

High **PROTEC**

MRU4



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English

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Build 62013

Revision A

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1 About This Reference Manual

This document is a reference of all the Setting Values, Direct Commands and Signals of the MRU4. In other words, it lists all parameters that are available (or can be made available) with the (optionally) full featured versions of the MRU4 protection device.

CAUTION!



This document does not intend to give long and/or detailed description, nor does it intend to replace the full Technical Manual in any way. Only a quite short description is given for each parameter.

This document is a reference of all the Setting Values, Direct Commands and Signals of the MRU4.

Every HighPROTEC protection device operates using a lot of digital values of various types. Throughout our Technical Documentation, we are talking of “settings” (or “parameters”) or “signals” or “(measured) values”, depending on the type.

Please consult the Technical Manual, in particular Chapter “Modules, Settings, Signals and Values”, for details of the existing data types.

Modules

The firmware of every HighPROTEC protection device can be thought of being sub-divided in several independent function blocks, the so-called “modules”. Every protection function, for example, is a module of its own. But one of the fundamental concepts of a HighPROTEC protection device is to implement this with great consequence.

There is even a general protection module (named »Prot«) that interacts all specific protection modules.

Every parameter, every value and every signal is therefore a member of some module.

But note that the settings dialogs (on the panel (HMI) or in the *Smart view* operating software) often omit the module name whenever it is clear from the menu branch. This means the parameters are often displayed only with their individual parameter names, i. e. simply »Function« instead of the full-blown »I2>[1] . Function«. This increases the overview and simplifies all configuration and operation work; however, it is good to know that the writing »Function« is just an abbreviation. In fact, **every** parameter **always** belongs to a module, and therefore – to make this concept absolutely clear – the reference tables have always the module name added in front of every parameter name

Especially for protection functions it is often required to have several instances active. For example, overcurrent protection usually has several “stages”, and all of these are running at the same time (using their individual setting values). Therefore it is an important feature of every HighPROTEC protection device that a lot of modules exist in several “instances”, which are numbered (in brackets), for example: »I2>[1]«, I2>[2]«

In the reference tables, usually every module has its own dedicated chapter, which lists the available number of instances at the beginning. Then, however, in the sub-chapters listing the various parameter types, only the first instance (e. g. »I2>[1]«) is mentioned, because all the other instances are identical anyway.









Structure of a Reference Table

Since (almost) every module can be activated or deactivated independently of the other modules and all parameters of an inactive module disappear from the menu branch it would not be helpful if this Reference Manual would list parameters sorted according to the menu structure. Instead, we list categories of modules (e. g. “Protection Functions”) and all the modules within a category.

For each parameter, there is a table with its properties, looking like this:

| Module . Parameter | [Menu Path to This Parameter] | |
|---|---|--|
| Default Value | Value Range | |
| For some parameters: | | |
| <ul style="list-style-type: none"> • Availability restrictions | | |
| Type | <i>Short descriptive text explaining the functionality of this parameter.</i> | |

“Type” is the data type of the parameter, which is denoted by a small icon. The following types are possible:

-  Setting Parameter
-  Direct Control
-  Input State
-  Signal (Output State)
-  Statistical Value
-  Counter
-  (Measuring) Value
-  Dialog — Such a dialog can feature several data objects using a special representation and/or functionality.

“Perm.” means “permission”, i. e. the access level and password that is required to modify the parameter. (Please refer to the “Security” chapter in the full Technical Manual for details.)


Several “access levels” exist, each having its individual password setting. (Each password is settable and can also be deactivated, see the MRU4 User Manual.)

In particular, the following permissions (access levels) can exist:

| Short Designation in this Reference Manual | Name of Access Area (Panel or Smart view) | Access to: |
|--|---|---|
| "RO" | Read Only-Lv0 | Level "RO" provides <i>Read Only</i> access to all settings and parameters of the device. The device will fall back into this level automatically after a configurable period or inactivity. |
| "P.1" | Prot-Lv1 | This password provides access to the reset- and acknowledge options. In addition to that, it permits the execution of manual trigger signals. |
| "P.2" | Prot-Lv2 | This password provides access to the reset and acknowledge options. In addition to that it permits changing of protection settings and the configuration of the trip manager. |
| "C.1" | Control-Lv1 | This password grants permission for switching operations (switching switchgears). |
| "C.2" | Control-Lv2 | This password grants permission for switching operations (switching switchgears). In addition to that it gives access to the switchgear settings (switching authority, interlockings, general settings of switchgears, Breaker wear...). |
| "S.3" | Supervisor-Lv3 | This password grants non-restricted access to all parameters and settings of the device (device configuration). This includes also the devices planning, device parameters (e.g. Date and Time), Field Parameters, Service Parameters and Logic Parameters. |

For some parameter types (e. g. Input and Output States), the second row (default, value range, permission) is useless and therefore omitted.

Example of a parameter:

| | | |
|---|-------------------|-----|
| Exp[1] . Mode | [Device planning] | |
| use | -, use ↳ Mode | S.3 |
|  <i>general operation mode</i> | | |

This means that one can find the parameter in the menu [Device planning], and its values are picked from a selection list named "Mode". The "↳" arrow indicates a cross-reference (hyperlink) into the "Selection Lists" chapter, and a click takes you to a table that lists all available choices.

The access level "S.3" means the access level "Supervisor-Lv3", which is required to modify the parameter.

Audience of This Manual

The manual serves as working basis for:

- Engineers in the protection field,
- commissioning engineers,
- people dealing with setting, testing and maintenance of protection and control devices,
- as well as trained personnel for electrical installations and power stations.

All functions concerning the MRU4 are listed. Should there be a description of any functions, parameters or inputs/outputs which do not apply to the device in use, please ignore that information.

This manual describes the (optionally) full featured versions of the devices.

All technical information and data included in this manual reflect their state at the time this document was issued. We reserve the right to carry out technical modifications in line with further development without changing this manual and without previous notice. Hence no claim can be brought based on the information and descriptions this manual includes.

We do not accept any liability for damage and operational failures caused by operating errors or disregarding the directions of this manual.

No part of this manual is allowed to be reproduced or passed on to others in any form, unless *SEG* have approved in writing.

This Reference Manual is part of the delivery scope when purchasing the device. In case the device is passed on (sold) to a third party, the manual has to be handed over as well.

Information Concerning Liability and Warranty

SEG does not accept any liability for damage resulting from conversions or changes carried out on the device or planning (projecting) work, parameter setting or adjustment changes done by the customer.

The warranty expires after a device has been opened by others than *SEG* specialists.

Warranty and liability conditions stated in *SEG* General Terms and Conditions are not supplemented by the above-mentioned explanations.

2 Device Configuration




















| MRU4 | # | # | # | # | # | # |
|---|----|---|---|---|---|---|
| Version | -2 | | | | | |
| Hardware Option1 | | A | | | | |
| Hardware Option2 | | | 0 | | | |
| Housing | | | | | | |
| Flush mounting | | | | | A | |
| 19 inch mounting (semi-flush) | | | | | B | |
| Customized Version 1 | | | | | H | |
| Customized Version 2 | | | | | K | |
| Communication | | | | | | |
| Without | | | | | | A |
| RS 485: Modbus RTU IEC 60870-5-103 DNP3 RTU | | | | | | B |
| Ethernet: Modbus TCP DNP3 UDP/TCP IEC 60870-5-104 | | | | | | C |
| Fiber Optics: Profibus-DP | | | | | | D |
| D-SUB: Profibus-DP | | | | | | E |
| Fiber Optics: Modbus RTU IEC 60870-5-103 DNP3 RTU | | | | | | F |
| RS 485/D-SUB: Modbus RTU IEC 60870-5-103 DNP3 RTU | | | | | | G |
| Ethernet: IEC 61850 communication Modbus TCP DNP3 UDP/TCP IEC 60870-5-104 | | | | | | H |
| RS 485, Ethernet: Modbus TCP/RTU IEC 60870-5-103 IEC 60870-5-104 DNP3 UDP/TCP/RTU | | | | | | I |
| Ethernet/Fiber Optics: IEC 61850 communication Modbus TCP DNP3 UDP/TCP IEC 60870-5-104 | | | | | | K |
| Ethernet/Fiber Optics: Modbus TCP DNP3 UDP/TCP IEC 60870-5-104 | | | | | | L |
| RS 485, Ethernet: IEC 61850 Modbus TCP/RTU IEC 60870-5-103 IEC 60870-5-104 DNP3 UDP/TCP/RTU | | | | | | T |
| Printed Circuit Board | | | | | | |
| Standard | | | | | | A |
| printed circuit boards are conformal coated | | | | | | B |







3 Menu

3.1 Operation

3.1.1 Operation / Measured Values

3.1.1.1 Operation / Measured Values / Voltage










| | | |
|---|---------------|--|
|  | »f« | Measured value: Frequency |
|  | »VL12 « | Measured value: Phase-to-phase voltage (fundamental) |
|  | »VL23 « | Measured value: Phase-to-phase voltage (fundamental) |
|  | »VL31 « | Measured value: Phase-to-phase voltage (fundamental) |
|  | »VL1 « | Measured value: Phase-to-neutral voltage (fundamental) |
|  | »VL2 « | Measured value: Phase-to-neutral voltage (fundamental) |
|  | »VL3 « | Measured value: Phase-to-neutral voltage (fundamental) |
|  | »VX meas « | Measured value (measured): VX measured (fundamental) |
|  | »VG calc « | Measured value (calculated): VG (fundamental) |
|  | »V0 « | Measured value (calculated): Symmetrical components Zero voltage(fundamental) |
|  | »V1 « | Measured value (calculated): Symmetrical components positive phase sequence voltage(fundamental) |
|  | »V2 « | Measured value (calculated): Symmetrical components negative phase sequence voltage(fundamental) |
|  | »%(V2/V1)« | Measured value (calculated): V2/V1, phase sequence will be taken into account automatically. |
|  | »phi VL12« | Measured value (calculated): Angle of Phasor VL12 Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi VL23« | Measured value (calculated): Angle of Phasor VL23 Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi VL31« | Measured value (calculated): Angle of Phasor VL31 Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi VL1« | Measured value (calculated): Angle of Phasor VL1 Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi VL2« | Measured value (calculated): Angle of Phasor VL2 Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi VL3« | Measured value (calculated): Angle of Phasor VL3 Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi VX meas« | Measured value: Angle of Phasor VX meas Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |

| | | |
|---|---------------|---|
|  | »phi VG calc« | Measured value (calculated): Angle of Phasor VG calc Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi V0« | Measured value (calculated): Angle Zero Sequence System Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi V1« | Measured value (calculated): Angle of Positive Sequence System Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »phi V2« | Measured Value (calculated): Angle of Negative Sequence System Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |
|  | »df/dt« | Measured value (calculated): Rate-of-frequency-change. |
|  | »delta phi« | Measured value (calculated): Vector surge |

3.1.1.2 Operation / Measured Values / Voltage RMS

| | | |
|---|---------------|--|
|  | »VL12 RMS« | Measured value: Phase-to-phase voltage (RMS) |
|  | »VL23 RMS« | Measured value: Phase-to-phase voltage (RMS) |
|  | »VL31 RMS« | Measured value: Phase-to-phase voltage (RMS) |
|  | »VL1 RMS« | Measured value: Phase-to-neutral voltage (RMS) |
|  | »VL2 RMS« | Measured value: Phase-to-neutral voltage (RMS) |
|  | »VL3 RMS« | Measured value: Phase-to-neutral voltage (RMS) |
|  | »VX meas RMS« | Measured value (measured): VX measured (RMS) |
|  | »VG calc RMS« | Measured value (calculated): VG (RMS) |
|  | »%VL12 THD« | Measured value (calculated): V12 Total Harmonic Distortion / Ground wave |
|  | »%VL23 THD« | Measured value (calculated): V23 Total Harmonic Distortion / Ground wave |
|  | »%VL31 THD« | Measured value (calculated): V31 Total Harmonic Distortion / Ground wave |
|  | »%VL1 THD« | Measured value (calculated): VL1 Total Harmonic Distortion / Ground wave |
|  | »%VL2 THD« | Measured value (calculated): VL2 Total Harmonic Distortion / Ground wave |
|  | »%VL3 THD« | Measured value (calculated): VL3 Total Harmonic Distortion / Ground wave |
|  | »VL12 THD« | Measured value (calculated): V12 Total Harmonic Distortion |
|  | »VL23 THD« | Measured value (calculated): V23 Total Harmonic Distortion |
|  | »VL31 THD« | Measured value (calculated): V31 Total Harmonic Distortion |
|  | »VL1 THD« | Measured value (calculated): VL1 Total Harmonic Distortion |
|  | »VL2 THD« | Measured value (calculated): VL2 Total Harmonic Distortion |
|  | »VL3 THD« | Measured value (calculated): VL3 Total Harmonic Distortion |

3.1.1.3 Operation / Measured Values / Synchronism

| | | |
|---|--------------|---|
|  | »Slip Freq« | Slip frequency |
|  | »Volt Diff« | Voltage difference between bus and line. |
|  | »Angle Diff« | Angle difference between bus and line voltages. |
|  | »f Bus« | Bus frequency |
|  | »f Line« | Line frequency |
|  | »V Bus« | Bus Voltage |
|  | »V Line« | Line Voltage |
|  | »Angle Bus« | Bus Angle (Reference) |
|  | »Angle Line« | Line Angle |

3.1.2 Operation / Statistics

3.1.2.1 Operation / Statistics / Max

3.1.2.1.1 Operation / Statistics / Max / Voltage

| | | |
|-------------------------------------|---------------------|--|
| <input checked="" type="checkbox"/> | »f max« | Max. frequency value |
| <input checked="" type="checkbox"/> | »VL12 max RMS« | VL12 maximum value (RMS) |
| <input checked="" type="checkbox"/> | »VL23 max RMS« | VL23 maximum value (RMS) |
| <input checked="" type="checkbox"/> | »VL31 max RMS« | VL31 maximum value (RMS) |
| <input checked="" type="checkbox"/> | »VL1 max RMS« | VL1 maximum value (RMS) |
| <input checked="" type="checkbox"/> | »VL2 max RMS« | VL2 maximum value (RMS) |
| <input checked="" type="checkbox"/> | »VL3 max RMS« | VL3 maximum value (RMS) |
| <input checked="" type="checkbox"/> | »VX meas max RMS« | Measured value: VX maximum value (RMS) |
| <input checked="" type="checkbox"/> | »VG calc max RMS« | Measured value (calculated):VX maximum value (RMS) |
| <input checked="" type="checkbox"/> | »V1 max « | Maximum value: Symmetrical components positive phase sequence voltage(fundamental) |
| <input checked="" type="checkbox"/> | »V2 max « | Maximum value: Symmetrical components negative phase sequence voltage(fundamental) |
| <input checked="" type="checkbox"/> | »%(V2/V1) max« | Measured value (calculated):V2/V1 maximum value, phase sequence will be taken into account automatically |
| <input type="checkbox"/> | »Res Cr Max values« | Number of resets since the last device restart. The timestamp shows date and time of the last reset. |

3.1.2.2 Operation / Statistics / Min

3.1.2.2.1 Operation / Statistics / Min / Voltage

| | | |
|-------------------------------------|---------------------|---|
| <input checked="" type="checkbox"/> | »f min « | Min. frequency value |
| <input checked="" type="checkbox"/> | »VL12 min RMS« | VL12 minimum value (RMS) |
| <input checked="" type="checkbox"/> | »VL23 min RMS« | VL23 minimum value (RMS) |
| <input checked="" type="checkbox"/> | »VL31 min RMS« | VL31 minimum value (RMS) |
| <input checked="" type="checkbox"/> | »VL1 min RMS« | VL1 minimum value (RMS) |
| <input checked="" type="checkbox"/> | »VL2 min RMS« | VL2 minimum value (RMS) |
| <input checked="" type="checkbox"/> | »VL3 min RMS« | VL3 minimum value (RMS) |
| <input checked="" type="checkbox"/> | »VX meas min RMS« | Measured value: VX minimum value (RMS) |
| <input checked="" type="checkbox"/> | »VG calc min RMS« | Measured value (calculated):VX minimum value (RMS) |
| <input checked="" type="checkbox"/> | »V1 min « | Minimum value: Symmetrical components positive phase sequence voltage(fundamental) |
| <input checked="" type="checkbox"/> | »V2 min « | Minimum value: Symmetrical components negative phase sequence voltage(fundamental) |
| <input checked="" type="checkbox"/> | »%(V2/V1) min« | Measured value (calculated):V2/V1 minimum value , phase sequence will be taken into account automatically |
| <input type="checkbox"/> | »Res Cr Min values« | Number of resets since the last device restart. The timestamp shows date and time of the last reset. |


3.1.2.3 Operation / Statistics / Vavg

| | | |
|-------------------------------------|----------------|--|
| <input checked="" type="checkbox"/> | »VL12 avg RMS« | VL12 average value (RMS) |
| <input checked="" type="checkbox"/> | »VL23 avg RMS« | VL23 average value (RMS) |
| <input checked="" type="checkbox"/> | »VL31 avg RMS« | VL31 average value (RMS) |
| <input checked="" type="checkbox"/> | »VL1 avg RMS« | VL1 average value (RMS) |
| <input checked="" type="checkbox"/> | »VL2 avg RMS« | VL2 average value (RMS) |
| <input checked="" type="checkbox"/> | »VL3 avg RMS« | VL3 average value (RMS) |
| <input type="checkbox"/> | »Res Cr V avg« | Number of resets since the last device restart. The timestamp shows date and time of the last reset. |





3.1.3 Operation / Status Display**3.1.3.1 Operation / Status Display / All Actives**


| | | |
|--------------------------|-----------------|----------------|
| <input type="checkbox"/> | »Prot . Active« | Signal: active |
| <input type="checkbox"/> | »V[1] . Active« | Signal: active |

| | | |
|---|--------------------------|----------------|
| ↑ | »V[2] . Active« | Signal: active |
| ↑ | »V[3] . Active« | Signal: active |
| ↑ | »V[4] . Active« | Signal: active |
| ↑ | »V[5] . Active« | Signal: active |
| ↑ | »V[6] . Active« | Signal: active |
| ↑ | »df/dt . Active« | Signal: active |
| ↑ | »delta phi . Active« | Signal: active |
| ↑ | »Intertripping . Active« | Signal: active |
| ↑ | »LVRT[1] . Active« | Signal: active |
| ↑ | »LVRT[2] . Active« | Signal: active |
| ↑ | »VG[1] . Active« | Signal: active |
| ↑ | »VG[2] . Active« | Signal: active |
| ↑ | »V012[1] . Active« | Signal: active |
| ↑ | »V012[2] . Active« | Signal: active |
| ↑ | »V012[3] . Active« | Signal: active |
| ↑ | »V012[4] . Active« | Signal: active |
| ↑ | »V012[5] . Active« | Signal: active |
| ↑ | »V012[6] . Active« | Signal: active |
| ↑ | »f[1] . Active« | Signal: active |
| ↑ | »f[2] . Active« | Signal: active |
| ↑ | »f[3] . Active« | Signal: active |
| ↑ | »f[4] . Active« | Signal: active |
| ↑ | »f[5] . Active« | Signal: active |
| ↑ | »f[6] . Active« | Signal: active |
| ↑ | »ReCon[1] . Active« | Signal: active |
| ↑ | »ReCon[2] . Active« | Signal: active |
| ↑ | »Sync . Active« | Signal: active |
| ↑ | »Exp[1] . Active« | Signal: active |
| ↑ | »Exp[2] . Active« | Signal: active |
| ↑ | »Exp[3] . Active« | Signal: active |
| ↑ | »Exp[4] . Active« | Signal: active |
| ↑ | »CBF . Active« | Signal: active |
| ↑ | »TCS . Active« | Signal: active |
| ↑ | »VTS . Active« | Signal: active |










| | | |
|---|----------------|----------------|
|  | »SysA . Alarm« | Signal: active |
|---|----------------|----------------|


3.1.3.2 Operation / Status Display / Alarms

| | | |
|---|-------------------------|--|
|  | »Prot . Alarm« | Signal: General Alarm |
|  | »V[1] . Alarm« | Signal: Alarm voltage stage |
|  | »V[2] . Alarm« | Signal: Alarm voltage stage |
|  | »V[3] . Alarm« | Signal: Alarm voltage stage |
|  | »V[4] . Alarm« | Signal: Alarm voltage stage |
|  | »V[5] . Alarm« | Signal: Alarm voltage stage |
|  | »V[6] . Alarm« | Signal: Alarm voltage stage |
|  | »df/dt . Alarm« | Signal: Alarm Frequency Protection (collective signal) |
|  | »delta phi . Alarm« | Signal: Alarm Frequency Protection (collective signal) |
|  | »Intertripping . Alarm« | Signal: Alarm |
|  | »LVRT[1] . Alarm« | Signal: Alarm voltage stage |
|  | »LVRT[2] . Alarm« | Signal: Alarm voltage stage |
|  | »VG[1] . Alarm« | Signal: Alarm Residual Voltage Supervision-stage |
|  | »VG[2] . Alarm« | Signal: Alarm Residual Voltage Supervision-stage |
|  | »V012[1] . Alarm« | Signal: Alarm voltage asymmetry |
|  | »V012[2] . Alarm« | Signal: Alarm voltage asymmetry |
|  | »V012[3] . Alarm« | Signal: Alarm voltage asymmetry |
|  | »V012[4] . Alarm« | Signal: Alarm voltage asymmetry |
|  | »V012[5] . Alarm« | Signal: Alarm voltage asymmetry |
|  | »V012[6] . Alarm« | Signal: Alarm voltage asymmetry |
|  | »f[1] . Alarm« | Signal: Alarm Frequency Protection (collective signal) |
|  | »f[2] . Alarm« | Signal: Alarm Frequency Protection (collective signal) |
|  | »f[3] . Alarm« | Signal: Alarm Frequency Protection (collective signal) |
|  | »f[4] . Alarm« | Signal: Alarm Frequency Protection (collective signal) |
|  | »f[5] . Alarm« | Signal: Alarm Frequency Protection (collective signal) |
|  | »f[6] . Alarm« | Signal: Alarm Frequency Protection (collective signal) |
|  | »Exp[1] . Alarm« | Signal: Alarm |
|  | »Exp[2] . Alarm« | Signal: Alarm |
|  | »Exp[3] . Alarm« | Signal: Alarm |
|  | »Exp[4] . Alarm« | Signal: Alarm |
|  | »TCS . Alarm« | Signal: Alarm Trip Circuit Supervision |



| | | |
|---|---------------|---|
|  | »VTS . Alarm« | Signal: Alarm Voltage Transformer Measuring Circuit Supervision |
|---|---------------|---|

3.1.3.3 Operation / Status Display / Trips

| | | |
|---|------------------------|---|
|  | »Prot . Trip« | Signal: General Trip |
|  | »V[1] . Trip« | Signal: Trip |
|  | »V[2] . Trip« | Signal: Trip |
|  | »V[3] . Trip« | Signal: Trip |
|  | »V[4] . Trip« | Signal: Trip |
|  | »V[5] . Trip« | Signal: Trip |
|  | »V[6] . Trip« | Signal: Trip |
|  | »df/dt . Trip« | Signal: Trip Frequency Protection (collective signal) |
|  | »delta phi . Trip« | Signal: Trip Frequency Protection (collective signal) |
|  | »Intertripping . Trip« | Signal: Trip |
|  | »LVRT[1] . Trip« | Signal: Trip |
|  | »LVRT[2] . Trip« | Signal: Trip |
|  | »VG[1] . Trip« | Signal: Trip |
|  | »VG[2] . Trip« | Signal: Trip |
|  | »V012[1] . Trip« | Signal: Trip |
|  | »V012[2] . Trip« | Signal: Trip |
|  | »V012[3] . Trip« | Signal: Trip |
|  | »V012[4] . Trip« | Signal: Trip |
|  | »V012[5] . Trip« | Signal: Trip |
|  | »V012[6] . Trip« | Signal: Trip |
|  | »f[1] . Trip« | Signal: Trip Frequency Protection (collective signal) |
|  | »f[2] . Trip« | Signal: Trip Frequency Protection (collective signal) |
|  | »f[3] . Trip« | Signal: Trip Frequency Protection (collective signal) |
|  | »f[4] . Trip« | Signal: Trip Frequency Protection (collective signal) |
|  | »f[5] . Trip« | Signal: Trip Frequency Protection (collective signal) |
|  | »f[6] . Trip« | Signal: Trip Frequency Protection (collective signal) |
|  | »Exp[1] . Trip« | Signal: Trip |
|  | »Exp[2] . Trip« | Signal: Trip |
|  | »Exp[3] . Trip« | Signal: Trip |
|  | »Exp[4] . Trip« | Signal: Trip |

| | | |
|---|---------------|---------------------------------|
|  | »CBF . Alarm« | Signal: Circuit Breaker Failure |
|---|---------------|---------------------------------|

3.1.3.4 Operation / Status Display / TripCmds

| | | |
|---|---------------------------|----------------------|
|  | »SG[1] . TripCmd« | Signal: Trip Command |
|  | »V[1] . TripCmd« | Signal: Trip Command |
|  | »V[2] . TripCmd« | Signal: Trip Command |
|  | »V[3] . TripCmd« | Signal: Trip Command |
|  | »V[4] . TripCmd« | Signal: Trip Command |
|  | »V[5] . TripCmd« | Signal: Trip Command |
|  | »V[6] . TripCmd« | Signal: Trip Command |
|  | »df/dt . TripCmd« | Signal: Trip Command |
|  | »delta phi . TripCmd« | Signal: Trip Command |
|  | »Intertripping . TripCmd« | Signal: Trip Command |
|  | »LVRT[1] . TripCmd« | Signal: Trip Command |
|  | »LVRT[2] . TripCmd« | Signal: Trip Command |
|  | »VG[1] . TripCmd« | Signal: Trip Command |
|  | »VG[2] . TripCmd« | Signal: Trip Command |
|  | »V012[1] . TripCmd« | Signal: Trip Command |
|  | »V012[2] . TripCmd« | Signal: Trip Command |
|  | »V012[3] . TripCmd« | Signal: Trip Command |
|  | »V012[4] . TripCmd« | Signal: Trip Command |
|  | »V012[5] . TripCmd« | Signal: Trip Command |
|  | »V012[6] . TripCmd« | Signal: Trip Command |
|  | »f[1] . TripCmd« | Signal: Trip Command |
|  | »f[2] . TripCmd« | Signal: Trip Command |
|  | »f[3] . TripCmd« | Signal: Trip Command |
|  | »f[4] . TripCmd« | Signal: Trip Command |
|  | »f[5] . TripCmd« | Signal: Trip Command |
|  | »f[6] . TripCmd« | Signal: Trip Command |
|  | »Exp[1] . TripCmd« | Signal: Trip Command |
|  | »Exp[2] . TripCmd« | Signal: Trip Command |
|  | »Exp[3] . TripCmd« | Signal: Trip Command |
|  | »Exp[4] . TripCmd« | Signal: Trip Command |

3.1.3.5 Operation / Status Display / Prot

| | | |
|---|-----------------------------|---|
| ↑ | »available« | Signal: Protection is available |
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: General-Alarm L1 |
| ↑ | »Alarm L2« | Signal: General-Alarm L2 |
| ↑ | »Alarm L3« | Signal: General-Alarm L3 |
| ↑ | »Alarm G« | Signal: General-Alarm - Earth fault |
| ↑ | »Alarm« | Signal: General Alarm |
| ↑ | »Trip L1« | Signal: General Trip L1 |
| ↑ | »Trip L2« | Signal: General Trip L2 |
| ↑ | »Trip L3« | Signal: General Trip L3 |
| ↑ | »Trip G« | Signal: General Trip Ground fault |
| ↑ | »Trip« | Signal: General Trip |
| ↑ | »Res FaultNo a GridFaultNo« | Signal: Resetting of fault number and grid fault number. |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3.1.3.6 Operation / Status Display / Control

3.1.3.6.1 Operation / Status Display / Control / General Control

| | | |
|---|-----------------------|---|
| ↑ | »Local« | Switching Authority: Local |
| ↑ | »Remote« | Switching Authority: Remote |
| ↑ | »NonInterl« | Non-Interlocking is active |
| ↑ | »SG Indeterm« | (At least one) Switchgear is moving (Position cannot be determined). |
| ↑ | »SG Disturb« | (At least one) Switchgear is disturbed. |
| ↑ | »CES SAuthority« | Command Execution Supervision: Number of rejected Commands because of missing switching authority. |
| ↑ | »CES DoubleOperating« | Command Execution Supervision: Number of rejected Commands because a second switch command is in conflict with a pending one. |
| ↓ | »NonInterl-I« | Non-Interlocking |

3 Menu

3.1.3.6.2 Operation / Status Display / Control / SG[1]

3.1.3.6.2 Operation / Status Display / Control / SG[1]

| | | |
|---|-----------------------|---|
| ↑ | »SI SingleContactInd« | Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected. |
| ↑ | »Pos not ON« | Signal: Pos not ON |
| ↑ | »Pos ON« | Signal: Circuit Breaker is in ON-Position |
| ↑ | »Pos OFF« | Signal: Circuit Breaker is in OFF-Position |
| ↑ | »Pos Indeterm« | Signal: Circuit Breaker is in Indeterminate Position |
| ↑ | »Pos Disturb« | Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true. |
| ↑ | »Pos« | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |
| ↑ | »Ready« | Signal: Circuit breaker is ready for operation. |
| ↑ | »t-Dwell« | Signal: Dwell time |
| ↑ | »Removed« | Signal: The withdrawable circuit breaker is Removed |
| ↑ | »Interl ON« | Signal: One or more IL_On inputs are active. |
| ↑ | »Interl OFF« | Signal: One or more IL_Off inputs are active. |
| ↑ | »CES succesf« | Signal: Command Execution Supervision: Switching command executed successfully. |
| ↑ | »CES Disturbed« | Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position. |
| ↑ | »CES Fail TripCmd« | Signal: Command Execution Supervision: Command execution failed because trip command is pending. |
| ↑ | »CES SwitchDir« | Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands. |
| ↑ | »CES ON d OFF« | Signal: Command Execution Supervision: On Command during a pending OFF Command. |
| ↑ | »CES SG not ready« | Signal: Command Execution Supervision: Switchgear not ready |
| ↑ | »CES Fiel Interl« | Signal: Command Execution Supervision: Switching Command not executed because of field interlocking. |
| ↑ | »CES SyncTimeout« | Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running. |
| ↑ | »CES SG removed« | Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed. |
| ↑ | »Prot ON« | Signal: ON Command issued by the Prot module |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↑ | »Ack TripCmd« | Signal: Acknowledge Trip Command |
| ↑ | »ON incl Prot ON« | Signal: The ON Command includes the ON Command issued by the Protection module. |
| ↑ | »OFF incl TripCmd« | Signal: The OFF Command includes the OFF Command issued by the Protection module. |

| | | |
|---|------------------------|---|
| ↑ | »Position Ind manipul« | Signal: Position Indicators faked |
| ↑ | »SGwear Slow SG« | Signal: Alarm, the circuit breaker (load-break switch) becomes slower |
| ↑ | »Res SGwear SI SG« | Signal: Resetting the slow Switchgear Alarm |
| ↑ | »ON Cmd« | Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module. |
| ↑ | »OFF Cmd« | Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module. |
| ↑ | »ON Cmd manual« | Signal: ON Cmd manual |
| ↑ | »OFF Cmd manual« | Signal: OFF Cmd manual |
| ↑ | »Sync ON request« | Signal: Synchronous ON request |
| ↑ | »Test Trip Cmd« | A trip command has been triggered manually (for testing purposes). |
| ↑ | »Operations Alarm« | Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.) |
| ↑ | »Res TripCmd Cr« | Signal: Resetting of the Counter: Total number of trips of the switchgear |
| ↓ | »Interl ON1-I« | State of the module input: Interlocking of the ON command |
| ↓ | »Interl ON2-I« | State of the module input: Interlocking of the ON command |
| ↓ | »Interl ON3-I« | State of the module input: Interlocking of the ON command |
| ↓ | »Interl OFF1-I« | State of the module input: Interlocking of the OFF command |
| ↓ | »Interl OFF2-I« | State of the module input: Interlocking of the OFF command |
| ↓ | »Interl OFF3-I« | State of the module input: Interlocking of the OFF command |
| ↓ | »SCmd ON-I« | State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input |
| ↓ | »SCmd OFF-I« | State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input |
| ↓ | »Aux ON-I« | Module Input State: Position indicator/check-back signal of the CB (52a) |
| ↓ | »Aux OFF-I« | Module input state: Position indicator/check-back signal of the CB (52b) |
| ↓ | »Ready-I« | Module input state: CB ready |
| ↓ | »Sys-in-Sync-I« | State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful. |
| ↓ | »Removed-I« | State of the module input: The withdrawable circuit breaker is Removed |
| ↓ | »Ack TripCmd-I« | State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal |

3.1.3.7 Operation / Status Display / Intercon-Prot

3.1.3.7.1 Operation / Status Display / Intercon-Prot / Mains Decouplg

3.1.3.7.1.1 Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by V<« | Signal: Module is blocked by undervoltage. |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm Frequency Protection (collective signal) |
| ↑ | »Trip« | Signal: Trip Frequency Protection (collective signal) |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.7.1.2 Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by V<« | Signal: Module is blocked by undervoltage. |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm Frequency Protection (collective signal) |
| ↑ | »Trip« | Signal: Trip Frequency Protection (collective signal) |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.7.1.3 Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |
| ↓ | »Alarm-I« | Module input state: Alarm |
| ↓ | »Trip-I« | Module input state: Trip |

3.1.3.7.2 Operation / Status Display / Intercon-Prot / LVRT[1]

| | | |
|---|---------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: Alarm L1 |
| ↑ | »Alarm L2« | Signal: Alarm L2 |
| ↑ | »Alarm L3« | Signal: Alarm L3 |
| ↑ | »Alarm« | Signal: Alarm voltage stage |
| ↑ | »Trip L1« | Signal: General Trip Phase L1 |
| ↑ | »Trip L2« | Signal: General Trip Phase L2 |
| ↑ | »Trip L3« | Signal: General Trip Phase L3 |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↑ | »t-LVRT is running« | Signal: t-LVRT is running |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3 Menu

3.1.3.7.3 Operation / Status Display / Intercon-Prot / LVRT[2]

3.1.3.7.3 Operation / Status Display / Intercon-Prot / LVRT[2]

| | | |
|---|---------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: Alarm L1 |
| ↑ | »Alarm L2« | Signal: Alarm L2 |
| ↑ | »Alarm L3« | Signal: Alarm L3 |
| ↑ | »Alarm« | Signal: Alarm voltage stage |
| ↑ | »Trip L1« | Signal: General Trip Phase L1 |
| ↑ | »Trip L2« | Signal: General Trip Phase L2 |
| ↑ | »Trip L3« | Signal: General Trip Phase L3 |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↑ | »t-LVRT is running« | Signal: t-LVRT is running |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.7.4 Operation / Status Display / Intercon-Prot / ReCon[1]

| | | |
|---|---------------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by Meas Circ Superv« | Signal: Module blocked by measuring circuit supervision |
| ↑ | »Eval Recon-Conditions« | Signal: Evaluation of reconnection conditions after decoupling event |
| ↑ | »t-Release running« | Signal: The timer "t-Release" is running. Thus, all conditions for reconnection are fulfilled. After the timer has expired reconnection release will be issued. |
| ↑ | »Release Energy Res.« | Signal: Signal: Release Energy Resource. |
| ↑ | »V out of range« | Signal: Reconnection release is blocked because voltage is out of range |
| ↑ | »f out of range« | Signal: Reconnection release is blocked because frequency is out of range |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »V Ext Release PCC-I« | Module input state: Release signal is being generated by the PCC (External Release) |
| ↓ | »PCC Fuse Fail VT-I« | State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC. |
| ↓ | »reconnected-I« | This signal indicates the state "reconnected" (mains parallel). |
| ↓ | »Decoupling1-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling2-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling3-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling4-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling5-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling6-I« | Decoupling function, that triggers the reconnection. |

3 Menu

3.1.3.7.5 Operation / Status Display / Intercon-Prot / ReCon[2]

3.1.3.7.5 Operation / Status Display / Intercon-Prot / ReCon[2]

| | | |
|---|---------------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by Meas Circ Superv« | Signal: Module blocked by measuring circuit supervision |
| ↑ | »Eval Recon-Conditions« | Signal: Evaluation of reconnection conditions after decoupling event |
| ↑ | »t-Release running« | Signal: The timer "t-Release" is running. Thus, all conditions for reconnection are fulfilled. After the timer has expired reconnection release will be issued. |
| ↑ | »Release Energy Res.« | Signal: Signal: Release Energy Resource. |
| ↑ | »V out of range« | Signal: Reconnection release is blocked because voltage is out of range |
| ↑ | »f out of range« | Signal: Reconnection release is blocked because frequency is out of range |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »V Ext Release PCC-I« | Module input state: Release signal is being generated by the PCC (External Release) |
| ↓ | »PCC Fuse Fail VT-I« | State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC. |
| ↓ | »reconnected-I« | This signal indicates the state "reconnected" (mains parallel). |
| ↓ | »Decoupling1-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling2-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling3-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling4-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling5-I« | Decoupling function, that triggers the reconnection. |
| ↓ | »Decoupling6-I« | Decoupling function, that triggers the reconnection. |

3.1.3.7.6 Operation / Status Display / Intercon-Prot / Sync

| | | |
|---|---------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »LiveBus« | Signal: Live-Bus flag: 1=Live-Bus, 0=Voltage is below the LiveBus threshold |
| ↑ | »LiveLine« | Signal: Live Line flag: 1=Live-Line, 0=Voltage is below the LiveLine threshold |
| ↑ | »SynchronRunTiming« | Signal: Synchron-Run-timer is timing (This timer starts when Close-Initiate is coming and stops if breaker is closed. Timeout means synchronizing failed.) |
| ↑ | »SynchronFailed« | Signal: This signal indicates a failed synchronization. It is set for 5s when the circuit breaker is still open after the Synchron-Run-timer has timed out. |
| ↑ | »SyncOverridden« | Signal:Synchronism Check is overridden because one of the Synchronism overriding conditions (DB/DL or ExtBypass) is met. |
| ↑ | »VDiffTooHigh« | Signal: Voltage difference between bus and line too high. |
| ↑ | »SlipTooHigh« | Signal: Frequency difference (slip frequency) between bus and line voltages too high. |
| ↑ | »AngleDiffTooHigh« | Signal: Phase Angle difference between bus and line voltages too high. |
| ↑ | »Sys-in-Sync« | Signal: Bus and line voltages are in synchronism according to the system synchronism criteria. |
| ↑ | »Ready to Close« | Signal: Ready to Close |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »Bypass-I« | State of the module input: The Synchrocheck will be bypassed if the state of the assigned signal (logic input) becomes true. |
| ↓ | »CBCloseInitiate-I« | State of the module input: Breaker Close Initiate with synchronism check from any control sources (e.g. HMI / SCADA). If the state of the assigned signal becomes true, a Breaker Close will be initiated (Trigger Source). |

3.1.3.8 Operation / Status Display / V-Prot

3.1.3.8.1 Operation / Status Display / V-Prot / V[1]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: Alarm L1 |
| ↑ | »Alarm L2« | Signal: Alarm L2 |
| ↑ | »Alarm L3« | Signal: Alarm L3 |
| ↑ | »Alarm« | Signal: Alarm voltage stage |
| ↑ | »Trip L1« | Signal: General Trip Phase L1 |
| ↑ | »Trip L2« | Signal: General Trip Phase L2 |
| ↑ | »Trip L3« | Signal: General Trip Phase L3 |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3.1.3.8.2 Operation / Status Display / V-Prot / V[2]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: Alarm L1 |
| ↑ | »Alarm L2« | Signal: Alarm L2 |
| ↑ | »Alarm L3« | Signal: Alarm L3 |
| ↑ | »Alarm« | Signal: Alarm voltage stage |
| ↑ | »Trip L1« | Signal: General Trip Phase L1 |
| ↑ | »Trip L2« | Signal: General Trip Phase L2 |
| ↑ | »Trip L3« | Signal: General Trip Phase L3 |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3 Menu

3.1.3.8.3 Operation / Status Display / V-Prot / V[3]

3.1.3.8.3 Operation / Status Display / V-Prot / V[3]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: Alarm L1 |
| ↑ | »Alarm L2« | Signal: Alarm L2 |
| ↑ | »Alarm L3« | Signal: Alarm L3 |
| ↑ | »Alarm« | Signal: Alarm voltage stage |
| ↑ | »Trip L1« | Signal: General Trip Phase L1 |
| ↑ | »Trip L2« | Signal: General Trip Phase L2 |
| ↑ | »Trip L3« | Signal: General Trip Phase L3 |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3.1.3.8.4 Operation / Status Display / V-Prot / V[4]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: Alarm L1 |
| ↑ | »Alarm L2« | Signal: Alarm L2 |
| ↑ | »Alarm L3« | Signal: Alarm L3 |
| ↑ | »Alarm« | Signal: Alarm voltage stage |
| ↑ | »Trip L1« | Signal: General Trip Phase L1 |
| ↑ | »Trip L2« | Signal: General Trip Phase L2 |
| ↑ | »Trip L3« | Signal: General Trip Phase L3 |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3 Menu

3.1.3.8.5 Operation / Status Display / V-Prot / V[5]

3.1.3.8.5 Operation / Status Display / V-Prot / V[5]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: Alarm L1 |
| ↑ | »Alarm L2« | Signal: Alarm L2 |
| ↑ | »Alarm L3« | Signal: Alarm L3 |
| ↑ | »Alarm« | Signal: Alarm voltage stage |
| ↑ | »Trip L1« | Signal: General Trip Phase L1 |
| ↑ | »Trip L2« | Signal: General Trip Phase L2 |
| ↑ | »Trip L3« | Signal: General Trip Phase L3 |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3.1.3.8.6 Operation / Status Display / V-Prot / V[6]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm L1« | Signal: Alarm L1 |
| ↑ | »Alarm L2« | Signal: Alarm L2 |
| ↑ | »Alarm L3« | Signal: Alarm L3 |
| ↑ | »Alarm« | Signal: Alarm voltage stage |
| ↑ | »Trip L1« | Signal: General Trip Phase L1 |
| ↑ | »Trip L2« | Signal: General Trip Phase L2 |
| ↑ | »Trip L3« | Signal: General Trip Phase L3 |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3.1.3.8.7 Operation / Status Display / V-Prot / VG[1]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm Residual Voltage Supervision-stage |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-I« | Module input state: External Blocking of the Trip Command |

3 Menu

3.1.3.8.8 Operation / Status Display / V-Prot / VG[2]

3.1.3.8.8 Operation / Status Display / V-Prot / VG[2]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm Residual Voltage Supervision-stage |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.8.9 Operation / Status Display / V-Prot / V012[1]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm voltage asymmetry |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.8.10 Operation / Status Display / V-Prot / V012[2]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm voltage asymmetry |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.8.11 Operation / Status Display / V-Prot / V012[3]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm voltage asymmetry |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3 Menu

3.1.3.8.12 Operation / Status Display / V-Prot / V012[4]

3.1.3.8.12 Operation / Status Display / V-Prot / V012[4]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm voltage asymmetry |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.8.13 Operation / Status Display / V-Prot / V012[5]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm voltage asymmetry |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.8.14 Operation / Status Display / V-Prot / V012[6]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm voltage asymmetry |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.9 Operation / Status Display / f-Prot

3.1.3.9.1 Operation / Status Display / f-Prot / f[1]

| | | |
|---|-----------------------|--|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by V<« | Signal: Module is blocked by undervoltage. |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm f« | Signal: Alarm Frequency Protection |
| ↑ | »Alarm df/dt DF/DT« | Alarm instantaneous or average value of the rate-of-frequency-change |
| ↑ | »Alarm delta phi« | Signal: Alarm Vector Surge |
| ↑ | »Alarm« | Signal: Alarm Frequency Protection (collective signal) |
| ↑ | »Trip f« | Signal: Frequency has exceeded the limit. |
| ↑ | »Trip df/dt DF/DT« | Signal: Trip df/dt or DF/DT |
| ↑ | »Trip delta phi« | Signal: Trip Vector Surge |
| ↑ | »Trip« | Signal: Trip Frequency Protection (collective signal) |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3 Menu

3.1.3.9.2 Operation / Status Display / f-Prot / f[2]

3.1.3.9.2 Operation / Status Display / f-Prot / f[2]

| | | |
|---|-----------------------|--|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by V<« | Signal: Module is blocked by undervoltage. |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm f« | Signal: Alarm Frequency Protection |
| ↑ | »Alarm df/dt DF/DT« | Alarm instantaneous or average value of the rate-of-frequency-change |
| ↑ | »Alarm delta phi« | Signal: Alarm Vector Surge |
| ↑ | »Alarm« | Signal: Alarm Frequency Protection (collective signal) |
| ↑ | »Trip f« | Signal: Frequency has exceeded the limit. |
| ↑ | »Trip df/dt DF/DT« | Signal: Trip df/dt or DF/DT |
| ↑ | »Trip delta phi« | Signal: Trip Vector Surge |
| ↑ | »Trip« | Signal: Trip Frequency Protection (collective signal) |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.9.3 Operation / Status Display / f-Prot / f[3]

| | | |
|---|-----------------------|--|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by V<« | Signal: Module is blocked by undervoltage. |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm f« | Signal: Alarm Frequency Protection |
| ↑ | »Alarm df/dt DF/DT« | Alarm instantaneous or average value of the rate-of-frequency-change |
| ↑ | »Alarm delta phi« | Signal: Alarm Vector Surge |
| ↑ | »Alarm« | Signal: Alarm Frequency Protection (collective signal) |
| ↑ | »Trip f« | Signal: Frequency has exceeded the limit. |
| ↑ | »Trip df/dt DF/DT« | Signal: Trip df/dt or DF/DT |
| ↑ | »Trip delta phi« | Signal: Trip Vector Surge |
| ↑ | »Trip« | Signal: Trip Frequency Protection (collective signal) |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3 Menu

3.1.3.9.4 Operation / Status Display / f-Prot / f[4]

3.1.3.9.4 Operation / Status Display / f-Prot / f[4]

| | | |
|---|-----------------------|--|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by V<« | Signal: Module is blocked by undervoltage. |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm f« | Signal: Alarm Frequency Protection |
| ↑ | »Alarm df/dt DF/DT« | Alarm instantaneous or average value of the rate-of-frequency-change |
| ↑ | »Alarm delta phi« | Signal: Alarm Vector Surge |
| ↑ | »Alarm« | Signal: Alarm Frequency Protection (collective signal) |
| ↑ | »Trip f« | Signal: Frequency has exceeded the limit. |
| ↑ | »Trip df/dt DF/DT« | Signal: Trip df/dt or DF/DT |
| ↑ | »Trip delta phi« | Signal: Trip Vector Surge |
| ↑ | »Trip« | Signal: Trip Frequency Protection (collective signal) |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.9.5 Operation / Status Display / f-Prot / f[5]

| | | |
|---|-----------------------|--|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by V<« | Signal: Module is blocked by undervoltage. |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm f« | Signal: Alarm Frequency Protection |
| ↑ | »Alarm df/dt DF/DT« | Alarm instantaneous or average value of the rate-of-frequency-change |
| ↑ | »Alarm delta phi« | Signal: Alarm Vector Surge |
| ↑ | »Alarm« | Signal: Alarm Frequency Protection (collective signal) |
| ↑ | »Trip f« | Signal: Frequency has exceeded the limit. |
| ↑ | »Trip df/dt DF/DT« | Signal: Trip df/dt or DF/DT |
| ↑ | »Trip delta phi« | Signal: Trip Vector Surge |
| ↑ | »Trip« | Signal: Trip Frequency Protection (collective signal) |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3 Menu

3.1.3.9.6 Operation / Status Display / f-Prot / f[6]

3.1.3.9.6 Operation / Status Display / f-Prot / f[6]

| | | |
|---|-----------------------|--|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo by V<« | Signal: Module is blocked by undervoltage. |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm f« | Signal: Alarm Frequency Protection |
| ↑ | »Alarm df/dt DF/DT« | Alarm instantaneous or average value of the rate-of-frequency-change |
| ↑ | »Alarm delta phi« | Signal: Alarm Vector Surge |
| ↑ | »Alarm« | Signal: Alarm Frequency Protection (collective signal) |
| ↑ | »Trip f« | Signal: Frequency has exceeded the limit. |
| ↑ | »Trip df/dt DF/DT« | Signal: Trip df/dt or DF/DT |
| ↑ | »Trip delta phi« | Signal: Trip Vector Surge |
| ↑ | »Trip« | Signal: Trip Frequency Protection (collective signal) |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |

3.1.3.10 Operation / Status Display / Exp

3.1.3.10.1 Operation / Status Display / Exp / Exp[1]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |
| ↓ | »Alarm-l« | Module input state: Alarm |
| ↓ | »Trip-l« | Module input state: Trip |

3.1.3.10.2 Operation / Status Display / Exp / Exp[2]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |
| ↓ | »Alarm-l« | Module input state: Alarm |
| ↓ | »Trip-l« | Module input state: Trip |

3 Menu

3.1.3.10.3 Operation / Status Display / ExP / ExP[3]

3.1.3.10.3 Operation / Status Display / ExP / ExP[3]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |
| ↓ | »Alarm-l« | Module input state: Alarm |
| ↓ | »Trip-l« | Module input state: Trip |

3.1.3.10.4 Operation / Status Display / ExP / ExP[4]

| | | |
|---|-------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Blo TripCmd« | Signal: Trip Command blocked |
| ↑ | »ExBlo TripCmd« | Signal: External Blocking of the Trip Command |
| ↑ | »Alarm« | Signal: Alarm |
| ↑ | »Trip« | Signal: Trip |
| ↑ | »TripCmd« | Signal: Trip Command |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »ExBlo TripCmd-l« | Module input state: External Blocking of the Trip Command |
| ↓ | »Alarm-l« | Module input state: Alarm |
| ↓ | »Trip-l« | Module input state: Trip |

3.1.3.11 Operation / Status Display / Supervision

3.1.3.11.1 Operation / Status Display / Supervision / CBF

| | | |
|---|-----------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Waiting for Trigger« | Waiting for Trigger |
| ↑ | »running« | Signal: CBF-Module started |
| ↑ | »Alarm« | Signal: Circuit Breaker Failure |
| ↑ | »Lockout« | Signal: Lockout |
| ↑ | »Res Lockout« | Signal: Reset Lockout |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |
| ↓ | »Trigger1-l« | Module Input: Trigger that will start the CBF |
| ↓ | »Trigger2-l« | Module Input: Trigger that will start the CBF |
| ↓ | »Trigger3-l« | Module Input: Trigger that will start the CBF |

3.1.3.11.2 Operation / Status Display / Supervision / TCS

| | | |
|---|----------------|--|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Alarm« | Signal: Alarm Trip Circuit Supervision |
| ↑ | »Not Possible« | Not possible because no state indicator assigned to the breaker. |
| ↓ | »Aux ON-l« | Module Input State: Position indicator/check-back signal of the CB (52a) |
| ↓ | »Aux OFF-l« | Module input state: Position indicator/check-back signal of the CB (52b) |
| ↓ | »ExBlo1-l« | Module input state: External blocking1 |
| ↓ | »ExBlo2-l« | Module input state: External blocking2 |

3 Menu

3.1.3.11.3 Operation / Status Display / Supervision / VTS

3.1.3.11.3 Operation / Status Display / Supervision / VTS

| | | |
|---|----------------------|---|
| ↑ | »Active« | Signal: active |
| ↑ | »ExBlo« | Signal: External Blocking |
| ↑ | »Alarm ΔV« | Signal: Alarm ΔV Voltage Transformer Measuring Circuit Supervision |
| ↑ | »Alarm« | Signal: Alarm Voltage Transformer Measuring Circuit Supervision |
| ↑ | »Ex FF VT« | Signal: Ex FF VT |
| ↑ | »Ex FF EVT« | Signal: Alarm Fuse Failure Earth Voltage Transformers |
| ↓ | »Ex Fuse Fail VT-I« | Module input state: External fuse failure voltage transformers |
| ↓ | »Ex Fuse Fail EVT-I« | Module input state: External fuse failure earth voltage transformer |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |

3.1.3.11.4 Operation / Status Display / Supervision / Phase Sequence

| | | |
|---|-------------------------|--|
| ↑ | »VT . Phase seq. wrong« | Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«. |
|---|-------------------------|--|

3.1.3.12 Operation / Status Display / Logics

| | | |
|---|--|---|
| ↑ | »LE1.Gate Out« ... »LE80.Gate Out« | Signal: Output of the logic gate |
| ↑ | »LE1.Timer Out« ... »LE80.Timer Out« | Signal: Timer Output |
| ↑ | »LE1.Out« ... »LE80.Out« | Signal: Latched Output (Q) |
| ↑ | »LE1.Out inverted« ... »LE80.Out inverted« | Signal: Negated Latched Output (Q NOT) |
| ↓ | »LE1.Gate In1-I« ... »LE80.Gate In4-I« | State of the module input: Assignment of the Input Signal |
| ↓ | »LE1.Reset Latch-I« | State of the module input: Reset Signal for the Latching |

| | | |
|----------------------|--|--|
| ... | | |
| »LE80.Reset Latch-I« | | |

3.1.3.13 Operation / Status Display / DI Slot X1

| | | |
|---|--------|-----------------------|
| ↑ | »DI 1« | Signal: Digital Input |
| ↑ | »DI 2« | Signal: Digital Input |
| ↑ | »DI 3« | Signal: Digital Input |
| ↑ | »DI 4« | Signal: Digital Input |
| ↑ | »DI 5« | Signal: Digital Input |
| ↑ | »DI 6« | Signal: Digital Input |
| ↑ | »DI 7« | Signal: Digital Input |
| ↑ | »DI 8« | Signal: Digital Input |

3.1.3.14 Operation / Status Display / BO Slot X2

| | | |
|---|---------------|---|
| ↑ | »BO 1« | Signal: Binary Output Relay |
| ↑ | »BO 2« | Signal: Binary Output Relay |
| ↑ | »BO 3« | Signal: Binary Output Relay |
| ↑ | »BO 4« | Signal: Binary Output Relay |
| ↑ | »BO 5« | Signal: Binary Output Relay |
| ↑ | »DISARMED!« | Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Self Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance |
| ↑ | »Outs forced« | Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals. |

3.1.3.15 Operation / Status Display / Recorders

















3.1.3.15.1 Operation / Status Display / Recorders / Event rec

| | | |
|---|-------------------|--|
| ↑ | »Res all records« | Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.) |
|---|-------------------|--|


3 Menu

3.1.3.15.2 Operation / Status Display / Recorders / Disturb rec


3.1.3.15.2 Operation / Status Display / Recorders / Disturb rec

| | | |
|---|-------------------|--|
|  | »Rec state« | Recording state |
|  | »Error code« | Error code |
|  | »recording« | Signal: Recording |
|  | »memory full« | Signal: Memory full |
|  | »Clear fail« | Signal: Clear failure in memory |
|  | »Res all records« | Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.) |
|  | »Res record« | Signal: Delete record |
|  | »Man Trigger« | Signal: Manual Trigger |
|  | »Start1-l« | State of the module input:: Trigger event / start recording |
|  | »Start2-l« | State of the module input:: Trigger event / start recording |
|  | »Start3-l« | State of the module input:: Trigger event / start recording |
|  | »Start4-l« | State of the module input:: Trigger event / start recording |
|  | »Start5-l« | State of the module input:: Trigger event / start recording |
|  | »Start6-l« | State of the module input:: Trigger event / start recording |
|  | »Start7-l« | State of the module input:: Trigger event / start recording |
|  | »Start8-l« | State of the module input:: Trigger event / start recording |



3.1.3.15.3 Operation / Status Display / Recorders / Fault rec

| | | |
|---|--------------|-----------------------|
|  | »Res record« | Signal: Delete record |
|---|--------------|-----------------------|

3.1.3.15.4 Operation / Status Display / Recorders / Trend rec

| | | |
|---|-------------------|--|
|  | »Res all records« | Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.) |
|---|-------------------|--|

3.1.3.16 Operation / Status Display / Scada

| | | |
|---|-----------------------|---|
|  | »SCADA connected« | At least one SCADA System is connected to the device. |
|  | »SCADA not connected« | No SCADA System is connected to the device |

3.1.3.17 Operation / Status Display / DNP3

3.1.3.17.1 Operation / Status Display / DNP3 / State

| | | |
|---|----------|---|
| ↑ | »busy« | This message is set if the protocol is started. It will be reset if the protocol is shut down. |
| ↑ | »ready« | The message will be set if the protocol is successfully started and ready for data exchange. |
| ↑ | »Active« | The communication with the Master (SCADA) is active. Note that for TCP/UDP, this state is permanently "Low" unless »DataLink confirm« is set to "Always". |

3.1.3.17.2 Operation / Status Display / DNP3 / Binary Inputs

| | | |
|---|-------------------|--|
| ↓ | »BinaryInput0-I« | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| | ... | |
| | »BinaryInput63-I« | |

3.1.3.17.3 Operation / Status Display / DNP3 / Double Bit Inputs

| | | |
|---|---------------------|--|
| ↓ | »DoubleBitInput0-I« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
| ↓ | »DoubleBitInput1-I« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
| ↓ | »DoubleBitInput2-I« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
| ↓ | »DoubleBitInput3-I« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
| ↓ | »DoubleBitInput4-I« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
| ↓ | »DoubleBitInput5-I« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |

3.1.3.18 Operation / Status Display / Modbus

3.1.3.18.1 Operation / Status Display / Modbus / State

| | | |
|---|--------------------|--|
| ↑ | »Transmission RTU« | Signal: SCADA active |
| ↑ | »Transmission TCP« | Signal: SCADA active |
| ↑ | »Device Type« | Device type code for relationship between device name and its Modbus code. HighPROTEC: MRI4 - 1000 MRU4 - 1001 MRA4 - 1002 MCA4 - 1003 MRDT4 - 1005 MCDTV4 - 1006 MCDGV4 - 1007 MRM4 - 1009 MRMV4 - 1010 MCDLV4 - 1011 |
| ↑ | »Comm Version« | Modbus Communication version. This version number changes if something becomes incompatible between different Modbus releases. |

3 Menu

3.1.3.18.2 Operation / Status Display / Modbus / Commands

3.1.3.18.2 Operation / Status Display / Modbus / Commands

| | | |
|---|----------------|---------------|
| ↑ | »Scada Cmd 1« | Scada Command |
| ↑ | »Scada Cmd 2« | Scada Command |
| ↑ | »Scada Cmd 3« | Scada Command |
| ↑ | »Scada Cmd 4« | Scada Command |
| ↑ | »Scada Cmd 5« | Scada Command |
| ↑ | »Scada Cmd 6« | Scada Command |
| ↑ | »Scada Cmd 7« | Scada Command |
| ↑ | »Scada Cmd 8« | Scada Command |
| ↑ | »Scada Cmd 9« | Scada Command |
| ↑ | »Scada Cmd 10« | Scada Command |
| ↑ | »Scada Cmd 11« | Scada Command |
| ↑ | »Scada Cmd 12« | Scada Command |
| ↑ | »Scada Cmd 13« | Scada Command |
| ↑ | »Scada Cmd 14« | Scada Command |
| ↑ | »Scada Cmd 15« | Scada Command |
| ↑ | »Scada Cmd 16« | Scada Command |

3.1.3.18.3 Operation / Status Display / Modbus / Config Registers

| | | |
|---|----------------------|---|
| ↓ | »Config Bin Inp1-I« | State of the module input: Config Bin Inp |
| | ... | |
| | »Config Bin Inp32-I« | |

3.1.3.19 Operation / Status Display / IEC 61850

3.1.3.19.1 Operation / Status Display / IEC 61850 / State

| | | |
|---|-------------------------------|--|
| 🔗 | »GoosePublisherState« | State of the GOOSE Publisher (on or off) |
| 🔗 | »GooseSubscriberState« | State of the GOOSE Subscriber (on or off) |
| 🔗 | »MmsServerState« | State of MMS Server (on or off) |
| ↑ | »MMS Client connected« | At least one MMS client is connected to the device |
| ↑ | »All Goose Subscriber active« | All Goose subscriber in the device are working |

3.1.3.19.2 Operation / Status Display / IEC 61850 / ControllInputs

| | | |
|---|--|--|
| ↑ | »CTLGGIO1.SPCSO1.stVal« ... »CTLGGIO1.SPCSO32.stVal« | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
|---|--|--|

3.1.3.19.3 Operation / Status Display / IEC 61850 / Virtual Inputs 1

| | | |
|---|--|---|
| ↑ | »GOSINGGIO1.Ind1.stVal« ... »GOSINGGIO1.Ind32.stVal« | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| ↑ | »GOSINGGIO1.Ind1.q« ... »GOSINGGIO1.Ind32.q« | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |

3.1.3.19.4 Operation / Status Display / IEC 61850 / Virtual Inputs 2

| | | |
|---|--|---|
| ↑ | »GOSINGGIO2.Ind1.stVal« ... »GOSINGGIO2.Ind32.stVal« | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| ↑ | »GOSINGGIO2.Ind1.q« ... »GOSINGGIO2.Ind32.q« | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |

3.1.3.19.5 Operation / Status Display / IEC 61850 / Virtual Outputs 1

| | | |
|---|--|---|
| ↓ | »COUTGGIO1.Ind1.stVal-l« ... »COUTGGIO1.Ind32.stVal-l« | Module input state: Binary state of the Virtual Output (GGIO) |
|---|--|---|

3.1.3.19.6 Operation / Status Display / IEC 61850 / Virtual Outputs 2

| | | |
|---|--|---|
| ↓ | »COUTGGIO2.Ind1.stVal-l« ... »COUTGGIO2.Ind32.stVal-l« | Module input state: Binary state of the Virtual Output (GGIO) |
|---|--|---|

3.1.3.20 Operation / Status Display / IEC103

| | | |
|---|----------------------|--|
| ↑ | »Scada Cmd 1« | Scada Command |
| ↑ | »Scada Cmd 2« | Scada Command |
| ↑ | »Scada Cmd 3« | Scada Command |
| ↑ | »Scada Cmd 4« | Scada Command |
| ↑ | »Scada Cmd 5« | Scada Command |
| ↑ | »Scada Cmd 6« | Scada Command |
| ↑ | »Scada Cmd 7« | Scada Command |
| ↑ | »Scada Cmd 8« | Scada Command |
| ↑ | »Scada Cmd 9« | Scada Command |
| ↑ | »Scada Cmd 10« | Scada Command |
| ↑ | »Transmission« | Signal: SCADA active |
| ↑ | »Failure Event lost« | Failure event lost |
| ↑ | »Test mode active« | Signal: IEC103 communication has been switched over into Test Mode. |
| ↑ | »Block MD active« | Signal: The blocking of IEC103 transmission in monitor direction has been activated. |

3.1.3.21 Operation / Status Display / IEC104

| | | |
|---|--|--|
| ↑ | »Scada Cmd 1« ... »Scada Cmd 16« | Scada Command |
| ↑ | »busy« | This message is set if the protocol is started. It will be reset if the protocol is shut down. |
| ↑ | »ready« | The message will be set if the protocol is successfully started and ready for data exchange. |
| ↑ | »Transmission« | Signal: SCADA active |
| ↑ | »Failure Event lost« | Failure event lost |

3.1.3.22 Operation / Status Display / Profibus












3.1.3.22.1 Operation / Status Display / Profibus / State

| | | |
|---|---------------------|---|
| ↑ | »Data OK« | Data within the Input field are OK (Yes=1) |
| ↑ | »SubModul Err« | Assignable Signal, Failure in Sub-Module, Communication Failure. |
| ↑ | »Connection active« | Connection active |
| ⌘ | »Slave State« | Communication State between Slave and Master. |
| ⌘ | »Baud rate« | The baud rate that has been detected lastly, will still be shown after a connection issue. |
| ⌘ | »PNO Id« | PNO Identification Number. GSD Identification Number. |
| # | »Master ID« | Device address (Master ID) within the bus system. Each device address has to be unique within a bus system. |
| # | »HO Id PSub« | Handoff Id of PbSub |
| # | »t-WatchDog« | The Profibus Chip detects a communication issue if this timer is expired without any communication (Parameterising telegram). |
| ⌘ | »Config info« | Configuration comment (entered by the user during SCADA configuration) |
| ⌘ | »Config version« | Version of the user-defined SCADA configuration |
| ⌘ | »Config status« | Status of the user-defined SCADA configuration. Possible values: |
| ● | »Slave ID« | Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system. |

3 Menu

3.1.3.22.2 Operation / Status Display / Profibus / Commands

3.1.3.22.2 Operation / Status Display / Profibus / Commands

| | | |
|---|----------------|---------------|
|  | »Scada Cmd 1« | Scada Command |
|  | »Scada Cmd 2« | Scada Command |
|  | »Scada Cmd 3« | Scada Command |
|  | »Scada Cmd 4« | Scada Command |
|  | »Scada Cmd 5« | Scada Command |
|  | »Scada Cmd 6« | Scada Command |
|  | »Scada Cmd 7« | Scada Command |
|  | »Scada Cmd 8« | Scada Command |
|  | »Scada Cmd 9« | Scada Command |
|  | »Scada Cmd 10« | Scada Command |
|  | »Scada Cmd 11« | Scada Command |
|  | »Scada Cmd 12« | Scada Command |
|  | »Scada Cmd 13« | Scada Command |
|  | »Scada Cmd 14« | Scada Command |
|  | »Scada Cmd 15« | Scada Command |
|  | »Scada Cmd 16« | Scada Command |

3.1.3.22.3 Operation / Status Display / Profibus / ConfigBinInp 1-16

| | | |
|---|-------------------|--------------------------------------|
| ↓ | »Assignment 1-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 2-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 3-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 4-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 5-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 6-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 7-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 8-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 9-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 10-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 11-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 12-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 13-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 14-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 15-l« | Module input state: Scada Assignment |
| ↓ | »Assignment 16-l« | Module input state: Scada Assignment |

3 Menu

3.1.3.22.4 Operation / Status Display / Profibus / ConfigBinInp 17-32

3.1.3.22.4 Operation / Status Display / Profibus / ConfigBinInp 17-32









| | | |
|---|-------------------|--------------------------------------|
| ↓ | »Assignment 17-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 18-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 19-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 20-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 21-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 22-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 23-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 24-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 25-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 26-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 27-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 28-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 29-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 30-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 31-I« | Module input state: Scada Assignment |
| ↓ | »Assignment 32-I« | Module input state: Scada Assignment |

3.1.3.23 Operation / Status Display / TimeSync


3.1.3.23.1 Operation / Status Display / TimeSync / IRIG-B

| | | |
|---|--|--|
| ↑ | »IRIG-B active« | Signal: If there is no valid IRIG-B signal for 60 sec, IRIG-B is regarded as inactive. |
| ↑ | »High-Low Invert« | Signal: The High and Low signals of the IRIG-B are inverted. This does NOT mean that the wiring is faulty. If the wiring is faulty no IRIG-B signal will be detected. |
| ↑ | »Control Signal1« ... »Control Signal18« | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |






3.1.3.23.2 Operation / Status Display / TimeSync / SNTP

| | | |
|---|------------------|---|
|  | »SNTP active« | Signal: If there is no valid SNTP signal for 120 sec, SNTP is regarded as inactive. |
|  | »Used Server« | Which Server is used for SNTP synchronization. |
|  | »StratumServer1« | Stratum of Server 1 |
|  | »PrecServer1« | Precision of Server 1 |
|  | »StratumServer2« | Stratum of Server 2 |
|  | »PrecServer2« | Precision of Server 2 |
|  | »ServerQty« | Quality of Server used for Synchronization (GOOD, SUFFICIENT, BAD) |
|  | »NetConn« | Quality of Network Connection (GOOD, SUFFICIENT, BAD). |


3.1.3.23.3 Operation / Status Display / TimeSync / TimeSync

| | | |
|---|----------------|------------------------|
|  | »synchronized« | Clock is synchronized. |
|---|----------------|------------------------|






3.1.3.24 Operation / Status Display / SysA

| | | |
|---|---------------|---|
|  | »Active« | Signal: active |
|  | »ExBlo« | Signal: External Blocking |
|  | »Alarm V THD« | Signal: Alarm Total Harmonic Distortion Voltage |
|  | »Trip V THD« | Signal: Trip Total Harmonic Distortion Voltage |
|  | »ExBlo-I« | Module input state: External blocking |

3.1.3.25 Operation / Status Display / Syslog

| | | |
|---|----------|----------------|
|  | »Active« | Signal: active |
|---|----------|----------------|

3.1.3.26 Operation / Status Display / Statistics

| | | |
|---|------------------|--|
|  | »ResFc all« | Signal: Resetting of all Statistic values (Current Demand, Power Demand, Min, Max) |
|  | »ResFc Vavg« | Signal: Resetting of the sliding average calculation. |
|  | »ResFc Max« | Signal: Resetting of all Maximum values |
|  | »ResFc Min« | Signal: Resetting of all Minimum values |
|  | »StartFc Vavg-I« | State of the module input: Start of Statistics Average Voltage |

3.1.3.27 Operation / Status Display / Sys

| | | |
|---|-----------------------|---|
| ↑ | »Reboot« | Signal: Rebooting the device. Device Start-up Codes: 1=Normal Start-up; 2=Reboot by the Operator; 3=Reboot by means of Super Reset; 4=outdated; 5=outdated; 6=Unknown Error Source; 7=Forced Reboot (initiated by the main processor); 8=Exceeded Time Limit of the Protection Cycle; 9= Forced Reboot (initiated by the digital signal processor); 10=Exceeded Time Limit of the Measured Value Processing; 11=Sags of the Supply Voltage; 12=Illegal Memory Access. |
| ↑ | »Act Set« | Signal: Active Parameter Set |
| ↑ | »PS 1« | Signal: The currently active Parameter Set is PS 1 |
| ↑ | »PS 2« | Signal: The currently active Parameter Set is PS 2 |
| ↑ | »PS 3« | Signal: The currently active Parameter Set is PS 3 |
| ↑ | »PS 4« | Signal: The currently active Parameter Set is PS 4 |
| ↑ | »PSS manual« | Signal: Manual Switch over of a Parameter Set |
| ↑ | »PSS via Scada« | Signal: Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4). |
| ↑ | »PSS via Inp fct« | Signal: Parameter Set Switch via input function |
| ↑ | »min 1 param changed« | Signal: At least one parameter has been changed |
| ↑ | »Setting Lock Bypass« | Signal: Short-period unlock of the Setting Lock |
| ↑ | »Maint Mode Active« | Signal: Arc Flash Reduction Maintenance Active |
| ↑ | »Maint Mode Inactive« | Signal: Arc Flash Reduction Maintenance Inactive |
| ↑ | »MaintMode Manually« | Signal: Arc Flash Reduction Maintenance Manual Mode |
| ↑ | »Maint Mode SCADA« | Signal: Arc Flash Reduction Maintenance SCADA Mode |
| ↑ | »Maint Mode DI« | Signal: Arc Flash Reduction Maintenance Digital Input Mode |
| ↑ | »Ack LED« | Signal: LEDs acknowledgement |
| ↑ | »Ack BO« | Signal: Acknowledgement of the Binary Outputs |
| ↑ | »Ack Scada« | Signal: Acknowledge latched SCADA signals |
| ↑ | »Ack TripCmd« | Signal: Reset Trip Command |
| ↑ | »Ack LED-HMI« | Signal: LEDs acknowledgement, triggered at the HMI |
| ↑ | »Ack BO-HMI« | Signal: Acknowledgement of the Binary Outputs, triggered at the HMI |
| ↑ | »Ack Scada-HMI« | Signal: Acknowledge latched SCADA signals, triggered at the HMI |
| ↑ | »Ack TripCmd-HMI« | Signal: Reset Trip Command, triggered at the HMI |
| ↑ | »Ack LED-Sca« | Signal: LEDs acknowledgement, triggered via SCADA |
| ↑ | »Ack BO-Sca« | Signal: Acknowledgement of the Binary Outputs, triggered via SCADA |
| ↑ | »Ack Counter-Sca« | Signal: Reset of all Counters, triggered via SCADA |
| ↑ | »Ack Scada-Sca« | Signal: Acknowledge latched SCADA signals, triggered via SCADA |
| ↑ | »Ack TripCmd-Sca« | Signal: Reset Trip Command, triggered via SCADA |
| ↑ | »Res OperationsCr« | Signal:: Res OperationsCr |

| | | |
|---|------------------|---|
| ↑ | »Res AlarmCr« | Signal:: Res AlarmCr |
| ↑ | »Res TripCmdCr« | Signal:: Res TripCmdCr |
| ↑ | »Res TotalCr« | Signal:: Res TotalCr |
| ↓ | »Ack LED-I« | Module input state: LEDs acknowledgement by digital input |
| ↓ | »Ack BO-I« | Module input state: Acknowledgement of the binary Output Relays |
| ↓ | »Ack Scada-I« | Module input state: Acknowledge latched SCADA signals. |
| ↓ | »PS1-I« | State of the module input respectively of the signal, that should activate this Parameter Setting Group. |
| ↓ | »PS2-I« | State of the module input respectively of the signal, that should activate this Parameter Setting Group. |
| ↓ | »PS3-I« | State of the module input respectively of the signal, that should activate this Parameter Setting Group. |
| ↓ | »PS4-I« | State of the module input respectively of the signal, that should activate this Parameter Setting Group. |
| ↓ | »Setting Lock-I« | State of the module input: No parameters can be changed as long as this input is true. The parameter settings are locked. |
| ↓ | »Maint Mode-I« | Module Input State: Arc Flash Reduction Maintenance Switch |

3.1.3.28 Operation / Status Display / Sgen

| | | |
|---|-------------------------|--|
| ↑ | »Manual Start« | Fault Simulation has been started manually. |
| ↑ | »Manual Stop« | Fault Simulation has been stopped manually. |
| ↑ | »Running« | Signal: Measuring value simulation is running |
| ↑ | »Started« | Fault Simulation has been started |
| ↑ | »Stopped« | Fault Simulation has been stopped |
| ↑ | »State« | Signal: Wave generation states: 0=Off, 1=PreFault, 2=Fault, 3=PostFault, 4=InitReset |
| ↓ | »Ex Start Simulation-I« | State of the module input:External Start of Fault Simulation (Using the test parameters) |
| ↓ | »ExBlo1-I« | Module input state: External blocking1 |
| ↓ | »ExBlo2-I« | Module input state: External blocking2 |
| ↓ | »Ex ForcePost-I« | State of the module input:Force Post state. Abort simulation. |





3.1.4 Operation / Count and RevData

3.1.4.1 Operation / Count and RevData / Prot


| | | |
|---|-------------|--------------|
| ↑ | »Fault No.« | Fault number |
|---|-------------|--------------|

3.1.4.2 Operation / Count and RevData / Control




3.1.4.2.1 Operation / Count and RevData / Control / Ctrl

| | | |
|---|----------------------|---|
|  | »Switch.Cmds per s« | The number of switching commands per second. (This is mainly an internal diagnosis value.) |
|  | »Rej. Switch.Cmds« | The percentage of rejected switching commands per second. (This is mainly an internal diagnosis value.) |
|  | »Switch.Cmds max« | The maximum number of switching commands per second. (This is mainly an internal diagnosis value.) |
|  | »Rej.Swtch.Cmds max« | The maximum percentage of rejected switching commands per second. (This is mainly an internal diagnosis value.) |




3.1.4.2.2 Operation / Count and RevData / Control / SG[1]

| | | |
|---|--------------|---|
|  | »TripCmd Cr« | Counter: Total number of trips of the switchgear. |
|---|--------------|---|






3.1.4.3 Operation / Count and RevData / LVRT[1]

| | | |
|---|------------------------|---|
|  | »Num Vdips in t-LVRT« | Number of Voltage dips during t-LVRT |
|  | »Cr Tot Numb of Vdips« | Counter Total number of voltage dips. |
|  | »Cr Num Vdips to Trip« | Counter Total number of voltage dips that caused a Trip |

3.1.4.4 Operation / Count and RevData / LVRT[2]

| | | |
|---|------------------------|---|
|  | »Num Vdips in t-LVRT« | Number of Voltage dips during t-LVRT |
|  | »Cr Tot Numb of Vdips« | Counter Total number of voltage dips. |
|  | »Cr Num Vdips to Trip« | Counter Total number of voltage dips that caused a Trip |

3.1.4.5 Operation / Count and RevData / Profibus

| | | |
|---|------------------------|--|
|  | »Fr Sync Err« | Frames, that were sent from the Master to the Slave are faulty. |
|  | »Num. CRC err.« | Number of CRC errors that the subsystem manager has recognized in the received response frames from the subsystem. (Each error caused a subsystem reset.) |
|  | »Num. frame loss err.« | Number of frame loss errors that the subsystem manager has recognized in the received response frames from the subsystem. (Each error caused a subsystem reset.) |
|  | »Num. trig. CRC err.« | Number of CRC errors that the subsystem has recognized in the received trigger frames from the host. |
|  | »Num. subsys. res.« | Number of subsystem restarts or resets that the subsystem manager has caused. |

3.1.4.6 Operation / Count and RevData / DNP3

| | | |
|---|-------------------|--|
| # | »NReceived« | Diagnostic counter: Number of received characters |
| # | »NSent« | Diagnostic counter: Number of sent characters |
| # | »NBadFramings« | Diagnostic counter: Number of bad framings. A large number indicates a disturbed serial connection. |
| # | »NBadParities« | Diagnostic counter: Number of parity errors. A large number indicates a disturbed serial connection. |
| # | »NBreakSignals« | Diagnostic counter: Number of break signals. A large number indicates a disturbed serial connection. |
| # | »NBadChecksum« | Diagnostic counter: Number of frames received with bad checksum. |
| ☉ | »Res all Diag Cr« | Reset all diagnosis counters |

3.1.4.7 Operation / Count and RevData / Modbus

















3.1.4.7.1 Operation / Count and RevData / Modbus / TCP

| | | |
|---|---------------------|--|
| # | »NoOfRequestsTotal« | Total number of requests. Includes requests for other slaves. |
| # | »NoOfReqForMe« | Total Number of requests for this slave. |
| # | »NoOfResponse« | Total number of requests having been responded. |
| # | »NoOfQueryInvalid« | Total number of Request errors. Request could not be interpreted |
| # | »NoOfInternalError« | Total Number of Internal errors while interpreting the request. |

3.1.4.7.2 Operation / Count and RevData / Modbus / RTU

| | | |
|---|------------------------|---|
| # | »NoOfRequestsTotal« | Total number of requests. Includes requests for other slaves. |
| # | »NoOfReqForMe« | Total Number of requests for this slave. |
| # | »NoOfResponse« | Total number of requests having been responded. |
| # | »NoOfFrameErrors« | Total Number of Frame Errors. Physically corrupted Frame. |
| # | »NoOfParityErrors« | Total number of parity errors. Physically corrupted Frame. |
| # | »NoOfRespTimeOverruns« | Total number of requests with exceeded response time. Physically corrupted Frame. |
| # | »NoOfOverrunErrors« | Total Number of Overrun Failures. Physically corrupted Frame. |
| # | »NoOfBreaks« | Number of detected communication aborts |

3.1.4.7.3 Operation / Count and RevData / Modbus / Measured Values

| | | |
|---|------------------|---|
|  | »Mapped Meas 1« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 2« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 3« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 4« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 5« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 6« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 7« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 8« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 9« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 10« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 11« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 12« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 13« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 14« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 15« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 16« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |

3.1.4.8 Operation / Count and RevData / IEC 61850

| | | |
|---|------------------------------|--|
| # | »NoOfGooseRxAll« | Total number of received GOOSE messages including messages for other devices (subscribed and not subscribed messages). |
| # | »NoOfGooseRxSubscribed« | Total Number of subscribed GOOSE messages including messages with incorrect content. |
| # | »NoOfGooseRxCorrect« | Total Number of subscribed and correctly received GOOSE messages. |
| # | »NoOfGooseRxNew« | Number of subscribed and correctly received GOOSE messages with new content. |
| # | »NoOfGooseTxAll« | Total Number of GOOSE messages that have been published by this device. |
| # | »NoOfGooseTxNew« | Total Number of new GOOSE messages (modified content) that have been published by this device. |
| # | »NoOf Srv.Req.All« | Total number of MMS Server requests including incorrect requests. |
| # | »NoOfDataReadAll« | Total Number of values read from this device including incorrect requests. |
| # | »NoOfDataReadCorrect« | Total Number of correctly read values from this device. |
| # | »NoOfDataWrittenAll« | Total Number of values written by this device including incorrect ones. |
| # | »NoOfDataWrittenCorrect« | Total Number of correctly written values by this device. |
| # | »NoOfDataChangeNotification« | Number of detected changes within the datasets that are published with GOOSE messages. |
| # | »No of Client Connections« | Number of active MMS client connections |

3.1.4.9 Operation / Count and RevData / IEC103

| | | |
|---|--------------------|---|
| # | »NReceived« | Total Number of received Messages |
| # | »NSent« | Total Number of sent Messages |
| # | »NBadFramings« | Number of bad Messages |
| # | »NBadParities« | Number of Parity Errors |
| # | »NBreakSignals« | Number of transmission errors with respect to the (electric) signal transport (physical layer). If the counter value gets increased constantly you should check for problems with the electrical connection (e.g. missing termination impedance of the serial interface), and make sure the transmission parameters (especially the baud rate) are correct. |
| # | »NInternalError« | Number of Internal Errors |
| # | »NBadCharChecksum« | Number of Checksum Errors |

3.1.4.10 Operation / Count and RevData / IEC104

| | | |
|---|----------------------|--|
| # | »NReceived« | Diagnostic counter: Number of received characters |
| # | »NSent« | Diagnostic counter: Number of sent characters |
| # | »Num. of lost conn.« | Diagnostic counter: Number of lost connections |
| # | »NBadChecksum« | Diagnostic counter: Number of frames received with bad checksum. |

3.1.4.11 Operation / Count and RevData / TimeSync

3.1.4.11.1 Operation / Count and RevData / TimeSync / IRIG-B

| | | |
|---|-------------------|--|
| # | »NoOfFramesOK« | Total Number valid Frames. |
| # | »NoOfFrameErrors« | Total Number of Frame Errors. Physically corrupted Frame. |
| # | »Edges« | Edges: Total number of rising and falling edges. This signal indicates if a signal is available at the IRIG-B input. |


3.1.4.11.2 Operation / Count and RevData / TimeSync / SNTP

| | | |
|---|-------------------|---|
| # | »NoOfSyncs« | Total Number of Synchronizations. |
| # | »NoOfConnectLost« | Total Number of lost SNTP Connections (no sync for 120 sec). |
| # | »NoOfSmallSyncs« | Service counter: Total Number of very small Time Corrections. |
| # | »NoOfNormSyncs« | Service counter: Total Number of normal Time Corrections |
| # | »NoOfBigSyncs« | Service counter: Total Number of big Time Corrections |
| # | »NoOfFiltSyncs« | Service counter: Total Number of filtered Time Corrections |
| # | »NoOfSlowTrans« | Service counter: Total Number of slow Transfers. |
| # | »NoOfHighOffs« | Service counter: Total Number of high Offsets. |
| # | »NoOfIntTimeouts« | Service counter: Total Number of internal timeouts. |





3.1.4.12 Operation / Count and RevData / Trend rec

| | | |
|---|---------------------|--|
| # | »Max avail Entries« | Maximum available entries in the current configuration |
|---|---------------------|--|


3.1.4.13 Operation / Count and RevData / Sys

| | | |
|---|----------------------|--|
|  | »Operating hours Cr« | Operating hours counter of the protective device |
|---|----------------------|--|


3.1.5 Operation / Recorders

| | | |
|---|---------------|--|
|  | »Event rec« | The event recorder logs all events like switching operations, change of parameters, alarms, trips, operating mode selections, blockings and state transitions of inputs and outputs. |
|  | »Disturb rec« | After a trigger event has become true, the disturbance recorder writes analogue and digital tracks |
|  | »Fault rec« | The values measured at the time of tripping are saved by the Fault Recorder. |
|  | »Trend rec« | Trend Recorder |









3.1.5.1 Operation / Recorders / Man Trigger

| | | |
|---|-----------------------------|----------------|
|  | »Disturb rec . Man Trigger« | Manual Trigger |
|---|-----------------------------|----------------|

3.1.6 Operation / Security

| | | |
|---|-------------------|---------------------------|
|  | »Security Logger« | Security-related messages |
|---|-------------------|---------------------------|

3.1.6.1 Operation / Security / Security States

| | | |
|---|----------------------------------|---|
|  | »Sys . Smart view via USB« | Information whether or not the Smart view access via the USB interface is activated (allowed). |
|  | »Sys . Smart view via Eth« | Information whether or not the Smart view access via the Ethernet interface is activated (allowed). |
|  | »Modbus . Smart view via Modbus« | Activate (allow) or inactivate (disallow) the Smart view access via the Modbus tunnel. |
|  | »Sys . Passw. for USB conn.« | Type / Security-level of the connection password that is used for a USB connection. |
|  | »Sys . Passw.remote net.conn.« | Type / Security-level of the connection password that is used for a Smart view connection via some network interface. |
|  | »Sys . TLS Certificate« | Type of certificate that the device uses for the encrypted communication. This value is directly related to the security-level of the communication. |
|  | »Ctrl . Switching Authority« | Switching Authority |
|  | »HMI . Conf. Dev. Reset« | If the »C« key is pressed while the device is performing a cold restart a general Reset Dialog appears on the screen. Select which options shall be available with this dialog. |

3.1.7 Operation / Self-Supervision

| | | |
|---|------------|-------------------|
|  | »Messages« | Internal messages |
|---|------------|-------------------|

3.1.7.1 Operation / Self-Supervision / System State

| | | |
|---|---------------------------|--|
| ↑ | »System Error« | Signal: Device Failure |
| ↑ | »New error« | Signal: A new error message has been issued. |
| ↑ | »New warning« | Signal: A new warning message has been issued. |
| ↑ | »Test SC« | A drop of SelfSuperVision Contact (SC) has been triggered manually (for testing purposes). |
| ↑ | »SelfSuperVision Contact« | Signal: SelfSuperVision Contact |
| # | »Cr No of free sockets« | Counter for network diagnosis. Number of free sockets. |

3.1.8 Operation / Acknowledge

| | | |
|---|------------------------------|--|
| ⦿ | »Sys . Ack BO LED Scd Trips« | Acknowledge (reset) latched binary output relays, LEDs, SCADA and Trips. |
| ⦿ | »Sys . Ack LED« | All acknowledgeable LEDs will be acknowledged. |
| ⦿ | »Sys . Ack BO« | All acknowledgeable binary output relays are acknowledged. |
| ⦿ | »Sys . Ack Scada« | Latched SCADA signals are acknowledged. |
| ⦿ | »SG[1] . Ack TripCmd« | Acknowledge Trip Command |
| ⦿ | »SSV . Ack System LED « | Acknowledge System LED (red/green flashing LED) |

3.1.9 Operation / Reset

| | | |
|---|------------------------------------|--|
| ⊙ | »Prot . Res FaultNo a GridFaultNo« | Resetting of fault number and grid fault number. |
| ⊙ | »Ctrl . Reset max values« | Direct Command to reset the maximum values of: switching comands per second, and percentage of rejected commands. |
| ⊙ | »SG[1] . Res SGwear SI SG« | Resetting the slow Switchgear Alarm |
| ⊙ | »SG[1] . Res TripCmd Cr« | Resetting of the Counter: Total number of trips of the switchgear |
| ⊙ | »CBF . Res Lockout« | Reset Lockout |
| ⊙ | »LVRT[1] . Res LVRT Cr« | Reset of the counter for the total number of voltage dips and reset of the counter of the total number of voltage dips that caused a trip. |
| ⊙ | »LVRT[2] . Res LVRT Cr« | Reset of the counter for the total number of voltage dips and reset of the counter of the total number of voltage dips that caused a trip. |
| ⊙ | »Statistics . ResFc all« | Resetting of all Statistic values (Current Demand, Power Demand, Min, Max) |
| ⊙ | »Statistics . ResFc Max« | Resetting of all Maximum values |
| ⊙ | »Statistics . ResFc Min« | Resetting of all Minimum values |
| ⊙ | »Statistics . ResFc Vavg« | Resetting of the sliding average calculation. |
| ⊙ | »DNP3 . Res all Diag Cr« | Reset all diagnosis counters |
| ⊙ | »Modbus . Res Diagn Cr« | All Modbus Diagnosis Counters will be reset. |
| ⊙ | »Profibus . Reset Comds« | All Profibus Commands will be reset. |
| ⊙ | »IEC103 . Res all Diag Cr« | Reset all diagnosis counters |
| ⊙ | »IEC104 . Res all Diag Cr« | Reset all diagnosis counters |
| ⊙ | »IRIG-B . Res IRIG-B Cr« | Resetting of the Diagnosis Counters: IRIG-B |
| ⊙ | »SNTP . Res Counter« | Reset all Counters. |
| ⊙ | »IEC 61850 . ResetStatistic« | Reset of all IEC61850 diagnostic counters |
| ⊙ | »Event rec . Res all rec« | Reset all records |
| ⊙ | »Disturb rec . Res all rec« | Reset all records |
| ⊙ | »Fault rec . Res all rec« | Reset all records |
| ⊙ | »Trend rec . Res all rec« | Reset all records |
































3.2 Device planning





3.2.1 Device planning / Projected Elements

| | | |
|---|---------------|---------------------------------------|
| ⌘ | »V[1] . Mode« | Voltage-stage, general operation mode |
| ⌘ | »V[2] . Mode« | Voltage-stage, general operation mode |
| ⌘ | »V[3] . Mode« | Voltage-stage, general operation mode |
| ⌘ | »V[4] . Mode« | Voltage-stage, general operation mode |







3 Menu

3.2.1 Device planning / Projected Elements

| | | |
|---|------------------------|---|
|  | »V[5] . Mode« | Voltage-stage, general operation mode |
|  | »V[6] . Mode« | Voltage-stage, general operation mode |
|  | »df/dt . Mode« | Frequency Protection Module, general operation mode |
|  | »delta phi . Mode« | Frequency Protection Module, general operation mode |
|  | »Intertripping . Mode« | External Protection - Module, general operation mode |
|  | »LVRT[1] . Mode« | general operation mode |
|  | »LVRT[2] . Mode« | general operation mode |
|  | »VG[1] . Mode« | Residual voltage-Stage, general operation mode |
|  | »VG[2] . Mode« | Residual voltage-Stage, general operation mode |
|  | »V012[1] . Mode« | Unbalance Protection: Supervision of the Voltage System |
|  | »V012[2] . Mode« | Unbalance Protection: Supervision of the Voltage System |
|  | »V012[3] . Mode« | Unbalance Protection: Supervision of the Voltage System |
|  | »V012[4] . Mode« | Unbalance Protection: Supervision of the Voltage System |
|  | »V012[5] . Mode« | Unbalance Protection: Supervision of the Voltage System |
|  | »V012[6] . Mode« | Unbalance Protection: Supervision of the Voltage System |
|  | »f[1] . Mode« | Frequency Protection Module, general operation mode |
|  | »f[2] . Mode« | Frequency Protection Module, general operation mode |
|  | »f[3] . Mode« | Frequency Protection Module, general operation mode |
|  | »f[4] . Mode« | Frequency Protection Module, general operation mode |
|  | »f[5] . Mode« | Frequency Protection Module, general operation mode |
|  | »f[6] . Mode« | Frequency Protection Module, general operation mode |
|  | »ReCon[1] . Mode« | general operation mode |
|  | »ReCon[2] . Mode« | general operation mode |
|  | »Sync . Mode« | Synchrocheck, general operation mode |
|  | »Exp[1] . Mode« | External Protection - Module, general operation mode |
|  | »Exp[2] . Mode« | External Protection - Module, general operation mode |
|  | »Exp[3] . Mode« | External Protection - Module, general operation mode |
|  | »Exp[4] . Mode« | External Protection - Module, general operation mode |
|  | »CBF . Mode« | Module Circuit Breaker Failure protection, general operation mode |
|  | »TCS . Mode« | Trip Circuit Supervision, general operation mode |
|  | »VTS . Mode« | Voltage transformer supervision, general operation mode |
|  | »SysA . Mode« | general operation mode |
|  | »Syslog . Mode« | Syslog [Module for sending (device-internal) log messages to some server computer via network (UDP/IP)], general operation mode |
|  | »Scada . Protocol« | Select the SCADA protocol to be used. |

| | | |
|---|-----------------------------|---|
|  | »IRIG-B . Mode« | IRIG-B-Module, general operation mode |
|  | »SNTP . Mode« | SNTP-Module, general operation mode |
|  | »Logics . No of Equations:« | Number of required Logic Equations: |
|  | »Sgen . Mode« | Sine wave generator, general operation mode |

3.2.2 Device planning / Definition


| | | |
|---|----------------------------|--|
|  | »V[1] . Superv. only« | Voltage-stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V[2] . Superv. only« | Voltage-stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V[3] . Superv. only« | Voltage-stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V[4] . Superv. only« | Voltage-stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V[5] . Superv. only« | Voltage-stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V[6] . Superv. only« | Voltage-stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »df/dt . Superv. only« | Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »delta phi . Superv. only« | Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »LVRT[1] . Superv. only« | Low Voltage Ride Through, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »LVRT[2] . Superv. only« | Low Voltage Ride Through, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »VG[1] . Superv. only« | Residual voltage-Stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »VG[2] . Superv. only« | Residual voltage-Stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V012[1] . Superv. only« | Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V012[2] . Superv. only« | Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V012[3] . Superv. only« | Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V012[4] . Superv. only« | Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |

| | | |
|---|--------------------------|--|
|  | »V012[5] . Superv. only« | Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »V012[6] . Superv. only« | Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »f[1] . Superv. only« | Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »f[2] . Superv. only« | Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »f[3] . Superv. only« | Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »f[4] . Superv. only« | Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »f[5] . Superv. only« | Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »f[6] . Superv. only« | Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »Exp[1] . Superv. only« | External Protection - Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »Exp[2] . Superv. only« | External Protection - Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »Exp[3] . Superv. only« | External Protection - Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |
|  | »Exp[4] . Superv. only« | External Protection - Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. |





3.3 Device Para

3.3.1 Device Para / Measurem Display

3.3.1.1 Device Para / Measurem Display / General Settings

| | | |
|---|-----------|---|
|  | »Scaling« | Display of the measured values as primary, secondary or per unit values |
|---|-----------|---|




3.3.1.2 Device Para / Measurem Display / Voltage

| | | |
|---|--------------------------|---|
|  | »V Cutoff Level« | The Phase Voltage shown in the Display or within the PC Software will be displayed as zero, if the Phase Voltage falls below this Cutoff Level. This parameter has no impact on recorders. This parameter is related to the voltage that is connected to the device (phase-to-phase or phase-to-earth). |
|  | »VG meas Cutoff Level« | The measured Residual Voltage shown in the Display or within the PC Software will be displayed as zero, if the measured Residual Voltage falls below this Cutoff Level. This parameter has no impact on recorders. |
|  | »VG calc Cutoff Level« | The calculated Residual Voltage shown in the Display or within the PC Software will be displayed as zero, if the calculated Residual Voltage falls below this Cutoff Level. This parameter has no impact on recorders. |
|  | »V012 Comp Cutoff Level« | The Symmetrical Component shown in the Display or within the PC Software will be displayed as zero, if the Symmetrical Component falls below this Cutoff Level. This parameter has no impact on recorders. |




3.3.2 Device Para / Digital Inputs

3.3.2.1 Device Para / Digital Inputs / DI Slot X1

3.3.2.1.1 Device Para / Digital Inputs / DI Slot X1 / Group 1

| | | |
|---|---------------------|--|
|  | »Nom voltage« | Nominal voltage of the digital inputs |
|  | »Inverting 1« | Inverting the input signals. |
|  | »Debouncing time 1« | A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted. |














3.3.2.1.2 Device Para / Digital Inputs / DI Slot X1 / Group 2

| | | |
|---|---------------------|--|
|  | »Nom voltage« | Nominal voltage of the digital inputs |
|  | »Inverting 2« | Inverting the input signals. |
|  | »Debouncing time 2« | A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted. |

3 Menu

3.3.2.1.3 Device Para / Digital Inputs / DI Slot X1 / Group 3









3.3.2.1.3 Device Para / Digital Inputs / DI Slot X1 / Group 3

| | | |
|---|---------------------|--|
|  | »Nom voltage« | Nominal voltage of the digital inputs |
|  | »Inverting 3« | Inverting the input signals. |
|  | »Inverting 4« | Inverting the input signals. |
|  | »Inverting 5« | Inverting the input signals. |
|  | »Inverting 6« | Inverting the input signals. |
|  | »Inverting 7« | Inverting the input signals. |
|  | »Inverting 8« | Inverting the input signals. |
|  | »Debouncing time 3« | A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted. |
|  | »Debouncing time 4« | A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted. |
|  | »Debouncing time 5« | A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted. |
|  | »Debouncing time 6« | A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted. |
|  | »Debouncing time 7« | A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted. |
|  | »Debouncing time 8« | A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted. |

3.3.3 Device Para / Binary Outputs

3.3.3.1 Device Para / Binary Outputs / BO Slot X2









3.3.3.1.1 Device Para / Binary Outputs / BO Slot X2 / BO 1

| | | |
|---|---|--|
|  | »Operating Mode« | Operating Mode |
|  | »t-hold« | To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time. |
|  | »t-Off Delay« | Switch Off Delay |
|  | »Latched« | Defines whether the Relay Output will be latched when it picks up. |
|  | »Acknowledgement« | Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active. |
|  | »Inverting« | Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction). |
|  | »Assignment 1« ... »Assignment 7« | Assignment |
|  | »Inverting 1« ... »Inverting 7« | Inverting of the state of the assigned signal. |









3 Menu

3.3.3.1.2 Device Para / Binary Outputs / BO Slot X2 / BO 2









3.3.3.1.2 Device Para / Binary Outputs / BO Slot X2 / BO 2

| | | |
|---|---|--|
|  | »Operating Mode« | Operating Mode |
|  | »t-hold« | To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time. |
|  | »t-Off Delay« | Switch Off Delay |
|  | »Latched« | Defines whether the Relay Output will be latched when it picks up. |
|  | »Acknowledgement« | Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active. |
|  | »Inverting« | Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction). |
|  | »Assignment 1« ... »Assignment 7« | Assignment |
|  | »Inverting 1« ... »Inverting 7« | Inverting of the state of the assigned signal. |









3.3.3.1.3 Device Para / Binary Outputs / BO Slot X2 / BO 3

| | | |
|---|---|--|
|  | »Operating Mode« | Operating Mode |
|  | »t-hold« | To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time. |
|  | »t-Off Delay« | Switch Off Delay |
|  | »Latched« | Defines whether the Relay Output will be latched when it picks up. |
|  | »Acknowledgement« | Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active. |
|  | »Inverting« | Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction). |
|  | »Assignment 1« ... »Assignment 7« | Assignment |
|  | »Inverting 1« ... »Inverting 7« | Inverting of the state of the assigned signal. |

3.3.3.1.4 Device Para / Binary Outputs / BO Slot X2 / BO 4















| | | |
|---|---|--|
|  | »Operating Mode« | Operating Mode |
|  | »t-hold« | To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time. |
|  | »t-Off Delay« | Switch Off Delay |
|  | »Latched« | Defines whether the Relay Output will be latched when it picks up. |
|  | »Acknowledgement« | Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active. |
|  | »Inverting« | Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction). |
|  | »Assignment 1« ... »Assignment 7« | Assignment |
|  | »Inverting 1« ... »Inverting 7« | Inverting of the state of the assigned signal. |

3.3.3.1.5 Device Para / Binary Outputs / BO Slot X2 / BO 5















| | | |
|---|---|--|
|  | »Operating Mode« | Operating Mode |
|  | »t-hold« | To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time. |
|  | »t-Off Delay« | Switch Off Delay |
|  | »Latched« | Defines whether the Relay Output will be latched when it picks up. |
|  | »Acknowledgement« | Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active. |
|  | »Inverting« | Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction). |
|  | »Assignment 1« ... »Assignment 7« | Assignment |
|  | »Inverting 1« ... »Inverting 7« | Inverting of the state of the assigned signal. |

3.3.4 Device Para / LEDs















3.3.4.1 Device Para / LEDs / LED 1

| | | |
|---|----------------------|--|
|  | »Latched« | Defines whether the LED will be latched when it picks up. |
|  | »Ack signal« | Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present. |
|  | »LED active color« | The LED lights up in this color if the state of the OR-assignment of the signals is true. |
|  | »LED inactive color« | The LED lights up in this color if the state of the OR-assignment of the signals is untrue. |
|  | »Assignment 1« | Assignment |
|  | »Assignment 2« | Assignment |
|  | »Assignment 3« | Assignment |
|  | »Assignment 4« | Assignment |
|  | »Assignment 5« | Assignment |
|  | »Inverting 1« | Inverting of the state of the assigned signal. |
|  | »Inverting 2« | Inverting of the state of the assigned signal. |
|  | »Inverting 3« | Inverting of the state of the assigned signal. |
|  | »Inverting 4« | Inverting of the state of the assigned signal. |
|  | »Inverting 5« | Inverting of the state of the assigned signal. |















3.3.4.2 Device Para / LEDs / LED 2

| | | |
|---|----------------------|--|
|  | »Latched« | Defines whether the LED will be latched when it picks up. |
|  | »Ack signal« | Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present. |
|  | »LED active color« | The LED lights up in this color if the state of the OR-assignment of the signals is true. |
|  | »LED inactive color« | The LED lights up in this color if the state of the OR-assignment of the signals is untrue. |
|  | »Assignment 1« | Assignment |
|  | »Assignment 2« | Assignment |
|  | »Assignment 3« | Assignment |
|  | »Assignment 4« | Assignment |
|  | »Assignment 5« | Assignment |
|  | »Inverting 1« | Inverting of the state of the assigned signal. |
|  | »Inverting 2« | Inverting of the state of the assigned signal. |
|  | »Inverting 3« | Inverting of the state of the assigned signal. |
|  | »Inverting 4« | Inverting of the state of the assigned signal. |
|  | »Inverting 5« | Inverting of the state of the assigned signal. |















3.3.4.3 Device Para / LEDs / LED 3

| | | |
|---|----------------------|--|
|  | »Latched« | Defines whether the LED will be latched when it picks up. |
|  | »Ack signal« | Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present. |
|  | »LED active color« | The LED lights up in this color if the state of the OR-assignment of the signals is true. |
|  | »LED inactive color« | The LED lights up in this color if the state of the OR-assignment of the signals is untrue. |
|  | »Assignment 1« | Assignment |
|  | »Assignment 2« | Assignment |
|  | »Assignment 3« | Assignment |
|  | »Assignment 4« | Assignment |
|  | »Assignment 5« | Assignment |
|  | »Inverting 1« | Inverting of the state of the assigned signal. |
|  | »Inverting 2« | Inverting of the state of the assigned signal. |
|  | »Inverting 3« | Inverting of the state of the assigned signal. |
|  | »Inverting 4« | Inverting of the state of the assigned signal. |
|  | »Inverting 5« | Inverting of the state of the assigned signal. |















3.3.4.4 Device Para / LEDs / LED 4

| | | |
|---|----------------------|--|
|  | »Latched« | Defines whether the LED will be latched when it picks up. |
|  | »Ack signal« | Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present. |
|  | »LED active color« | The LED lights up in this color if the state of the OR-assignment of the signals is true. |
|  | »LED inactive color« | The LED lights up in this color if the state of the OR-assignment of the signals is untrue. |
|  | »Assignment 1« | Assignment |
|  | »Assignment 2« | Assignment |
|  | »Assignment 3« | Assignment |
|  | »Assignment 4« | Assignment |
|  | »Assignment 5« | Assignment |
|  | »Inverting 1« | Inverting of the state of the assigned signal. |
|  | »Inverting 2« | Inverting of the state of the assigned signal. |
|  | »Inverting 3« | Inverting of the state of the assigned signal. |
|  | »Inverting 4« | Inverting of the state of the assigned signal. |
|  | »Inverting 5« | Inverting of the state of the assigned signal. |














3.3.4.5 Device Para / LEDs / LED 5

| | | |
|---|----------------------|--|
|  | »Latched« | Defines whether the LED will be latched when it picks up. |
|  | »Ack signal« | Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present. |
|  | »LED active color« | The LED lights up in this color if the state of the OR-assignment of the signals is true. |
|  | »LED inactive color« | The LED lights up in this color if the state of the OR-assignment of the signals is untrue. |
|  | »Assignment 1« | Assignment |
|  | »Assignment 2« | Assignment |
|  | »Assignment 3« | Assignment |
|  | »Assignment 4« | Assignment |
|  | »Assignment 5« | Assignment |
|  | »Inverting 1« | Inverting of the state of the assigned signal. |
|  | »Inverting 2« | Inverting of the state of the assigned signal. |
|  | »Inverting 3« | Inverting of the state of the assigned signal. |
|  | »Inverting 4« | Inverting of the state of the assigned signal. |
|  | »Inverting 5« | Inverting of the state of the assigned signal. |






3.3.4.6 Device Para / LEDs / LED 6

| | | |
|---|----------------------|--|
|  | »Latched« | Defines whether the LED will be latched when it picks up. |
|  | »Ack signal« | Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present. |
|  | »LED active color« | The LED lights up in this color if the state of the OR-assignment of the signals is true. |
|  | »LED inactive color« | The LED lights up in this color if the state of the OR-assignment of the signals is untrue. |
|  | »Assignment 1« | Assignment |
|  | »Assignment 2« | Assignment |
|  | »Assignment 3« | Assignment |
|  | »Assignment 4« | Assignment |
|  | »Assignment 5« | Assignment |
|  | »Inverting 1« | Inverting of the state of the assigned signal. |
|  | »Inverting 2« | Inverting of the state of the assigned signal. |
|  | »Inverting 3« | Inverting of the state of the assigned signal. |
|  | »Inverting 4« | Inverting of the state of the assigned signal. |
|  | »Inverting 5« | Inverting of the state of the assigned signal. |

3.3.4.7 Device Para / LEDs / LED 7



| | | |
|---|----------------------|--|
|  | »Latched« | Defines whether the LED will be latched when it picks up. |
|  | »Ack signal« | Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present. |
|  | »LED active color« | The LED lights up in this color if the state of the OR-assignment of the signals is true. |
|  | »LED inactive color« | The LED lights up in this color if the state of the OR-assignment of the signals is untrue. |
|  | »Assignment 1« | Assignment |
|  | »Assignment 2« | Assignment |
|  | »Assignment 3« | Assignment |
|  | »Assignment 4« | Assignment |
|  | »Assignment 5« | Assignment |
|  | »Inverting 1« | Inverting of the state of the assigned signal. |
|  | »Inverting 2« | Inverting of the state of the assigned signal. |
|  | »Inverting 3« | Inverting of the state of the assigned signal. |
|  | »Inverting 4« | Inverting of the state of the assigned signal. |
|  | »Inverting 5« | Inverting of the state of the assigned signal. |

3.3.5 Device Para / Acknowledge






| | | |
|---|-------------------|---|
|  | »Ack via »C« key« | Select which acknowledgeable elements can be reset via pressing the »C« key. |
|  | »Remote Reset« | Enables or disables the option to acknowledge from external/remote via signals (assignments) and SCADA. |
|  | »Ack LED« | All acknowledgeable LEDs will be acknowledged if the state of the assigned signal becomes true. |
|  | »Ack BO« | All acknowledgeable binary output relays will be acknowledged if the state of the assigned signal becomes true. |
|  | »Ack Scada« | Latched SCADA signals are acknowledged if the state of the assigned signal becomes true. |

3.3.6 Device Para / Statistics





3.3.6.1 Device Para / Statistics / Min / Max

| | | |
|---|-------------|---------------------------------|
|  | »ResFc Max« | Resetting of all Maximum values |
|  | »ResFc Min« | Resetting of all Minimum values |



3.3.6.2 Device Para / Statistics / Vavg

| | | |
|---|-------------------|--|
|  | »Start Vavg via:« | Statistics: Start sliding supervision of the average voltage by the set trigger. |
|  | »Start Vavg Fc« | Start of the calculation, if the assigned signal becomes true. |
|  | »ResFc Vavg« | Resetting of the sliding average calculation. |
|  | »Duration Vavg« | Recording time |
|  | »Window Vavg« | Window configuration |



3.3.7 Device Para / HMI

| | | |
|---|---------------------------|--|
|  | »Contrast« | Contrast |
|  | »Display Off« | The display back light will be turned off when this timer has expired. |
|  | »Menu language« | Selection of the language |
|  | »Display ANSI Device No.« | Display ANSI Device Numbers |




3.3.8 Device Para / Security

| | | |
|---|----------------|-----------------------|
|  | »Password« | Changing the password |
|  | »Access Level« | Access Level |







3.3.8.1 Device Para / Security / General Settings

| | | |
|---|---------------------|---|
|  | »t-max Edit/Access« | If no other key(s) is pressed at the panel, after expiration of this time, all cached (changed) parameters are canceled. The device access will be locked by falling back into Read-only level Lv0. |
|  | »Conf. Dev. Reset« | If the »C« key is pressed while the device is performing a cold restart a general Reset Dialog appears on the screen. Select which options shall be available with this dialog. |

3.3.8.2 Device Para / Security / Communication












| | | |
|---|-------------------------|---|
|  | »Smart view via USB« | Activate (allow) or inactivate (disallow) the Smart view access via the USB interface. |
|  | »Smart view via Eth« | Activate (allow) or inactivate (disallow) the Smart view access via the Ethernet interface. |
|  | »Smart view via Modbus« | Activate (allow) or inactivate (disallow) the Smart view access via the Modbus tunnel. |

3.3.8.3 Device Para / Security / Syslog



| | | |
|---|----------------------|--|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »IP port number« | IP port number. This is the port on which the Syslog server computer listens and receives log messages. (Since the default, port 514, is a general protocol standard it is recommended to keep this default, unless there are network-related or security-related reasons against it.) |
|  | »IP address, part 1« | IP address (IPv4) of the Syslog server computer, that receives the log messages. IP1.IP2.IP3.IP4 |
|  | »IP address, part 2« | IP address (IPv4) of the Syslog server computer, that receives the log messages. IP1.IP2.IP3.IP4 |
|  | »IP address, part 3« | IP address (IPv4) of the Syslog server computer, that receives the log messages. IP1.IP2.IP3.IP4 |
|  | »IP address, part 4« | IP address (IPv4) of the Syslog server computer, that receives the log messages. IP1.IP2.IP3.IP4 |

3.3.9 Device Para / Recorders












3.3.9.1 Device Para / Recorders / Disturb rec

| | | |
|---|---------------------|--|
|  | »Start: 1« | Start recording if the assigned signal is true. |
|  | »Start: 2« | Start recording if the assigned signal is true. |
|  | »Start: 3« | Start recording if the assigned signal is true. |
|  | »Start: 4« | Start recording if the assigned signal is true. |
|  | »Start: 5« | Start recording if the assigned signal is true. |
|  | »Start: 6« | Start recording if the assigned signal is true. |
|  | »Start: 7« | Start recording if the assigned signal is true. |
|  | »Start: 8« | Start recording if the assigned signal is true. |
|  | »Auto overwriting« | If there is no more free memory capacity left, the oldest file will be overwritten. |
|  | »Pre-trigger time« | The pre trigger time is set in percent of the »Max file size« value. It corresponds to the part of recording before the onset of the trigger event. |
|  | »Post-trigger time« | The post trigger time is set in percent of the »Max file size« value. It is the remaining time of the »Max file size«, depending on the »Pre-trigger time« setting and the duration of the trigger event, but at maximum the »Post-trigger time« set here. |
|  | »Max file size« | The maximum storage capacity per record, including pre-trigger and post-trigger time. The amount of records depends on the size of each record, on the max. file size (set here), and on the total storage capacity. |


3.3.9.2 Device Para / Recorders / Fault rec

| | | |
|---|----------------|--|
|  | »Record-Mode« | Recorder Mode (Set the behaviour of the recorder) |
|  | »t-meas-delay« | After the Trip, the measurement will be delayed for this time. |




3.3.9.3 Device Para / Recorders / Trend rec

| | | |
|---|--------------|----------------------------------|
|  | »Resolution« | Resolution (recording frequency) |
|  | »Trend1« | Observed Value1 |
|  | »Trend2« | Observed Value2 |
|  | »Trend3« | Observed Value3 |
|  | »Trend4« | Observed Value4 |
|  | »Trend5« | Observed Value5 |
|  | »Trend6« | Observed Value6 |
|  | »Trend7« | Observed Value7 |
|  | »Trend8« | Observed Value8 |
|  | »Trend9« | Observed Value9 |
|  | »Trend10« | Observed Value10 |

3.3.10 Device Para / TCP/IP




| | | |
|---|-----------------|--------------------------------------|
|  | »TCP/IP config« | configuration of the TCP/IP protocol |
|---|-----------------|--------------------------------------|

3.3.10.1 Device Para / TCP/IP / Advanced Settings


| | | |
|---|-----------------------|--|
|  | »Keep Alive Time« | Keep Alive Time is the duration between two keep alive transmissions in idle condition |
|  | »Keep Alive Interval« | Keep Alive Interval is the duration between two successive keep alive retransmissions, if the acknowledgement to the previous keepalive transmission was not received. |
|  | »Keep Alive Retry« | Keep alive retry is the number of retransmissions to be carried out before declaring that the remote end is not available. |

3.3.11 Device Para / IEC 61850


3.3.11.1 Device Para / IEC 61850 / Communication

| | | |
|---|---------------------|--|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »Deadb integr time« | Deadband integration time. |
|  | »Simulation Mode« | Direct Command to activate the IEC61850 Simulation Mode, so that the "test" flag is set in all GOOSE messages that the device transmits. Moreover, the device reacts in Simulation Mode to only those messages that have this "test" flag set. |

3.3.11.2 Device Para / IEC 61850 / Virtual Outputs 1












| | | |
|---|-------------------------|---|
|  | »COUTGGIO1.Ind1.stVal« | Virtual Output. This signal can be assigned or visualized via the SCD file to other devices within the IEC61850 substation. |
| | ... | |
| | »COUTGGIO1.Ind32.stVal« | |















3.3.11.3 Device Para / IEC 61850 / Virtual Outputs 2

| | | |
|---|-------------------------|---|
|  | »COUTGGIO2.Ind1.stVal« | Virtual Output. This signal can be assigned or visualized via the SCD file to other devices within the IEC61850 substation. |
| | ... | |
| | »COUTGGIO2.Ind32.stVal« | |

3.3.12 Device Para / DNP3


3.3.12.1 Device Para / DNP3 / Communication

| | | |
|---|-------------------------|--|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »IP Port Number« | IP Port Number. In general it is recommended to keep the default value. If this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network. |
|  | »Baud rate« | Baud rate for communication |
|  | »Frame Layout« | Frame Layout |
|  | »Optical rest position« | Optical rest position |
|  | »Slave Id« | SlaveId defines the DNP3 address of this device (Outstation) |
|  | »Master Id« | MasterId defines the DNP3 address of master (SCADA) |
|  | »SelfAddress« | Support of self (automatic) addresses |
|  | »DataLink confirm« | Enables or disables the data layer confirmation (ack). |
|  | »t-DataLink confirm« | Data layer confirmation timeout |
|  | »DataLink num retries« | Number of repetition of data link packet sending after failing |







| | | |
|---|---------------------------|---|
|  | »Direction Bit« | Enables Direction Bit functionality. The Direction Bit is 0 for SlaveStation and 1 for MasterStation |
|  | »Max Frame Size« | This value is used to limit the net Frame Size |
|  | »Test Link Period« | This value specifies the time period when to send a Test Link-Frame |
|  | »AppLink confirm« | Determines if the device will request that the Application Layer response be confirmed or not |
|  | »t-AppLink confirm« | Application layer response timeout |
|  | »AppLink num retries« | The number of times the device will retransmit an Application Layer fragment |
|  | »Unsol Reporting« | Enables unsolicited reporting. This is available only for DNP3 TCP connections, and for DNP3 RTU in case of a peer-to-peer connection. |
|  | »Unsol Reporting Timeout« | Set the amount of time that the outstation will wait for an Application Layer confirmation back from the master indicating that the master received the unsolicited response message. |
|  | »Unsol Reporting Retry« | Set the number of retries that an outstation transmits in each unsolicited response series if it does not receive confirmation back from the master. |
|  | »TestSeqNo« | Test if sequence number of request is incremented. If it is not correctly incremented the request will be ignored. It is recommended to have it inactive but some older DNP implementations need it activated. |
|  | »TestSBO« | It enables a stricter comparing of SBO and operate command. For older DNP versions it is recommended to deactivated it. |
|  | »Timeout SBO« | DNP Outputs can be controlled in a two stage procedure (SBO: Select Before Operate). These outputs are to be selected first by a Select command. After this the bit is reserved for this Operate request. This setting defines the timer for this reservation: After the timer has elapsed the bit is released. |
|  | »ColdRestart« | Enables support for Cold Restart function. |
|  | »Deadb integr time« | Deadband integration time. |

3.3.12.2 Device Para / DNP3 / Point map


3.3.12.2.1 Device Para / DNP3 / Point map / Binary Inputs

| | | |
|---|------------------|--|
|  | »BinaryInput 0« | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| | ... | |
| | »BinaryInput 63« | |




3.3.12.2.2 Device Para / DNP3 / Point map / Double Bit Inputs

| | | |
|---|--------------------|--|
|  | »DoubleBitInput 0« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
|  | »DoubleBitInput 1« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
|  | »DoubleBitInput 2« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
|  | »DoubleBitInput 3« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
|  | »DoubleBitInput 4« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |
|  | »DoubleBitInput 5« | Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device. |

3.3.12.2.3 Device Para / DNP3 / Point map / BinaryCounter

| | | |
|---|-------------------|---|
|  | »BinaryCounter 0« | Counter can be used to report counter values to the DNP master. |
|  | »BinaryCounter 1« | Counter can be used to report counter values to the DNP master. |
|  | »BinaryCounter 2« | Counter can be used to report counter values to the DNP master. |
|  | »BinaryCounter 3« | Counter can be used to report counter values to the DNP master. |
|  | »BinaryCounter 4« | Counter can be used to report counter values to the DNP master. |
|  | »BinaryCounter 5« | Counter can be used to report counter values to the DNP master. |
|  | »BinaryCounter 6« | Counter can be used to report counter values to the DNP master. |
|  | »BinaryCounter 7« | Counter can be used to report counter values to the DNP master. |






3.3.12.2.4 Device Para / DNP3 / Point map / Analog Input

| | | |
|---|--|---|
|  | »Analog value 0« ... »Analog value 31« | Analog value can be used to report values to the master (DNP) |
|  | »Scale Factor 0« ... »Scale Factor 31« | The scale factor is used to convert the measured value in an integer format |
|  | »Dead Band 0« ... »Dead Band 31« | If a change of measured value is greater than the deadband value it will be reported to the master. |



3.3.13 Device Para / Modbus

3.3.13.1 Device Para / Modbus / Communication




3.3.13.1.1 Device Para / Modbus / Communication / General Settings

| | | |
|---|-------------------------|--|
|  | »t-call« | If there is no request telegram sent from Scada to the device after expiry of this time - the device concludes a communication failure within the Scada system. |
|  | »Scada CmdBlo« | Activating (allowing)/ Deactivating (disallowing) the blocking of the Scada Commands |
|  | »Disable Latching« | Disable Latching: If this parameter is active (true), none of the Modbus states will be latched. That means that trip signals wont be latched by Modbus. |
|  | »AllowGap« | If this parameter is active (True), the user can request a set of modbus register without getting an exception, because of invalid address in the requested array. The invalid addresses have a special value 0xFAFA, but the user is responsible for ignoring invalid addresses. Attention: This special value can be valid, if address is valid. |
|  | »Optical rest position« | Optical rest position |

3.3.13.1.2 Device Para / Modbus / Communication / TCP



| | | |
|---|-------------------|--|
| <input checked="" type="radio"/> | »Unit ID« | The Unit Identifier is used for routing. This parameter is to be set, if a Modbus RTU and a Modbus TCP network should be coupled. |
|  | »TCP Port Config« | TCP Port Configuration. This parameter needs to be set to "Private" only if another TCP Port than the default one shall be used. |
|  | »Port« | IP Port Number. In general it is recommended to keep the default value. if this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network. |

3.3.13.1.3 Device Para / Modbus / Communication / RTU

| | | |
|---|---------------------|---|
| <input checked="" type="radio"/> | »Slave ID« | Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system. |
|  | »t-timeout« | Maximum time that is available to the device for sending an answer to the SCADA system. If the device detects that this time has elapsed (i.e. it failed to send its answer within this time) then it cancels the answer. The time set here must not be longer than the corresponding timeout set for the SCADA system. |
|  | »Baud rate« | Baud rate |
|  | »Physical Settings« | Digit 1: Number of bits. Digit 2: E=even parity, O=odd parity, N=no parity. Digit 3: Number of stop bits. More information on the parity: It is possible that the last data bit is followed by a parity bit which is used for recognition of communication errors. The parity bit ensures that with even parity ("EVEN") always an even number of bits with valence "1" or with odd parity ("ODD") an odd number of "1" valence bits are transmitted. But it is also possible to transmit no parity bits (here the setting is "Parity = None"). More information on the stop-bits: The end of a data byte is terminated by the stop-bits. |

3.3.13.2 Device Para / Modbus / Configb Registers





3.3.13.2.1 Device Para / Modbus / Configb Registers / States

| | | |
|---|--|--|
|  | »Config Bin Inp1« ... »Config Bin Inp32« | Virtual Digital Input. This corresponds to a virtual binary output of the protective device. |
|  | »Latched Config Bin Inp1« ... »Latched Config Bin Inp32« | Latched Configurable Binary Input |

3.3.13.2.2 Device Para / Modbus / Config Registers / Measured Values










| | | |
|---|------------------|---|
|  | »Mapped Meas 1« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 2« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 3« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 4« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 5« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 6« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 7« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 8« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 9« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 10« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 11« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 12« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 13« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 14« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 15« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |
|  | »Mapped Meas 16« | Mapped Measured Values. They can be used to provide measured values to the Modbus Master. |

3.3.13.3 Device Para / Modbus / Config. Data Obj.





| | | |
|---|-------------------------|---|
|  | »Type of SCADA mapping« | This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file. |
|  | »Config info« | Configuration comment (entered by the user during SCADA configuration) |
|  | »Config version« | Version of the user-defined SCADA configuration |
|  | »Config status« | Status of the user-defined SCADA configuration. Possible values: - New SCADA configuration is being loaded, but not active yet. - The SCADA configuration is active. - The user-defined SCADA configuration is not available (e.g. has not been loaded into the device). - Unexpected error. Please contact our service-team. |

3.3.14 Device Para / IEC103

3.3.14.1 Device Para / IEC103 / General Settings







| | | |
|---|------------------------|---|
|  | »Function« | Activation or deactivation of the IEC103 communication. |
|  | »Slave ID« | Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system. |
|  | »Baud rate« | Baud rate |
|  | »Physical Settings« | Digit 1: Number of bits. Digit 2: E=even parity, O=odd parity, N=no parity. Digit 3: Number of stop bits. More information on the parity: It is possible that the last data bit is followed by a parity bit which is used for recognition of communication errors. The parity bit ensures that with even parity ("EVEN") always an even number of bits with valence "1" or with odd parity ("ODD") an odd number of "1" valence bits are transmitted. But it is also possible to transmit no parity bits (here the setting is "Parity = None"). More information on the stop-bits: The end of a data byte is terminated by the stop-bits. |
|  | »Timezone« | Selection whether the timestamps in IEC103 messages shall be given as UTC or local time. ("Local time" always includes the actual daylight saving settings.) |
|  | »Transfer Disturb Rec« | Activates the transmission of disturbance records |
|  | »Energy Pulse Rate« | The energy values are always transmitted as counter values (i.e. as integer numbers). This setting defines the unit: If "1" is set then each counter increment is 1 kWh, if "2" is set then each counter increment is 2 kWh, etc. The setting "0" has the effect that no energy values are transmitted. |
|  | »t-call« | If there is no request telegram sent from Scada to the device after expiry of this time - the device concludes a communication failure within the Scada system. |
|  | »DFC-Compat.« | This setting is only required for certain substation implementations. If there should be communication problems related to the Command Response Queue this setting switches the device over to a different behavior. |

3.3.14.2 Device Para / IEC103 / Config. Data Obj.













| | | |
|---|-------------------------|--|
|  | »Type of SCADA mapping« | This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file. |
|  | »Config info« | Configuration comment (entered by the user during SCADA configuration) |
|  | »Config version« | Version of the user-defined SCADA configuration |
|  | »Config status« | Status of the user-defined SCADA configuration. Possible values: - Changing: New SCADA configuration is being loaded, but not active yet. - OK: The SCADA configuration is active. - Config. not avail.: The user-defined SCADA configuration is not available (e.g. has not been loaded into the device). - Error: Unexpected error. Please contact our service-team. |

3.3.15 Device Para / IEC104





3.3.15.1 Device Para / IEC104 / General Settings

| | | |
|---|---------------------|--|
|  | »Function« | Activation or deactivation of the IEC104 communication. |
|  | »TCP Port Config« | TCP Port Configuration. This parameter needs to be set to "Private" only if another TCP Port than the default one shall be used. |
|  | »Port« | IP Port Number. In general it is recommended to keep the default value. if this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network. |
| <input checked="" type="radio"/> | »Common address« | Common Address of the ASDU |
|  | »Timezone« | Selection whether the timestamps in the transmitted communication telegrams shall be given as UTC or local time. ("Local time" always includes the actual daylight saving settings.) |
|  | »Deadb integr time« | Deadband integration time. |
|  | »Timeout SBE« | The communication outputs can be controlled in a two-stage procedure (SBE: Select Before Execute). These outputs have to be selected first by a Select command. After this the bit is reserved for this Execute request. This setting defines the timer for this reservation: After the timer has elapsed the bit is released. |

3.3.15.2 Device Para / IEC104 / Advanced



| | | |
|---|--------------------------|--|
|  | »Timeout t0« | Timeout of connection establishment |
|  | »Timeout t1« | Timeout of send or test APDUs |
|  | »Timeout t2« | Timeout for acknowledges in case of no data messages |
|  | »Timeout t3« | Timeout for sending test frames in case of a long idle state |
|  | »Param k« | Protocol parameter k |
|  | »Param w« | Protocol parameter w |
|  | »Length of address« | Number of bytes of the Common Address of the ASDU |
|  | »Length of CoT« | Number of bytes of the Cause of Transmission |
|  | »Length of Inf Obj addr« | Number of bytes of the address of the Information Object |
|  | »Update time« | This setting specifies the time after which measurement values are refreshed. If cyclic transmission is selected new values are reported after this time has elapsed. |
|  | »Transmit Int. State« | If this parameter is set to “active” (default) then the intermediate position of a switchgear, too, is transmitted. This needs to be changed to “inactive” only in the rare case that the substation communication does not support the reporting of intermediate positions. |
|  | »Trans. Cmd. State« | _ If false it suppress change events for command states (Same address as cmd) |

3.3.15.3 Device Para / IEC104 / Config. Data Obj.



| | | |
|---|-------------------------|--|
|  | »Type of SCADA mapping« | This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file. |
|  | »Config info« | Configuration comment (entered by the user during SCADA configuration) |
|  | »Config version« | Version of the user-defined SCADA configuration |
|  | »Config status« | Status of the user-defined SCADA configuration. Possible values: - Changing: New SCADA configuration is being loaded, but not active yet. - OK: The SCADA configuration is active. - Config. not avail.: The user-defined SCADA configuration is not available (e.g. has not been loaded into the device). - Error: Unexpected error. Please contact our service-team. |

3.3.16 Device Para / Profibus



3.3.16.1 Device Para / Profibus / Bus parameters

| | | |
|---|-----------------|--|
|  | »Slave ID« | Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system. |
|  | »Little Endian« | If this setting is “active” all numbers are transmitted with the byte order Little Endian, otherwise the byte order Big Endian is used. (If all numbers received by your SCADA system should be completely wrong, changing this setting might help.) |





3.3.16.2 Device Para / Profibus / ConfigBinInp 1-16

| | | |
|---|--|--|
|  | »ConfigBinInp 1« ... »ConfigBinInp 16« | Virtual Digital Input. This corresponds to a virtual binary output of the protective device. |
|  | »Latched 1« ... »Latched 16« | Defines whether the Input is latched. |


3.3.16.3 Device Para / Profibus / ConfigBinInp 17-32

| | | |
|---|---|--|
|  | »ConfigBinInp 17« ... »ConfigBinInp 32« | Virtual Digital Input. This corresponds to a virtual binary output of the protective device. |
|  | »Latched 17« ... »Latched 32« | Defines whether the Input is latched. |















3.3.16.4 Device Para / Profibus / Config. Data Obj.

| | | |
|---|-------------------------|---|
|  | »Type of SCADA mapping« | This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file. |
|  | »Config info« | Configuration comment (entered by the user during SCADA configuration) |
|  | »Config version« | Version of the user-defined SCADA configuration |
|  | »Config status« | Status of the user-defined SCADA configuration. Possible values: |

3.3.17 Device Para / Time


| | | |
|---|-----------------|----------------------------|
|  | »Date and Time« | (Re-)setting Date and Time |
|---|-----------------|----------------------------|

3.3.17.1 Device Para / Time / Timezone



| | | |
|---|------------------|--|
|  | »Time Zones« | Time Zones |
|  | »DST offset« | Difference to wintertime |
|  | »DST manual« | Manual setting of the Daylight Saving Time |
|  | »Summertime« | Daylight Saving Time |
|  | »Summertime m« | Month of clock change summertime |
|  | »Summertime d« | Day of clock change summertime |
|  | »Summertime w« | Place of selected day in month (for clock change summertime) |
|  | »Summertime h« | Hour of clock change summertime |
|  | »Summertime min« | Minute of clock change summertime |
|  | »Wintertime m« | Month of clock change wintertime |
|  | »Wintertime d« | Day of clock change wintertime |
|  | »Wintertime w« | Place of selected day in month (for clock change wintertime) |
|  | »Wintertime h« | Hour of clock change wintertime |
|  | »Wintertime min« | Minute of clock change wintertime |

3.3.17.2 Device Para / Time / TimeSync



3.3.17.2.1 Device Para / Time / TimeSync / TimeSync

| | | |
|---|------------|----------------------|
|  | »TimeSync« | Time synchronisation |
|---|------------|----------------------|








3.3.17.2.2 Device Para / Time / TimeSync / IRIG-B

| | | |
|---|-------------|--|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »IRIG-B00X« | Determination of the Type: IRIG-B00X. IRIG-B types differ in types of included "Coded Expressions" (year, control-functions, straight-binary-seconds). |

3.3.17.2.3 Device Para / Time / TimeSync / SNTP





| | | |
|---|------------|-----------------|
|  | »Server1« | Server 1 |
|  | »IP Byte1« | IP1.IP2.IP3.IP4 |
|  | »IP Byte2« | IP1.IP2.IP3.IP4 |
|  | »IP Byte3« | IP1.IP2.IP3.IP4 |
|  | »IP Byte4« | IP1.IP2.IP3.IP4 |
|  | »Server2« | Server 2 |
|  | »IP Byte1« | IP1.IP2.IP3.IP4 |
|  | »IP Byte2« | IP1.IP2.IP3.IP4 |
|  | »IP Byte3« | IP1.IP2.IP3.IP4 |
|  | »IP Byte4« | IP1.IP2.IP3.IP4 |

3.3.18 Device Para / Version







| | | |
|---|--------------------|--|
|  | »DM version« | Version of the device model |
|  | »SW version« | Version of the device firmware |
|  | »Build« | Build Number |
|  | »CAT No« | »CAT No.«, Order Code as printed on the nameplate of the device. |
|  | »REV.« | Revision (as printed on the nameplate of the device). |
|  | »S/N« | The serial number of the device. |
|  | »Bootloader Build« | Build number of the bootloader |

3.4 Field Para







3.4.1 Field Para / General Settings

| | | |
|---|-----------------------|--|
|  | »Phase Sequence« | Phase Sequence |
|  | »f« | Nominal frequency |
|  | »Setting Lock« | No parameters can be changed as long as this input is true. The parameter settings are locked. |
|  | »Setting Lock Bypass« | Short-period unlock of the Setting Lock |

3.4.2 Field Para / VT

| | | |
|---|-----------|---|
|  | »VT pri« | Nominal voltage of the Voltage Transformers at the primary side. Note that always the phase-to-phase voltage must be entered here. |
|  | »VT sec« | Nominal voltage of the Voltage Transformers at the secondary side. Note that always the phase-to-phase voltage must be entered here. |
|  | »VT con« | This parameter has to be set in order to ensure the correct assignment of the voltage measurement channels in the device. |
|  | »EVT pri« | Primary nominal voltage of the e-n winding of the voltage transformers, which is only taken into account in the direct measurement of the residual voltage (GVT con=measured/broken delta). |
|  | »EVT sec« | Secondary nominal voltage of the e-n winding of the voltage transformers, which is only taken into account in the direct measurement of the residual voltage. |
|  | »V Sync« | The fourth measuring input of the voltage measuring card measures the voltage that is to be synchronized. |








3.4.3 Field Para / Frequency

| | | |
|---|----------------------------|---|
|  | »V Block f« | Threshold for the release of the frequency stages: Frequency-based protection functions are blocked if the voltage drops below this setting. This is necessary to avoid an undesired response of the frequency-based protection functions in case of a voltage disturbance caused by a fault. For example, faults with an arc flash generate a high proportion of harmonics in the voltage. Such disturbances will interfere with accurate frequency detection. |
|  | »delta phi - Mode« | The delta phi element (vector surge) trips, if the permissible voltage angle shift (delta phi) of the three measured voltages (phase-ground or phase-phase) in: one phase, two phases or within all phases is exceeded. |
|  | »Stab. window f« | Stabilizing window, for stabilizing the frequency values against momentary fluctuations. The setting value is in cycles at the rated frequency. |
|  | »Stab. window f for df/dt« | Stabilizing window, for stabilizing the frequency values that are used as input for df/dt calculation against momentary fluctuations. The setting value is in cycles at the rated frequency. |
|  | »Window df/dt« | Window for the determination of df/dt (ROCOF). The setting value is in cycles at the rated frequency. |
|  | »Stab. window df/dt« | Stabilizing window, for stabilizing the df/dt (ROCOF) values against momentary fluctuations. The setting value is in cycles at the rated frequency. |

3.5 Protection Para

3.5.1 Protection Para / Global Prot Para




3.5.1.1 Protection Para / Global Prot Para / Prot

| | | |
|---|--------------------|--|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) the external blocking of the global protection functionality of the device. |
|  | »ExBlo1« | If external blocking of this module is activated (allowed), the global protection functionality of the device will be blocked if the state of the assigned signal becomes true. |
|  | »ExBlo2« | If external blocking of this module is activated (allowed), the global protection functionality of the device will be blocked if the state of the assigned signal becomes true. |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the entire Protection. |
|  | »ExBlo TripCmd Fc« | Activate (allow) the external blocking of the trip command of the entire device. |
|  | »ExBlo TripCmd« | If external blocking of the tripping command is activated (allowed), the tripping command of the entire device will be blocked if the state of the assigned signal becomes true. |




3.5.1.2 Protection Para / Global Prot Para / Intercon-Prot

3.5.1.2.1 Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg

3.5.1.2.1.1 Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / df/dt

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |






3.5.1.2.1.2 Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / delta phi

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3 Menu

3.5.1.2.1.3 Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping




3.5.1.2.1.3 Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »Alarm« | Assignment for External Alarm |
|  | »Trip« | External trip of the CB if the state of the assigned signal is true. |

3.5.1.2.2 Protection Para / Global Prot Para / Intercon-Prot / LVRT[1]






| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.2.3 Protection Para / Global Prot Para / Intercon-Prot / LVRT[2]







| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.2.4 Protection Para / Global Prot Para / Intercon-Prot / ReCon[1]

3.5.1.2.4.1 Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings






| | | |
|---|---------------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »V Ext Release PCC« | Release Signal by the Point of Common Coupling. The line-to-line voltage is greater than 95% of VN. |
|  | »PCC Fuse Fail VT« | Blocking if the fuse of a voltage transformer has tripped at the PCC. |
|  | »reconnected« | This signal indicates the state "reconnected" (mains parallel). |

3.5.1.2.4.2 Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / Decoupling







| | | |
|---|---------------|--|
|  | »Decoupling1« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling2« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling3« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling4« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling5« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling6« | Decoupling function, that triggers the reconnection. |

3.5.1.2.5 Protection Para / Global Prot Para / Intercon-Prot / ReCon[2]

3.5.1.2.5.1 Protection Para / Global Prot Para / Intercon-Prot / ReCon[2] / General Settings

| | | |
|---|---------------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »V Ext Release PCC« | Release Signal by the Point of Common Coupling. The line-to-line voltage is greater than 95% of VN. |
|  | »PCC Fuse Fail VT« | Blocking if the fuse of a voltage transformer has tripped at the PCC. |
|  | »reconnected« | This signal indicates the state "reconnected" (mains parallel). |









3.5.1.2.5.2 Protection Para / Global Prot Para / Intercon-Prot / ReCon[2] / Decoupling

| | | |
|---|---------------|--|
|  | »Decoupling1« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling2« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling3« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling4« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling5« | Decoupling function, that triggers the reconnection. |
|  | »Decoupling6« | Decoupling function, that triggers the reconnection. |

3 Menu




3.5.1.2.6 Protection Para / Global Prot Para / Intercon-Prot / Sync

3.5.1.2.6 Protection Para / Global Prot Para / Intercon-Prot / Sync




| | | |
|---|--------------------|--|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »Bypass« | The Synchrocheck will be bypassed if the state of the assigned signal (logic input) becomes true. |
|  | »CB Pos Detect« | Criterion by which the Circuit Breaker Switch Position is to be detected. |
|  | »CBCloseInitiate« | Breaker Close Initiate with synchronism check from any control sources (e.g. HMI / SCADA). If the state of the assigned signal becomes true, a Breaker Close will be initiated (Trigger Source). |
|  | »Transformer-Mode« | Activate transformer mode to enable phase and angle corrections for this function. |
|  | »V Line / V Bus« | Ratio of the voltage amplitudes between the line and bus side when using transformer mode. |
|  | »Angle Correction« | Correction angle resulting from the difference in angle between the line and bus side when using transformer mode. |

3.5.1.3 Protection Para / Global Prot Para / V-Prot




3.5.1.3.1 Protection Para / Global Prot Para / V-Prot / V[1]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.2 Protection Para / Global Prot Para / V-Prot / V[2]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.3 Protection Para / Global Prot Para / V-Prot / V[3]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.4 Protection Para / Global Prot Para / V-Prot / V[4]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.3.5 Protection Para / Global Prot Para / V-Prot / V[5]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.6 Protection Para / Global Prot Para / V-Prot / V[6]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3 Menu

3.5.1.3.7 Protection Para / Global Prot Para / V-Prot / VG[1]




3.5.1.3.7 Protection Para / Global Prot Para / V-Prot / VG[1]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.8 Protection Para / Global Prot Para / V-Prot / VG[2]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.9 Protection Para / Global Prot Para / V-Prot / V012[1]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1 |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2 |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.10 Protection Para / Global Prot Para / V-Prot / V012[2]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1 |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2 |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.11 Protection Para / Global Prot Para / V-Prot / V012[3]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1 |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2 |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.3.12 Protection Para / Global Prot Para / V-Prot / V012[4]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1 |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2 |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.3.13 Protection Para / Global Prot Para / V-Prot / V012[5]




| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1 |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2 |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.3.14 Protection Para / Global Prot Para / V-Prot / V012[6]




| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1 |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2 |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.4 Protection Para / Global Prot Para / f-Prot




3.5.1.4.1 Protection Para / Global Prot Para / f-Prot / f[1]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.4.2 Protection Para / Global Prot Para / f-Prot / f[2]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.4.3 Protection Para / Global Prot Para / f-Prot / f[3]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |




3.5.1.4.4 Protection Para / Global Prot Para / f-Prot / f[4]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.4.5 Protection Para / Global Prot Para / f-Prot / f[5]






| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.4.6 Protection Para / Global Prot Para / f-Prot / f[6]






| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.5 Protection Para / Global Prot Para / Exp

3.5.1.5.1 Protection Para / Global Prot Para / Exp / Exp[1]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »Alarm« | Assignment for External Alarm |
|  | »Trip« | External trip of the CB if the state of the assigned signal is true. |






3.5.1.5.2 Protection Para / Global Prot Para / Exp / Exp[2]

| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »Alarm« | Assignment for External Alarm |
|  | »Trip« | External trip of the CB if the state of the assigned signal is true. |






3 Menu

3.5.1.5.3 Protection Para / Global Prot Para / ExP / ExP[3]

3.5.1.5.3 Protection Para / Global Prot Para / ExP / ExP[3]







| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »Alarm« | Assignment for External Alarm |
|  | »Trip« | External trip of the CB if the state of the assigned signal is true. |

3.5.1.5.4 Protection Para / Global Prot Para / ExP / ExP[4]






| | | |
|---|-----------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo TripCmd« | External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »Alarm« | Assignment for External Alarm |
|  | »Trip« | External trip of the CB if the state of the assigned signal is true. |

3.5.1.6 Protection Para / Global Prot Para / Supervision





3.5.1.6.1 Protection Para / Global Prot Para / Supervision / CBF

| | | |
|---|------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »Trigger« | Determining the trigger mode for the Breaker Failure. |
|  | »Trigger1« | Trigger that will start the CBF |
|  | »Trigger2« | Trigger that will start the CBF |
|  | »Trigger3« | Trigger that will start the CBF |







3.5.1.6.2 Protection Para / Global Prot Para / Supervision / TCS

| | | |
|---|-----------|---|
|  | »Mode« | Select if trip circuit is going to be monitored when the breaker is closed or when the breaker is either open or close. |
|  | »Input 1« | Select the input configured to monitor the trip coil when the breaker is closed. |
|  | »Input 2« | Select the input configured to monitor the trip coil when the breaker is open. Only available if Mode set to "Either". |
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |

3.5.1.6.3 Protection Para / Global Prot Para / Supervision / VTS

| | | |
|--|---------------|---|
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. |
|  | »Ex FF VT-I« | State of the module input: Alarm Fuse Failure Voltage Transformers |
|  | »Ex FF EVT-I« | State of the module input: Alarm Fuse Failure Earth Voltage Transformers |

3.5.2 Protection Para / PSet-Switch








| | | |
|---|---------------------|--|
|  | »Act Set« | Signal: Active Parameter Set |
|  | »PSet-Switch« | Switching Parameter Set |
|  | »PS1: activated by« | This Setting Group will be the active one if: The Parameter Setting Group Switch is set to "Switch via Input" and the other three input functions are inactive at the same time. In case that there is more than one input function active, no Parameter Setting Group Switch will be executed. In case all input functions are inactive, the device will keep working with the Setting Group that was activated lastly. |
|  | »PS2: activated by« | This Setting Group will be the active one if: The Parameter Setting Group Switch is set to "Switch via Input" and the other three input functions are inactive at the same time. In case that there is more than one input function active, no Parameter Setting Group Switch will be executed. In case all input functions are inactive, the device will keep working with the Setting Group that was activated lastly. |
|  | »PS3: activated by« | This Setting Group will be the active one if: The Parameter Setting Group Switch is set to "Switch via Input" and the other three input functions are inactive at the same time. In case that there is more than one input function active, no Parameter Setting Group Switch will be executed. In case all input functions are inactive, the device will keep working with the Setting Group that was activated lastly. |
|  | »PS4: activated by« | This Setting Group will be the active one if: The Parameter Setting Group Switch is set to "Switch via Input" and the other three input functions are inactive at the same time. In case that there is more than one input function active, no Parameter Setting Group Switch will be executed. In case all input functions are inactive, the device will keep working with the Setting Group that was activated lastly. |

3.5.3 Protection Para / Set 1 ... 4






3.5.3.1 Protection Para / Set 1 ... 4 / Intercon-Prot

3.5.3.1.1 Protection Para / Set 1 ... 4 / Intercon-Prot / Mains Decouplg





3.5.3.1.1.1 Protection Para / Set 1 ... 4 / Intercon-Prot / Mains Decouplg / df/dt

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »df/dt« | Measured value (calculated): Rate-of-frequency-change. |
|  | »t-df/dt« | Trip delay df/dt |
|  | »df/dt mode« | df/dt mode |

3.5.3.1.1.2 Protection Para / Set 1 ... 4 / Intercon-Prot / Mains Decouplg / delta phi












| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »delta phi« | Measured value (calculated): Vector surge |

3.5.3.1.1.3 Protection Para / Set 1 ... 4 / Intercon-Prot / Mains Decouplg / Intertripping

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |

3.5.3.1.2 Protection Para / Set 1 ... 4 / Intercon-Prot / LVRT[1]





3.5.3.1.2.1 Protection Para / Set 1 ... 4 / Intercon-Prot / LVRT[1] / General Settings

| | | |
|---|----------------------------|--|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »Measuring Mode« | Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised |
|  | »Measuring method« | Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays) |
|  | »Alarm Mode« | Alarm criterion for the voltage protection stage. |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |
|  | »AR controlled LVRT« | Activates the supervision of the number of voltage dips during a defined time (t-LVRT). |
|  | »Number of V dips to trip« | Number of voltage dips until the disconnection signal (trip) will be issued. |
|  | »t-LVRT« | This timer defines the supervision interval (window/period) for counting the number of voltage dips to trip ("No of V dips to trip"). The first voltage dip will start the timer. The counted number of voltage dips will be reset if the timer is expired. The timer will also be reset if the maximum "No of V dips to trip" is reached. |

3 Menu












3.5.3.1.2.2 Protection Para / Set 1 ... 4 / Intercon-Prot / LVRT[1] / LVRT Profile

3.5.3.1.2.2 Protection Para / Set 1 ... 4 / Intercon-Prot / LVRT[1] / LVRT Profile





| | | |
|---|------------------------------|--|
|  | »Vstart<< | A voltage dip is detected if the measured voltage falls below this threshold. |
|  | »Vrecover>> | The voltage is recovered if the measured voltage raises above this threshold. |
|  | »V(t1)<< ... »V(t10)<< | Voltage value of a point V(t(n)). These points define the LVRT profile. |
|  | »t1<< ... »t10<< | Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile. |

3.5.3.1.3 Protection Para / Set 1 ... 4 / Intercon-Prot / LVRT[2]

3.5.3.1.3.1 Protection Para / Set 1 ... 4 / Intercon-Prot / LVRT[2] / General Settings





| | | |
|---|-----------------------------|--|
|  | »Function<< | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc<< | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd<< | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc<< | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »Measuring Mode<< | Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised |
|  | »Measuring method<< | Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays) |
|  | »Alarm Mode<< | Alarm criterion for the voltage protection stage. |
|  | »Meas Circuit Superv<< | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |
|  | »AR controlled LVRT<< | Activates the supervision of the number of voltage dips during a defined time (t-LVRT). |
|  | »Number of V dips to trip<< | Number of voltage dips until the disconnection signal (trip) will be issued. |
|  | »t-LVRT<< | This timer defines the supervision interval (window/period) for counting the number of voltage dips to trip ("No of V dips to trip"). The first voltage dip will start the timer. The counted number of voltage dips will be reset if the timer is expired. The timer will also be reset if the maximum "No of V dips to trip" is reached. |

3.5.3.1.3.2 Protection Para / Set 1 ... 4 / Intercon-Prot / LVRT[2] / LVRT Profile









| | | |
|---|------------------------------|--|
|  | »Vstart<< | A voltage dip is detected if the measured voltage falls below this threshold. |
|  | »Vrecover>> | The voltage is recovered if the measured voltage raises above this threshold. |
|  | »V(t1)<< ... »V(t10)<< | Voltage value of a point V(t(n)). These points define the LVRT profile. |
|  | »t1<< ... »t10<< | Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile. |

3.5.3.1.4 Protection Para / Set 1 ... 4 / Intercon-Prot / ReCon[1]

3.5.3.1.4.1 Protection Para / Set 1 ... 4 / Intercon-Prot / ReCon[1] / General Settings

| | | |
|---|-------------------------|---|
|  | »Function<< | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc<< | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Meas Circuit Superv<< | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |
|  | »V Ext Release PCC Fc<< | Activate the release signal of the Point of Common Coupling. The line-to-line voltage is greater than 95% of VN. |

3.5.3.1.4.2 Protection Para / Set 1 ... 4 / Intercon-Prot / ReCon[1] / Release Para





| | | |
|---|----------------------------|---|
|  | »Reconnect. Release Cond<< | This parameter ensures that the mains voltage is recovered. |
|  | »PCC Fuse Fail VT Fk<< | Blocking if the fuse of a voltage transformer has tripped at the PCC. |
|  | »Measuring method<< | Measuring method: fundamental or rms or "sliding average supervision" |
|  | »VLL max Release<< | Maximum voltage (line-to-line) for reclosure (Restoration Voltage) |
|  | »VLL min Release<< | Minimum voltage (line-to-line) for reclosure (Restoration Voltage) |
|  | »f max Release<< | Upper frequency limit for the reclosure |
|  | »f min Release<< | Lower frequency limit for the reclosure (Restoration Voltage) |
|  | »t-Release Blo<< | Time stage (delay) for the reclosure of the energy resources. The Mains saddle time takes based on exirience approx. 10 - 15 minutes. |

3 Menu









3.5.3.1.5 Protection Para / Set 1 ... 4 / Intercon-Prot / ReCon[2]

3.5.3.1.5 Protection Para / Set 1 ... 4 / Intercon-Prot / ReCon[2]

3.5.3.1.5.1 Protection Para / Set 1 ... 4 / Intercon-Prot / ReCon[2] / General Settings




| | | |
|---|------------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |
|  | »V Ext Release PCC Fc« | Activate the release signal of the Point of Common Coupling. The line-to-line voltage is greater than 95% of VN. |

3.5.3.1.5.2 Protection Para / Set 1 ... 4 / Intercon-Prot / ReCon[2] / Release Para




| | | |
|---|---------------------------|---|
|  | »Reconnect. Release Cond« | This parameter ensures that the mains voltage is recovered. |
|  | »PCC Fuse Fail VT Fk« | Blocking if the fuse of a voltage transformer has tripped at the PCC. |
|  | »Measuring method« | Measuring method: fundamental or rms or "sliding average supervision" |
|  | »VLL max Release« | Maximum voltage (line-to-line) for reclosure (Restoration Voltage) |
|  | »VLL min Release« | Minimum voltage (line-to-line) for reclosure (Restoration Voltage) |
|  | »f max Release« | Upper frequency limit for the reclosure |
|  | »f min Release« | Lower frequency limit for the reclosure (Restoration Voltage) |
|  | »t-Release Blo« | Time stage (delay) for the reclosure of the energy resources. The Mains saddle time takes based on exirience approx. 10 - 15 minutes. |

3.5.3.1.6 Protection Para / Set 1 ... 4 / Intercon-Prot / Sync






3.5.3.1.6.1 Protection Para / Set 1 ... 4 / Intercon-Prot / Sync / General Settings

| | | |
|---|-------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Bypass Fc« | Allowing to bypass the Synchrocheck, if the state signal that is assigned to the parameter with the same name within the Global Parameters (logic input) becomes true. |




3.5.3.1.6.2 Protection Para / Set 1 ... 4 / Intercon-Prot / Sync / Mode / Times

| | | |
|---|---------------------|--|
|  | »SyncMode« | Synchrocheck mode: GENERATOR2SYSTEM = Synchronizing generator to system (breaker close initiate needed). SYSTEM2SYSTEM = SynchronCheck between two systems (Stand-Alone, no breaker info needed) |
|  | »t-MaxCBCloseDelay« | Maximum circuit breaker close time delay (Only used for GENERATOR-SYSTEM working mode and is critical for a correct synchronized switching) |
|  | »t-MaxSyncSuperv« | Synchron-Run timer: Max. time allowed for synchronizing process after a close initiate. Only used for GENERATOR2SYSTEM working mode. |




3.5.3.1.6.3 Protection Para / Set 1 ... 4 / Intercon-Prot / Sync / DeadLiveVLevels

| | | |
|--|----------------------|---|
|  | »MinLiveBusVoltage« | Minimum Live Bus voltage (Live bus detected, when all three phase bus voltages are above this limit). |
|  | »MaxDeadBusVoltage« | Maximum Dead Bus voltage (Dead bus detected, when all three phase bus voltages are below this limit). |
|  | »MinLiveLineVoltage« | Minimum Live Line voltage (Live line detected, when line voltage above this limit). |
|  | »MaxDeadLineVoltage« | Maximum Dead Line voltage (Dead Line detected, when line voltage below this limit). |
|  | »t-VoltDead« | Voltage dead time (A Dead Bus/Line condition will be accepted only if the voltage falls below the set dead voltage levels longer than this time setting). |

3.5.3.1.6.4 Protection Para / Set 1 ... 4 / Intercon-Prot / Sync / Conditions














| | | |
|---|--------------------|--|
|  | »MaxVoltageDiff« | Maximum voltage difference between bus and line voltage phasors (Delta V)for synchronism (Related to bus voltage secondary rating) |
|  | »MaxSlipFrequency« | Maximum frequency difference (Slip: Delta f) between bus and line voltage allowed for synchronism |
|  | »MaxAngleDiff« | Maximum phase angle difference (Delta-Phi in degree) between bus and line voltages allowed for synchronism |

3.5.3.1.6.5 Protection Para / Set 1 ... 4 / Intercon-Prot / Sync / Override











| | | |
|---|--------|--|
|  | »DBDL« | Enable/disable Dead-Bus AND Dead-Line synchronism overriding |
|  | »DBLL« | Enable/disable Dead-Bus AND Live-Line synchronism overriding |
|  | »LBDL« | Enable/disable Live-Bus AND Dead-Line synchronism overriding |

3.5.3.2 Protection Para / Set 1 ... 4 / V-Prot










3.5.3.2.1 Protection Para / Set 1 ... 4 / V-Prot / V[1]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »Measuring Mode« | Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised |
|  | »Measuring method« | Measuring method: fundamental or rms or "sliding average supervision" |
|  | »Alarm Mode« | Alarm criterion for the voltage protection stage. |
|  | »V>« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V> Reset« | Drop Out (is in percent of setting) |
|  | »V<« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V< Reset« | Drop Out (is in percent of setting) |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |










3.5.3.2.2 Protection Para / Set 1 ... 4 / V-Prot / V[2]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »Measuring Mode« | Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised |
|  | »Measuring method« | Measuring method: fundamental or rms or "sliding average supervision" |
|  | »Alarm Mode« | Alarm criterion for the voltage protection stage. |
|  | »V>« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V> Reset« | Drop Out (is in percent of setting) |
|  | »V<« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V< Reset« | Drop Out (is in percent of setting) |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |







3.5.3.2.3 Protection Para / Set 1 ... 4 / V-Prot / V[3]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »Measuring Mode« | Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised |
|  | »Measuring method« | Measuring method: fundamental or rms or "sliding average supervision" |
|  | »Alarm Mode« | Alarm criterion for the voltage protection stage. |
|  | »V>« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V> Reset« | Drop Out (is in percent of setting) |
|  | »V<« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V< Reset« | Drop Out (is in percent of setting) |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |








3.5.3.2.4 Protection Para / Set 1 ... 4 / V-Prot / V[4]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »Measuring Mode« | Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised |
|  | »Measuring method« | Measuring method: fundamental or rms or "sliding average supervision" |
|  | »Alarm Mode« | Alarm criterion for the voltage protection stage. |
|  | »V>« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V> Reset« | Drop Out (is in percent of setting) |
|  | »V<« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V< Reset« | Drop Out (is in percent of setting) |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |

3.5.3.2.5 Protection Para / Set 1 ... 4 / V-Prot / V[5]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »Measuring Mode« | Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised |
|  | »Measuring method« | Measuring method: fundamental or rms or "sliding average supervision" |
|  | »Alarm Mode« | Alarm criterion for the voltage protection stage. |
|  | »V>« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V> Reset« | Drop Out (is in percent of setting) |
|  | »V<« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V< Reset« | Drop Out (is in percent of setting) |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |













3.5.3.2.6 Protection Para / Set 1 ... 4 / V-Prot / V[6]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »Measuring Mode« | Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised |
|  | »Measuring method« | Measuring method: fundamental or rms or "sliding average supervision" |
|  | »Alarm Mode« | Alarm criterion for the voltage protection stage. |
|  | »V>« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V> Reset« | Drop Out (is in percent of setting) |
|  | »V<« | If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started. The definition of V_n is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«: If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec}/\sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$. |
|  | »V< Reset« | Drop Out (is in percent of setting) |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |













3 Menu

3.5.3.2.7 Protection Para / Set 1 ... 4 / V-Prot / VG[1]

3.5.3.2.7 Protection Para / Set 1 ... 4 / V-Prot / VG[1]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »VX Source« | Selection if VG is measured or calculated (neutral voltage or residual voltage) |
|  | »Measuring method« | Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays) |
|  | »VG>« | If the pickup value is exceeded, the module/stage will be started. |
|  | »VG> Reset« | Drop Out (is in percent of setting) |
|  | »VG<« | Undervoltage Threshold |
|  | »VG< Reset« | Drop Out (is in percent of setting) |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |















3.5.3.2.8 Protection Para / Set 1 ... 4 / V-Prot / VG[2]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »VX Source« | Selection if VG is measured or calculated (neutral voltage or residual voltage) |
|  | »Measuring method« | Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays) |
|  | »VG>« | If the pickup value is exceeded, the module/stage will be started. |
|  | »VG> Reset« | Drop Out (is in percent of setting) |
|  | »VG<« | Undervoltage Threshold |
|  | »VG< Reset« | Drop Out (is in percent of setting) |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |













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3.5.3.2.9 Protection Para / Set 1 ... 4 / V-Prot / V012[1]

3.5.3.2.9 Protection Para / Set 1 ... 4 / V-Prot / V012[1]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »V1>« | Positive Phase Sequence Overvoltage |
|  | »V1> Reset« | Drop Out (is in percent of setting) |
|  | »V1<« | Positive Phase Sequence Undervoltage |
|  | »V1< Reset« | Drop Out (is in percent of setting) |
|  | »V2>« | Negative Phase Sequence Overvoltage |
|  | »V2> Reset« | Drop Out (is in percent of setting) |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |















3.5.3.2.10 Protection Para / Set 1 ... 4 / V-Prot / V012[2]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »V1>« | Positive Phase Sequence Overvoltage |
|  | »V1> Reset« | Drop Out (is in percent of setting) |
|  | »V1<« | Positive Phase Sequence Undervoltage |
|  | »V1< Reset« | Drop Out (is in percent of setting) |
|  | »V2>« | Negative Phase Sequence Overvoltage |
|  | »V2> Reset« | Drop Out (is in percent of setting) |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |















3 Menu

3.5.3.2.11 Protection Para / Set 1 ... 4 / V-Prot / V012[3]















3.5.3.2.11 Protection Para / Set 1 ... 4 / V-Prot / V012[3]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »V1>« | Positive Phase Sequence Overvoltage |
|  | »V1> Reset« | Drop Out (is in percent of setting) |
|  | »V1<« | Positive Phase Sequence Undervoltage |
|  | »V1< Reset« | Drop Out (is in percent of setting) |
|  | »V2>« | Negative Phase Sequence Overvoltage |
|  | »V2> Reset« | Drop Out (is in percent of setting) |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |















3.5.3.2.12 Protection Para / Set 1 ... 4 / V-Prot / V012[4]

| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »V1>« | Positive Phase Sequence Overvoltage |
|  | »V1> Reset« | Drop Out (is in percent of setting) |
|  | »V1<« | Positive Phase Sequence Undervoltage |
|  | »V1< Reset« | Drop Out (is in percent of setting) |
|  | »V2>« | Negative Phase Sequence Overvoltage |
|  | »V2> Reset« | Drop Out (is in percent of setting) |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |

3.5.3.2.13 Protection Para / Set 1 ... 4 / V-Prot / V012[5]















| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »V1>« | Positive Phase Sequence Overvoltage |
|  | »V1> Reset« | Drop Out (is in percent of setting) |
|  | »V1<« | Positive Phase Sequence Undervoltage |
|  | »V1< Reset« | Drop Out (is in percent of setting) |
|  | »V2>« | Negative Phase Sequence Overvoltage |
|  | »V2> Reset« | Drop Out (is in percent of setting) |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |

3.5.3.2.14 Protection Para / Set 1 ... 4 / V-Prot / V012[6]















| | | |
|---|-----------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »V1>« | Positive Phase Sequence Overvoltage |
|  | »V1> Reset« | Drop Out (is in percent of setting) |
|  | »V1<« | Positive Phase Sequence Undervoltage |
|  | »V1< Reset« | Drop Out (is in percent of setting) |
|  | »V2>« | Negative Phase Sequence Overvoltage |
|  | »V2> Reset« | Drop Out (is in percent of setting) |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »%(V2/V1)« | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. |
|  | »t« | Tripping delay |
|  | »Meas Circuit Superv« | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). |

3.5.3.3 Protection Para / Set 1 ... 4 / f-Prot

3.5.3.3.1 Protection Para / Set 1 ... 4 / f-Prot / f[1]

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »f>« | Pickup value for overfrequency. |
|  | »f<« | Pickup value for underfrequency. |
|  | »Freq. drop-off« | Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection. |
|  | »t« | Tripping delay |
|  | »df/dt« | Measured value (calculated): Rate-of-frequency-change. |
|  | »t-df/dt« | Trip delay df/dt |
|  | »DF« | Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0. |
|  | »DT« | Time interval of the maximum admissible rate-of-frequency-change. |
|  | »df/dt mode« | df/dt mode |
|  | »delta phi« | Measured value (calculated): Vector surge |















3.5.3.3.2 Protection Para / Set 1 ... 4 / f-Prot / f[2]

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »f>« | Pickup value for overfrequency. |
|  | »f<« | Pickup value for underfrequency. |
|  | »Freq. drop-off« | Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection. |
|  | »t« | Tripping delay |
|  | »df/dt« | Measured value (calculated): Rate-of-frequency-change. |
|  | »t-df/dt« | Trip delay df/dt |
|  | »DF« | Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0. |
|  | »DT« | Time interval of the maximum admissible rate-of-frequency-change. |
|  | »df/dt mode« | df/dt mode |
|  | »delta phi« | Measured value (calculated): Vector surge |















3 Menu

3.5.3.3.3 Protection Para / Set 1 ... 4 / f-Prot / f[3]

3.5.3.3.3 Protection Para / Set 1 ... 4 / f-Prot / f[3]

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »f>« | Pickup value for overfrequency. |
|  | »f<« | Pickup value for underfrequency. |
|  | »Freq. drop-off« | Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection. |
|  | »t« | Tripping delay |
|  | »df/dt« | Measured value (calculated): Rate-of-frequency-change. |
|  | »t-df/dt« | Trip delay df/dt |
|  | »DF« | Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0. |
|  | »DT« | Time interval of the maximum admissible rate-of-frequency-change. |
|  | »df/dt mode« | df/dt mode |
|  | »delta phi« | Measured value (calculated): Vector surge |















3.5.3.3.4 Protection Para / Set 1 ... 4 / f-Prot / f[4]

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »f>« | Pickup value for overfrequency. |
|  | »f<« | Pickup value for underfrequency. |
|  | »Freq. drop-off« | Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection. |
|  | »t« | Tripping delay |
|  | »df/dt« | Measured value (calculated): Rate-of-frequency-change. |
|  | »t-df/dt« | Trip delay df/dt |
|  | »DF« | Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0. |
|  | »DT« | Time interval of the maximum admissible rate-of-frequency-change. |
|  | »df/dt mode« | df/dt mode |
|  | »delta phi« | Measured value (calculated): Vector surge |















3 Menu

3.5.3.3.5 Protection Para / Set 1 ... 4 / f-Prot / f[5]

3.5.3.3.5 Protection Para / Set 1 ... 4 / f-Prot / f[5]





| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »f>« | Pickup value for overfrequency. |
|  | »f<« | Pickup value for underfrequency. |
|  | »Freq. drop-off« | Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection. |
|  | »t« | Tripping delay |
|  | »df/dt« | Measured value (calculated): Rate-of-frequency-change. |
|  | »t-df/dt« | Trip delay df/dt |
|  | »DF« | Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0. |
|  | »DT« | Time interval of the maximum admissible rate-of-frequency-change. |
|  | »df/dt mode« | df/dt mode |
|  | »delta phi« | Measured value (calculated): Vector surge |

3.5.3.3.6 Protection Para / Set 1 ... 4 / f-Prot / f[6]

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |
|  | »f>« | Pickup value for overfrequency. |
|  | »f<« | Pickup value for underfrequency. |
|  | »Freq. drop-off« | Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection. |
|  | »t« | Tripping delay |
|  | »df/dt« | Measured value (calculated): Rate-of-frequency-change. |
|  | »t-df/dt« | Trip delay df/dt |
|  | »DF« | Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0. |
|  | »DT« | Time interval of the maximum admissible rate-of-frequency-change. |
|  | »df/dt mode« | df/dt mode |
|  | »delta phi« | Measured value (calculated): Vector surge |

3.5.3.4 Protection Para / Set 1 ... 4 / ExP





3.5.3.4.1 Protection Para / Set 1 ... 4 / ExP / ExP[1]

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |





3 Menu

3.5.3.4.2 Protection Para / Set 1 ... 4 / ExP / ExP[2]





3.5.3.4.2 Protection Para / Set 1 ... 4 / ExP / ExP[2]

| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |

3.5.3.4.3 Protection Para / Set 1 ... 4 / ExP / ExP[3]




| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |

3.5.3.4.4 Protection Para / Set 1 ... 4 / ExP / ExP[4]




| | | |
|---|--------------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »Blo TripCmd« | Permanent blocking of the Trip Command of the module/stage. |
|  | »ExBlo TripCmd Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". |

3.5.3.5 Protection Para / Set 1 ... 4 / Supervision





3.5.3.5.1 Protection Para / Set 1 ... 4 / Supervision / CBF

| | | |
|---|------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »t-CBF« | If the delay time is expired, a CBF alarm is issued. |

3.5.3.5.2 Protection Para / Set 1 ... 4 / Supervision / TCS



| | | |
|---|------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | »t-TCS« | Delay time of the Trip Circuit Supervision |

3.5.3.5.3 Protection Para / Set 1 ... 4 / Supervision / VTS

| | | |
|---|----------------|--|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |
|  | » ΔV « | In order to prevent faulty tripping of phase selective protection functions that use the voltage as tripping criterion. If the difference of the residual voltage and the calculated value V_0 is higher than the pick up value ΔV , an alarm event effected after the excitation time. In such a case, the existence of a fuse failure, a broken wire or a faulty measuring circuit can be assumed. |
|  | »Alarm delay« | Alarm delay |




3.6 SysA

3.6.1 SysA / General Settings


| | | |
|---|------------|---|
|  | »Function« | Permanent activation or deactivation of module/stage. |
|  | »ExBlo Fc« | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". |

3.6.2 SysA / THD

3.6.2.1 SysA / THD / V THD

| | | |
|---|-------------|--|
|  | »Alarm« | Alarm |
|  | »Threshold« | Threshold (to be entered as primary value) |
|  | »t-Delay« | Tripping Delay |

3.7 Control

| | | |
|---|----------------|--------------|
|  | »Control Page« | Control Page |
|---|----------------|--------------|






3.7.1 Control / General Settings

| | | |
|---|-----------------------|-----------------------------|
| <input checked="" type="radio"/> | »Switching Authority« | Switching Authority |
| <input checked="" type="radio"/> | »NonInterl« | DC for Non-Interlocking |
|  | »Res NonL« | Resetmode Non-Interlocking |
|  | »Timeout NonL« | Timeout Non-Interlocking |
|  | »NonL Assign« | Assignment Non-Interlocking |




3.7.2 Control / SG


3.7.2.1 Control / SG / SG[1]

3.7.2.1.1 Control / SG / SG[1] / General Settings





| | | |
|---|-----------------------|---|
|  | »ON incl Prot ON« | The ON Command includes the ON Command issued by the Protection module. |
|  | »OFF incl TripCmd« | The OFF Command includes the OFF Command issued by the Protection module. |
|  | »t-Move ON« | Time to move to the ON Position |
|  | »t-Move OFF« | Time to move to the OFF Position |
|  | »t-Dwell« | Dwell time |
| <input checked="" type="radio"/> | »Manipulate Position« | WARNING! Fake Position - Manual Position Manipulation |

3.7.2.1.2 Control / SG / SG[1] / Trip Manager



| | | |
|---|---------------|---|
|  | »t-TripCmd« | Minimum hold time of the OFF-command (circuit breaker, load break switch) |
|  | »Latched« | Defines whether the Trip Command is latched. |
|  | »Ack TripCmd« | Ack TripCmd |

| | | |
|---|----------------------------------|--|
|  | »Off Cmd1« ... »Off Cmd30« | Off Command to the Circuit Breaker if the state of the assigned signal becomes true. |
|---|----------------------------------|--|




3.7.2.1.3 Control / SG / SG[1] / Pos Indicatr Wiring

| | | |
|---|-----------|--|
|  | »Aux ON« | The CB is in ON-position if the state of the assigned signal is true (52a). |
|  | »Aux OFF« | The CB is in OFF-position if the state of the assigned signal is true (52b). |
|  | »Ready« | Circuit breaker is ready for operation if the state of the assigned signal is true. This digital input can be used by some protective elements (if they are available within the device) like Auto Reclosure (AR), e.g. as a trigger signal. |
|  | »Removed« | The withdrawable circuit breaker is Removed |



3.7.2.1.4 Control / SG / SG[1] / Ex ON/OFF Cmd

| | | |
|---|------------|---|
|  | »SCmd ON« | Switching ON Command, e.g. the state of the Logics or the state of the digital input |
|  | »SCmd OFF« | Switching OFF Command, e.g. the state of the Logics or the state of the digital input |


3.7.2.1.5 Control / SG / SG[1] / Interlockings

| | | |
|---|---------------|---------------------------------|
|  | »Interl ON1« | Interlocking of the ON command |
|  | »Interl ON2« | Interlocking of the ON command |
|  | »Interl ON3« | Interlocking of the ON command |
|  | »Interl OFF1« | Interlocking of the OFF command |
|  | »Interl OFF2« | Interlocking of the OFF command |
|  | »Interl OFF3« | Interlocking of the OFF command |

3.7.2.1.6 Control / SG / SG[1] / Synchron Switchg















| | | |
|---|-------------------|--|
|  | »Synchronism« | Synchronism |
|  | »t-MaxSyncSuperv« | Synchron-Run timer: Max. time allowed for synchronizing process after a close initiate. Only used for GENERATOR2SYSTEM working mode. |

3.7.2.1.7 Control / SG / SG[1] / SG Wear

| | | |
|---|--------------------|--|
|  | »Operations Alarm« | Maximum number of operations. If the operations counter »TripCmd Cr« exceeds this limit then the signal »Operations Alarm« is set. |
|---|--------------------|--|

3.8 Logics















3.8.1 Logics / LE 1

| | | |
|---|-----------------------|---|
|  | »LE1.Gate« | Logic gate |
|  | »LE1.Input1« | Assignment of the Input Signal |
|  | »LE1.Inverting1« | Inverting the input signals. |
|  | »LE1.Input2« | Assignment of the Input Signal |
|  | »LE1.Inverting2« | Inverting the input signals. |
|  | »LE1.Input3« | Assignment of the Input Signal |
|  | »LE1.Inverting3« | Inverting the input signals. |
|  | »LE1.Input4« | Assignment of the Input Signal |
|  | »LE1.Inverting4« | Inverting the input signals. |
|  | »LE1.t-On Delay« | Switch On Delay |
|  | »LE1.t-Off Delay« | Switch Off Delay |
|  | »LE1.Reset Latched« | Reset Signal for the Latching |
|  | »LE1.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE1.Inverting Set« | Inverting the Setting Signal for the Latching |













3.8.2 Logics / LE 2

| | | |
|---|-----------------------|---|
|  | »LE2.Gate« | Logic gate |
|  | »LE2.Input1« | Assignment of the Input Signal |
|  | »LE2.Inverting1« | Inverting the input signals. |
|  | »LE2.Input2« | Assignment of the Input Signal |
|  | »LE2.Inverting2« | Inverting the input signals. |
|  | »LE2.Input3« | Assignment of the Input Signal |
|  | »LE2.Inverting3« | Inverting the input signals. |
|  | »LE2.Input4« | Assignment of the Input Signal |
|  | »LE2.Inverting4« | Inverting the input signals. |
|  | »LE2.t-On Delay« | Switch On Delay |
|  | »LE2.t-Off Delay« | Switch Off Delay |
|  | »LE2.Reset Latched« | Reset Signal for the Latching |
|  | »LE2.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE2.Inverting Set« | Inverting the Setting Signal for the Latching |


3.8.3 Logics / LE 3

| | | |
|---|-----------------------|---|
|  | »LE3.Gate« | Logic gate |
|  | »LE3.Input1« | Assignment of the Input Signal |
|  | »LE3.Inverting1« | Inverting the input signals. |
|  | »LE3.Input2« | Assignment of the Input Signal |
|  | »LE3.Inverting2« | Inverting the input signals. |
|  | »LE3.Input3« | Assignment of the Input Signal |
|  | »LE3.Inverting3« | Inverting the input signals. |
|  | »LE3.Input4« | Assignment of the Input Signal |
|  | »LE3.Inverting4« | Inverting the input signals. |
|  | »LE3.t-On Delay« | Switch On Delay |
|  | »LE3.t-Off Delay« | Switch Off Delay |
|  | »LE3.Reset Latched« | Reset Signal for the Latching |
|  | »LE3.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE3.Inverting Set« | Inverting the Setting Signal for the Latching |










3.8.4 Logics / LE 4

| | | |
|---|-----------------------|---|
|  | »LE4.Gate« | Logic gate |
|  | »LE4.Input1« | Assignment of the Input Signal |
|  | »LE4.Inverting1« | Inverting the input signals. |
|  | »LE4.Input2« | Assignment of the Input Signal |
|  | »LE4.Inverting2« | Inverting the input signals. |
|  | »LE4.Input3« | Assignment of the Input Signal |
|  | »LE4.Inverting3« | Inverting the input signals. |
|  | »LE4.Input4« | Assignment of the Input Signal |
|  | »LE4.Inverting4« | Inverting the input signals. |
|  | »LE4.t-On Delay« | Switch On Delay |
|  | »LE4.t-Off Delay« | Switch Off Delay |
|  | »LE4.Reset Latched« | Reset Signal for the Latching |
|  | »LE4.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE4.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.5 Logics / LE 5

| | | |
|---|-----------------------|---|
|  | »LE5.Gate« | Logic gate |
|  | »LE5.Input1« | Assignment of the Input Signal |
|  | »LE5.Inverting1« | Inverting the input signals. |
|  | »LE5.Input2« | Assignment of the Input Signal |
|  | »LE5.Inverting2« | Inverting the input signals. |
|  | »LE5.Input3« | Assignment of the Input Signal |
|  | »LE5.Inverting3« | Inverting the input signals. |
|  | »LE5.Input4« | Assignment of the Input Signal |
|  | »LE5.Inverting4« | Inverting the input signals. |
|  | »LE5.t-On Delay« | Switch On Delay |
|  | »LE5.t-Off Delay« | Switch Off Delay |
|  | »LE5.Reset Latched« | Reset Signal for the Latching |
|  | »LE5.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE5.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.6 Logics / LE 6

| | | |
|---|-----------------------|---|
|  | »LE6.Gate« | Logic gate |
|  | »LE6.Input1« | Assignment of the Input Signal |
|  | »LE6.Inverting1« | Inverting the input signals. |
|  | »LE6.Input2« | Assignment of the Input Signal |
|  | »LE6.Inverting2« | Inverting the input signals. |
|  | »LE6.Input3« | Assignment of the Input Signal |
|  | »LE6.Inverting3« | Inverting the input signals. |
|  | »LE6.Input4« | Assignment of the Input Signal |
|  | »LE6.Inverting4« | Inverting the input signals. |
|  | »LE6.t-On Delay« | Switch On Delay |
|  | »LE6.t-Off Delay« | Switch Off Delay |
|  | »LE6.Reset Latched« | Reset Signal for the Latching |
|  | »LE6.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE6.Inverting Set« | Inverting the Setting Signal for the Latching |




3.8.7 Logics / LE 7

| | | |
|---|-----------------------|---|
|  | »LE7.Gate« | Logic gate |
|  | »LE7.Input1« | Assignment of the Input Signal |
|  | »LE7.Inverting1« | Inverting the input signals. |
|  | »LE7.Input2« | Assignment of the Input Signal |
|  | »LE7.Inverting2« | Inverting the input signals. |
|  | »LE7.Input3« | Assignment of the Input Signal |
|  | »LE7.Inverting3« | Inverting the input signals. |
|  | »LE7.Input4« | Assignment of the Input Signal |
|  | »LE7.Inverting4« | Inverting the input signals. |
|  | »LE7.t-On Delay« | Switch On Delay |
|  | »LE7.t-Off Delay« | Switch Off Delay |
|  | »LE7.Reset Latched« | Reset Signal for the Latching |
|  | »LE7.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE7.Inverting Set« | Inverting the Setting Signal for the Latching |








3.8.8 Logics / LE 8

| | | |
|---|-----------------------|---|
|  | »LE8.Gate« | Logic gate |
|  | »LE8.Input1« | Assignment of the Input Signal |
|  | »LE8.Inverting1« | Inverting the input signals. |
|  | »LE8.Input2« | Assignment of the Input Signal |
|  | »LE8.Inverting2« | Inverting the input signals. |
|  | »LE8.Input3« | Assignment of the Input Signal |
|  | »LE8.Inverting3« | Inverting the input signals. |
|  | »LE8.Input4« | Assignment of the Input Signal |
|  | »LE8.Inverting4« | Inverting the input signals. |
|  | »LE8.t-On Delay« | Switch On Delay |
|  | »LE8.t-Off Delay« | Switch Off Delay |
|  | »LE8.Reset Latched« | Reset Signal for the Latching |
|  | »LE8.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE8.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.9 Logics / LE 9

| | | |
|---|-----------------------|---|
|  | »LE9.Gate« | Logic gate |
|  | »LE9.Input1« | Assignment of the Input Signal |
|  | »LE9.Inverting1« | Inverting the input signals. |
|  | »LE9.Input2« | Assignment of the Input Signal |
|  | »LE9.Inverting2« | Inverting the input signals. |
|  | »LE9.Input3« | Assignment of the Input Signal |
|  | »LE9.Inverting3« | Inverting the input signals. |
|  | »LE9.Input4« | Assignment of the Input Signal |
|  | »LE9.Inverting4« | Inverting the input signals. |
|  | »LE9.t-On Delay« | Switch On Delay |
|  | »LE9.t-Off Delay« | Switch Off Delay |
|  | »LE9.Reset Latched« | Reset Signal for the Latching |
|  | »LE9.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE9.Inverting Set« | Inverting the Setting Signal for the Latching |









3.8.10 Logics / LE 10

| | | |
|---|------------------------|---|
|  | »LE10.Gate« | Logic gate |
|  | »LE10.Input1« | Assignment of the Input Signal |
|  | »LE10.Inverting1« | Inverting the input signals. |
|  | »LE10.Input2« | Assignment of the Input Signal |
|  | »LE10.Inverting2« | Inverting the input signals. |
|  | »LE10.Input3« | Assignment of the Input Signal |
|  | »LE10.Inverting3« | Inverting the input signals. |
|  | »LE10.Input4« | Assignment of the Input Signal |
|  | »LE10.Inverting4« | Inverting the input signals. |
|  | »LE10.t-On Delay« | Switch On Delay |
|  | »LE10.t-Off Delay« | Switch Off Delay |
|  | »LE10.Reset Latched« | Reset Signal for the Latching |
|  | »LE10.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE10.Inverting Set« | Inverting the Setting Signal for the Latching |













3.8.11 Logics / LE 11

| | | |
|---|------------------------|---|
|  | »LE11.Gate« | Logic gate |
|  | »LE11.Input1« | Assignment of the Input Signal |
|  | »LE11.Inverting1« | Inverting the input signals. |
|  | »LE11.Input2« | Assignment of the Input Signal |
|  | »LE11.Inverting2« | Inverting the input signals. |
|  | »LE11.Input3« | Assignment of the Input Signal |
|  | »LE11.Inverting3« | Inverting the input signals. |
|  | »LE11.Input4« | Assignment of the Input Signal |
|  | »LE11.Inverting4« | Inverting the input signals. |
|  | »LE11.t-On Delay« | Switch On Delay |
|  | »LE11.t-Off Delay« | Switch Off Delay |
|  | »LE11.Reset Latched« | Reset Signal for the Latching |
|  | »LE11.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE11.Inverting Set« | Inverting the Setting Signal for the Latching |




3.8.12 Logics / LE 12

| | | |
|---|------------------------|---|
|  | »LE12.Gate« | Logic gate |
|  | »LE12.Input1« | Assignment of the Input Signal |
|  | »LE12.Inverting1« | Inverting the input signals. |
|  | »LE12.Input2« | Assignment of the Input Signal |
|  | »LE12.Inverting2« | Inverting the input signals. |
|  | »LE12.Input3« | Assignment of the Input Signal |
|  | »LE12.Inverting3« | Inverting the input signals. |
|  | »LE12.Input4« | Assignment of the Input Signal |
|  | »LE12.Inverting4« | Inverting the input signals. |
|  | »LE12.t-On Delay« | Switch On Delay |
|  | »LE12.t-Off Delay« | Switch Off Delay |
|  | »LE12.Reset Latched« | Reset Signal for the Latching |
|  | »LE12.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE12.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.13 Logics / LE 13

| | | |
|---|------------------------|---|
|  | »LE13.Gate« | Logic gate |
|  | »LE13.Input1« | Assignment of the Input Signal |
|  | »LE13.Inverting1« | Inverting the input signals. |
|  | »LE13.Input2« | Assignment of the Input Signal |
|  | »LE13.Inverting2« | Inverting the input signals. |
|  | »LE13.Input3« | Assignment of the Input Signal |
|  | »LE13.Inverting3« | Inverting the input signals. |
|  | »LE13.Input4« | Assignment of the Input Signal |
|  | »LE13.Inverting4« | Inverting the input signals. |
|  | »LE13.t-On Delay« | Switch On Delay |
|  | »LE13.t-Off Delay« | Switch Off Delay |
|  | »LE13.Reset Latched« | Reset Signal for the Latching |
|  | »LE13.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE13.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.14 Logics / LE 14

| | | |
|---|------------------------|---|
|  | »LE14.Gate« | Logic gate |
|  | »LE14.Input1« | Assignment of the Input Signal |
|  | »LE14.Inverting1« | Inverting the input signals. |
|  | »LE14.Input2« | Assignment of the Input Signal |
|  | »LE14.Inverting2« | Inverting the input signals. |
|  | »LE14.Input3« | Assignment of the Input Signal |
|  | »LE14.Inverting3« | Inverting the input signals. |
|  | »LE14.Input4« | Assignment of the Input Signal |
|  | »LE14.Inverting4« | Inverting the input signals. |
|  | »LE14.t-On Delay« | Switch On Delay |
|  | »LE14.t-Off Delay« | Switch Off Delay |
|  | »LE14.Reset Latched« | Reset Signal for the Latching |
|  | »LE14.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE14.Inverting Set« | Inverting the Setting Signal for the Latching |













3.8.15 Logics / LE 15

| | | |
|---|------------------------|---|
|  | »LE15.Gate« | Logic gate |
|  | »LE15.Input1« | Assignment of the Input Signal |
|  | »LE15.Inverting1« | Inverting the input signals. |
|  | »LE15.Input2« | Assignment of the Input Signal |
|  | »LE15.Inverting2« | Inverting the input signals. |
|  | »LE15.Input3« | Assignment of the Input Signal |
|  | »LE15.Inverting3« | Inverting the input signals. |
|  | »LE15.Input4« | Assignment of the Input Signal |
|  | »LE15.Inverting4« | Inverting the input signals. |
|  | »LE15.t-On Delay« | Switch On Delay |
|  | »LE15.t-Off Delay« | Switch Off Delay |
|  | »LE15.Reset Latched« | Reset Signal for the Latching |
|  | »LE15.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE15.Inverting Set« | Inverting the Setting Signal for the Latching |








3.8.16 Logics / LE 16

| | | |
|---|------------------------|---|
|  | »LE16.Gate« | Logic gate |
|  | »LE16.Input1« | Assignment of the Input Signal |
|  | »LE16.Inverting1« | Inverting the input signals. |
|  | »LE16.Input2« | Assignment of the Input Signal |
|  | »LE16.Inverting2« | Inverting the input signals. |
|  | »LE16.Input3« | Assignment of the Input Signal |
|  | »LE16.Inverting3« | Inverting the input signals. |
|  | »LE16.Input4« | Assignment of the Input Signal |
|  | »LE16.Inverting4« | Inverting the input signals. |
|  | »LE16.t-On Delay« | Switch On Delay |
|  | »LE16.t-Off Delay« | Switch Off Delay |
|  | »LE16.Reset Latched« | Reset Signal for the Latching |
|  | »LE16.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE16.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.17 Logics / LE 17

| | | |
|---|------------------------|---|
|  | »LE17.Gate« | Logic gate |
|  | »LE17.Input1« | Assignment of the Input Signal |
|  | »LE17.Inverting1« | Inverting the input signals. |
|  | »LE17.Input2« | Assignment of the Input Signal |
|  | »LE17.Inverting2« | Inverting the input signals. |
|  | »LE17.Input3« | Assignment of the Input Signal |
|  | »LE17.Inverting3« | Inverting the input signals. |
|  | »LE17.Input4« | Assignment of the Input Signal |
|  | »LE17.Inverting4« | Inverting the input signals. |
|  | »LE17.t-On Delay« | Switch On Delay |
|  | »LE17.t-Off Delay« | Switch Off Delay |
|  | »LE17.Reset Latched« | Reset Signal for the Latching |
|  | »LE17.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE17.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.18 Logics / LE 18

| | | |
|---|------------------------|---|
|  | »LE18.Gate« | Logic gate |
|  | »LE18.Input1« | Assignment of the Input Signal |
|  | »LE18.Inverting1« | Inverting the input signals. |
|  | »LE18.Input2« | Assignment of the Input Signal |
|  | »LE18.Inverting2« | Inverting the input signals. |
|  | »LE18.Input3« | Assignment of the Input Signal |
|  | »LE18.Inverting3« | Inverting the input signals. |
|  | »LE18.Input4« | Assignment of the Input Signal |
|  | »LE18.Inverting4« | Inverting the input signals. |
|  | »LE18.t-On Delay« | Switch On Delay |
|  | »LE18.t-Off Delay« | Switch Off Delay |
|  | »LE18.Reset Latched« | Reset Signal for the Latching |
|  | »LE18.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE18.Inverting Set« | Inverting the Setting Signal for the Latching |













3.8.19 Logics / LE 19

| | | |
|---|------------------------|---|
|  | »LE19.Gate« | Logic gate |
|  | »LE19.Input1« | Assignment of the Input Signal |
|  | »LE19.Inverting1« | Inverting the input signals. |
|  | »LE19.Input2« | Assignment of the Input Signal |
|  | »LE19.Inverting2« | Inverting the input signals. |
|  | »LE19.Input3« | Assignment of the Input Signal |
|  | »LE19.Inverting3« | Inverting the input signals. |
|  | »LE19.Input4« | Assignment of the Input Signal |
|  | »LE19.Inverting4« | Inverting the input signals. |
|  | »LE19.t-On Delay« | Switch On Delay |
|  | »LE19.t-Off Delay« | Switch Off Delay |
|  | »LE19.Reset Latched« | Reset Signal for the Latching |
|  | »LE19.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE19.Inverting Set« | Inverting the Setting Signal for the Latching |










3.8.20 Logics / LE 20

| | | |
|---|------------------------|---|
|  | »LE20.Gate« | Logic gate |
|  | »LE20.Input1« | Assignment of the Input Signal |
|  | »LE20.Inverting1« | Inverting the input signals. |
|  | »LE20.Input2« | Assignment of the Input Signal |
|  | »LE20.Inverting2« | Inverting the input signals. |
|  | »LE20.Input3« | Assignment of the Input Signal |
|  | »LE20.Inverting3« | Inverting the input signals. |
|  | »LE20.Input4« | Assignment of the Input Signal |
|  | »LE20.Inverting4« | Inverting the input signals. |
|  | »LE20.t-On Delay« | Switch On Delay |
|  | »LE20.t-Off Delay« | Switch Off Delay |
|  | »LE20.Reset Latched« | Reset Signal for the Latching |
|  | »LE20.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE20.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.21 Logics / LE 21

| | | |
|---|------------------------|---|
|  | »LE21.Gate« | Logic gate |
|  | »LE21.Input1« | Assignment of the Input Signal |
|  | »LE21.Inverting1« | Inverting the input signals. |
|  | »LE21.Input2« | Assignment of the Input Signal |
|  | »LE21.Inverting2« | Inverting the input signals. |
|  | »LE21.Input3« | Assignment of the Input Signal |
|  | »LE21.Inverting3« | Inverting the input signals. |
|  | »LE21.Input4« | Assignment of the Input Signal |
|  | »LE21.Inverting4« | Inverting the input signals. |
|  | »LE21.t-On Delay« | Switch On Delay |
|  | »LE21.t-Off Delay« | Switch Off Delay |
|  | »LE21.Reset Latched« | Reset Signal for the Latching |
|  | »LE21.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE21.Inverting Set« | Inverting the Setting Signal for the Latching |







3.8.22 Logics / LE 22

| | | |
|---|------------------------|---|
|  | »LE22.Gate« | Logic gate |
|  | »LE22.Input1« | Assignment of the Input Signal |
|  | »LE22.Inverting1« | Inverting the input signals. |
|  | »LE22.Input2« | Assignment of the Input Signal |
|  | »LE22.Inverting2« | Inverting the input signals. |
|  | »LE22.Input3« | Assignment of the Input Signal |
|  | »LE22.Inverting3« | Inverting the input signals. |
|  | »LE22.Input4« | Assignment of the Input Signal |
|  | »LE22.Inverting4« | Inverting the input signals. |
|  | »LE22.t-On Delay« | Switch On Delay |
|  | »LE22.t-Off Delay« | Switch Off Delay |
|  | »LE22.Reset Latched« | Reset Signal for the Latching |
|  | »LE22.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE22.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.23 Logics / LE 23

| | | |
|---|------------------------|---|
|  | »LE23.Gate« | Logic gate |
|  | »LE23.Input1« | Assignment of the Input Signal |
|  | »LE23.Inverting1« | Inverting the input signals. |
|  | »LE23.Input2« | Assignment of the Input Signal |
|  | »LE23.Inverting2« | Inverting the input signals. |
|  | »LE23.Input3« | Assignment of the Input Signal |
|  | »LE23.Inverting3« | Inverting the input signals. |
|  | »LE23.Input4« | Assignment of the Input Signal |
|  | »LE23.Inverting4« | Inverting the input signals. |
|  | »LE23.t-On Delay« | Switch On Delay |
|  | »LE23.t-Off Delay« | Switch Off Delay |
|  | »LE23.Reset Latched« | Reset Signal for the Latching |
|  | »LE23.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE23.Inverting Set« | Inverting the Setting Signal for the Latching |







3.8.24 Logics / LE 24

| | | |
|---|------------------------|---|
|  | »LE24.Gate« | Logic gate |
|  | »LE24.Input1« | Assignment of the Input Signal |
|  | »LE24.Inverting1« | Inverting the input signals. |
|  | »LE24.Input2« | Assignment of the Input Signal |
|  | »LE24.Inverting2« | Inverting the input signals. |
|  | »LE24.Input3« | Assignment of the Input Signal |
|  | »LE24.Inverting3« | Inverting the input signals. |
|  | »LE24.Input4« | Assignment of the Input Signal |
|  | »LE24.Inverting4« | Inverting the input signals. |
|  | »LE24.t-On Delay« | Switch On Delay |
|  | »LE24.t-Off Delay« | Switch Off Delay |
|  | »LE24.Reset Latched« | Reset Signal for the Latching |
|  | »LE24.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE24.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.25 Logics / LE 25

| | | |
|---|------------------------|---|
|  | »LE25.Gate« | Logic gate |
|  | »LE25.Input1« | Assignment of the Input Signal |
|  | »LE25.Inverting1« | Inverting the input signals. |
|  | »LE25.Input2« | Assignment of the Input Signal |
|  | »LE25.Inverting2« | Inverting the input signals. |
|  | »LE25.Input3« | Assignment of the Input Signal |
|  | »LE25.Inverting3« | Inverting the input signals. |
|  | »LE25.Input4« | Assignment of the Input Signal |
|  | »LE25.Inverting4« | Inverting the input signals. |
|  | »LE25.t-On Delay« | Switch On Delay |
|  | »LE25.t-Off Delay« | Switch Off Delay |
|  | »LE25.Reset Latched« | Reset Signal for the Latching |
|  | »LE25.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE25.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.26 Logics / LE 26

| | | |
|---|------------------------|---|
|  | »LE26.Gate« | Logic gate |
|  | »LE26.Input1« | Assignment of the Input Signal |
|  | »LE26.Inverting1« | Inverting the input signals. |
|  | »LE26.Input2« | Assignment of the Input Signal |
|  | »LE26.Inverting2« | Inverting the input signals. |
|  | »LE26.Input3« | Assignment of the Input Signal |
|  | »LE26.Inverting3« | Inverting the input signals. |
|  | »LE26.Input4« | Assignment of the Input Signal |
|  | »LE26.Inverting4« | Inverting the input signals. |
|  | »LE26.t-On Delay« | Switch On Delay |
|  | »LE26.t-Off Delay« | Switch Off Delay |
|  | »LE26.Reset Latched« | Reset Signal for the Latching |
|  | »LE26.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE26.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.27 Logics / LE 27

| | | |
|---|------------------------|---|
|  | »LE27.Gate« | Logic gate |
|  | »LE27.Input1« | Assignment of the Input Signal |
|  | »LE27.Inverting1« | Inverting the input signals. |
|  | »LE27.Input2« | Assignment of the Input Signal |
|  | »LE27.Inverting2« | Inverting the input signals. |
|  | »LE27.Input3« | Assignment of the Input Signal |
|  | »LE27.Inverting3« | Inverting the input signals. |
|  | »LE27.Input4« | Assignment of the Input Signal |
|  | »LE27.Inverting4« | Inverting the input signals. |
|  | »LE27.t-On Delay« | Switch On Delay |
|  | »LE27.t-Off Delay« | Switch Off Delay |
|  | »LE27.Reset Latched« | Reset Signal for the Latching |
|  | »LE27.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE27.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.28 Logics / LE 28

| | | |
|---|------------------------|---|
|  | »LE28.Gate« | Logic gate |
|  | »LE28.Input1« | Assignment of the Input Signal |
|  | »LE28.Inverting1« | Inverting the input signals. |
|  | »LE28.Input2« | Assignment of the Input Signal |
|  | »LE28.Inverting2« | Inverting the input signals. |
|  | »LE28.Input3« | Assignment of the Input Signal |
|  | »LE28.Inverting3« | Inverting the input signals. |
|  | »LE28.Input4« | Assignment of the Input Signal |
|  | »LE28.Inverting4« | Inverting the input signals. |
|  | »LE28.t-On Delay« | Switch On Delay |
|  | »LE28.t-Off Delay« | Switch Off Delay |
|  | »LE28.Reset Latched« | Reset Signal for the Latching |
|  | »LE28.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE28.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.29 Logics / LE 29

| | | |
|---|------------------------|---|
|  | »LE29.Gate« | Logic gate |
|  | »LE29.Input1« | Assignment of the Input Signal |
|  | »LE29.Inverting1« | Inverting the input signals. |
|  | »LE29.Input2« | Assignment of the Input Signal |
|  | »LE29.Inverting2« | Inverting the input signals. |
|  | »LE29.Input3« | Assignment of the Input Signal |
|  | »LE29.Inverting3« | Inverting the input signals. |
|  | »LE29.Input4« | Assignment of the Input Signal |
|  | »LE29.Inverting4« | Inverting the input signals. |
|  | »LE29.t-On Delay« | Switch On Delay |
|  | »LE29.t-Off Delay« | Switch Off Delay |
|  | »LE29.Reset Latched« | Reset Signal for the Latching |
|  | »LE29.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE29.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.30 Logics / LE 30

| | | |
|---|------------------------|---|
|  | »LE30.Gate« | Logic gate |
|  | »LE30.Input1« | Assignment of the Input Signal |
|  | »LE30.Inverting1« | Inverting the input signals. |
|  | »LE30.Input2« | Assignment of the Input Signal |
|  | »LE30.Inverting2« | Inverting the input signals. |
|  | »LE30.Input3« | Assignment of the Input Signal |
|  | »LE30.Inverting3« | Inverting the input signals. |
|  | »LE30.Input4« | Assignment of the Input Signal |
|  | »LE30.Inverting4« | Inverting the input signals. |
|  | »LE30.t-On Delay« | Switch On Delay |
|  | »LE30.t-Off Delay« | Switch Off Delay |
|  | »LE30.Reset Latched« | Reset Signal for the Latching |
|  | »LE30.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE30.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.31 Logics / LE 31

| | | |
|---|------------------------|---|
|  | »LE31.Gate« | Logic gate |
|  | »LE31.Input1« | Assignment of the Input Signal |
|  | »LE31.Inverting1« | Inverting the input signals. |
|  | »LE31.Input2« | Assignment of the Input Signal |
|  | »LE31.Inverting2« | Inverting the input signals. |
|  | »LE31.Input3« | Assignment of the Input Signal |
|  | »LE31.Inverting3« | Inverting the input signals. |
|  | »LE31.Input4« | Assignment of the Input Signal |
|  | »LE31.Inverting4« | Inverting the input signals. |
|  | »LE31.t-On Delay« | Switch On Delay |
|  | »LE31.t-Off Delay« | Switch Off Delay |
|  | »LE31.Reset Latched« | Reset Signal for the Latching |
|  | »LE31.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE31.Inverting Set« | Inverting the Setting Signal for the Latching |







3.8.32 Logics / LE 32

| | | |
|---|------------------------|---|
|  | »LE32.Gate« | Logic gate |
|  | »LE32.Input1« | Assignment of the Input Signal |
|  | »LE32.Inverting1« | Inverting the input signals. |
|  | »LE32.Input2« | Assignment of the Input Signal |
|  | »LE32.Inverting2« | Inverting the input signals. |
|  | »LE32.Input3« | Assignment of the Input Signal |
|  | »LE32.Inverting3« | Inverting the input signals. |
|  | »LE32.Input4« | Assignment of the Input Signal |
|  | »LE32.Inverting4« | Inverting the input signals. |
|  | »LE32.t-On Delay« | Switch On Delay |
|  | »LE32.t-Off Delay« | Switch Off Delay |
|  | »LE32.Reset Latched« | Reset Signal for the Latching |
|  | »LE32.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE32.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.33 Logics / LE 33

| | | |
|---|------------------------|---|
|  | »LE33.Gate« | Logic gate |
|  | »LE33.Input1« | Assignment of the Input Signal |
|  | »LE33.Inverting1« | Inverting the input signals. |
|  | »LE33.Input2« | Assignment of the Input Signal |
|  | »LE33.Inverting2« | Inverting the input signals. |
|  | »LE33.Input3« | Assignment of the Input Signal |
|  | »LE33.Inverting3« | Inverting the input signals. |
|  | »LE33.Input4« | Assignment of the Input Signal |
|  | »LE33.Inverting4« | Inverting the input signals. |
|  | »LE33.t-On Delay« | Switch On Delay |
|  | »LE33.t-Off Delay« | Switch Off Delay |
|  | »LE33.Reset Latched« | Reset Signal for the Latching |
|  | »LE33.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE33.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.34 Logics / LE 34

| | | |
|---|------------------------|---|
|  | »LE34.Gate« | Logic gate |
|  | »LE34.Input1« | Assignment of the Input Signal |
|  | »LE34.Inverting1« | Inverting the input signals. |
|  | »LE34.Input2« | Assignment of the Input Signal |
|  | »LE34.Inverting2« | Inverting the input signals. |
|  | »LE34.Input3« | Assignment of the Input Signal |
|  | »LE34.Inverting3« | Inverting the input signals. |
|  | »LE34.Input4« | Assignment of the Input Signal |
|  | »LE34.Inverting4« | Inverting the input signals. |
|  | »LE34.t-On Delay« | Switch On Delay |
|  | »LE34.t-Off Delay« | Switch Off Delay |
|  | »LE34.Reset Latched« | Reset Signal for the Latching |
|  | »LE34.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE34.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.35 Logics / LE 35

| | | |
|---|------------------------|---|
|  | »LE35.Gate« | Logic gate |
|  | »LE35.Input1« | Assignment of the Input Signal |
|  | »LE35.Inverting1« | Inverting the input signals. |
|  | »LE35.Input2« | Assignment of the Input Signal |
|  | »LE35.Inverting2« | Inverting the input signals. |
|  | »LE35.Input3« | Assignment of the Input Signal |
|  | »LE35.Inverting3« | Inverting the input signals. |
|  | »LE35.Input4« | Assignment of the Input Signal |
|  | »LE35.Inverting4« | Inverting the input signals. |
|  | »LE35.t-On Delay« | Switch On Delay |
|  | »LE35.t-Off Delay« | Switch Off Delay |
|  | »LE35.Reset Latched« | Reset Signal for the Latching |
|  | »LE35.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE35.Inverting Set« | Inverting the Setting Signal for the Latching |









3.8.36 Logics / LE 36

| | | |
|---|------------------------|---|
|  | »LE36.Gate« | Logic gate |
|  | »LE36.Input1« | Assignment of the Input Signal |
|  | »LE36.Inverting1« | Inverting the input signals. |
|  | »LE36.Input2« | Assignment of the Input Signal |
|  | »LE36.Inverting2« | Inverting the input signals. |
|  | »LE36.Input3« | Assignment of the Input Signal |
|  | »LE36.Inverting3« | Inverting the input signals. |
|  | »LE36.Input4« | Assignment of the Input Signal |
|  | »LE36.Inverting4« | Inverting the input signals. |
|  | »LE36.t-On Delay« | Switch On Delay |
|  | »LE36.t-Off Delay« | Switch Off Delay |
|  | »LE36.Reset Latched« | Reset Signal for the Latching |
|  | »LE36.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE36.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.37 Logics / LE 37

| | | |
|---|------------------------|---|
|  | »LE37.Gate« | Logic gate |
|  | »LE37.Input1« | Assignment of the Input Signal |
|  | »LE37.Inverting1« | Inverting the input signals. |
|  | »LE37.Input2« | Assignment of the Input Signal |
|  | »LE37.Inverting2« | Inverting the input signals. |
|  | »LE37.Input3« | Assignment of the Input Signal |
|  | »LE37.Inverting3« | Inverting the input signals. |
|  | »LE37.Input4« | Assignment of the Input Signal |
|  | »LE37.Inverting4« | Inverting the input signals. |
|  | »LE37.t-On Delay« | Switch On Delay |
|  | »LE37.t-Off Delay« | Switch Off Delay |
|  | »LE37.Reset Latched« | Reset Signal for the Latching |
|  | »LE37.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE37.Inverting Set« | Inverting the Setting Signal for the Latching |







3.8.38 Logics / LE 38

| | | |
|---|------------------------|---|
|  | »LE38.Gate« | Logic gate |
|  | »LE38.Input1« | Assignment of the Input Signal |
|  | »LE38.Inverting1« | Inverting the input signals. |
|  | »LE38.Input2« | Assignment of the Input Signal |
|  | »LE38.Inverting2« | Inverting the input signals. |
|  | »LE38.Input3« | Assignment of the Input Signal |
|  | »LE38.Inverting3« | Inverting the input signals. |
|  | »LE38.Input4« | Assignment of the Input Signal |
|  | »LE38.Inverting4« | Inverting the input signals. |
|  | »LE38.t-On Delay« | Switch On Delay |
|  | »LE38.t-Off Delay« | Switch Off Delay |
|  | »LE38.Reset Latched« | Reset Signal for the Latching |
|  | »LE38.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE38.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.39 Logics / LE 39

| | | |
|---|------------------------|---|
|  | »LE39.Gate« | Logic gate |
|  | »LE39.Input1« | Assignment of the Input Signal |
|  | »LE39.Inverting1« | Inverting the input signals. |
|  | »LE39.Input2« | Assignment of the Input Signal |
|  | »LE39.Inverting2« | Inverting the input signals. |
|  | »LE39.Input3« | Assignment of the Input Signal |
|  | »LE39.Inverting3« | Inverting the input signals. |
|  | »LE39.Input4« | Assignment of the Input Signal |
|  | »LE39.Inverting4« | Inverting the input signals. |
|  | »LE39.t-On Delay« | Switch On Delay |
|  | »LE39.t-Off Delay« | Switch Off Delay |
|  | »LE39.Reset Latched« | Reset Signal for the Latching |
|  | »LE39.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE39.Inverting Set« | Inverting the Setting Signal for the Latching |







3.8.40 Logics / LE 40

| | | |
|---|------------------------|---|
|  | »LE40.Gate« | Logic gate |
|  | »LE40.Input1« | Assignment of the Input Signal |
|  | »LE40.Inverting1« | Inverting the input signals. |
|  | »LE40.Input2« | Assignment of the Input Signal |
|  | »LE40.Inverting2« | Inverting the input signals. |
|  | »LE40.Input3« | Assignment of the Input Signal |
|  | »LE40.Inverting3« | Inverting the input signals. |
|  | »LE40.Input4« | Assignment of the Input Signal |
|  | »LE40.Inverting4« | Inverting the input signals. |
|  | »LE40.t-On Delay« | Switch On Delay |
|  | »LE40.t-Off Delay« | Switch Off Delay |
|  | »LE40.Reset Latched« | Reset Signal for the Latching |
|  | »LE40.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE40.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.41 Logics / LE 41

| | | |
|---|------------------------|---|
|  | »LE41.Gate« | Logic gate |
|  | »LE41.Input1« | Assignment of the Input Signal |
|  | »LE41.Inverting1« | Inverting the input signals. |
|  | »LE41.Input2« | Assignment of the Input Signal |
|  | »LE41.Inverting2« | Inverting the input signals. |
|  | »LE41.Input3« | Assignment of the Input Signal |
|  | »LE41.Inverting3« | Inverting the input signals. |
|  | »LE41.Input4« | Assignment of the Input Signal |
|  | »LE41.Inverting4« | Inverting the input signals. |
|  | »LE41.t-On Delay« | Switch On Delay |
|  | »LE41.t-Off Delay« | Switch Off Delay |
|  | »LE41.Reset Latched« | Reset Signal for the Latching |
|  | »LE41.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE41.Inverting Set« | Inverting the Setting Signal for the Latching |


3.8.42 Logics / LE 42

| | | |
|---|------------------------|---|
|  | »LE42.Gate« | Logic gate |
|  | »LE42.Input1« | Assignment of the Input Signal |
|  | »LE42.Inverting1« | Inverting the input signals. |
|  | »LE42.Input2« | Assignment of the Input Signal |
|  | »LE42.Inverting2« | Inverting the input signals. |
|  | »LE42.Input3« | Assignment of the Input Signal |
|  | »LE42.Inverting3« | Inverting the input signals. |
|  | »LE42.Input4« | Assignment of the Input Signal |
|  | »LE42.Inverting4« | Inverting the input signals. |
|  | »LE42.t-On Delay« | Switch On Delay |
|  | »LE42.t-Off Delay« | Switch Off Delay |
|  | »LE42.Reset Latched« | Reset Signal for the Latching |
|  | »LE42.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE42.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.43 Logics / LE 43

| | | |
|---|------------------------|---|
|  | »LE43.Gate« | Logic gate |
|  | »LE43.Input1« | Assignment of the Input Signal |
|  | »LE43.Inverting1« | Inverting the input signals. |
|  | »LE43.Input2« | Assignment of the Input Signal |
|  | »LE43.Inverting2« | Inverting the input signals. |
|  | »LE43.Input3« | Assignment of the Input Signal |
|  | »LE43.Inverting3« | Inverting the input signals. |
|  | »LE43.Input4« | Assignment of the Input Signal |
|  | »LE43.Inverting4« | Inverting the input signals. |
|  | »LE43.t-On Delay« | Switch On Delay |
|  | »LE43.t-Off Delay« | Switch Off Delay |
|  | »LE43.Reset Latched« | Reset Signal for the Latching |
|  | »LE43.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE43.Inverting Set« | Inverting the Setting Signal for the Latching |









3.8.44 Logics / LE 44

| | | |
|---|------------------------|---|
|  | »LE44.Gate« | Logic gate |
|  | »LE44.Input1« | Assignment of the Input Signal |
|  | »LE44.Inverting1« | Inverting the input signals. |
|  | »LE44.Input2« | Assignment of the Input Signal |
|  | »LE44.Inverting2« | Inverting the input signals. |
|  | »LE44.Input3« | Assignment of the Input Signal |
|  | »LE44.Inverting3« | Inverting the input signals. |
|  | »LE44.Input4« | Assignment of the Input Signal |
|  | »LE44.Inverting4« | Inverting the input signals. |
|  | »LE44.t-On Delay« | Switch On Delay |
|  | »LE44.t-Off Delay« | Switch Off Delay |
|  | »LE44.Reset Latched« | Reset Signal for the Latching |
|  | »LE44.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE44.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.45 Logics / LE 45

| | | |
|---|------------------------|---|
|  | »LE45.Gate« | Logic gate |
|  | »LE45.Input1« | Assignment of the Input Signal |
|  | »LE45.Inverting1« | Inverting the input signals. |
|  | »LE45.Input2« | Assignment of the Input Signal |
|  | »LE45.Inverting2« | Inverting the input signals. |
|  | »LE45.Input3« | Assignment of the Input Signal |
|  | »LE45.Inverting3« | Inverting the input signals. |
|  | »LE45.Input4« | Assignment of the Input Signal |
|  | »LE45.Inverting4« | Inverting the input signals. |
|  | »LE45.t-On Delay« | Switch On Delay |
|  | »LE45.t-Off Delay« | Switch Off Delay |
|  | »LE45.Reset Latched« | Reset Signal for the Latching |
|  | »LE45.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE45.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.46 Logics / LE 46

| | | |
|---|------------------------|---|
|  | »LE46.Gate« | Logic gate |
|  | »LE46.Input1« | Assignment of the Input Signal |
|  | »LE46.Inverting1« | Inverting the input signals. |
|  | »LE46.Input2« | Assignment of the Input Signal |
|  | »LE46.Inverting2« | Inverting the input signals. |
|  | »LE46.Input3« | Assignment of the Input Signal |
|  | »LE46.Inverting3« | Inverting the input signals. |
|  | »LE46.Input4« | Assignment of the Input Signal |
|  | »LE46.Inverting4« | Inverting the input signals. |
|  | »LE46.t-On Delay« | Switch On Delay |
|  | »LE46.t-Off Delay« | Switch Off Delay |
|  | »LE46.Reset Latched« | Reset Signal for the Latching |
|  | »LE46.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE46.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.47 Logics / LE 47

| | | |
|---|------------------------|---|
|  | »LE47.Gate« | Logic gate |
|  | »LE47.Input1« | Assignment of the Input Signal |
|  | »LE47.Inverting1« | Inverting the input signals. |
|  | »LE47.Input2« | Assignment of the Input Signal |
|  | »LE47.Inverting2« | Inverting the input signals. |
|  | »LE47.Input3« | Assignment of the Input Signal |
|  | »LE47.Inverting3« | Inverting the input signals. |
|  | »LE47.Input4« | Assignment of the Input Signal |
|  | »LE47.Inverting4« | Inverting the input signals. |
|  | »LE47.t-On Delay« | Switch On Delay |
|  | »LE47.t-Off Delay« | Switch Off Delay |
|  | »LE47.Reset Latched« | Reset Signal for the Latching |
|  | »LE47.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE47.Inverting Set« | Inverting the Setting Signal for the Latching |





3.8.48 Logics / LE 48

| | | |
|---|------------------------|---|
|  | »LE48.Gate« | Logic gate |
|  | »LE48.Input1« | Assignment of the Input Signal |
|  | »LE48.Inverting1« | Inverting the input signals. |
|  | »LE48.Input2« | Assignment of the Input Signal |
|  | »LE48.Inverting2« | Inverting the input signals. |
|  | »LE48.Input3« | Assignment of the Input Signal |
|  | »LE48.Inverting3« | Inverting the input signals. |
|  | »LE48.Input4« | Assignment of the Input Signal |
|  | »LE48.Inverting4« | Inverting the input signals. |
|  | »LE48.t-On Delay« | Switch On Delay |
|  | »LE48.t-Off Delay« | Switch Off Delay |
|  | »LE48.Reset Latched« | Reset Signal for the Latching |
|  | »LE48.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE48.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.49 Logics / LE 49

| | | |
|---|------------------------|---|
|  | »LE49.Gate« | Logic gate |
|  | »LE49.Input1« | Assignment of the Input Signal |
|  | »LE49.Inverting1« | Inverting the input signals. |
|  | »LE49.Input2« | Assignment of the Input Signal |
|  | »LE49.Inverting2« | Inverting the input signals. |
|  | »LE49.Input3« | Assignment of the Input Signal |
|  | »LE49.Inverting3« | Inverting the input signals. |
|  | »LE49.Input4« | Assignment of the Input Signal |
|  | »LE49.Inverting4« | Inverting the input signals. |
|  | »LE49.t-On Delay« | Switch On Delay |
|  | »LE49.t-Off Delay« | Switch Off Delay |
|  | »LE49.Reset Latched« | Reset Signal for the Latching |
|  | »LE49.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE49.Inverting Set« | Inverting the Setting Signal for the Latching |





3.8.50 Logics / LE 50

| | | |
|---|------------------------|---|
|  | »LE50.Gate« | Logic gate |
|  | »LE50.Input1« | Assignment of the Input Signal |
|  | »LE50.Inverting1« | Inverting the input signals. |
|  | »LE50.Input2« | Assignment of the Input Signal |
|  | »LE50.Inverting2« | Inverting the input signals. |
|  | »LE50.Input3« | Assignment of the Input Signal |
|  | »LE50.Inverting3« | Inverting the input signals. |
|  | »LE50.Input4« | Assignment of the Input Signal |
|  | »LE50.Inverting4« | Inverting the input signals. |
|  | »LE50.t-On Delay« | Switch On Delay |
|  | »LE50.t-Off Delay« | Switch Off Delay |
|  | »LE50.Reset Latched« | Reset Signal for the Latching |
|  | »LE50.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE50.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.51 Logics / LE 51

| | | |
|---|------------------------|---|
|  | »LE51.Gate« | Logic gate |
|  | »LE51.Input1« | Assignment of the Input Signal |
|  | »LE51.Inverting1« | Inverting the input signals. |
|  | »LE51.Input2« | Assignment of the Input Signal |
|  | »LE51.Inverting2« | Inverting the input signals. |
|  | »LE51.Input3« | Assignment of the Input Signal |
|  | »LE51.Inverting3« | Inverting the input signals. |
|  | »LE51.Input4« | Assignment of the Input Signal |
|  | »LE51.Inverting4« | Inverting the input signals. |
|  | »LE51.t-On Delay« | Switch On Delay |
|  | »LE51.t-Off Delay« | Switch Off Delay |
|  | »LE51.Reset Latched« | Reset Signal for the Latching |
|  | »LE51.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE51.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.52 Logics / LE 52

| | | |
|---|------------------------|---|
|  | »LE52.Gate« | Logic gate |
|  | »LE52.Input1« | Assignment of the Input Signal |
|  | »LE52.Inverting1« | Inverting the input signals. |
|  | »LE52.Input2« | Assignment of the Input Signal |
|  | »LE52.Inverting2« | Inverting the input signals. |
|  | »LE52.Input3« | Assignment of the Input Signal |
|  | »LE52.Inverting3« | Inverting the input signals. |
|  | »LE52.Input4« | Assignment of the Input Signal |
|  | »LE52.Inverting4« | Inverting the input signals. |
|  | »LE52.t-On Delay« | Switch On Delay |
|  | »LE52.t-Off Delay« | Switch Off Delay |
|  | »LE52.Reset Latched« | Reset Signal for the Latching |
|  | »LE52.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE52.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.53 Logics / LE 53

| | | |
|---|------------------------|---|
|  | »LE53.Gate« | Logic gate |
|  | »LE53.Input1« | Assignment of the Input Signal |
|  | »LE53.Inverting1« | Inverting the input signals. |
|  | »LE53.Input2« | Assignment of the Input Signal |
|  | »LE53.Inverting2« | Inverting the input signals. |
|  | »LE53.Input3« | Assignment of the Input Signal |
|  | »LE53.Inverting3« | Inverting the input signals. |
|  | »LE53.Input4« | Assignment of the Input Signal |
|  | »LE53.Inverting4« | Inverting the input signals. |
|  | »LE53.t-On Delay« | Switch On Delay |
|  | »LE53.t-Off Delay« | Switch Off Delay |
|  | »LE53.Reset Latched« | Reset Signal for the Latching |
|  | »LE53.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE53.Inverting Set« | Inverting the Setting Signal for the Latching |







3.8.54 Logics / LE 54

| | | |
|---|------------------------|---|
|  | »LE54.Gate« | Logic gate |
|  | »LE54.Input1« | Assignment of the Input Signal |
|  | »LE54.Inverting1« | Inverting the input signals. |
|  | »LE54.Input2« | Assignment of the Input Signal |
|  | »LE54.Inverting2« | Inverting the input signals. |
|  | »LE54.Input3« | Assignment of the Input Signal |
|  | »LE54.Inverting3« | Inverting the input signals. |
|  | »LE54.Input4« | Assignment of the Input Signal |
|  | »LE54.Inverting4« | Inverting the input signals. |
|  | »LE54.t-On Delay« | Switch On Delay |
|  | »LE54.t-Off Delay« | Switch Off Delay |
|  | »LE54.Reset Latched« | Reset Signal for the Latching |
|  | »LE54.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE54.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.55 Logics / LE 55

| | | |
|---|------------------------|---|
|  | »LE55.Gate« | Logic gate |
|  | »LE55.Input1« | Assignment of the Input Signal |
|  | »LE55.Inverting1« | Inverting the input signals. |
|  | »LE55.Input2« | Assignment of the Input Signal |
|  | »LE55.Inverting2« | Inverting the input signals. |
|  | »LE55.Input3« | Assignment of the Input Signal |
|  | »LE55.Inverting3« | Inverting the input signals. |
|  | »LE55.Input4« | Assignment of the Input Signal |
|  | »LE55.Inverting4« | Inverting the input signals. |
|  | »LE55.t-On Delay« | Switch On Delay |
|  | »LE55.t-Off Delay« | Switch Off Delay |
|  | »LE55.Reset Latched« | Reset Signal for the Latching |
|  | »LE55.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE55.Inverting Set« | Inverting the Setting Signal for the Latching |








3.8.56 Logics / LE 56

| | | |
|---|------------------------|---|
|  | »LE56.Gate« | Logic gate |
|  | »LE56.Input1« | Assignment of the Input Signal |
|  | »LE56.Inverting1« | Inverting the input signals. |
|  | »LE56.Input2« | Assignment of the Input Signal |
|  | »LE56.Inverting2« | Inverting the input signals. |
|  | »LE56.Input3« | Assignment of the Input Signal |
|  | »LE56.Inverting3« | Inverting the input signals. |
|  | »LE56.Input4« | Assignment of the Input Signal |
|  | »LE56.Inverting4« | Inverting the input signals. |
|  | »LE56.t-On Delay« | Switch On Delay |
|  | »LE56.t-Off Delay« | Switch Off Delay |
|  | »LE56.Reset Latched« | Reset Signal for the Latching |
|  | »LE56.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE56.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.57 Logics / LE 57

| | | |
|---|------------------------|---|
|  | »LE57.Gate« | Logic gate |
|  | »LE57.Input1« | Assignment of the Input Signal |
|  | »LE57.Inverting1« | Inverting the input signals. |
|  | »LE57.Input2« | Assignment of the Input Signal |
|  | »LE57.Inverting2« | Inverting the input signals. |
|  | »LE57.Input3« | Assignment of the Input Signal |
|  | »LE57.Inverting3« | Inverting the input signals. |
|  | »LE57.Input4« | Assignment of the Input Signal |
|  | »LE57.Inverting4« | Inverting the input signals. |
|  | »LE57.t-On Delay« | Switch On Delay |
|  | »LE57.t-Off Delay« | Switch Off Delay |
|  | »LE57.Reset Latched« | Reset Signal for the Latching |
|  | »LE57.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE57.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.58 Logics / LE 58

| | | |
|---|------------------------|---|
|  | »LE58.Gate« | Logic gate |
|  | »LE58.Input1« | Assignment of the Input Signal |
|  | »LE58.Inverting1« | Inverting the input signals. |
|  | »LE58.Input2« | Assignment of the Input Signal |
|  | »LE58.Inverting2« | Inverting the input signals. |
|  | »LE58.Input3« | Assignment of the Input Signal |
|  | »LE58.Inverting3« | Inverting the input signals. |
|  | »LE58.Input4« | Assignment of the Input Signal |
|  | »LE58.Inverting4« | Inverting the input signals. |
|  | »LE58.t-On Delay« | Switch On Delay |
|  | »LE58.t-Off Delay« | Switch Off Delay |
|  | »LE58.Reset Latched« | Reset Signal for the Latching |
|  | »LE58.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE58.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.59 Logics / LE 59

| | | |
|---|------------------------|---|
|  | »LE59.Gate« | Logic gate |
|  | »LE59.Input1« | Assignment of the Input Signal |
|  | »LE59.Inverting1« | Inverting the input signals. |
|  | »LE59.Input2« | Assignment of the Input Signal |
|  | »LE59.Inverting2« | Inverting the input signals. |
|  | »LE59.Input3« | Assignment of the Input Signal |
|  | »LE59.Inverting3« | Inverting the input signals. |
|  | »LE59.Input4« | Assignment of the Input Signal |
|  | »LE59.Inverting4« | Inverting the input signals. |
|  | »LE59.t-On Delay« | Switch On Delay |
|  | »LE59.t-Off Delay« | Switch Off Delay |
|  | »LE59.Reset Latched« | Reset Signal for the Latching |
|  | »LE59.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE59.Inverting Set« | Inverting the Setting Signal for the Latching |





3.8.60 Logics / LE 60

| | | |
|---|------------------------|---|
|  | »LE60.Gate« | Logic gate |
|  | »LE60.Input1« | Assignment of the Input Signal |
|  | »LE60.Inverting1« | Inverting the input signals. |
|  | »LE60.Input2« | Assignment of the Input Signal |
|  | »LE60.Inverting2« | Inverting the input signals. |
|  | »LE60.Input3« | Assignment of the Input Signal |
|  | »LE60.Inverting3« | Inverting the input signals. |
|  | »LE60.Input4« | Assignment of the Input Signal |
|  | »LE60.Inverting4« | Inverting the input signals. |
|  | »LE60.t-On Delay« | Switch On Delay |
|  | »LE60.t-Off Delay« | Switch Off Delay |
|  | »LE60.Reset Latched« | Reset Signal for the Latching |
|  | »LE60.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE60.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.61 Logics / LE 61

| | | |
|---|------------------------|---|
|  | »LE61.Gate« | Logic gate |
|  | »LE61.Input1« | Assignment of the Input Signal |
|  | »LE61.Inverting1« | Inverting the input signals. |
|  | »LE61.Input2« | Assignment of the Input Signal |
|  | »LE61.Inverting2« | Inverting the input signals. |
|  | »LE61.Input3« | Assignment of the Input Signal |
|  | »LE61.Inverting3« | Inverting the input signals. |
|  | »LE61.Input4« | Assignment of the Input Signal |
|  | »LE61.Inverting4« | Inverting the input signals. |
|  | »LE61.t-On Delay« | Switch On Delay |
|  | »LE61.t-Off Delay« | Switch Off Delay |
|  | »LE61.Reset Latched« | Reset Signal for the Latching |
|  | »LE61.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE61.Inverting Set« | Inverting the Setting Signal for the Latching |







3.8.62 Logics / LE 62

| | | |
|---|------------------------|---|
|  | »LE62.Gate« | Logic gate |
|  | »LE62.Input1« | Assignment of the Input Signal |
|  | »LE62.Inverting1« | Inverting the input signals. |
|  | »LE62.Input2« | Assignment of the Input Signal |
|  | »LE62.Inverting2« | Inverting the input signals. |
|  | »LE62.Input3« | Assignment of the Input Signal |
|  | »LE62.Inverting3« | Inverting the input signals. |
|  | »LE62.Input4« | Assignment of the Input Signal |
|  | »LE62.Inverting4« | Inverting the input signals. |
|  | »LE62.t-On Delay« | Switch On Delay |
|  | »LE62.t-Off Delay« | Switch Off Delay |
|  | »LE62.Reset Latched« | Reset Signal for the Latching |
|  | »LE62.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE62.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.63 Logics / LE 63

| | | |
|---|------------------------|---|
|  | »LE63.Gate« | Logic gate |
|  | »LE63.Input1« | Assignment of the Input Signal |
|  | »LE63.Inverting1« | Inverting the input signals. |
|  | »LE63.Input2« | Assignment of the Input Signal |
|  | »LE63.Inverting2« | Inverting the input signals. |
|  | »LE63.Input3« | Assignment of the Input Signal |
|  | »LE63.Inverting3« | Inverting the input signals. |
|  | »LE63.Input4« | Assignment of the Input Signal |
|  | »LE63.Inverting4« | Inverting the input signals. |
|  | »LE63.t-On Delay« | Switch On Delay |
|  | »LE63.t-Off Delay« | Switch Off Delay |
|  | »LE63.Reset Latched« | Reset Signal for the Latching |
|  | »LE63.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE63.Inverting Set« | Inverting the Setting Signal for the Latching |





3.8.64 Logics / LE 64

| | | |
|---|------------------------|---|
|  | »LE64.Gate« | Logic gate |
|  | »LE64.Input1« | Assignment of the Input Signal |
|  | »LE64.Inverting1« | Inverting the input signals. |
|  | »LE64.Input2« | Assignment of the Input Signal |
|  | »LE64.Inverting2« | Inverting the input signals. |
|  | »LE64.Input3« | Assignment of the Input Signal |
|  | »LE64.Inverting3« | Inverting the input signals. |
|  | »LE64.Input4« | Assignment of the Input Signal |
|  | »LE64.Inverting4« | Inverting the input signals. |
|  | »LE64.t-On Delay« | Switch On Delay |
|  | »LE64.t-Off Delay« | Switch Off Delay |
|  | »LE64.Reset Latched« | Reset Signal for the Latching |
|  | »LE64.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE64.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.65 Logics / LE 65

| | | |
|---|------------------------|---|
|  | »LE65.Gate« | Logic gate |
|  | »LE65.Input1« | Assignment of the Input Signal |
|  | »LE65.Inverting1« | Inverting the input signals. |
|  | »LE65.Input2« | Assignment of the Input Signal |
|  | »LE65.Inverting2« | Inverting the input signals. |
|  | »LE65.Input3« | Assignment of the Input Signal |
|  | »LE65.Inverting3« | Inverting the input signals. |
|  | »LE65.Input4« | Assignment of the Input Signal |
|  | »LE65.Inverting4« | Inverting the input signals. |
|  | »LE65.t-On Delay« | Switch On Delay |
|  | »LE65.t-Off Delay« | Switch Off Delay |
|  | »LE65.Reset Latched« | Reset Signal for the Latching |
|  | »LE65.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE65.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.66 Logics / LE 66

| | | |
|---|------------------------|---|
|  | »LE66.Gate« | Logic gate |
|  | »LE66.Input1« | Assignment of the Input Signal |
|  | »LE66.Inverting1« | Inverting the input signals. |
|  | »LE66.Input2« | Assignment of the Input Signal |
|  | »LE66.Inverting2« | Inverting the input signals. |
|  | »LE66.Input3« | Assignment of the Input Signal |
|  | »LE66.Inverting3« | Inverting the input signals. |
|  | »LE66.Input4« | Assignment of the Input Signal |
|  | »LE66.Inverting4« | Inverting the input signals. |
|  | »LE66.t-On Delay« | Switch On Delay |
|  | »LE66.t-Off Delay« | Switch Off Delay |
|  | »LE66.Reset Latched« | Reset Signal for the Latching |
|  | »LE66.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE66.Inverting Set« | Inverting the Setting Signal for the Latching |













3.8.67 Logics / LE 67

| | | |
|---|------------------------|---|
|  | »LE67.Gate« | Logic gate |
|  | »LE67.Input1« | Assignment of the Input Signal |
|  | »LE67.Inverting1« | Inverting the input signals. |
|  | »LE67.Input2« | Assignment of the Input Signal |
|  | »LE67.Inverting2« | Inverting the input signals. |
|  | »LE67.Input3« | Assignment of the Input Signal |
|  | »LE67.Inverting3« | Inverting the input signals. |
|  | »LE67.Input4« | Assignment of the Input Signal |
|  | »LE67.Inverting4« | Inverting the input signals. |
|  | »LE67.t-On Delay« | Switch On Delay |
|  | »LE67.t-Off Delay« | Switch Off Delay |
|  | »LE67.Reset Latched« | Reset Signal for the Latching |
|  | »LE67.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE67.Inverting Set« | Inverting the Setting Signal for the Latching |









3.8.68 Logics / LE 68

| | | |
|---|------------------------|---|
|  | »LE68.Gate« | Logic gate |
|  | »LE68.Input1« | Assignment of the Input Signal |
|  | »LE68.Inverting1« | Inverting the input signals. |
|  | »LE68.Input2« | Assignment of the Input Signal |
|  | »LE68.Inverting2« | Inverting the input signals. |
|  | »LE68.Input3« | Assignment of the Input Signal |
|  | »LE68.Inverting3« | Inverting the input signals. |
|  | »LE68.Input4« | Assignment of the Input Signal |
|  | »LE68.Inverting4« | Inverting the input signals. |
|  | »LE68.t-On Delay« | Switch On Delay |
|  | »LE68.t-Off Delay« | Switch Off Delay |
|  | »LE68.Reset Latched« | Reset Signal for the Latching |
|  | »LE68.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE68.Inverting Set« | Inverting the Setting Signal for the Latching |















3.8.69 Logics / LE 69

| | | |
|---|------------------------|---|
|  | »LE69.Gate« | Logic gate |
|  | »LE69.Input1« | Assignment of the Input Signal |
|  | »LE69.Inverting1« | Inverting the input signals. |
|  | »LE69.Input2« | Assignment of the Input Signal |
|  | »LE69.Inverting2« | Inverting the input signals. |
|  | »LE69.Input3« | Assignment of the Input Signal |
|  | »LE69.Inverting3« | Inverting the input signals. |
|  | »LE69.Input4« | Assignment of the Input Signal |
|  | »LE69.Inverting4« | Inverting the input signals. |
|  | »LE69.t-On Delay« | Switch On Delay |
|  | »LE69.t-Off Delay« | Switch Off Delay |
|  | »LE69.Reset Latched« | Reset Signal for the Latching |
|  | »LE69.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE69.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.70 Logics / LE 70

| | | |
|---|------------------------|---|
|  | »LE70.Gate« | Logic gate |
|  | »LE70.Input1« | Assignment of the Input Signal |
|  | »LE70.Inverting1« | Inverting the input signals. |
|  | »LE70.Input2« | Assignment of the Input Signal |
|  | »LE70.Inverting2« | Inverting the input signals. |
|  | »LE70.Input3« | Assignment of the Input Signal |
|  | »LE70.Inverting3« | Inverting the input signals. |
|  | »LE70.Input4« | Assignment of the Input Signal |
|  | »LE70.Inverting4« | Inverting the input signals. |
|  | »LE70.t-On Delay« | Switch On Delay |
|  | »LE70.t-Off Delay« | Switch Off Delay |
|  | »LE70.Reset Latched« | Reset Signal for the Latching |
|  | »LE70.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE70.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.71 Logics / LE 71

| | | |
|---|------------------------|---|
|  | »LE71.Gate« | Logic gate |
|  | »LE71.Input1« | Assignment of the Input Signal |
|  | »LE71.Inverting1« | Inverting the input signals. |
|  | »LE71.Input2« | Assignment of the Input Signal |
|  | »LE71.Inverting2« | Inverting the input signals. |
|  | »LE71.Input3« | Assignment of the Input Signal |
|  | »LE71.Inverting3« | Inverting the input signals. |
|  | »LE71.Input4« | Assignment of the Input Signal |
|  | »LE71.Inverting4« | Inverting the input signals. |
|  | »LE71.t-On Delay« | Switch On Delay |
|  | »LE71.t-Off Delay« | Switch Off Delay |
|  | »LE71.Reset Latched« | Reset Signal for the Latching |
|  | »LE71.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE71.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.72 Logics / LE 72

| | | |
|---|------------------------|---|
|  | »LE72.Gate« | Logic gate |
|  | »LE72.Input1« | Assignment of the Input Signal |
|  | »LE72.Inverting1« | Inverting the input signals. |
|  | »LE72.Input2« | Assignment of the Input Signal |
|  | »LE72.Inverting2« | Inverting the input signals. |
|  | »LE72.Input3« | Assignment of the Input Signal |
|  | »LE72.Inverting3« | Inverting the input signals. |
|  | »LE72.Input4« | Assignment of the Input Signal |
|  | »LE72.Inverting4« | Inverting the input signals. |
|  | »LE72.t-On Delay« | Switch On Delay |
|  | »LE72.t-Off Delay« | Switch Off Delay |
|  | »LE72.Reset Latched« | Reset Signal for the Latching |
|  | »LE72.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE72.Inverting Set« | Inverting the Setting Signal for the Latching |













3.8.73 Logics / LE 73

| | | |
|---|------------------------|---|
|  | »LE73.Gate« | Logic gate |
|  | »LE73.Input1« | Assignment of the Input Signal |
|  | »LE73.Inverting1« | Inverting the input signals. |
|  | »LE73.Input2« | Assignment of the Input Signal |
|  | »LE73.Inverting2« | Inverting the input signals. |
|  | »LE73.Input3« | Assignment of the Input Signal |
|  | »LE73.Inverting3« | Inverting the input signals. |
|  | »LE73.Input4« | Assignment of the Input Signal |
|  | »LE73.Inverting4« | Inverting the input signals. |
|  | »LE73.t-On Delay« | Switch On Delay |
|  | »LE73.t-Off Delay« | Switch Off Delay |
|  | »LE73.Reset Latched« | Reset Signal for the Latching |
|  | »LE73.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE73.Inverting Set« | Inverting the Setting Signal for the Latching |








3.8.74 Logics / LE 74

| | | |
|---|------------------------|---|
|  | »LE74.Gate« | Logic gate |
|  | »LE74.Input1« | Assignment of the Input Signal |
|  | »LE74.Inverting1« | Inverting the input signals. |
|  | »LE74.Input2« | Assignment of the Input Signal |
|  | »LE74.Inverting2« | Inverting the input signals. |
|  | »LE74.Input3« | Assignment of the Input Signal |
|  | »LE74.Inverting3« | Inverting the input signals. |
|  | »LE74.Input4« | Assignment of the Input Signal |
|  | »LE74.Inverting4« | Inverting the input signals. |
|  | »LE74.t-On Delay« | Switch On Delay |
|  | »LE74.t-Off Delay« | Switch Off Delay |
|  | »LE74.Reset Latched« | Reset Signal for the Latching |
|  | »LE74.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE74.Inverting Set« | Inverting the Setting Signal for the Latching |













3.8.75 Logics / LE 75

| | | |
|---|------------------------|---|
|  | »LE75.Gate« | Logic gate |
|  | »LE75.Input1« | Assignment of the Input Signal |
|  | »LE75.Inverting1« | Inverting the input signals. |
|  | »LE75.Input2« | Assignment of the Input Signal |
|  | »LE75.Inverting2« | Inverting the input signals. |
|  | »LE75.Input3« | Assignment of the Input Signal |
|  | »LE75.Inverting3« | Inverting the input signals. |
|  | »LE75.Input4« | Assignment of the Input Signal |
|  | »LE75.Inverting4« | Inverting the input signals. |
|  | »LE75.t-On Delay« | Switch On Delay |
|  | »LE75.t-Off Delay« | Switch Off Delay |
|  | »LE75.Reset Latched« | Reset Signal for the Latching |
|  | »LE75.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE75.Inverting Set« | Inverting the Setting Signal for the Latching |






3.8.76 Logics / LE 76

| | | |
|---|------------------------|---|
|  | »LE76.Gate« | Logic gate |
|  | »LE76.Input1« | Assignment of the Input Signal |
|  | »LE76.Inverting1« | Inverting the input signals. |
|  | »LE76.Input2« | Assignment of the Input Signal |
|  | »LE76.Inverting2« | Inverting the input signals. |
|  | »LE76.Input3« | Assignment of the Input Signal |
|  | »LE76.Inverting3« | Inverting the input signals. |
|  | »LE76.Input4« | Assignment of the Input Signal |
|  | »LE76.Inverting4« | Inverting the input signals. |
|  | »LE76.t-On Delay« | Switch On Delay |
|  | »LE76.t-Off Delay« | Switch Off Delay |
|  | »LE76.Reset Latched« | Reset Signal for the Latching |
|  | »LE76.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE76.Inverting Set« | Inverting the Setting Signal for the Latching |














3.8.77 Logics / LE 77

| | | |
|---|------------------------|---|
|  | »LE77.Gate« | Logic gate |
|  | »LE77.Input1« | Assignment of the Input Signal |
|  | »LE77.Inverting1« | Inverting the input signals. |
|  | »LE77.Input2« | Assignment of the Input Signal |
|  | »LE77.Inverting2« | Inverting the input signals. |
|  | »LE77.Input3« | Assignment of the Input Signal |
|  | »LE77.Inverting3« | Inverting the input signals. |
|  | »LE77.Input4« | Assignment of the Input Signal |
|  | »LE77.Inverting4« | Inverting the input signals. |
|  | »LE77.t-On Delay« | Switch On Delay |
|  | »LE77.t-Off Delay« | Switch Off Delay |
|  | »LE77.Reset Latched« | Reset Signal for the Latching |
|  | »LE77.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE77.Inverting Set« | Inverting the Setting Signal for the Latching |








3.8.78 Logics / LE 78

| | | |
|---|------------------------|---|
|  | »LE78.Gate« | Logic gate |
|  | »LE78.Input1« | Assignment of the Input Signal |
|  | »LE78.Inverting1« | Inverting the input signals. |
|  | »LE78.Input2« | Assignment of the Input Signal |
|  | »LE78.Inverting2« | Inverting the input signals. |
|  | »LE78.Input3« | Assignment of the Input Signal |
|  | »LE78.Inverting3« | Inverting the input signals. |
|  | »LE78.Input4« | Assignment of the Input Signal |
|  | »LE78.Inverting4« | Inverting the input signals. |
|  | »LE78.t-On Delay« | Switch On Delay |
|  | »LE78.t-Off Delay« | Switch Off Delay |
|  | »LE78.Reset Latched« | Reset Signal for the Latching |
|  | »LE78.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE78.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.79 Logics / LE 79


| | | |
|---|------------------------|---|
|  | »LE79.Gate« | Logic gate |
|  | »LE79.Input1« | Assignment of the Input Signal |
|  | »LE79.Inverting1« | Inverting the input signals. |
|  | »LE79.Input2« | Assignment of the Input Signal |
|  | »LE79.Inverting2« | Inverting the input signals. |
|  | »LE79.Input3« | Assignment of the Input Signal |
|  | »LE79.Inverting3« | Inverting the input signals. |
|  | »LE79.Input4« | Assignment of the Input Signal |
|  | »LE79.Inverting4« | Inverting the input signals. |
|  | »LE79.t-On Delay« | Switch On Delay |
|  | »LE79.t-Off Delay« | Switch Off Delay |
|  | »LE79.Reset Latched« | Reset Signal for the Latching |
|  | »LE79.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE79.Inverting Set« | Inverting the Setting Signal for the Latching |

3.8.80 Logics / LE 80



| | | |
|---|------------------------|---|
|  | »LE80.Gate« | Logic gate |
|  | »LE80.Input1« | Assignment of the Input Signal |
|  | »LE80.Inverting1« | Inverting the input signals. |
|  | »LE80.Input2« | Assignment of the Input Signal |
|  | »LE80.Inverting2« | Inverting the input signals. |
|  | »LE80.Input3« | Assignment of the Input Signal |
|  | »LE80.Inverting3« | Inverting the input signals. |
|  | »LE80.Input4« | Assignment of the Input Signal |
|  | »LE80.Inverting4« | Inverting the input signals. |
|  | »LE80.t-On Delay« | Switch On Delay |
|  | »LE80.t-Off Delay« | Switch Off Delay |
|  | »LE80.Reset Latched« | Reset Signal for the Latching |
|  | »LE80.Inverting Reset« | Inverting Reset Signal for the Latching |
|  | »LE80.Inverting Set« | Inverting the Setting Signal for the Latching |

3.9 Service

3.9.1 Service / General

| | | |
|---|--------------------------------|-----------------------|
|  | »Sys . Reboot« | Rebooting the device. |
|---|--------------------------------|-----------------------|





3.9.2 Service / Maint Mode

| | | |
|---|---|---|
|  | »Maint Mode« | Activation Mode of the Arc Flash Reduction. Switching into another mode is only possible when no Activation Signal is active (pending). |
|  | »Maint Mode Activated by« | Activation Signal for the Arc Flash Reduction Maintenance Switch |

3.9.3 Service / Test - Prot inhib.





3.9.3.1 Service / Test - Prot inhib. / DISARMED

3.9.3.1.1 Service / Test - Prot inhib. / DISARMED / BO Slot X2

| | | |
|---|------------------------------------|---|
|  | »DISARMED Ctrl« | Enables and disables the disarming of the relay outputs. This is the first step of a two step process, to inhibit the operation or the relay outputs. Please refer to "DISARMED" for the second step. |
|  | »Disarm Mode« | CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance. |
|  | »t-Timeout DISARM« | The relays will be armed again after expiring of this time. |
|  | »DISARMED« | This is the second step, after the "DISARMED Ctrl" has been activated, that is required to DISARM the relay outputs. This will DISARM those output relays that are currently not latched and that are not on "hold" by a pending minimum hold time. CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: Zone Interlocking and Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance. |









3.9.3.2 Service / Test - Prot inhib. / Scada

3.9.3.2.1 Service / Test - Prot inhib. / Scada / IEC103


| | | |
|---|-------------------------|--|
|  | »Activate test mode« | This Direct Control parameter switches the IEC103 communication into Test Mode (or back to normal mode). |
|  | »Activate Block MD« | This Direct Control parameter activates (or deactivates) the blocking of IEC103 transmission in monitor direction. |
|  | »Ex activate test mode« | The signal assigned to this parameter switches the IEC103 communication into Test Mode. |
|  | »Ex activate Block MD« | The signal assigned to this parameter activates the blocking of IEC103 transmission in monitor direction. |

3.9.3.3 Service / Test - Prot inhib. / Force OR


3.9.3.3.1 Service / Test - Prot inhib. / Force OR / BO Slot X2

| | | |
|---|-------------------|--|
|  | »Force Mode« | By means of this function the normal Output Relay States can be overwritten (forced) in case that the Relay is not in a disarmed state. The relays can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. |
|  | »t-Timeout Force« | The Output State will be set by force for the duration of this time. That means for the duration of this time the Output Relay does not show the state of the signals that are assigned on it. |
|  | »Force all Outs« | By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. Forcing all outputs relays of an entire assembly group is superior to forcing a single output relay. |
|  | »Force OR1« | By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. |
|  | »Force OR2« | By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. |
|  | »Force OR3« | By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. |
|  | »Force OR4« | By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. |
|  | »Force OR5« | By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. |

3.9.3.4 Service / Test - Prot inhib. / Force SG






| | | |
|---|--------------------------|--|
|  | »SG[1] . Force Trip Cmd« | Direct Command to force the device to issue a trip command (for testing purposes). |
|---|--------------------------|--|

3.9.3.5 Service / Test - Prot inhib. / Force SC








| | | |
|---|------------------|---|
|  | »SSV . Force SC« | Direct Command to force the device to drop SelfSuperVision Contact (SC) for 5 seconds (for testing purposes). |
|---|------------------|---|

3.9.3.6 Service / Test - Prot inhib. / Sgen

3.9.3.6.1 Service / Test - Prot inhib. / Sgen / State




| | | |
|--|------------------|--|
|  | »Running« | Signal: Measuring value simulation is running |
|  | »State« | Wave generation states: 0=Off, 1=PreFault, 2=Fault, 3=PostFault, 4=InitReset |
|  | »ExBlo1-I« | Module input state: External blocking1 |
|  | »ExBlo2-I« | Module input state: External blocking2 |
|  | »Ex ForcePost-I« | State of the module input:Force Post state. Abort simulation. |

3.9.3.6.2 Service / Test - Prot inhib. / Sgen / Process

| | | |
|---|-----------------------|--|
|  | »Start Simulation« | Start Fault Simulation (Using the test parameters) |
|  | »Stop Simulation« | Stopp Fault Simulation (Using the test parameters) |
|  | »TripCmd Mode« | Trip Command Mode: Select between two operating modes for the Fault Simulator: "cold simulation" (without tripping the circuit breaker), or "hot simulation" (i.e. the simulation is authorized to trip the circuit breaker) |
|  | »Ex Start Simulation« | External Start of Fault Simulation (Using the test parameters) |
|  | »ExBlo1« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1 |
|  | »ExBlo2« | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2 |
|  | »Ex ForcePost« | Force Post state. Abort simulation. |









3.9.3.6.3 Service / Test - Prot inhib. / Sgen / Configuration

3.9.3.6.3.1 Service / Test - Prot inhib. / Sgen / Configuration / Times

| | | |
|---|-------------------|------------------------------|
|  | »PreFault« | Pre Fault Duration |
|  | »FaultSimulation« | Duration of Fault Simulation |
|  | »PostFault« | Post Fault Duration |









3.9.3.6.3.2 Service / Test - Prot inhib. / Sgen / Configuration / PreFault

3.9.3.6.3.2.1 Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT

| | | |
|---|----------------|---|
|  | »VL1 « | Voltage Fundamental Magnitude in Pre State: phase L1 |
|  | »VL2 « | Voltage Fundamental Magnitude in Pre State: phase L2 |
|  | »VL3 « | Voltage Fundamental Magnitude in Pre State: phase L3 |
|  | »VX « | Voltage Fundamental Magnitude in Pre State: VX |
|  | »phi VL1 « | Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L1 |
|  | »phi VL2 « | Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L2 |
|  | »phi VL3 « | Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L3 |
|  | »phi VX meas « | Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase: VX |

3.9.3.6.3.3 Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation

3.9.3.6.3.3.1 Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT



| | | |
|---|----------------|---|
|  | »VL1 « | Voltage Fundamental Magnitude in Fault State: phase L1 |
|  | »VL2 « | Voltage Fundamental Magnitude in Fault State: phase L2 |
|  | »VL3 « | Voltage Fundamental Magnitude in Fault State: phase L3 |
|  | »VX « | Voltage Fundamental Magnitude in Fault State: phase VX |
|  | »phi VL1 « | Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L1 |
|  | »phi VL2 « | Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L2 |
|  | »phi VL3 « | Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L3 |
|  | »phi VX meas « | Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase: VX |

3 Menu

3.9.3.6.3.4 Service / Test - Prot inhib. / Sgen / Configuration / PostFault












3.9.3.6.3.4 Service / Test - Prot inhib. / Sgen / Configuration / PostFault

3.9.3.6.3.4.1 Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT

| | | |
|---|----------------|---|
|  | »VL1 « | Voltage Fundamental Magnitude during Post phase: phase L1 |
|  | »VL2 « | Voltage Fundamental Magnitude during Post phase: phase L2 |
|  | »VL3 « | Voltage Fundamental Magnitude during Post phase: phase L3 |
|  | »VX « | Voltage Fundamental Magnitude during Post phase: phase VX |
|  | »phi VL1 « | Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L1 |
|  | »phi VL2 « | Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L2 |
|  | »phi VL3 « | Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L3 |
|  | »phi VX meas « | Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase VX |

3.9.4 Service / Diagnostic Data

3.9.4.1 Service / Diagnostic Data / FADC


| | | |
|---|--------------------|---|
|  | »Sys . FADC_TR« | FADC_TR: total (retain) |
|  | »Sys . FADC_LR« | FADC-LR: long (10min, max, retain) |
|  | »Sys . FADC_MR« | FADC-MR: mid (10s, max, retain) |
|  | »Sys . FADC_SR« | FADC-SR: short(0.2s, max, retain) |
|  | »Sys . FADC_LM« | FADC-LM: long (10min, max, since reset) |
|  | »Sys . FADC_MM« | FADC-MM: mid (10s, max, since reset) |
|  | »Sys . FADC_SM« | FADC-SM: short (0.2s, max, since reset) |
|  | »Sys . FADC_L« | FADC-L: long (10mmin) |
|  | »Sys . FADC_M« | FADC-M: mid (10s) |
|  | »Sys . FADC_S« | FADC-S: short (0.2s) |
|  | »Sys . Reset-FADC« | Reset: FADC-Counter |


4 Hardware

4.1 HMI

front-panel

4.1.1 HMI: Global Parameters


| t-max Edit/Access | Device Para / Security / General Settings | |
|---|--|-----|
| 180s | 20s ... 3600s | S.3 |
|  | <i>If no other key(s) is pressed at the panel, after expiration of this time, all cached (changed) parameters are canceled. The device access will be locked by falling back into Read-only level Lv0.</i> | |


| Display Off | Device Para / HMI | |
|---|---|-----|
| 180s | 20s ... 3600s | S.3 |
|  | <i>The display back light will be turned off when this timer has expired.</i> | |

| Menu language | Device Para / HMI | |
|---|---|-----|
| English | English ... Romanian Table | S.3 |
|  | <i>Selection of the language</i> | |


| Display ANSI Device No. | Device Para / HMI | |
|---|---|-----|
| Active | Inactive, Active Table | S.3 |
|  | <i>Display ANSI Device Numbers</i> | |

4.1.2 HMI: Direct Controls

| Contrast | Device Para / HMI | |
|---|-------------------|-----|
| 50% | 0% ... 100% | S.3 |
|  | <i>Contrast</i> | |

| Conf. Dev. Reset | Device Para / Security / General Settings | |
|---|--|-----|
| "Fact.def.", "PW rst" | "Fact.def.", "PW rst", Only "Fact.defaults", Reset deact. Table | S.3 |
|  | <i>If the »C« key is pressed while the device is performing a cold restart a general Reset Dialog appears on the screen. Select which options shall be available with this dialog.</i> | |


4.1.3 HMI: Values

| Conf. Dev. Reset | Operation / Security / Security States |
|---|--|
|  | <i>If the »C« key is pressed while the device is performing a cold restart a general Reset Dialog appears on the screen. Select which options shall be available with this dialog.</i> |


4.2 Digital Inputs


4.2.1 DI Slot X1

4.2.1.1 DI Slot X1: Global Parameters


| Nom voltage | | Device Para / Digital Inputs / DI Slot X1 / Group 1 | |
|---|--|---|-----|
| 24 VDC | | 24 VDC, 48 VDC, 60 VDC, 110 VDC, 230 VDC, 110 VAC, 230 VAC ↩ Table | S.3 |
|  | <i>Nominal voltage of the digital inputs</i> | | |

| Inverting 1 | | Device Para / Digital Inputs / DI Slot X1 / Group 1 | |
|---|-------------------------------------|---|-----|
| Inactive | | Inactive, Active ↩ Table | S.3 |
|  | <i>Inverting the input signals.</i> | | |

| Debouncing time 1 | | Device Para / Digital Inputs / DI Slot X1 / Group 1 | |
|---|---|---|-----|
| no debouncing time | | no debouncing time, 20 ms, 50 ms, 100 ms ↩ Table | S.3 |
|  | <i>A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.</i> | | |


| Nom voltage | | Device Para / Digital Inputs / DI Slot X1 / Group 2 | |
|---|--|---|-----|
| 24 VDC | | 24 VDC, 48 VDC, 60 VDC, 110 VDC, 230 VDC, 110 VAC, 230 VAC ↩ Table | S.3 |
|  | <i>Nominal voltage of the digital inputs</i> | | |


| Inverting 2 | | Device Para / Digital Inputs / DI Slot X1 / Group 2 | |
|---|-------------------------------------|---|-----|
| Inactive | | Inactive, Active ↩ Table | S.3 |
|  | <i>Inverting the input signals.</i> | | |


| Debouncing time 2 | | Device Para / Digital Inputs / DI Slot X1 / Group 2 | |
|---|---|---|-----|
| no debouncing time | | no debouncing time, 20 ms, 50 ms, 100 ms ↩ Table | S.3 |
|  | <i>A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.</i> | | |

4 Hardware


4.2.1.1 DI Slot X1: Global Parameters


| Nom voltage | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|--|--|-----|
| 24 VDC | | 24 VDC, 48 VDC, 60 VDC, 110 VDC, 230 VDC, 110 VAC, 230 VAC | S.3 |
| | | ↪ Table | |
|  | <i>Nominal voltage of the digital inputs</i> | | |


| Inverting 3 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|-------------------------------------|---|-----|
| Inactive | | Inactive, Active | S.3 |
| | | ↪ Table | |
|  | <i>Inverting the input signals.</i> | | |

| Debouncing time 3 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|---|---|-----|
| no debouncing time | | no debouncing time, 20 ms, 50 ms, 100 ms | S.3 |
| | | ↪ Table | |
|  | <i>A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.</i> | | |


| Inverting 4 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|-------------------------------------|---|-----|
| Inactive | | Inactive, Active | S.3 |
| | | ↪ Table | |
|  | <i>Inverting the input signals.</i> | | |

| Debouncing time 4 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|---|---|-----|
| no debouncing time | | no debouncing time, 20 ms, 50 ms, 100 ms | S.3 |
| | | ↪ Table | |
|  | <i>A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.</i> | | |


| Inverting 5 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|-------------------------------------|---|-----|
| Inactive | | Inactive, Active | S.3 |
| | | ↪ Table | |
|  | <i>Inverting the input signals.</i> | | |

| Debouncing time 5 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|---|---|-----|
| no debouncing time | | no debouncing time, 20 ms, 50 ms, 100 ms | S.3 |
| | | ↪ Table | |
|  | <i>A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.</i> | | |


| Inverting 6 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|-------------------------------------|---|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting the input signals.</i> | | |

| Debouncing time 6 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|---|---|-----|
| no debouncing time | no debouncing time, 20 ms, 50 ms, 100 ms | | S.3 |
| | ↩> Table | | |
|  | <i>A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.</i> | | |


| Inverting 7 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|-------------------------------------|---|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting the input signals.</i> | | |

| Debouncing time 7 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|---|---|-----|
| no debouncing time | no debouncing time, 20 ms, 50 ms, 100 ms | | S.3 |
| | ↩> Table | | |
|  | <i>A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.</i> | | |

| Inverting 8 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|-------------------------------------|---|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting the input signals.</i> | | |

| Debouncing time 8 | | Device Para / Digital Inputs / DI Slot X1 / Group 3 | |
|---|---|---|-----|
| no debouncing time | no debouncing time, 20 ms, 50 ms, 100 ms | | S.3 |
| | ↩> Table | | |
|  | <i>A change of the state of a digital input will only be recognized after the debouncing time has expired (become effective). Thus, transient signals will not be misinterpreted.</i> | | |

4.2.1.2 DI Slot X1: Signals (Output States)


| | |
|--|---|
| DI 1 | Operation / Status Display / DI Slot X1 |
| ... | |
| DI 8 | |
|  <i>Signal: Digital Input</i> | |


4.3 Binary Outputs


4.3.1 BO Slot X2


Binary Output relay - BO2


4.3.1.1 BO Slot X2: Global Parameters


| Operating Mode | | Device Para / Binary Outputs / BO Slot X2 / BO 1 |
|---|--|--|
| Normally open (NO) | Normally open (NO), Normally closed (NC) | S.3 |
| | ↪ Table | |
|  | <i>Operating Mode</i> | |

| t-hold | | Device Para / Binary Outputs / BO Slot X2 / BO 1 |
|---|--|--|
| 0.00s | 0.00s ... 300.00s | S.3 |
|  | <i>To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.</i> | |

| t-Off Delay | | Device Para / Binary Outputs / BO Slot X2 / BO 1 |
|---|-------------------------|--|
| 0.00s | 0.00s ... 300.00s | S.3 |
|  | <i>Switch Off Delay</i> | |


| Latched | | Device Para / Binary Outputs / BO Slot X2 / BO 1 |
|---|---|--|
| Inactive | Inactive, Active | S.3 |
| | ↪ Table | |
|  | <i>Defines whether the Relay Output will be latched when it picks up.</i> | |


| Acknowledgement | | Device Para / Binary Outputs / BO Slot X2 / BO 1 |
|--|---|--|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | S.3 |
| - | ↪ Table | |
|  | <i>Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.</i> | |


| Inverting | | Device Para / Binary Outputs / BO Slot X2 / BO 1 |
|---|--|--|
| Inactive | Inactive, Active | S.3 |
| | ↪ Table | |
|  | <i>Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).</i> | |


4 Hardware


4.3.1.1 BO Slot X2: Global Parameters

| Assignment 1 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---------------------------|--|-----|
| TripCmd | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 1 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|------------------|--|-----|
| Inactive | Inactive, Active | ↩> Table | S.3 |
|  <i>Inverting of the state of the assigned signal.</i> | | | |

| Assignment 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | ↩> Table | S.3 |
|  <i>Assignment</i> | | | |

| Inverting 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|------------------|--|-----|
| Inactive | Inactive, Active | ↩> Table | S.3 |
|  <i>Inverting of the state of the assigned signal.</i> | | | |

| Assignment 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | ↩> Table | S.3 |
|  <i>Assignment</i> | | | |


| Inverting 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|------------------|--|-----|
| Inactive | Inactive, Active | ↩> Table | S.3 |
|  <i>Inverting of the state of the assigned signal.</i> | | | |


| Assignment 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | ↩> Table | S.3 |
|  <i>Assignment</i> | | | |


| Inverting 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 1 | |
|---|------------------|--|-----|
| Inactive | Inactive, Active | ↩> Table | S.3 |
|  <i>Inverting of the state of the assigned signal.</i> | | | |


4 Hardware


4.3.1.1 BO Slot X2: Global Parameters


| Operating Mode | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|--|--|-----|
| Normally open (NO) | Normally open (NO), Normally closed (NC) | | S.3 |
| | ↪ Table | | |
|  | <i>Operating Mode</i> | | |


| t-hold | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|--|--|-----|
| 0.00s | 0.00s ... 300.00s | | S.3 |
|  | <i>To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.</i> | | |

| t-Off Delay | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|-------------------------|--|-----|
| 0.00s | 0.00s ... 300.00s | | S.3 |
|  | <i>Switch Off Delay</i> | | |


| Latched | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Defines whether the Relay Output will be latched when it picks up.</i> | | |

| Acknowledgement | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|--|---|--|-----|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | | S.3 |
| - | ↪ Table | | |
|  | <i>Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.</i> | | |


| Inverting | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|--|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).</i> | | |

| Assignment 1 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|---------------------------|--|-----|
| Alarm | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 1 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|-----------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↩> Table | | |
|  | <i>Assignment</i> | | |

| Inverting 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|-----------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↩> Table | | |
|  | <i>Assignment</i> | | |








| Inverting 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|-----------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↩> Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


4 Hardware


4.3.1.1 BO Slot X2: Global Parameters


| | | | |
|---|---|--|-----|
| Assignment 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |
| Inverting 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |
| Assignment 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |
| Inverting 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |
| Assignment 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |
| Inverting 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 2 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |
| Operating Mode | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
| Normally open (NO) | Normally open (NO), Normally closed (NC) | | S.3 |
| | ↪ Table | | |
|  | <i>Operating Mode</i> | | |


| t-hold | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|--|--|-----|
| 0.00s | | 0.00s ... 300.00s | S.3 |
|  | <i>To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.</i> | | |

| t-Off Delay | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|-------------------------|--|-----|
| 0.00s | | 0.00s ... 300.00s | S.3 |
|  | <i>Switch Off Delay</i> | | |

| Latched | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|---|--|-----|
| Inactive | | Inactive, Active ↳ Table | S.3 |
|  | <i>Defines whether the Relay Output will be latched when it picks up.</i> | | |

| Acknowledgement | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|--|---|--|-----|
| <ul style="list-style-type: none"> Only available if: Latched = Active | | - ... Internal test state ↳ Table | S.3 |
|  | <i>Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.</i> | | |


| Inverting | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|--|--|-----|
| Inactive | | Inactive, Active ↳ Table | S.3 |
|  | <i>Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).</i> | | |


| Assignment 1 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|-------------------|--|-----|
| ON Cmd | | - ... Internal test state ↳ Table | S.3 |
|  | <i>Assignment</i> | | |


| Inverting 1 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|---|--|-----|
| Inactive | | Inactive, Active ↳ Table | S.3 |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

4 Hardware


4.3.1.1 BO Slot X2: Global Parameters

| | | | |
|---|---------------------------|--|-----|
| Assignment 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| | | | |
|---|---|--|-----|
| Inverting 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| | | | |
|---|---------------------------|--|-----|
| Assignment 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| | | | |
|---|---|--|-----|
| Inverting 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| | | | |
|---|---------------------------|--|-----|
| Assignment 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| | | | |
|---|---|--|-----|
| Inverting 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| | | | |
|---|---------------------------|--|-----|
| Assignment 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|---|--|-----|
| Inactive | Inactive, Active | ↩> Table | S.3 |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | ↩> Table | S.3 |
|  | <i>Assignment</i> | | |

| Inverting 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|---|--|-----|
| Inactive | Inactive, Active | ↩> Table | S.3 |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | ↩> Table | S.3 |
|  | <i>Assignment</i> | | |


| Inverting 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 3 | |
|---|---|--|-----|
| Inactive | Inactive, Active | ↩> Table | S.3 |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Operating Mode | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|--|--|-----|
| Normally open (NO) | Normally open (NO), Normally closed (NC) | ↩> Table | S.3 |
|  | <i>Operating Mode</i> | | |


| t-hold | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|--|--|-----|
| 0.00s | 0.00s ... 300.00s | | S.3 |
|  | <i>To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.</i> | | |


4 Hardware


4.3.1.1 BO Slot X2: Global Parameters


| | | |
|--|--|-----|
| t-Off Delay | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
| 0.00s | 0.00s ... 300.00s | S.3 |
|  Switch Off Delay | | |


| | | |
|--|--|-----|
| Latched | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
| Inactive | Inactive, Active ↳ Table | S.3 |
|  Defines whether the Relay Output will be latched when it picks up. | | |

| | | |
|--|--|-----|
| Acknowledgement | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state ↳ Table | S.3 |
|  Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active. | | |


| | | |
|---|--|-----|
| Inverting | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
| Inactive | Inactive, Active ↳ Table | S.3 |
|  Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction). | | |

| | | |
|--|--|-----|
| Assignment 1 | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
| OFF Cmd | - ... Internal test state ↳ Table | S.3 |
|  Assignment | | |


| | | |
|--|--|-----|
| Inverting 1 | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
| Inactive | Inactive, Active ↳ Table | S.3 |
|  Inverting of the state of the assigned signal. | | |

| | | |
|--|--|-----|
| Assignment 2 | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
| - | - ... Internal test state ↳ Table | S.3 |
|  Assignment | | |


| Inverting 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|-----------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↩> Table | | |
|  | <i>Assignment</i> | | |

| Inverting 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|-----------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↩> Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|-----------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↩> Table | | |
|  | <i>Assignment</i> | | |


| Inverting 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩> Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

4 Hardware


4.3.1.1 BO Slot X2: Global Parameters


| Assignment 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 4 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Operating Mode | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|--|--|-----|
| Normally open (NO) | Normally open (NO), Normally closed (NC) | | S.3 |
| | ↪ Table | | |
|  | <i>Operating Mode</i> | | |


| t-hold | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|--|--|-----|
| 0.00s | 0.00s ... 300.00s | | S.3 |
|  | <i>To clearly identify the state transition of a binary output relay, the "new state" is being hold, at least for the duration of the hold time.</i> | | |

| t-Off Delay | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|-------------------------|--|-----|
| 0.00s | 0.00s ... 300.00s | | S.3 |
|  | <i>Switch Off Delay</i> | | |


| Latched | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Defines whether the Relay Output will be latched when it picks up.</i> | | |

| Acknowledgement | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|--|---|--|-----|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | | S.3 |
| - | ↪ Table | | |
|  | <i>Acknowledgement Signal - An acknowledgement signal (that acknowledges the corresponding binary output relay) can be assigned to each output relay. The acknowledgement-signal is only effective if the parameter "Latched" is set to active.</i> | | |

| Inverting | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|--|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the collective signal (OR-gate/disjunction). In combination with inverted input signals an AND-gate can be programmed (Conjunction).</i> | | |

| Assignment 1 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 1 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 2 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

4 Hardware


4.3.1.1 BO Slot X2: Global Parameters

| Assignment 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 3 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 5 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---|--|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 6 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---|--|-----|
| Inactive | Inactive, Active | ↪ Table | S.3 |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---------------------------|--|-----|
| - | - ... Internal test state | ↪ Table | S.3 |
|  | <i>Assignment</i> | | |


| Inverting 7 | | Device Para / Binary Outputs / BO Slot X2 / BO 5 | |
|---|---|--|-----|
| Inactive | Inactive, Active | ↪ Table | S.3 |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| DISARMED Ctrl | | Service / Test - Prot inhib. / DISARMED / BO Slot X2 | |
|---|--|--|-----|
| Inactive | Inactive, Active | ↪ Table | S.3 |
|  | <i>Enables and disables the disarming of the relay outputs. This is the first step of a two step process, to inhibit the operation or the relay outputs. Please refer to "DISARMED" for the second step.</i> | | |


| Disarm Mode | | Service / Test - Prot inhib. / DISARMED / BO Slot X2 | |
|---|--|--|-----|
| permanent | permanent, timeout | ↪ Table | S.3 |
|  | <i>CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance.</i> | | |


| t-Timeout DISARM | | Service / Test - Prot inhib. / DISARMED / BO Slot X2 | |
|--|--|--|-----|
| <ul style="list-style-type: none"> Only available if: Disarm Mode = timeout 0.03s | 0.00s ... 300.00s | | S.3 |
|  | <i>The relays will be armed again after expiring of this time.</i> | | |


| | | |
|---|--|-----|
| Force Mode | Service / Test - Prot inhib. / Force OR / BO Slot X2 | |
| permanent | permanent, timeout ↪ Table | S.3 |
|  | <i>By means of this function the normal Output Relay States can be overwritten (forced) in case that the Relay is not in a disarmed state. The relays can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state.</i> | |

| | | |
|--|---|-----|
| t-Timeout Force | Service / Test - Prot inhib. / Force OR / BO Slot X2 | |
| <ul style="list-style-type: none"> Only available if: Force Mode = timeout 0.03s | 0.00s ... 300.00s | S.3 |
|  | <i>The Output State will be set by force for the duration of this time. That means for the duration of this time the Output Relay does not show the state of the signals that are assigned on it.</i> | |


4.3.1.2 BO Slot X2: Direct Controls


| | | |
|---|--|-----|
| DISARMED | Service / Test - Prot inhib. / DISARMED / BO Slot X2 | |
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>This is the second step, after the "DISARMED Ctrl" has been activated, that is required to DISARM the relay outputs. This will DISARM those output relays that are currently not latched and that are not on "hold" by a pending minimum hold time. CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: Zone Interlocking and Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance.</i> | |


| | | |
|---|---|-----|
| Force all Outs | Service / Test - Prot inhib. / Force OR / BO Slot X2 | |
| Normal | Normal, De-Energized, Energized ↪ Table | S.3 |
|  | <i>By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state. Forcing all outputs relays of an entire assembly group is superior to forcing a single output relay.</i> | |

| | | |
|---|--|-----|
| Force OR1 | Service / Test - Prot inhib. / Force OR / BO Slot X2 | |
| ... | | |
| Force OR5 | | |
| Normal | Normal, De-Energized, Energized ↪ Table | S.3 |
|  | <i>By means of this function the normal Output Relay State can be overwritten (forced). The relay can be set from normal operation (relay works according to the assigned signals) to "force energized" or "force de-energized" state.</i> | |

4.3.1.3 BO Slot X2: Signals (Output States)

| | |
|---|---|
| BO 1 | Operation / Status Display / BO Slot X2 |
| ... | |
| BO 5 | |
|  | <i>Signal: Binary Output Relay</i> |

| | |
|---|--|
| DISARMED! | Operation / Status Display / BO Slot X2 |
|  | <i>Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Self Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance</i> |


| | |
|---|---|
| Outs forced | Operation / Status Display / BO Slot X2 |
|  | <i>Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals.</i> |


4.4 LEDs


4.4.1 LEDs group A


LEDs at the left side of the display


4.4.1.1 LEDs group A: Global Parameters

| Latched | | Device Para / LEDs / LED 1 |
|---|--|----------------------------|
| Inactive | Inactive, Active, active, ack. by alarm | S.3 |
| | ↪ Table | |
|  | <i>Defines whether the LED will be latched when it picks up.</i> | |


| Ack signal | | Device Para / LEDs / LED 1 |
|--|---|----------------------------|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | S.3 |
| - | ↪ Table | |
|  | <i>Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.</i> | |

| LED active color | | Device Para / LEDs / LED 1 |
|---|--|----------------------------|
| green | green, red, red flash, green flash, - | S.3 |
| | ↪ Table | |
|  | <i>The LED lights up in this color if the state of the OR-assignment of the signals is true.</i> | |


| LED inactive color | | Device Para / LEDs / LED 1 |
|---|--|----------------------------|
| - | green, red, red flash, green flash, - | S.3 |
| | ↪ Table | |
|  | <i>The LED lights up in this color if the state of the OR-assignment of the signals is untrue.</i> | |

| Assignment 1 | | Device Para / LEDs / LED 1 |
|---|---------------------------|----------------------------|
| Active | - ... Internal test state | S.3 |
| | ↪ Table | |
|  | <i>Assignment</i> | |


| Inverting 1 | | Device Para / LEDs / LED 1 |
|---|---|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | ↪ Table | |
|  | <i>Inverting of the state of the assigned signal.</i> | |

| Assignment 2 | | Device Para / LEDs / LED 1 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 2 | | Device Para / LEDs / LED 1 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / LEDs / LED 1 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |

| Inverting 3 | | Device Para / LEDs / LED 1 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / LEDs / LED 1 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / LEDs / LED 1 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 5 | | Device Para / LEDs / LED 1 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


4 Hardware


4.4.1.1 LEDs group A: Global Parameters


| Inverting 5 | | Device Para / LEDs / LED 1 |
|---|---|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | ↪ Table | |
|  | <i>Inverting of the state of the assigned signal.</i> | |


| Latched | | Device Para / LEDs / LED 2 |
|---|--|----------------------------|
| Active | Inactive, Active, active, ack. by alarm | S.3 |
| | ↪ Table | |
|  | <i>Defines whether the LED will be latched when it picks up.</i> | |


| Ack signal | | Device Para / LEDs / LED 2 |
|--|---|----------------------------|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | S.3 |
| - | ↪ Table | |
|  | <i>Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.</i> | |

| LED active color | | Device Para / LEDs / LED 2 |
|---|--|----------------------------|
| red | green, red, red flash, green flash, - | S.3 |
| | ↪ Table | |
|  | <i>The LED lights up in this color if the state of the OR-assignment of the signals is true.</i> | |


| LED inactive color | | Device Para / LEDs / LED 2 |
|---|--|----------------------------|
| - | green, red, red flash, green flash, - | S.3 |
| | ↪ Table | |
|  | <i>The LED lights up in this color if the state of the OR-assignment of the signals is untrue.</i> | |

| Assignment 1 | | Device Para / LEDs / LED 2 |
|---|---------------------------|----------------------------|
| TripCmd | - ... Internal test state | S.3 |
| | ↪ Table | |
|  | <i>Assignment</i> | |


| Inverting 1 | | Device Para / LEDs / LED 2 |
|---|---|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | ↪ Table | |
|  | <i>Inverting of the state of the assigned signal.</i> | |


| Assignment 2 | | Device Para / LEDs / LED 2 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 2 | | Device Para / LEDs / LED 2 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / LEDs / LED 2 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |

| Inverting 3 | | Device Para / LEDs / LED 2 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / LEDs / LED 2 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / LEDs / LED 2 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 5 | | Device Para / LEDs / LED 2 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


4 Hardware


4.4.1.1 LEDs group A: Global Parameters


| Inverting 5 | | Device Para / LEDs / LED 2 |
|---|------------------|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
|  <i>Inverting of the state of the assigned signal.</i> | | |


| Latched | | Device Para / LEDs / LED 3 |
|--|---|----------------------------|
| Inactive | Inactive, Active, active, ack. by alarm | S.3 |
| | | ↩ Table |
|  <i>Defines whether the LED will be latched when it picks up.</i> | | |


| Ack signal | | Device Para / LEDs / LED 3 |
|---|---------------------------|----------------------------|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | S.3 |
| | | ↩ Table |
|  <i>Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.</i> | | |

| LED active color | | Device Para / LEDs / LED 3 |
|--|---------------------------------------|----------------------------|
| red flash | green, red, red flash, green flash, - | S.3 |
| | | ↩ Table |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is true.</i> | | |


| LED inactive color | | Device Para / LEDs / LED 3 |
|--|---------------------------------------|----------------------------|
| - | green, red, red flash, green flash, - | S.3 |
| | | ↩ Table |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is untrue.</i> | | |

| Assignment 1 | | Device Para / LEDs / LED 3 |
|---|---------------------------|----------------------------|
| Alarm | - ... Internal test state | S.3 |
| | | ↩ Table |
|  <i>Assignment</i> | | |


| Inverting 1 | | Device Para / LEDs / LED 3 |
|---|------------------|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
|  <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 2 | | Device Para / LEDs / LED 3 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 2 | | Device Para / LEDs / LED 3 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / LEDs / LED 3 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |

| Inverting 3 | | Device Para / LEDs / LED 3 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / LEDs / LED 3 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / LEDs / LED 3 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 5 | | Device Para / LEDs / LED 3 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


4 Hardware


4.4.1.1 LEDs group A: Global Parameters


| Inverting 5 | | Device Para / LEDs / LED 3 |
|---|------------------|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
|  <i>Inverting of the state of the assigned signal.</i> | | |

| Latched | | Device Para / LEDs / LED 4 |
|--|---|----------------------------|
| Inactive | Inactive, Active, active, ack. by alarm | S.3 |
| | | ↩ Table |
|  <i>Defines whether the LED will be latched when it picks up.</i> | | |


| Ack signal | | Device Para / LEDs / LED 4 |
|---|---------------------------|----------------------------|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | S.3 |
| | | ↩ Table |
|  <i>Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.</i> | | |

| LED active color | | Device Para / LEDs / LED 4 |
|--|---------------------------------------|----------------------------|
| red | green, red, red flash, green flash, - | S.3 |
| | | ↩ Table |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is true.</i> | | |


| LED inactive color | | Device Para / LEDs / LED 4 |
|--|---------------------------------------|----------------------------|
| - | green, red, red flash, green flash, - | S.3 |
| | | ↩ Table |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is untrue.</i> | | |

| Assignment 1 | | Device Para / LEDs / LED 4 |
|---|---------------------------|----------------------------|
| - | - ... Internal test state | S.3 |
| | | ↩ Table |
|  <i>Assignment</i> | | |


| Inverting 1 | | Device Para / LEDs / LED 4 |
|---|------------------|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
|  <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 2 | | Device Para / LEDs / LED 4 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↩ Table | | |
|  | Assignment | | |


| Inverting 2 | | Device Para / LEDs / LED 4 | |
|---|--|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩ Table | | |
|  | Inverting of the state of the assigned signal. | | |

| Assignment 3 | | Device Para / LEDs / LED 4 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↩ Table | | |
|  | Assignment | | |

| Inverting 3 | | Device Para / LEDs / LED 4 | |
|---|--|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩ Table | | |
|  | Inverting of the state of the assigned signal. | | |

| Assignment 4 | | Device Para / LEDs / LED 4 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↩ Table | | |
|  | Assignment | | |


| Inverting 4 | | Device Para / LEDs / LED 4 | |
|---|--|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↩ Table | | |
|  | Inverting of the state of the assigned signal. | | |


| Assignment 5 | | Device Para / LEDs / LED 4 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↩ Table | | |
|  | Assignment | | |


4 Hardware


4.4.1.1 LEDs group A: Global Parameters


| Inverting 5 | | Device Para / LEDs / LED 4 |
|---|------------------|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
|  <i>Inverting of the state of the assigned signal.</i> | | |


| Latched | | Device Para / LEDs / LED 5 |
|--|---|----------------------------|
| Inactive | Inactive, Active, active, ack. by alarm | S.3 |
| | | ↩ Table |
|  <i>Defines whether the LED will be latched when it picks up.</i> | | |


| Ack signal | | Device Para / LEDs / LED 5 |
|---|---------------------------|----------------------------|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | S.3 |
| - | ↩ Table | |
|  <i>Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.</i> | | |

| LED active color | | Device Para / LEDs / LED 5 |
|--|---------------------------------------|----------------------------|
| red | green, red, red flash, green flash, - | S.3 |
| | | ↩ Table |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is true.</i> | | |


| LED inactive color | | Device Para / LEDs / LED 5 |
|--|---------------------------------------|----------------------------|
| - | green, red, red flash, green flash, - | S.3 |
| | | ↩ Table |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is untrue.</i> | | |

| Assignment 1 | | Device Para / LEDs / LED 5 |
|---|---------------------------|----------------------------|
| - | - ... Internal test state | S.3 |
| | | ↩ Table |
|  <i>Assignment</i> | | |


| Inverting 1 | | Device Para / LEDs / LED 5 |
|---|------------------|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
|  <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 2 | | Device Para / LEDs / LED 5 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 2 | | Device Para / LEDs / LED 5 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / LEDs / LED 5 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |

| Inverting 3 | | Device Para / LEDs / LED 5 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / LEDs / LED 5 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / LEDs / LED 5 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 5 | | Device Para / LEDs / LED 5 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


4 Hardware


4.4.1.1 LEDs group A: Global Parameters


| Inverting 5 | | Device Para / LEDs / LED 5 |
|---|---|----------------------------|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  <i>Inverting of the state of the assigned signal.</i> | | |


| Latched | | Device Para / LEDs / LED 6 |
|--|--|----------------------------|
| Inactive | Inactive, Active, active, ack. by alarm ↪ Table | S.3 |
|  <i>Defines whether the LED will be latched when it picks up.</i> | | |


| Ack signal | | Device Para / LEDs / LED 6 |
|---|--|----------------------------|
| <ul style="list-style-type: none"> Only available if: Latched = Active - | - ... Internal test state ↪ Table | S.3 |
|  <i>Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.</i> | | |

| LED active color | | Device Para / LEDs / LED 6 |
|--|--|----------------------------|
| red | green, red, red flash, green flash, - ↪ Table | S.3 |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is true.</i> | | |


| LED inactive color | | Device Para / LEDs / LED 6 |
|--|--|----------------------------|
| - | green, red, red flash, green flash, - ↪ Table | S.3 |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is untrue.</i> | | |

| Assignment 1 | | Device Para / LEDs / LED 6 |
|---|--|----------------------------|
| - | - ... Internal test state ↪ Table | S.3 |
|  <i>Assignment</i> | | |


| Inverting 1 | | Device Para / LEDs / LED 6 |
|---|---|----------------------------|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 2 | | Device Para / LEDs / LED 6 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 2 | | Device Para / LEDs / LED 6 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / LEDs / LED 6 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |

| Inverting 3 | | Device Para / LEDs / LED 6 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / LEDs / LED 6 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 4 | | Device Para / LEDs / LED 6 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


| Assignment 5 | | Device Para / LEDs / LED 6 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


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4.4.1.1 LEDs group A: Global Parameters


| Inverting 5 | | Device Para / LEDs / LED 6 |
|---|------------------|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
|  <i>Inverting of the state of the assigned signal.</i> | | |


| Latched | | Device Para / LEDs / LED 7 |
|--|---|----------------------------|
| Inactive | Inactive, Active, active, ack. by alarm | S.3 |
| | | ↩ Table |
|  <i>Defines whether the LED will be latched when it picks up.</i> | | |


| Ack signal | | Device Para / LEDs / LED 7 |
|---|---------------------------|----------------------------|
| <ul style="list-style-type: none"> Only available if: Latched = Active | - ... Internal test state | S.3 |
| - | ↩ Table | |
|  <i>Acknowledgement signal for the LED. If latching is set to active the LED can only be acknowledged if those signals that initiated the setting are no longer present.</i> | | |

| LED active color | | Device Para / LEDs / LED 7 |
|--|---------------------------------------|----------------------------|
| red | green, red, red flash, green flash, - | S.3 |
| | | ↩ Table |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is true.</i> | | |


| LED inactive color | | Device Para / LEDs / LED 7 |
|--|---------------------------------------|----------------------------|
| - | green, red, red flash, green flash, - | S.3 |
| | | ↩ Table |
|  <i>The LED lights up in this color if the state of the OR-assignment of the signals is untrue.</i> | | |

| Assignment 1 | | Device Para / LEDs / LED 7 |
|---|---------------------------|----------------------------|
| - | - ... Internal test state | S.3 |
| | | ↩ Table |
|  <i>Assignment</i> | | |


| Inverting 1 | | Device Para / LEDs / LED 7 |
|---|------------------|----------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
|  <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 2 | | Device Para / LEDs / LED 7 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |


| Inverting 2 | | Device Para / LEDs / LED 7 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 3 | | Device Para / LEDs / LED 7 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |

| Inverting 3 | | Device Para / LEDs / LED 7 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |

| Assignment 4 | | Device Para / LEDs / LED 7 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |

| Inverting 4 | | Device Para / LEDs / LED 7 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |



| Assignment 5 | | Device Para / LEDs / LED 7 | |
|---|---------------------------|----------------------------|-----|
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Assignment</i> | | |

4 Hardware

4.4.1.1 LEDs group A: Global Parameters

| Inverting 5 | | Device Para / LEDs / LED 7 | |
|---|---|----------------------------|-----|
| Inactive | Inactive, Active | | 5.3 |
| | ↩ Table | | |
|  | <i>Inverting of the state of the assigned signal.</i> | | |


5 Security

-  Modbus . Smart view via Modbus
-  Ctrl . Switching Authority
-  HMI . Conf. Dev. Reset
-  HMI . t-max Edit/Access
- HMI . Conf. Dev. Reset
- Modbus . Smart view via Modbus


5.1 Syslog


Module for sending (device-internal) log messages to some server computer via network (UDP/IP)


5.1.1 Syslog: Device Planning Parameters

| Mode | Device planning / Projected Elements | |
|---|---|-----|
| - | -, use ↪ Table | S.3 |
|  | Syslog [Module for sending (device-internal) log messages to some server computer via network (UDP/IP)], general operation mode | |


5.1.2 Syslog: Global Parameters

| Function | Device Para / Security / Syslog | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | Permanent activation or deactivation of module/stage. | |

| IP port number | Device Para / Security / Syslog | |
|---|--|-----|
| 514 | 1 ... 65535 | S.3 |
|  | <p>IP port number.</p> <p>This is the port on which the Syslog server computer listens and receives log messages. (Since the default, port 514, is a general protocol standard it is recommended to keep this default, unless there are network-related or security-related reasons against it.)</p> | |

| IP address, part 1 ... IP address, part 4 | Device Para / Security / Syslog | |
|---|--|-----|
| 0 | 0 ... 255 | S.3 |
|  | <p>IP address (IPv4) of the Syslog server computer, that receives the log messages.</p> <p>IP1.IP2.IP3.IP4</p> | |

5.1.3 Syslog: Signals (Output States)


| Active | Operation / Status Display / Syslog | |
|---|-------------------------------------|--|
|  | Signal: active | |


6 System


System


| Messages | |
|---|---|
|  | <p><i>Internal messages</i></p> <p>This item represents a special dialog. (See the Technical Manual for details.)</p> |

6.1 Sys: Global Parameters

| PSet-Switch | | Protection Para / PSet-Switch |
|---|--|-------------------------------|
| PS1 | PS1, PS2, PS3, PS4, PSS via Inp fct, PSS via Scada | P.2 |
| | | ↪ Table |
|  | <i>Switching Parameter Set</i> | |


| PS1: activated by | | Protection Para / PSet-Switch |
|--|---|-------------------------------|
| ... | | |
| PS4: activated by | | |
| <ul style="list-style-type: none"> Only available if: PSet-Switch = PSS via Inp fct | - ... Maint Mode Inactive | P.2 |
| | | ↪ Table |
| | | - |
|  | <i>This Setting Group will be the active one if: The Parameter Setting Group Switch is set to "Switch via Input" and the other three input functions are inactive at the same time. In case that there is more than one input function active, no Parameter Setting Group Switch will be executed. In case all input functions are inactive, the device will keep working with the Setting Group that was activated lastly.</i> | |


| Ack via »C« key | | Device Para / Acknowledge |
|---|---|---------------------------|
| Ack LEDs w/o passw. | Nothing, Ack LEDs w/o passw., Ack LEDs, Ack LEDs and relays, Ack Everything | P.2 |
| | | ↪ Table |
|  | <i>Select which acknowledgeable elements can be reset via pressing the »C« key.</i> | |


| Remote Reset | | Device Para / Acknowledge |
|---|--|---------------------------|
| Active | Inactive, Active | P.2 |
| | | ↪ Table |
|  | <i>Enables or disables the option to acknowledge from external/remote via signals (assignments) and SCADA.</i> | |


6 System


6.1 Sys: Global Parameters


| Ack LED | | Device Para / Acknowledge |
|---|--|---------------------------|
| <ul style="list-style-type: none"> Only available if: Remote Reset = Active | - ... Internal test state Table | S.3 |
|  All acknowledgeable LEDs will be acknowledged if the state of the assigned signal becomes true. | | |


| Ack BO | | Device Para / Acknowledge |
|---|--|---------------------------|
| <ul style="list-style-type: none"> Only available if: Remote Reset = Active | - ... Internal test state Table | S.3 |
|  All acknowledgeable binary output relays will be acknowledged if the state of the assigned signal becomes true. | | |

| Ack Scada | | Device Para / Acknowledge |
|--|--|---------------------------|
| <ul style="list-style-type: none"> Only available if: Remote Reset = Active | - ... Internal test state Table | S.3 |
|  Latched SCADA signals are acknowledged if the state of the assigned signal becomes true. | | |

| Scaling | | Device Para / Measurem Display / General Settings |
|---|--|---|
| Per unit values | Per unit values, Primary values, Secondary values Table | S.3 |
|  Display of the measured values as primary, secondary or per unit values | | |

| Maint Mode | | Service / Maint Mode |
|---|---|----------------------|
| Inactive | Inactive, Activation Manually, Activation via SCADA, Activation via DI Table | S.3 |
|  Activation Mode of the Arc Flash Reduction. Switching into another mode is only possible when no Activation Signal is active (pending). | | |

| Maint Mode Activated by | | Service / Maint Mode |
|--|--|----------------------|
| <ul style="list-style-type: none"> Only available if: Maint Mode = Activation via DI | - ... LE80.Out inverted Table | S.3 |
|  Activation Signal for the Arc Flash Reduction Maintenance Switch | | |

| Setting Lock | | Field Para / General Settings |
|--|---------------------------|-------------------------------|
| - | - ... Internal test state | P.2 |
| | | ↪ Table |
|  No parameters can be changed as long as this input is true. The parameter settings are locked. | | |

6.2 Sys: Direct Controls

| Ack BO LED Scd Trips | | Operation / Acknowledge |
|---|------------------|-------------------------|
| Inactive | Inactive, Active | P.1 |
| | | ↪ Table |
| <input checked="" type="radio"/> Acknowledge (reset) latched binary output relays, LEDs, SCADA and Trips. | | |


| Ack LED | | Operation / Acknowledge |
|---|------------------|-------------------------|
| Inactive | Inactive, Active | P.1 |
| | | ↪ Table |
| <input checked="" type="radio"/> All acknowledgeable LEDs will be acknowledged. | | |

| Ack BO | | Operation / Acknowledge |
|---|------------------|-------------------------|
| Inactive | Inactive, Active | P.1 |
| | | ↪ Table |
| <input checked="" type="radio"/> All acknowledgeable binary output relays are acknowledged. | | |


| Ack Scada | | Operation / Acknowledge |
|--|------------------|-------------------------|
| <ul style="list-style-type: none"> Only available if: Protocol \neq - Inactive | Inactive, Active | P.1 |
| | | ↪ Table |
| <input checked="" type="radio"/> Latched SCADA signals are acknowledged. | | |


| Reboot | | Service / General |
|--|---------|-------------------------|
| no | no, yes | S.3 |
| | | ↪ Table |
| <input checked="" type="radio"/> Rebooting the device. | | |


| Setting Lock Bypass | | Field Para / General Settings |
|--|------------------|-------------------------------|
| Inactive | Inactive, Active | P.1 |
| | | ↪ Table |
| <input checked="" type="radio"/> Short-period unlock of the Setting Lock | | |


| | | |
|--|---|-----|
| Reset-FADC | Service / Diagnostic Data / FADC | |
| Inactive | Inactive, Active ↩ Table | P.1 |
|  <i>Reset: FADC-Counter</i> | | |


6.3 Sys: Input States


| | | |
|--|----------------------------------|--|
| Ack LED-I | Operation / Status Display / Sys | |
|  <i>Module input state: LEDs acknowledgement by digital input</i> | | |

| | | |
|--|----------------------------------|--|
| Ack BO-I | Operation / Status Display / Sys | |
|  <i>Module input state: Acknowledgement of the binary Output Relays</i> | | |


| | | |
|---|----------------------------------|--|
| Ack Scada-I | Operation / Status Display / Sys | |
|  <ul style="list-style-type: none"> • Only available if: Protocol ≠ - <i>Module input state: Acknowledge latched SCADA signals.</i> | | |

| | | |
|---|----------------------------------|--|
| PS1-I ... PS4-I | Operation / Status Display / Sys | |
|  <i>State of the module input respectively of the signal, that should activate this Parameter Setting Group.</i> | | |

| | | |
|--|----------------------------------|--|
| Setting Lock-I ↩ Sys . Setting Lock | Operation / Status Display / Sys | |
|  <i>State of the module input: No parameters can be changed as long as this input is true. The parameter settings are locked.</i> | | |

| | | |
|---|----------------------------------|--|
| Maint Mode-I | Operation / Status Display / Sys | |
|  <i>Module Input State: Arc Flash Reduction Maintenance Switch</i> | | |

6.4 Sys: Signals (Output States)










| | | |
|--|----------------------------------|--|
| Reboot | Operation / Status Display / Sys | |
|  <i>Signal: Rebooting the device.</i> <i>Device Start-up Codes: 1=Normal Start-up; 2=Reboot by the Operator; 3=Reboot by means of Super Reset; 4=outdated; 5=outdated; 6=Unknown Error Source; 7=Forced Reboot (initiated by the main processor); 8=Exceeded Time Limit of the Protection Cycle; 9= Forced Reboot (initiated by the digital signal processor); 10=Exceeded Time Limit of the Measured Value Processing; 11=Sags of the Supply Voltage; 12=Illegal Memory Access.</i> | | |

| | |
|----------------------------|---|
| Act Set | Operation / Status Display / Sys Protection Para / PSet-Switch |
| ↑↓ | Signal: Active Parameter Set |
| PS 1 | Operation / Status Display / Sys |
| ↑↓ | Signal: The currently active Parameter Set is PS 1 |
| PS 2 | Operation / Status Display / Sys |
| ↑↓ | Signal: The currently active Parameter Set is PS 2 |
| PS 3 | Operation / Status Display / Sys |
| ↑↓ | Signal: The currently active Parameter Set is PS 3 |
| PS 4 | Operation / Status Display / Sys |
| ↑↓ | Signal: The currently active Parameter Set is PS 4 |
| PSS manual | Operation / Status Display / Sys |
| ↑↓ | Signal: Manual Switch over of a Parameter Set |
| PSS via Scada | Operation / Status Display / Sys |
| ↑↓ | <ul style="list-style-type: none"> • Only available if: Protocol ≠ - <p>Signal: Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4).</p> |
| PSS via Inp fct | Operation / Status Display / Sys |
| ↑↓ | Signal: Parameter Set Switch via input function |
| min 1 param changed | Operation / Status Display / Sys |
| ↑↓ | Signal: At least one parameter has been changed |
| Setting Lock Bypass | Operation / Status Display / Sys |
| ↑↓ | Signal: Short-period unlock of the Setting Lock |
| Maint Mode Active | Operation / Status Display / Sys |
| ↑↓ | Signal: Arc Flash Reduction Maintenance Active |
| Maint Mode Inactive | Operation / Status Display / Sys |
| ↑↓ | Signal: Arc Flash Reduction Maintenance Inactive |







6 System







6.4 Sys: Signals (Output States)

| | |
|---------------------------|---|
| MaintMode Manually | Operation / Status Display / Sys |
| ↑ | Signal: Arc Flash Reduction Maintenance Manual Mode |
| Maint Mode SCADA | Operation / Status Display / Sys |
| ↑ | Signal: Arc Flash Reduction Maintenance SCADA Mode |
| Maint Mode DI | Operation / Status Display / Sys |
| ↑ | Signal: Arc Flash Reduction Maintenance Digital Input Mode |
| Ack LED | Operation / Status Display / Sys |
| ↑ | Signal: LEDs acknowledgement |
| Ack BO | Operation / Status Display / Sys |
| ↑ | Signal: Acknowledgement of the Binary Outputs |
| Ack Scada | Operation / Status Display / Sys |
| ↑ | <ul style="list-style-type: none">• Only available if: Protocol \neq - Signal: Acknowledge latched SCADA signals |
| Ack TripCmd | Operation / Status Display / Sys |
| ↑ | Signal: Reset Trip Command |
| Ack LED-HMI | Operation / Status Display / Sys |
| ↑ | Signal: LEDs acknowledgement, triggered at the HMI |
| Ack BO-HMI | Operation / Status Display / Sys |
| ↑ | Signal: Acknowledgement of the Binary Outputs, triggered at the HMI |
| Ack Scada-HMI | Operation / Status Display / Sys |
| ↑ | <ul style="list-style-type: none">• Only available if: Protocol \neq - Signal: Acknowledge latched SCADA signals, triggered at the HMI |
| Ack TripCmd-HMI | Operation / Status Display / Sys |
| ↑ | Signal: Reset Trip Command, triggered at the HMI |

| | |
|---|----------------------------------|
| Ack LED-Sca | Operation / Status Display / Sys |
|  <ul style="list-style-type: none"> Only available if: Protocol \neq - <p><i>Signal: LEDs acknowledgement, triggered via SCADA</i></p> | |
| Ack BO-Sca | Operation / Status Display / Sys |
|  <ul style="list-style-type: none"> Only available if: Protocol \neq - <p><i>Signal: Acknowledgement of the Binary Outputs, triggered via SCADA</i></p> | |
| Ack Counter-Sca | Operation / Status Display / Sys |
|  <ul style="list-style-type: none"> Only available if: Protocol \neq - <p><i>Signal: Reset of all Counters, triggered via SCADA</i></p> | |
| Ack Scada-Sca | Operation / Status Display / Sys |
|  <ul style="list-style-type: none"> Only available if: Protocol \neq - <p><i>Signal: Acknowledge latched SCADA signals, triggered via SCADA</i></p> | |
| Ack TripCmd-Sca | Operation / Status Display / Sys |
|  <ul style="list-style-type: none"> Only available if: Protocol \neq - <p><i>Signal: Reset Trip Command, triggered via SCADA</i></p> | |
| Res OperationsCr | Operation / Status Display / Sys |
|  <p><i>Signal:: Res OperationsCr</i></p> | |
| Res AlarmCr | Operation / Status Display / Sys |
|  <p><i>Signal:: Res AlarmCr</i></p> | |
| Res TripCmdCr | Operation / Status Display / Sys |
|  <p><i>Signal:: Res TripCmdCr</i></p> | |
| Res TotalCr | Operation / Status Display / Sys |
|  <p><i>Signal:: Res TotalCr</i></p> | |


6.5 Sys: Values


| | |
|---|-------------------------------------|
| Bootloader Build | Device Para / Version |
|  <i>Build number of the bootloader</i> | |
| Build | Device Para / Version |
|  <i>Build Number</i> | |
| SW version | Device Para / Version |
|  <i>Version of the device firmware</i> | |
| CAT No | Device Para / Version |
|  <i>»CAT No.«, Order Code as printed on the nameplate of the device.</i> | |
| REV. | Device Para / Version |
|  <i>Revision (as printed on the nameplate of the device).</i> | |
| S/N | Device Para / Version |
|  <i>The serial number of the device.</i> | |
| DM version | Device Para / Version |
|  <i>Version of the device model</i> | |
| Operating hours Cr | Operation / Count and RevData / Sys |
|  <i>Operating hours counter of the protective device</i> | |
| FADC_TR | Service / Diagnostic Data / FADC |
|  <i>FADC_TR: total (retain)</i> | |
| FADC_LR | Service / Diagnostic Data / FADC |
|  <i>FADC-LR: long (10min, max, retain)</i> | |
| FADC_MR | Service / Diagnostic Data / FADC |
|  <i>FADC-MR: mid (10s, max, retain)</i> | |
| FADC_SR | Service / Diagnostic Data / FADC |
|  <i>FADC-SR: short(0.2s, max, retain)</i> | |

| | |
|--|----------------------------------|
| FADC_LM | Service / Diagnostic Data / FADC |
|  <i>FADC-LM: long (10min, max, since reset)</i> | |
| FADC_MM | Service / Diagnostic Data / FADC |
|  <i>FADC-MM: mid (10s, max, since reset)</i> | |
| FADC_SM | Service / Diagnostic Data / FADC |
|  <i>FADC-SM: short (0.2s, max, since reset)</i> | |
| FADC_L | Service / Diagnostic Data / FADC |
|  <i>FADC-L: long (10mmin)</i> | |
| FADC_M | Service / Diagnostic Data / FADC |
|  <i>FADC-M: mid (10s)</i> | |
| FADC_S | Service / Diagnostic Data / FADC |
|  <i>FADC-S: short (0.2s)</i> | |

6.6 Sys

System

| Security Logger | |
|---|---|
|  | <p><i>Security-related messages</i></p> <p>This item represents a special dialog. (See the Technical Manual for details.)</p> |

| Password | |
|---|---|
|  | <p><i>Changing the password</i></p> <p>This item represents a special dialog. (See the Technical Manual for details.)</p> |


| Access Level | |
|---|--|
|  | <p><i>Access Level</i></p> <p>This item represents a special dialog. (See the Technical Manual for details.)</p> |


6.6.1 Sys: Direct Controls




| Smart view via USB | | Device Para / Security / Communication |
|----------------------------------|---|--|
| Active | Inactive, Active | S.3 |
| | | ↩> Table |
| <input checked="" type="radio"/> | <i>Activate (allow) or inactivate (disallow) the Smart view access via the USB interface.</i> | |

| Smart view via Eth | | Device Para / Security / Communication |
|----------------------------------|--|--|
| Active | Inactive, Active | S.3 |
| | | ↩> Table |
| <input checked="" type="radio"/> | <i>Activate (allow) or inactivate (disallow) the Smart view access via the Ethernet interface.</i> | |

6.6.2 Sys: Values

| Smart view via USB | | Operation / Security / Security States |
|---|---|--|
|  | <i>Information whether or not the Smart view access via the USB interface is activated (allowed).</i> | |

| Smart view via Eth | | Operation / Security / Security States |
|---|--|--|
|  | <i>Information whether or not the Smart view access via the Ethernet interface is activated (allowed).</i> | |

| | |
|---|--|
| TLS Certificate | Operation / Security / Security States |
|  <i>Type of certificate that the device uses for the encrypted communication. This value is directly related to the security-level of the communication.</i> | |
| Passw.remote net.conn. | Operation / Security / Security States |
|  <i>Type / Security-level of the connection password that is used for a Smart view connection via some network interface.</i> | |
| Passw. for USB conn. | Operation / Security / Security States |
|  <i>Type / Security-level of the connection password that is used for a USB connection.</i> | |


6.7 TimeSync

Time synchronisation


| Date and Time | |
|---|--|
|  | (Re-)setting Date and Time |
| | This item represents a special dialog. (See the Technical Manual for details.) |


6.7.1 TimeSync: Global Parameters







| DST offset | |
|---|---|
| 60min | Device Para / Time / Timezone -180min ... 180min S.3 |
|  | Difference to wintertime |

| DST manual | |
|---|--|
| Active | Device Para / Time / Timezone Inactive, Active S.3 Table |
|  | Manual setting of the Daylight Saving Time |

| Summertime | |
|---|--|
| <ul style="list-style-type: none"> Only available if: DST manual = Active Inactive | Device Para / Time / Timezone Inactive, Active S.3 Table |
|  | Daylight Saving Time |


| Summertime m | |
|--|--|
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive March | Device Para / Time / Timezone January ... December S.3 Table |
|  | Month of clock change summertime |


| Summertime d | |
|---|--|
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive Sunday | Device Para / Time / Timezone Sunday ... General day S.3 Table |
|  | Day of clock change summertime |


| Summertime w | | Device Para / Time / Timezone | |
|--|---|-------------------------------|-----|
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive | First, Second, Third, Fourth, Last | Table | S.3 |
| Last | | | |
|  | <i>Place of selected day in month (for clock change summertime)</i> | | |
| Summertime h | | Device Para / Time / Timezone | |
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive | 0h ... 23h | | S.3 |
| 2h | | | |
|  | <i>Hour of clock change summertime</i> | | |
| Summertime min | | Device Para / Time / Timezone | |
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive | 0min ... 59min | | S.3 |
| 0min | | | |
|  | <i>Minute of clock change summertime</i> | | |
| Wintertime m | | Device Para / Time / Timezone | |
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive | January ... December | Table | S.3 |
| October | | | |
|  | <i>Month of clock change wintertime</i> | | |
| Wintertime d | | Device Para / Time / Timezone | |
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive | Sunday ... General day | Table | S.3 |
| Sunday | | | |
|  | <i>Day of clock change wintertime</i> | | |
| Wintertime w | | Device Para / Time / Timezone | |
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive | First, Second, Third, Fourth, Last | Table | S.3 |
| Last | | | |
|  | <i>Place of selected day in month (for clock change wintertime)</i> | | |


6 System

6.7.2 TimeSync: Signals (Output States)


| Wintertime h | | Device Para / Time / Timezone | |
|--|------------|-------------------------------|-----|
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive 3h | 0h ... 23h | | S.3 |
|  <i>Hour of clock change wintertime</i> | | | |

| Wintertime min | | Device Para / Time / Timezone | |
|--|----------------|-------------------------------|-----|
| <ul style="list-style-type: none"> Only available if: DST manual = Inactive 0min | 0min ... 59min | | S.3 |
|  <i>Minute of clock change wintertime</i> | | | |

| Time Zones | | Device Para / Time / Timezone | |
|--|---|-------------------------------|-----|
| UTC+0 London | UTC+14 Kiritimati ... UTC-11 Midway Islands | | S.3 |
| ↳ Table | | | |
|  <i>Time Zones</i> | | | |


| TimeSync | | Device Para / Time / TimeSync / TimeSync | |
|---|--|--|-----|
| - | -, IRIG-B, SNTP, Modbus, IEC 60870-5-103, IEC104, DNP3 | | S.3 |
| ↳ Table | | | |
|  <i>Time synchronisation</i> | | | |

6.7.2 TimeSync: Signals (Output States)



| synchronized | | Operation / Status Display / TimeSync / TimeSync | |
|---|--|--|--|
|  <i>Clock is synchronized.</i> | | | |

7 Communication

7.1 Scada: Device Planning Parameters

| Protocol | Device planning / Projected Elements | |
|--|---|-----|
| - | - ... Profibus Table | S.3 |
|  <i>Select the SCADA protocol to be used.</i> | | |


7.2 Scada: Signals (Output States)


| SCADA connected | Operation / Status Display / Scada | |
|---|--|--|
|  | <i>At least one SCADA System is connected to the device.</i> | |
| SCADA not connected | Operation / Status Display / Scada | |
|  | <i>No SCADA System is connected to the device</i> | |


7.3 Tcplp

| TCP/IP config | |
|---|--|
|  | <p><i>configuration of the TCP/IP protocol</i></p> <p>This item represents a special dialog. (See the Technical Manual for details.)</p> |

7.3.1 Tcplp: Global Parameters

| Keep Alive Time | | Device Para / TCP/IP / Advanced Settings |
|---|---|--|
| 720s | 1s ... 7200s | S.3 |
|  | <i>Keep Alive Time is the duration between two keep alive transmissions in idle condition</i> | |


| Keep Alive Interval | | Device Para / TCP/IP / Advanced Settings |
|---|---|--|
| 15s | 1s ... 60s | S.3 |
|  | <i>Keep Alive Interval is the duration between two successive keep alive retransmissions, if the acknowledgement to the previous keepalive transmission was not received.</i> | |


| Keep Alive Retry | | Device Para / TCP/IP / Advanced Settings |
|---|---|--|
| 3 | 3 ... 3 | S.3 |
|  | <i>Keep alive retry is the number of retransmissions to be carried out before declaring that the remote end is not available.</i> | |


7.4 DNP3


Distributed Network Protocol


7.4.1 DNP3: Global Parameters

| Function | Device Para / DNP3 / Communication | |
|---|--|-----|
| Inactive | Inactive, Active ↩> Table | S.3 |
|  | <i>Permanent activation or deactivation of module/stage.</i> | |

| IP Port Number | Device Para / DNP3 / Communication | |
|--|---|-----|
| Only available if: <ul style="list-style-type: none"> • Protocol = DNP3 TCP • Protocol = DNP3 UDP 20000 | 0 ... 65535 ↩> Table | S.3 |
|  | <i>IP Port Number.</i> <i>In general it is recommended to keep the default value. If this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network.</i> | |









| Baud rate | Device Para / DNP3 / Communication | |
|--|--|-----|
| <ul style="list-style-type: none"> • Only available if: Protocol = DNP3 RTU 19200 | 1200 ... 115200 ↩> Table | S.3 |
|  | <i>Baud rate for communication</i> | |


| Frame Layout | Device Para / DNP3 / Communication | |
|--|---|-----|
| <ul style="list-style-type: none"> • Only available if: Protocol = DNP3 RTU 8E1 | 8E1, 8O1, 8N1, 8N2 ↩> Table | S.3 |
|  | <i>Frame Layout</i> | |


| Optical rest position | Device Para / DNP3 / Communication | |
|---|--|-----|
| Light on | Light off, Light on ↩> Table | S.3 |
|  | <i>Optical rest position</i> | |


7 Communication


7.4.1 DNP3: Global Parameters


| | | |
|---|--|-----|
| SelfAddress | Device Para / DNP3 / Communication | |
| Inactive | Inactive, Active ↪ Table | S.3 |
|  <i>Support of self (automatic) addresses</i> | | |
| DataLink confirm | Device Para / DNP3 / Communication | |
| Never | Never, Always, On_Large ↪ Table | S.3 |
|  <i>Enables or disables the data layer confirmation (ack).</i> | | |
| t-DataLink confirm | Device Para / DNP3 / Communication | |
| 1s | 0.1s ... 10.0s | S.3 |
|  <i>Data layer confirmation timeout</i> | | |
| DataLink num retries | Device Para / DNP3 / Communication | |
| 3 | 0 ... 255 | S.3 |
|  <i>Number of repetition of data link packet sending after failing</i> | | |
| Direction Bit | Device Para / DNP3 / Communication | |
| Inactive | Inactive, Active ↪ Table | S.3 |
|  <i>Enables Direction Bit functionality. The Direction Bit is 0 for SlaveStation and 1 for MasterStation</i> | | |
| Max Frame Size | Device Para / DNP3 / Communication | |
| 255 | 64 ... 255 | S.3 |
|  <i>This value is used to limit the net Frame Size</i> | | |
| Test Link Period | Device Para / DNP3 / Communication | |
| 0s | 0.0s ... 120.0s | S.3 |
|  <i>This value specifies the time period when to send a Test Link-Frame</i> | | |
| AppLink confirm | Device Para / DNP3 / Communication | |
| Always | Never, Always, Event ↪ Table | S.3 |
|  <i>Determines if the device will request that the Application Layer response be confirmed or not</i> | | |


| t-AppLink confirm | | Device Para / DNP3 / Communication | |
|---|---|------------------------------------|-----|
| 5s | | 0.1s ... 10.0s | S.3 |
|  | <i>Application layer response timeout</i> | | |


| AppLink num retries | | Device Para / DNP3 / Communication | |
|---|---|------------------------------------|-----|
| 0 | | 0 ... 255 | S.3 |
|  | <i>The number of times the device will retransmit an Application Layer fragment</i> | | |

| Unsol Reporting | | Device Para / DNP3 / Communication | |
|---|---|---|-----|
| Inactive | | Inactive, Active ↳ Table | S.3 |
|  | <i>Enables unsolicited reporting. This is available only for DNP3 TCP connections, and for DNP3 RTU in case of a peer-to-peer connection.</i> | | |

| Unsol Reporting Timeout | | Device Para / DNP3 / Communication | |
|---|--|------------------------------------|-----|
| 10s | <ul style="list-style-type: none"> Only available if: Protocol ≠ DNP3 UDP | 1.0s ... 60.0s | S.3 |
|  | <i>Set the amount of time that the outstation will wait for an Application Layer confirmation back from the master indicating that the master received the unsolicited response message.</i> | | |


| Unsol Reporting Retry | | Device Para / DNP3 / Communication | |
|---|---|------------------------------------|-----|
| 2 | <ul style="list-style-type: none"> Only available if: Protocol ≠ DNP3 UDP | 0 ... 255 | S.3 |
|  | <i>Set the number of retries that an outstation transmits in each unsolicited response series if it does not receive confirmation back from the master.</i> | | |

| TestSeqNo | | Device Para / DNP3 / Communication | |
|---|---|---|-----|
| Inactive | | Inactive, Active ↳ Table | S.3 |
|  | <i>Test if sequence number of request is incremented. If it is not correctly incremented the request will be ignored. It is recommended to have it inactive but some older DNP implementations need it activated.</i> | | |


| TestSBO | | Device Para / DNP3 / Communication | |
|---|--|---|-----|
| Active | | Inactive, Active ↳ Table | S.3 |
|  | <i>It enables a stricter comparing of SBO and operate command. For older DNP versions it is recommended to deactivated it.</i> | | |


7 Communication


7.4.1 DNP3: Global Parameters


| | | |
|---|--|-----|
| Timeout SBO | Device Para / DNP3 / Communication | |
| 30s | 1.0s ... 60.0s | S.3 |
|  | <i>DNP Outputs can be controlled in a two stage procedure (SBO: Select Before Operate). These outputs are to be selected first by a Select command. After this the bit is reserved for this Operate request. This setting defines the timer for this reservation: After the timer has elapsed the bit is released.</i> | |


| | | |
|---|---|-----|
| ColdRestart | Device Para / DNP3 / Communication | |
| Inactive | Inactive, Active ↳ Table | S.3 |
|  | <i>Enables support for Cold Restart function.</i> | |


| | | |
|---|------------------------------------|-----|
| Deadb integr time | Device Para / DNP3 / Communication | |
| 1 | 0 ... 300 | S.3 |
|  | <i>Deadband integration time.</i> | |


| | | |
|---|---|-----|
| BinaryInput 0 ... BinaryInput 63 | Device Para / DNP3 / Point map / Binary Inputs | |
| - | - ... Internal test state ↳ Table | S.3 |
|  | <i>Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.</i> | |

| | | |
|---|---|-----|
| DoubleBitInput 0 ... DoubleBitInput 5 | Device Para / DNP3 / Point map / Double Bit Inputs | |
| - | -, Pos ↳ Table | S.3 |
|  | <i>Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| BinaryCounter 0 ... BinaryCounter 7 | Device Para / DNP3 / Point map / BinaryCounter | |
| - | - ... Operating hours Cr ↳ Table | S.3 |
|  | <i>Counter can be used to report counter values to the DNP master.</i> | |


| | | |
|---|--|-----|
| Analog value 0 ... Analog value 31 | Device Para / DNP3 / Point map / Analog Input | |
| - | - ... VL31 THD ↪ Table | S.3 |
|  | <i>Analog value can be used to report values to the master (DNP)</i> | |


| | | |
|---|--|-----|
| Scale Factor 0 ... Scale Factor 31 | Device Para / DNP3 / Point map / Analog Input | |
| 1 | 0.001 ... 1000000 ↪ Table | S.3 |
|  | <i>The scale factor is used to convert the measured value in an integer format</i> | |

| | | |
|---|--|-----|
| Dead Band 0 ... Dead Band 31 | Device Para / DNP3 / Point map / Analog Input | |
| 1% | 0.01% ... 100.00% | S.3 |
|  | <i>If a change of measured value is greater than the deadband value it will be reported to the master.</i> | |

7.4.2 DNP3: Direct Controls

| | | |
|---|---|-----|
| Res all Diag Cr | Operation / Count and RevData / DNP3 Operation / Reset | |
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>Reset all diagnosis counters</i> | |

| | | |
|---|---|-----|
| Slave Id | Device Para / DNP3 / Communication | |
| 1 | 0 ... 65519 | S.3 |
|  | <i>Slaveld defines the DNP3 address of this device (Outstation)</i> | |

| | | |
|---|--|-----|
| Master Id | Device Para / DNP3 / Communication | |
| 65500 | 0 ... 65519 | S.3 |
|  | <i>MasterId defines the DNP3 address of master (SCADA)</i> | |

7.4.3 DNP3: Input States

| | |
|--|---|
| BinaryInput0-I ... BinaryInput15-I (↪ DNP3 . BinaryInput 0) | Operation / Status Display / DNP3 / Binary Inputs |
| ↓ | <i>Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.</i> |

| | |
|---|---|
| BinaryInput16-I ... BinaryInput31-I | Operation / Status Display / DNP3 / Binary Inputs |
| ↓ | <i>Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.</i> |

| | |
|---|---|
| BinaryInput32-I ... BinaryInput47-I | Operation / Status Display / DNP3 / Binary Inputs |
| ↓ | <i>Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.</i> |

| | |
|---|---|
| BinaryInput48-I ... BinaryInput63-I | Operation / Status Display / DNP3 / Binary Inputs |
| ↓ | <i>Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device.</i> |

| | |
|--|---|
| DoubleBitInput0-I ... DoubleBitInput5-I (↪ DNP3 . DoubleBitInput 0) | Operation / Status Display / DNP3 / Double Bit Inputs |
| ↓ | <i>Double Bit Digital Input (DNP). This corresponds to a double bit binary output of the protective device.</i> |

7.4.4 DNP3: Signals (Output States)

| | |
|-------------------|---|
| busy | Operation / Status Display / DNP3 / State |
| ↑ | <i>This message is set if the protocol is started. It will be reset if the protocol is shut down.</i> |

| | |
|-------------------|---|
| ready | Operation / Status Display / DNP3 / State |
| ↑ | <i>The message will be set if the protocol is successfully started and ready for data exchange.</i> |

| | |
|---------------|---|
| Active | Operation / Status Display / DNP3 / State |
| ↑ | <i>The communication with the Master (SCADA) is active.</i> |
| | <i>Note that for TCP/UDP, this state is permanently "Low" unless »DataLink confirm« is set to "Always".</i> |

7.4.5 DNP3: Counters

| | |
|------------------|--|
| NReceived | Operation / Count and RevData / DNP3 |
| # | <i>Diagnostic counter: Number of received characters</i> |

| | |
|--------------|--|
| NSent | Operation / Count and RevData / DNP3 |
| # | <i>Diagnostic counter: Number of sent characters</i> |

| | |
|---------------------|--|
| NBadFramings | Operation / Count and RevData / DNP3 |
| # | <i>Diagnostic counter: Number of bad framings. A large number indicates a disturbed serial connection.</i> |


| | |
|---------------------|---|
| NBadParities | Operation / Count and RevData / DNP3 |
| # | <i>Diagnostic counter: Number of parity errors. A large number indicates a disturbed serial connection.</i> |


| | |
|----------------------|---|
| NBreakSignals | Operation / Count and RevData / DNP3 |
| # | <i>Diagnostic counter: Number of break signals. A large number indicates a disturbed serial connection.</i> |


| | |
|---------------------|---|
| NBadChecksum | Operation / Count and RevData / DNP3 |
| # | <i>Diagnostic counter: Number of frames received with bad checksum.</i> |

7.5 Modbus


7.5.1 Modbus: Global Parameters


| TCP Port Config | | Device Para / Modbus / Communication / TCP |
|---|---|--|
| Only available if: <ul style="list-style-type: none"> • Protocol = Modbus TCP • Protocol = Modbus TCP/RTU Default | Default, Private ↪ Table | S.3 |
|  <i>TCP Port Configuration. This parameter needs to be set to "Private" only if another TCP Port than the default one shall be used.</i> | | |


| Port | | Device Para / Modbus / Communication / TCP |
|--|--|--|
| Only available if: <ul style="list-style-type: none"> • Protocol = Modbus TCP • Protocol = Modbus TCP/RTU 502 | Adjustable range: <ul style="list-style-type: none"> • 502 ... 502, If: TCP Port Config = Default • 49152 ... 65535, If: TCP Port Config = Private | S.3 |
|  <i>IP Port Number.</i> <i>In general it is recommended to keep the default value. if this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network.</i> | | |


| t-timeout | | Device Para / Modbus / Communication / RTU |
|--|------------------|--|
| Only available if: <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU 2s | 0.01s ... 10.00s | S.3 |
|  <i>Maximum time that is available to the device for sending an answer to the SCADA system. If the device detects that this time has elapsed (i.e. it failed to send its answer within this time) then it cancels the answer. The time set here must not be longer than the corresponding timeout set for the SCADA system.</i> | | |


| Baud rate | | Device Para / Modbus / Communication / RTU |
|---|---|--|
| Only available if: <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU 19200 | 1200, 2400, 4800, 9600, 19200, 38400 ↪ Table | S.3 |
|  <i>Baud rate</i> | | |


| Physical Settings | | Device Para / Modbus / Communication / RTU | |
|--|---|--|-----|
| Only available if: | 8E1, 8O1, 8N1, 8N2 | | S.3 |
| <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU | ↪ Table | | |
| 8E1 | | | |
|  | <p><i>Digit 1: Number of bits. Digit 2: E=even parity, O=odd parity, N=no parity. Digit 3: Number of stop bits. More information on the parity: It is possible that the last data bit is followed by a parity bit which is used for recognition of communication errors. The parity bit ensures that with even parity ("EVEN") always an even number of bits with valence "1" or with odd parity ("ODD") an odd number of "1" valence bits are transmitted. But it is also possible to transmit no parity bits (here the setting is "Parity = None"). More information on the stop-bits: The end of a data byte is terminated by the stop-bits.</i></p> | | |


| t-call | | Device Para / Modbus / Communication / General Settings | |
|---|---|---|-----|
| 10s | 1s ... 3600s | | S.3 |
|  | <p><i>If there is no request telegram sent from Scada to the device after expiry of this time - the device concludes a communication failure within the Scada system.</i></p> | | |


| Scada CmdBlo | | Device Para / Modbus / Communication / General Settings | |
|---|--|---|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <p><i>Activating (allowing)/ Deactivating (disallowing) the blocking of the Scada Commands</i></p> | | |


| Disable Latching | | Device Para / Modbus / Communication / General Settings | |
|---|--|---|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <p><i>Disable Latching: If this parameter is active (true), none of the Modbus states will be latched. That means that trip signals wont be latched by Modbus.</i></p> | | |


| AllowGap | | Device Para / Modbus / Communication / General Settings | |
|---|--|---|-----|
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <p><i>If this parameter is active (True), the user can request a set of modbus register without getting an exception, because of invalid address in the requested array. The invalid addresses have a special value 0xFAFA, but the user is responsible for ignoring invalid addresses. Attention: This special value can be valid, if address is valid.</i></p> | | |

| Optical rest position | | Device Para / Modbus / Communication / General Settings | |
|---|-------------------------------------|---|-----|
| Light on | Light off, Light on | | S.3 |
| | ↪ Table | | |
|  | <p><i>Optical rest position</i></p> | | |

| | | |
|---|---|-----|
| Config Bin Inp1 ... Config Bin Inp32 | Device Para / Modbus / Config Registers / States | |
| - | - ... Internal test state ↳ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |

| | | |
|---|--|-----|
| Latched Config Bin Inp1 ... Latched Config Bin Inp32 | Device Para / Modbus / Config Registers / States | |
| Inactive | Inactive, Active ↳ Table | S.3 |
|  | <i>Latched Configurable Binary Input</i> | |

| | | |
|---|--|-----|
| Mapped Meas 1 ... Mapped Meas 16 | Device Para / Modbus / Config Registers / Measured Values | |
| - | - ... VL31 THD ↳ Table | S.3 |
|  | <i>Mapped Measured Values. They can be used to provide measured values to the Modbus Master.</i> | |

| | | |
|---|--|-----|
| Type of SCADA mapping | Device Para / Modbus / Config. Data Obj. | |
| Standard | Standard, User-defined ↳ Table | S.3 |
|  | <i>This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.</i> | |

7.5.2 Modbus: Direct Controls

| | | |
|---|---|-----|
| Res Diagn Cr | Operation / Reset | |
| Inactive | Inactive, Active ↳ Table | P.1 |
|  | <i>All Modbus Diagnosis Counters will be reset.</i> | |

| Smart view via Modbus | Device Para / Security / Communication | |
|---|---|-----|
| Inactive | Inactive, Active ↩ Table | P.1 |
| <input checked="" type="radio"/> Activate (allow) or inactivate (disallow) the Smart view access via the Modbus tunnel. | | |

| Slave ID | Device Para / Modbus / Communication / RTU | |
|---|--|-----|
| Only available if: <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU 1 | 1 ... 247 | P.1 |
| <input checked="" type="radio"/> Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system. | | |

| Unit ID | Device Para / Modbus / Communication / TCP | |
|--|--|-----|
| Only available if: <ul style="list-style-type: none"> • Protocol = Modbus TCP • Protocol = Modbus TCP/RTU 255 | 1 ... 255 | P.1 |
| <input checked="" type="radio"/> The Unit Identifier is used for routing. This parameter is to be set, if a Modbus RTU and a Modbus TCP network should be coupled. | | |

7.5.3 Modbus: Input States

| Config Bin Inp1-I | Operation / Status Display / Modbus / Configb Registers | |
|--|---|--|
| ... | | |
| Config Bin Inp16-I (↩ Modbus . Config Bin Inp1) | | |
| <input type="checkbox"/> State of the module input: Config Bin Inp | | |

| Config Bin Inp17-I | Operation / Status Display / Modbus / Configb Registers | |
|--|---|--|
| ... | | |
| Config Bin Inp32-I | | |
| <input type="checkbox"/> State of the module input: Config Bin Inp | | |

7.5.4 Modbus: Signals (Output States)

| Transmission RTU | | Operation / Status Display / Modbus / State |
|------------------|--|---|
| ↑ | Only available if: <ul style="list-style-type: none">• Protocol = Modbus RTU• Protocol = Modbus TCP/RTU <p>Signal: SCADA active</p> | |

| Transmission TCP | | Operation / Status Display / Modbus / State |
|------------------|--|---|
| ↑ | Only available if: <ul style="list-style-type: none">• Protocol = Modbus TCP• Protocol = Modbus TCP/RTU <p>Signal: SCADA active</p> | |

| Scada Cmd 1 | | Operation / Status Display / Modbus / Commands |
|--------------|---------------|--|
| ... | | |
| Scada Cmd 16 | | |
| ↑ | Scada Command | |

| Device Type | | Operation / Status Display / Modbus / State |
|-------------|---|---|
| ↑ | Device type code for relationship between device name and its Modbus code. HighPROTEC: MRI4 - 1000 MRU4 - 1001 MRA4 - 1002 MCA4 - 1003 MRDT4 - 1005 MCDTV4 - 1006 MCDGV4 - 1007 MRM4 - 1009 MRMV4 - 1010 MCDLV4 - 1011 | |

| Comm Version | | Operation / Status Display / Modbus / State |
|--------------|--|---|
| ↑ | Modbus Communication version. This version number changes if something becomes incompatible between different Modbus releases. | |

7.5.5 Modbus: Values, Counters

| NoOfRequestsTotal | | Operation / Count and RevData / Modbus / RTU |
|--------------------------|--|--|
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU <p><i>Total number of requests. Includes requests for other slaves.</i></p> | |

| NoOfReqForMe | | Operation / Count and RevData / Modbus / RTU |
|---------------------|---|--|
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU <p><i>Total Number of requests for this slave.</i></p> | |

| NoOfResponse | | Operation / Count and RevData / Modbus / RTU |
|---------------------|--|--|
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU <p><i>Total number of requests having been responded.</i></p> | |

| NoOfFrameErrors | | Operation / Count and RevData / Modbus / RTU |
|------------------------|--|--|
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU <p><i>Total Number of Frame Errors. Physically corrupted Frame.</i></p> | |

| NoOfParityErrors | | Operation / Count and RevData / Modbus / RTU |
|-------------------------|---|--|
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU <p><i>Total number of parity errors. Physically corrupted Frame.</i></p> | |

| NoOfRespTimeOverruns | | Operation / Count and RevData / Modbus / RTU |
|-----------------------------|--|--|
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU <p><i>Total number of requests with exceeded response time. Physically corrupted Frame.</i></p> | |

| | | |
|--------------------------|---|--|
| NoOfOverrunErros | | Operation / Count and RevData / Modbus / RTU |
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU <p><i>Total Number of Overrun Failures. Physically corrupted Frame.</i></p> | |
| NoOfBreaks | | Operation / Count and RevData / Modbus / RTU |
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus RTU • Protocol = Modbus TCP/RTU <p><i>Number of detected communication aborts</i></p> | |
| NoOfRequestsTotal | | Operation / Count and RevData / Modbus / TCP |
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus TCP • Protocol = Modbus TCP/RTU <p><i>Total number of requests. Includes requests for other slaves.</i></p> | |
| NoOfReqForMe | | Operation / Count and RevData / Modbus / TCP |
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus TCP • Protocol = Modbus TCP/RTU <p><i>Total Number of requests for this slave.</i></p> | |
| NoOfResponse | | Operation / Count and RevData / Modbus / TCP |
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus TCP • Protocol = Modbus TCP/RTU <p><i>Total number of requests having been responded.</i></p> | |
| NoOfQueryInvalid | | Operation / Count and RevData / Modbus / TCP |
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus TCP • Protocol = Modbus TCP/RTU <p><i>Total number of Request errors. Request could not be interpreted</i></p> | |


| | |
|--------------------------|--|
| NoOfInternalError | Operation / Count and RevData / Modbus / TCP |
|--------------------------|--|

| | |
|---|--|
| # | <p>Only available if:</p> <ul style="list-style-type: none"> • Protocol = Modbus TCP • Protocol = Modbus TCP/RTU <p><i>Total Number of Internal errors while interpreting the request.</i></p> |
|---|--|

| | |
|--|--|
| Mapped Meas 1 ... Mapped Meas 16 | Operation / Count and RevData / Modbus / Measured Values |
|--|--|

| | |
|---|--|
|  | <i>Mapped Measured Values. They can be used to provide measured values to the Modbus Master.</i> |
|---|--|


| | |
|------------------------------|--|
| Smart view via Modbus | Operation / Security / Security States |
|------------------------------|--|

| | |
|---|---|
|  | <i>Activate (allow) or inactivate (disallow) the Smart view access via the Modbus tunnel.</i> |
|---|---|


| | |
|--------------------|--|
| Config info | Device Para / Modbus / Config. Data Obj. |
|--------------------|--|

| | |
|---|---|
|  | <i>Configuration comment (entered by the user during SCADA configuration)</i> |
|---|---|

| | |
|-----------------------|--|
| Config version | Device Para / Modbus / Config. Data Obj. |
|-----------------------|--|

| | |
|---|--|
|  | <i>Version of the user-defined SCADA configuration</i> |
|---|--|

| | |
|----------------------|--|
| Config status | Device Para / Modbus / Config. Data Obj. |
|----------------------|--|


| | |
|---|--|
|  | <p><i>Status of the user-defined SCADA configuration.</i></p> <p><i>Possible values:</i></p> <ul style="list-style-type: none"> - <i>New SCADA configuration is being loaded, but not active yet.</i> - <i>The SCADA configuration is active.</i> - <i>The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).</i> - <i>Unexpected error. Please contact our service-team.</i> |
|---|--|

7.6 IEC 61850


IEC 61850 communication


7.6.1 IEC 61850: Global Parameters

| Function | Device Para / IEC 61850 / Communication | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | Permanent activation or deactivation of module/stage. | |


| Deadb integr time | Device Para / IEC 61850 / Communication | |
|---|---|-----|
| 0 | 0 ... 300 | S.3 |
|  | Deadband integration time. | |


7.6.2 IEC 61850: Direct Controls

| ResetStatistic | Operation / Reset | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | P.1 |
|  | Reset of all IEC61850 diagnostic counters | |

| Simulation Mode | Device Para / IEC 61850 / Communication | |
|---|--|-----|
| Inactive | Inactive, Active ↪ Table | P.1 |
|  | Direct Command to activate the IEC61850 Simulation Mode, so that the "test" flag is set in all GOOSE messages that the device transmits. Moreover, the device reacts in Simulation Mode to only those messages that have this "test" flag set. | |

7.6.3 IEC 61850: Signals (Output States)

| MMS Client connected | Operation / Status Display / IEC 61850 / State | |
|---|--|--|
|  | At least one MMS client is connected to the device | |

| All Goose Subscriber active | Operation / Status Display / IEC 61850 / State | |
|---|--|--|
|  | All Goose subscriber in the device are working | |

| | |
|--|---|
| GOSINGGIO1.Ind1.stVal ... GOSINGGIO1.Ind16.stVal | Operation / Status Display / IEC 61850 / Virtual Inputs 1 |
|--|---|

[!\[\]\(919a2cb85b99741a73c0c31a427236a8_img.jpg\)](#) *Signal: Virtual Input (IEC61850 GGIO Ind): State*

| | |
|---|---|
| GOSINGGIO1.Ind17.stVal ... GOSINGGIO1.Ind32.stVal | Operation / Status Display / IEC 61850 / Virtual Inputs 1 |
|---|---|

[!\[\]\(c3d993ca47bfe2a953c700506ce31fa0_img.jpg\)](#) *Signal: Virtual Input (IEC61850 GGIO Ind): State*

| | |
|--|---|
| GOSINGGIO2.Ind1.stVal ... GOSINGGIO2.Ind16.stVal | Operation / Status Display / IEC 61850 / Virtual Inputs 2 |
|--|---|

[!\[\]\(e3f8612927870f2e0f9f5989e6dd3064_img.jpg\)](#) *Signal: Virtual Input (IEC61850 GGIO Ind): State*

| | |
|---|---|
| GOSINGGIO2.Ind17.stVal ... GOSINGGIO2.Ind32.stVal | Operation / Status Display / IEC 61850 / Virtual Inputs 2 |
|---|---|

[!\[\]\(17413706fd4997a1a4bdf85c6864eee1_img.jpg\)](#) *Signal: Virtual Input (IEC61850 GGIO Ind): State*

| | |
|--|---|
| GOSINGGIO1.Ind1.q ... GOSINGGIO1.Ind16.q | Operation / Status Display / IEC 61850 / Virtual Inputs 1 |
|--|---|


[!\[\]\(cf531ed27e91483460120fcc057b3901_img.jpg\)](#) *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input*


| | |
|---|---|
| GOSINGGIO1.Ind17.q ... GOSINGGIO1.Ind32.q | Operation / Status Display / IEC 61850 / Virtual Inputs 1 |
|---|---|


[!\[\]\(4b7a79268f6ba26c1471d4232fffa85a_img.jpg\)](#) *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input*

| | |
|--|---|
| GOSINGGIO2.Ind1.q ... GOSINGGIO2.Ind16.q | Operation / Status Display / IEC 61850 / Virtual Inputs 2 |
|--|---|


[!\[\]\(b4eeff342f60cc7bcd67d869b4fedca2_img.jpg\)](#) *Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input*


| | |
|---|--|
| GOSINGGIO2.Ind17.q ... GOSINGGIO2.Ind32.q | Operation / Status Display / IEC 61850 / Virtual Inputs 2 |
|  | <i>Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input</i> |


| | |
|---|---|
| CTLGGIO1.SPCSO1.stVal ... CTLGGIO1.SPCSO16.stVal | Operation / Status Display / IEC 61850 / ControlInputs |
|  | <i>Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).</i> |


| | |
|---|---|
| CTLGGIO1.SPCSO17.stVal ... CTLGGIO1.SPCSO32.stVal | Operation / Status Display / IEC 61850 / ControlInputs |
|  | <i>Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output).</i> |


7.6.4 IEC 61850: Values, Counters


| | |
|---|---|
| GoosePublisherState | Operation / Status Display / IEC 61850 / State |
|  | <i>State of the GOOSE Publisher (on or off)</i> |


| | |
|---|--|
| GooseSubscriberState | Operation / Status Display / IEC 61850 / State |
|  | <i>State of the GOOSE Subscriber (on or off)</i> |

| | |
|---|--|
| MmsServerState | Operation / Status Display / IEC 61850 / State |
|  | <i>State of MMS Server (on or off)</i> |

| | |
|---|---|
| NoOfGooseRxAll | Operation / Count and RevData / IEC 61850 |
|  | <i>Total number of received GOOSE messages including messages for other devices (subscribed and not subscribed messages).</i> |

| | |
|---|---|
| NoOfGooseRxSubscribed | Operation / Count and RevData / IEC 61850 |
|  | <i>Total Number of subscribed GOOSE messages including messages with incorrect content.</i> |

| | |
|---|--|
| NoOfGooseRxCorrect | Operation / Count and RevData / IEC 61850 |
|  | <i>Total Number of subscribed and correctly received GOOSE messages.</i> |


| | |
|---|---|
| NoOfGooseRxNew | Operation / Count and RevData / IEC 61850 |
|  | <i>Number of subscribed and correctly received GOOSE messages with new content.</i> |

| | |
|-----------------------------------|---|
| NoOfGooseTxAll | Operation / Count and RevData / IEC 61850 |
| # | <i>Total Number of GOOSE messages that have been published by this device.</i> |
| NoOfGooseTxNew | Operation / Count and RevData / IEC 61850 |
| # | <i>Total Number of new GOOSE messages (modified content) that have been published by this device.</i> |
| NoOf Srv.Req.All | Operation / Count and RevData / IEC 61850 |
| # | <i>Total number of MMS Server requests including incorrect requests.</i> |
| NoOfDataReadAll | Operation / Count and RevData / IEC 61850 |
| # | <i>Total Number of values read from this device including incorrect requests.</i> |
| NoOfDataReadCorrect | Operation / Count and RevData / IEC 61850 |
| # | <i>Total Number of correctly read values from this device.</i> |
| NoOfDataWrittenAll | Operation / Count and RevData / IEC 61850 |
| # | <i>Total Number of values written by this device including incorrect ones.</i> |
| NoOfDataWrittenCorrect | Operation / Count and RevData / IEC 61850 |
| # | <i>Total Number of correctly written values by this device.</i> |
| NoOfDataChangeNotification | Operation / Count and RevData / IEC 61850 |
| # | <i>Number of detected changes within the datasets that are published with GOOSE messages.</i> |
| No of Client Connections | Operation / Count and RevData / IEC 61850 |
| # | <i>Number of active MMS client connections</i> |


7.6.5 IEC 61850, IEC 61850


IEC 61850 communication

7.6.5.1 IEC 61850, IEC 61850: Global Parameters

| | | |
|--|--|-----|
| COU_{TGGIO1}.Ind1.stVal ... COU_{TGGIO1}.Ind32.stVal | Device Para / IEC 61850 / Virtual Outputs 1 | |
| - | - ... Internal test state ↪ Table | S.3 |
|  <i>Virtual Output. This signal can be assigned or visualized via the SCD file to other devices within the IEC61850 substation.</i> | | |

7.6.5.2 IEC 61850, IEC 61850: Input States


| | | |
|---|--|--|
| COU_{TGGIO1}.Ind1.stVal-I ... COU_{TGGIO1}.Ind16.stVal-I (↪ IEC 61850 . COU_{TGGIO1}.Ind1.stVal) | Operation / Status Display / IEC 61850 / Virtual Outputs 1 | |
|  | <i>Module input state: Binary state of the Virtual Output (GGIO)</i> | |


| | | |
|---|--|--|
| COU_{TGGIO1}.Ind17.stVal-I ... COU_{TGGIO1}.Ind32.stVal-I | Operation / Status Display / IEC 61850 / Virtual Outputs 1 | |
|  | <i>Module input state: Binary state of the Virtual Output (GGIO)</i> | |


7.7 IEC103


IEC 60870-5-103 communication


7.7.1 IEC103: Global Parameters


| Function | Device Para / IEC103 / General Settings | |
|---|--|-----|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>Activation or deactivation of the IEC103 communication.</i> | |


| Baud rate | Device Para / IEC103 / General Settings | |
|---|--|-----|
| 19200 | 1200, 2400, 4800, 9600, 19200, 38400, 57600 ↪ Table | S.3 |
|  | <i>Baud rate</i> | |


| Physical Settings | Device Para / IEC103 / General Settings | |
|---|--|-----|
| 8E1 | 8E1, 8O1, 8N1, 8N2 ↪ Table | S.3 |
|  | <i>Digit 1: Number of bits. Digit 2: E=even parity, O=odd parity, N=no parity. Digit 3: Number of stop bits. More information on the parity: It is possible that the last data bit is followed by a parity bit which is used for recognition of communication errors. The parity bit ensures that with even parity ("EVEN") always an even number of bits with valence "1" or with odd parity ("ODD") an odd number of "1" valence bits are transmitted. But it is also possible to transmit no parity bits (here the setting is "Parity = None"). More information on the stop-bits: The end of a data byte is terminated by the stop-bits.</i> | |


| t-call | Device Para / IEC103 / General Settings | |
|---|--|-----|
| 60s | 1s ... 3600s | S.3 |
|  | <i>If there is no request telegram sent from Scada to the device after expiry of this time - the device concludes a communication failure within the Scada system.</i> | |


| Transfer Disturb Rec | Device Para / IEC103 / General Settings | |
|---|--|-----|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>Activates the transmission of disturbance records</i> | |


| Timezone | Device Para / IEC103 / General Settings | |
|---|---|-----|
| UTC | UTC, Local Time ↪ Table | S.3 |
|  | <i>Selection whether the timestamps in IEC103 messages shall be given as UTC or local time. ("Local time" always includes the actual daylight saving settings.)</i> | |

| Energy Pulse Rate | | Device Para / IEC103 / General Settings |
|---|--|---|
| 0 | 0 ... 0 | S.3 |
|  | <i>The energy values are always transmitted as counter values (i.e. as integer numbers). This setting defines the unit: If "1" is set then each counter increment is 1 kWh, if "2" is set then each counter increment is 2 kWh, etc. The setting "0" has the effect that no energy values are transmitted.</i> | |


| DFC-Compat. | | Device Para / IEC103 / General Settings |
|---|---|---|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>This setting is only required for certain substation implementations. If there should be communication problems related to the Command Response Queue this setting switches the device over to a different behavior.</i> | |


| Ex activate test mode | | Service / Test - Prot inhib. / Scada / IEC103 |
|---|--|---|
| Running | - ... Internal test state ↪ Table | S.3 |
|  | <i>The signal assigned to this parameter switches the IEC103 communication into Test Mode.</i> | |

| Ex activate Block MD | | Service / Test - Prot inhib. / Scada / IEC103 |
|---|--|---|
| - | - ... Internal test state ↪ Table | S.3 |
|  | <i>The signal assigned to this parameter activates the blocking of IEC103 transmission in monitor direction.</i> | |

| Type of SCADA mapping | | Device Para / IEC103 / Config. Data Obj. |
|---|--|--|
| Standard | Standard, User-defined ↪ Table | S.3 |
|  | <i>This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.</i> | |

7.7.2 IEC103: Direct Controls

| Activate test mode | | Service / Test - Prot inhib. / Scada / IEC103 |
|---|---|---|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>This Direct Control parameter switches the IEC103 communication into Test Mode (or back to normal mode).</i> | |

| Activate Block MD | | Service / Test - Prot inhib. / Scada / IEC103 |
|---|---|---|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>This Direct Control parameter activates (or deactivates) the blocking of IEC103 transmission in monitor direction.</i> | |

| | | |
|----------------------------------|-------------------------------------|-----|
| Res all Diag Cr | Operation / Reset | |
| Inactive | Inactive, Active | S.3 |
| | ↩ Table | |
| <input checked="" type="radio"/> | <i>Reset all diagnosis counters</i> | |

| | | |
|----------------------------------|---|-----|
| Slave ID | Device Para / IEC103 / General Settings | |
| 1 | 1 ... 247 | S.3 |
| <input checked="" type="radio"/> | <i>Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system.</i> | |

7.7.3 IEC103: Signals (Output States)

| | | |
|--|-------------------------------------|--|
| Scada Cmd 1 ... Scada Cmd 10 | Operation / Status Display / IEC103 | |
| ↑↓ | <i>Scada Command</i> | |

| | | |
|---------------------|-------------------------------------|--|
| Transmission | Operation / Status Display / IEC103 | |
| ↑↓ | <i>Signal: SCADA active</i> | |

| | | |
|---------------------------|-------------------------------------|--|
| Failure Event lost | Operation / Status Display / IEC103 | |
| ↑↓ | <i>Failure event lost</i> | |




| | | |
|-------------------------|--|--|
| Test mode active | Operation / Status Display / IEC103 | |
| ↑↓ | <i>Signal: IEC103 communication has been switched over into Test Mode.</i> | |

| | | |
|------------------------|---|--|
| Block MD active | Operation / Status Display / IEC103 | |
| ↑↓ | <i>Signal: The blocking of IEC103 transmission in monitor direction has been activated.</i> | |

7.7.4 IEC103: Values, Counters

| | | |
|--------------------------|--|--|
| NReceived | Operation / Count and RevData / IEC103 | |
| <input type="checkbox"/> | <i>Total Number of received Messages</i> | |


| | | |
|--------------------------|--|--|
| NSent | Operation / Count and RevData / IEC103 | |
| <input type="checkbox"/> | <i>Total Number of sent Messages</i> | |


| | |
|---|---|
| NBadFramings | Operation / Count and RevData / IEC103 |
| # | Number of bad Messages |
| NBadParities | Operation / Count and RevData / IEC103 |
| # | Number of Parity Errors |
| NBreakSignals | Operation / Count and RevData / IEC103 |
| # | <p>Number of transmission errors with respect to the (electric) signal transport (physical layer).</p> <p>If the counter value gets increased constantly you should check for problems with the electrical connection (e.g. missing termination impedance of the serial interface), and make sure the transmission parameters (especially the baud rate) are correct.</p> |
| NInternalError | Operation / Count and RevData / IEC103 |
| # | Number of Internal Errors |
| NBadCharChecksum | Operation / Count and RevData / IEC103 |
| # | Number of Checksum Errors |
| Config info | Device Para / IEC103 / Config. Data Obj. |
|  | Configuration comment (entered by the user during SCADA configuration) |
| Config version | Device Para / IEC103 / Config. Data Obj. |
|  | Version of the user-defined SCADA configuration |
| Config status | Device Para / IEC103 / Config. Data Obj. |
|  | <p>Status of the user-defined SCADA configuration.</p> <p>Possible values:</p> <ul style="list-style-type: none"> - Changing: New SCADA configuration is being loaded, but not active yet. - OK: The SCADA configuration is active. - Config. not avail.: The user-defined SCADA configuration is not available (e.g. has not been loaded into the device). - Error: Unexpected error. Please contact our service-team. |


7.8 IEC104


IEC 60870-5-104 communication


7.8.1 IEC104: Global Parameters


| Function | Device Para / IEC104 / General Settings | |
|---|--|-----|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>Activation or deactivation of the IEC104 communication.</i> | |


| TCP Port Config | Device Para / IEC104 / General Settings | |
|---|---|-----|
| Default | Default, Private ↪ Table | S.3 |
|  | <i>TCP Port Configuration. This parameter needs to be set to "Private" only if another TCP Port than the default one shall be used.</i> | |

| Port | Device Para / IEC104 / General Settings | |
|---|---|-----|
| 2404 | Adjustable range: <ul style="list-style-type: none"> • 2404 ... 2404, If: TCP Port Config = Default • 49152 ... 65535, If: TCP Port Config = Private | S.3 |
|  | <i>IP Port Number.</i> <i>In general it is recommended to keep the default value. if this is not possible then select a number out of the private range 49152-52151 or 52164-65535 that is not yet in use within your network.</i> | |

| Timeout t0 | Device Para / IEC104 / Advanced | |
|---|--|-----|
| 30s | 30s ... 30s | S.3 |
|  | <i>Timeout of connection establishment</i> | |










| Timeout t1 | Device Para / IEC104 / Advanced | |
|---|--------------------------------------|-----|
| 15s | 15s ... 15s | S.3 |
|  | <i>Timeout of send or test APDUs</i> | |


| Timeout t2 | Device Para / IEC104 / Advanced | |
|---|---|-----|
| 10s | 10s ... 10s | S.3 |
|  | <i>Timeout for acknowledges in case of no data messages</i> | |


| Timeout t3 | Device Para / IEC104 / Advanced | |
|---|---|-----|
| 20s | 20s ... 20s | S.3 |
|  | <i>Timeout for sending test frames in case of a long idle state</i> | |


7 Communication

7.8.1 IEC104: Global Parameters

| | | |
|--|---|-----|
| Param k | Device Para / IEC104 / Advanced | |
| 12 | 12 ... 12 | S.3 |
|  Protocol parameter k | | |
| Param w | Device Para / IEC104 / Advanced | |
| 8 | 8 ... 8 | S.3 |
|  Protocol parameter w | | |
| Length of address | Device Para / IEC104 / Advanced | |
| 2 | 2 ... 2 | S.3 |
|  Number of bytes of the Common Address of the ASDU | | |
| Length of CoT | Device Para / IEC104 / Advanced | |
| 2 | 2 ... 2 | S.3 |
|  Number of bytes of the Cause of Transmission | | |
| Length of Inf Obj addr | Device Para / IEC104 / Advanced | |
| 3 | 3 ... 3 | S.3 |
|  Number of bytes of the address of the Information Object | | |
| Timezone | Device Para / IEC104 / General Settings | |
| UTC | UTC, Local Time | S.3 |
| | ↩ Table | |
|  Selection whether the timestamps in the transmitted communication telegrams shall be given as UTC or local time. ("Local time" always includes the actual daylight saving settings.) | | |
| Deadb integr time | Device Para / IEC104 / General Settings | |
| 1s | 0s ... 1000s | S.3 |
|  Deadband integration time. | | |
| Timeout SBE | Device Para / IEC104 / General Settings | |
| 30s | 1s ... 60s | S.3 |
|  The communication outputs can be controlled in a two-stage procedure (SBE: Select Before Execute). These outputs have to be selected first by a Select command. After this the bit is reserved for this Execute request. This setting defines the timer for this reservation: After the timer has elapsed the bit is released. | | |
| Update time | Device Para / IEC104 / Advanced | |
| 1s | 1s ... 60s | S.3 |
|  This setting specifies the time after which measurement values are refreshed. If cyclic transmission is selected new values are reported after this time has elapsed. | | |

| Transmit Int. State | | Device Para / IEC104 / Advanced |
|---|---|---------------------------------|
| Active | Inactive, Active | S.3 |
| | | ↩ Table |
|  | <i>If this parameter is set to "active" (default) then the intermediate position of a switchgear, too, is transmitted. This needs to be changed to "inactive" only in the rare case that the substation communication does not support the reporting of intermediate positions.</i> | |

| Trans. Cmd. State | | Device Para / IEC104 / Advanced |
|---|--|---------------------------------|
| Active | Inactive, Active | S.3 |
| | | ↩ Table |
|  | <i>_ If false it suppress change events for command states (Same address as cmd)</i> | |


| Type of SCADA mapping | | Device Para / IEC104 / Config. Data Obj. |
|---|--|--|
| Standard | Standard, User-defined | S.3 |
| | | ↩ Table |
|  | <i>This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.</i> | |


7.8.2 IEC104: Direct Controls

| Res all Diag Cr | | Operation / Reset |
|----------------------------------|-------------------------------------|-------------------------|
| Inactive | Inactive, Active | S.3 |
| | | ↩ Table |
| <input checked="" type="radio"/> | <i>Reset all diagnosis counters</i> | |

| Common address | | Device Para / IEC104 / General Settings |
|----------------------------------|-----------------------------------|---|
| 1 | 1 ... 65535 | S.3 |
| <input checked="" type="radio"/> | <i>Common Address of the ASDU</i> | |

7.8.3 IEC104: Signals (Output States)


| busy | | Operation / Status Display / IEC104 |
|---|---|-------------------------------------|
|  | <i>This message is set if the protocol is started. It will be reset if the protocol is shut down.</i> | |

| ready | | Operation / Status Display / IEC104 |
|---|---|-------------------------------------|
|  | <i>The message will be set if the protocol is successfully started and ready for data exchange.</i> | |

| | |
|---------------------------|-------------------------------------|
| Transmission | Operation / Status Display / IEC104 |
| ↑ | <i>Signal: SCADA active</i> |
| Failure Event lost | Operation / Status Display / IEC104 |
| ↑ | <i>Failure event lost</i> |
| Scada Cmd 1 ... | Operation / Status Display / IEC104 |
| Scada Cmd 16 | |
| ↑ | <i>Scada Command</i> |

7.8.4 IEC104: Values, Counters


| | |
|---------------------------|---|
| NReceived | Operation / Count and RevData / IEC104 |
| # | <i>Diagnostic counter: Number of received characters</i> |
| NSent | Operation / Count and RevData / IEC104 |
| # | <i>Diagnostic counter: Number of sent characters</i> |
| Num. of lost conn. | Operation / Count and RevData / IEC104 |
| # | <i>Diagnostic counter: Number of lost connections</i> |
| NBadChecksum | Operation / Count and RevData / IEC104 |
| # | <i>Diagnostic counter: Number of frames received with bad checksum.</i> |
| Config info | Device Para / IEC104 / Config. Data Obj. |
| | <i>Configuration comment (entered by the user during SCADA configuration)</i> |
| Config version | Device Para / IEC104 / Config. Data Obj. |
| | <i>Version of the user-defined SCADA configuration</i> |


| Config status | Device Para / IEC104 / Config. Data Obj. |
|---|--|
|  | <p><i>Status of the user-defined SCADA configuration.</i></p> <p><i>Possible values:</i></p> <ul style="list-style-type: none">- <i>Changing: New SCADA configuration is being loaded, but not active yet.</i>- <i>OK: The SCADA configuration is active.</i>- <i>Config. not avail.: The user-defined SCADA configuration is not available (e.g. has not been loaded into the device).</i>- <i>Error: Unexpected error. Please contact our service-team.</i> |


7.9 Profibus


Profibus Module


7.9.1 Profibus: Global Parameters


| ConfigBinInp 1 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↪ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 1 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 2 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↪ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 2 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 3 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↪ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 3 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 4 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 4 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |

| ConfigBinInp 5 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 5 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 6 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 6 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |

| ConfigBinInp 7 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| | | |
|---|--|-----|
| Latched 7 | Device Para / Profibus / ConfigBinInp 1-16 | |
| Inactive | Inactive, Active ↩ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 8 | Device Para / Profibus / ConfigBinInp 1-16 | |
| - | - ... Internal test state ↩ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| Latched 8 | Device Para / Profibus / ConfigBinInp 1-16 | |
| Inactive | Inactive, Active ↩ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 9 | Device Para / Profibus / ConfigBinInp 1-16 | |
| - | - ... Internal test state ↩ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| Latched 9 | Device Para / Profibus / ConfigBinInp 1-16 | |
| Inactive | Inactive, Active ↩ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 10 | Device Para / Profibus / ConfigBinInp 1-16 | |
| - | - ... Internal test state ↩ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| Latched 10 | Device Para / Profibus / ConfigBinInp 1-16 | |
| Inactive | Inactive, Active ↩ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| ConfigBinInp 11 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 11 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |

| ConfigBinInp 12 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 12 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 13 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 13 | | Device Para / Profibus / ConfigBinInp 1-16 |
|--|---|--|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |

| ConfigBinInp 14 | | Device Para / Profibus / ConfigBinInp 1-16 |
|---|--|--|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| | | | |
|---|--|--|-----|
| Latched 14 | | Device Para / Profibus / ConfigBinInp 1-16 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Defines whether the Input is latched.</i> | | |

| | | | |
|---|---|--|-----|
| ConfigBinInp 15 | | Device Para / Profibus / ConfigBinInp 1-16 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| | | | |
|---|--|--|-----|
| Latched 15 | | Device Para / Profibus / ConfigBinInp 1-16 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Defines whether the Input is latched.</i> | | |


| | | | |
|---|---|--|-----|
| ConfigBinInp 16 | | Device Para / Profibus / ConfigBinInp 1-16 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| | | | |
|---|--|--|-----|
| Latched 16 | | Device Para / Profibus / ConfigBinInp 1-16 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Defines whether the Input is latched.</i> | | |


| | | | |
|---|---|---|-----|
| ConfigBinInp 17 | | Device Para / Profibus / ConfigBinInp 17-32 | |
| - | - ... Internal test state | | S.3 |
| | ↪ Table | | |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| | | | |
|---|--|---|-----|
| Latched 17 | | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active | | S.3 |
| | ↪ Table | | |
|  | <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 18 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|---------------------------|---|
| - | - ... Internal test state | S.3 |
| | ↳ Table | |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 18 | | Device Para / Profibus / ConfigBinInp 17-32 |
|--|-------------------------|---|
| Inactive | Inactive, Active | S.3 |
| | ↳ Table | |
|  <i>Defines whether the Input is latched.</i> | | |

| ConfigBinInp 19 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|---------------------------|---|
| - | - ... Internal test state | S.3 |
| | ↳ Table | |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 19 | | Device Para / Profibus / ConfigBinInp 17-32 |
|--|-------------------------|---|
| Inactive | Inactive, Active | S.3 |
| | ↳ Table | |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 20 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|---------------------------|---|
| - | - ... Internal test state | S.3 |
| | ↳ Table | |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 20 | | Device Para / Profibus / ConfigBinInp 17-32 |
|--|-------------------------|---|
| Inactive | Inactive, Active | S.3 |
| | ↳ Table | |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 21 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|---------------------------|---|
| - | - ... Internal test state | S.3 |
| | ↳ Table | |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| | | |
|---|--|-----|
| Latched 21 | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 22 | Device Para / Profibus / ConfigBinInp 17-32 | |
| - | - ... Internal test state ↪ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| Latched 22 | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 23 | Device Para / Profibus / ConfigBinInp 17-32 | |
| - | - ... Internal test state ↪ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| Latched 23 | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 24 | Device Para / Profibus / ConfigBinInp 17-32 | |
| - | - ... Internal test state ↪ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| Latched 24 | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| ConfigBinInp 25 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|--|---|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 25 | | Device Para / Profibus / ConfigBinInp 17-32 |
|--|---|---|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 26 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|--|---|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 26 | | Device Para / Profibus / ConfigBinInp 17-32 |
|--|---|---|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |


| ConfigBinInp 27 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|--|---|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| Latched 27 | | Device Para / Profibus / ConfigBinInp 17-32 |
|--|---|---|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  <i>Defines whether the Input is latched.</i> | | |

| ConfigBinInp 28 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|--|---|
| - | - ... Internal test state ↳ Table | S.3 |
|  <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | | |


| | | |
|---|--|-----|
| Latched 28 | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active ↩ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 29 | Device Para / Profibus / ConfigBinInp 17-32 | |
| - | - ... Internal test state ↩ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| Latched 29 | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active ↩ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 30 | Device Para / Profibus / ConfigBinInp 17-32 | |
| - | - ... Internal test state ↩ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| | | |
|---|--|-----|
| Latched 30 | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active ↩ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| | | |
|---|---|-----|
| ConfigBinInp 31 | Device Para / Profibus / ConfigBinInp 17-32 | |
| - | - ... Internal test state ↩ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |

| | | |
|---|--|-----|
| Latched 31 | Device Para / Profibus / ConfigBinInp 17-32 | |
| Inactive | Inactive, Active ↩ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |


| ConfigBinInp 32 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|---|---|
| - | - ... Internal test state ↳ Table | S.3 |
|  | <i>Virtual Digital Input. This corresponds to a virtual binary output of the protective device.</i> | |


| Latched 32 | | Device Para / Profibus / ConfigBinInp 17-32 |
|---|--|---|
| Inactive | Inactive, Active ↳ Table | S.3 |
|  | <i>Defines whether the Input is latched.</i> | |

| Little Endian | | Device Para / Profibus / Bus parameters |
|---|---|---|
| Active | Inactive, Active ↳ Table | S.3 |
|  | <i>If this setting is "active" all numbers are transmitted with the byte order Little Endian, otherwise the byte order Big Endian is used. (If all numbers received by your SCADA system should be completely wrong, changing this setting might help.)</i> | |

| Type of SCADA mapping | | Device Para / Profibus / Config. Data Obj. |
|---|--|--|
| Standard | Standard, User-defined ↳ Table | S.3 |
|  | <i>This setting decides whether the communication protocol shall use the default mapping of data objects, or some user-defined mapping that has been loaded from a *.HptSMap file.</i> | |

7.9.2 Profibus: Direct Controls

| Reset Comds | | Operation / Reset |
|---|---|-------------------|
| Inactive | Inactive, Active ↳ Table | P.1 |
|  | <i>All Profibus Commands will be reset.</i> | |


| Slave ID | | Operation / Status Display / Profibus / State Device Para / Profibus / Bus parameters |
|---|---|--|
| 2 | 2 ... 125 | P.1 |
|  | <i>Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system.</i> | |


7.9.3 Profibus: Input States


| | |
|---|---|
| Assignment 1-I ... Assignment 16-I (↪ Profibus . ConfigBinInp 1) | Operation / Status Display / Profibus / ConfigBinInp 1-16 |
|  <i>Module input state: Scada Assignment</i> | |


| | |
|---|--|
| Assignment 17-I ... Assignment 32-I (↪ Profibus . ConfigBinInp 17) | Operation / Status Display / Profibus / ConfigBinInp 17-32 |
|  <i>Module input state: Scada Assignment</i> | |

7.9.4 Profibus: Signals (Output States)


| | |
|---|---|
| Data OK | Operation / Status Display / Profibus / State |
|  <i>Data within the Input field are OK (Yes=1)</i> | |


| | |
|---|---|
| SubModul Err | Operation / Status Display / Profibus / State |
|  <i>Assignable Signal, Failure in Sub-Module, Communication Failure.</i> | |



| | |
|--|---|
| Connection active | Operation / Status Display / Profibus / State |
|  <i>Connection active</i> | |


| | |
|--|--|
| Scada Cmd 1 ... Scada Cmd 16 | Operation / Status Display / Profibus / Commands |
|  <i>Scada Command</i> | |

7.9.5 Profibus: Values, Counters

| | |
|--|--|
| Fr Sync Err | Operation / Count and RevData / Profibus |
|  <i>Frames, that were sent from the Master to the Slave are faulty.</i> | |

| | |
|--|--|
| Num. CRC err. | Operation / Count and RevData / Profibus |
|  <i>Number of CRC errors that the subsystem manager has recognized in the received response frames from the subsystem. (Each error caused a subsystem reset.)</i> | |


| | |
|---|---|
| Num. frame loss err. | Operation / Count and RevData / Profibus |
| # | <i>Number of frame loss errors that the subsystem manager has recognized in the received response frames from the subsystem. (Each error caused a subsystem reset.)</i> |
| Num. trig. CRC err. | Operation / Count and RevData / Profibus |
| # | <i>Number of CRC errors that the subsystem has recognized in the received trigger frames from the host.</i> |
| Num. subsys. res. | Operation / Count and RevData / Profibus |
| # | <i>Number of subsystem restarts or resets that the subsystem manager has caused.</i> |
| Slave State | Operation / Status Display / Profibus / State |
|  | <i>Communication State between Slave and Master.</i> |
| Baud rate | Operation / Status Display / Profibus / State |
|  | <i>The baud rate that has been detected lastly, will still be shown after a connection issue.</i> |
| PNO Id | Operation / Status Display / Profibus / State |
|  | <i>PNO Identification Number. GSD Identification Number.</i> |
| Master ID | Operation / Status Display / Profibus / State |
| # | <i>Device address (Master ID) within the bus system. Each device address has to be unique within a bus system.</i> |
| HO Id PSub | Operation / Status Display / Profibus / State |
| # | <i>Handoff Id of PbSub</i> |
| t-WatchDog | Operation / Status Display / Profibus / State |
| # | <i>The Profibus Chip detects a communication issue if this timer is expired without any communication (Parameterising telegram).</i> |
| Config info | Operation / Status Display / Profibus / State Device Para / Profibus / Config. Data Obj. |
|  | <i>Configuration comment (entered by the user during SCADA configuration)</i> |
| Config version | Operation / Status Display / Profibus / State Device Para / Profibus / Config. Data Obj. |
|  | <i>Version of the user-defined SCADA configuration</i> |

| | |
|---|---|
| Config status | Operation / Status Display / Profibus / State Device Para / Profibus / Config. Data Obj. |
|  | <i>Status of the user-defined SCADA configuration.</i> <i>Possible values:</i> |

7.10 IRIG-B


IRIG-B-Module

7.10.1 IRIG-B: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|---------------------------------------|-----|
| - | -, use ↪ Table | S.3 |
|  | IRIG-B-Module, general operation mode | |

7.10.2 IRIG-B: Global Parameters



| Function | Device Para / Time / TimeSync / IRIG-B | |
|--|---|-----|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  | Permanent activation or deactivation of module/stage. | |

| IRIG-B00X | Device Para / Time / TimeSync / IRIG-B | |
|---|--|-----|
| IRIGB-000 | IRIGB-000 ... IRIGB-007 ↪ Table | S.3 |
|  | Determination of the Type: IRIG-B00X. IRIG-B types differ in types of included "Coded Expressions" (year, control-functions, straight-binary-seconds). | |

7.10.3 IRIG-B: Direct Controls

| Res IRIG-B Cr | Operation / Reset | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | P.1 |
|  | Resetting of the Diagnosis Counters: IRIG-B | |

7.10.4 IRIG-B: Signals (Output States)

| IRIG-B active | Operation / Status Display / TimeSync / IRIG-B |
|---|---|
|  | Signal: If there is no valid IRIG-B signal for 60 sec, IRIG-B is regarded as inactive. |
| High-Low Invert | Operation / Status Display / TimeSync / IRIG-B |
|  | Signal: The High and Low signals of the IRIG-B are inverted. This does NOT mean that the wiring is faulty. If the wiring is faulty no IRIG-B signal will be detected. |

| | |
|---|--|
| Control Signal1 ... Control Signal9 | Operation / Status Display / TimeSync / IRIG-B |
|---|--|

↑ Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).

| | |
|---|--|
| Control Signal10 ... Control Signal18 | Operation / Status Display / TimeSync / IRIG-B |
|---|--|

↑ Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions).

7.10.5 IRIG-B: Counters

| | |
|---------------------|---|
| NoOfFramesOK | Operation / Count and RevData / TimeSync / IRIG-B |
|---------------------|---|

Total Number valid Frames.

| | |
|------------------------|---|
| NoOfFrameErrors | Operation / Count and RevData / TimeSync / IRIG-B |
|------------------------|---|

Total Number of Frame Errors. Physically corrupted Frame.


| | |
|--------------|---|
| Edges | Operation / Count and RevData / TimeSync / IRIG-B |
|--------------|---|

Edges: Total number of rising and falling edges. This signal indicates if a signal is available at the IRIG-B input.

7.11 SNTP


SNTP-Module

7.11.1 SNTP: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|--------------------------------------|-----|
| - | -, use ↪ Table | S.3 |
|  SNTP-Module, general operation mode | | |

7.11.2 SNTP: Global Parameters


| Server1 | Device Para / Time / TimeSync / SNTP | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  Server 1 | | |

| IP Byte1 ... IP Byte4 | Device Para / Time / TimeSync / SNTP | |
|---|--------------------------------------|-----|
| 0 | 0 ... 255 | S.3 |
|  IP1.IP2.IP3.IP4 | | |


| Server2 | Device Para / Time / TimeSync / SNTP | |
|--|---|-----|
| Inactive | Inactive, Active ↪ Table | S.3 |
|  Server 2 | | |

| IP Byte1 ... IP Byte4 | Device Para / Time / TimeSync / SNTP | |
|---|--------------------------------------|-----|
| 0 | 0 ... 255 | S.3 |
|  IP1.IP2.IP3.IP4 | | |


7.11.3 SNTP: Direct Controls


| | | |
|---|---|-----|
| Res Counter | Operation / Reset | |
| Inactive | Inactive, Active ↩ Table | P.1 |
|  | Reset all Counters. | |


7.11.4 SNTP: Signals (Output States)


| | |
|---|---|
| SNTP active | Operation / Status Display / TimeSync / SNTP |
|  | Signal: If there is no valid SNTP signal for 120 sec, SNTP is regarded as inactive. |


7.11.5 SNTP: Values, Counters


| | |
|--|---|
| NoOfSyncs | Operation / Count and RevData / TimeSync / SNTP |
|  | Total Number of Synchronizations. |


| | |
|---|--|
| NoOfConnectLost | Operation / Count and RevData / TimeSync / SNTP |
|  | Total Number of lost SNTP Connections (no sync for 120 sec). |


| | |
|---|---|
| NoOfSmallSyncs | Operation / Count and RevData / TimeSync / SNTP |
|  | Service counter: Total Number of very small Time Corrections. |

| | |
|---|--|
| NoOfNormSyncs | Operation / Count and RevData / TimeSync / SNTP |
|  | Service counter: Total Number of normal Time Corrections |

| | |
|---|---|
| NoOfBigSyncs | Operation / Count and RevData / TimeSync / SNTP |
|  | Service counter: Total Number of big Time Corrections |

| | |
|---|--|
| NoOfFiltSyncs | Operation / Count and RevData / TimeSync / SNTP |
|  | Service counter: Total Number of filtered Time Corrections |

| | |
|---|--|
| NoOfSlowTrans | Operation / Count and RevData / TimeSync / SNTP |
|  | Service counter: Total Number of slow Transfers. |

| | |
|---|---|
| NoOfHighOffs | Operation / Count and RevData / TimeSync / SNTP |
|  | Service counter: Total Number of high Offsets. |


| | |
|------------------------|---|
| NoOfIntTimeouts | Operation / Count and RevData / TimeSync / SNTP |
| # | <i>Service counter: Total Number of internal timeouts.</i> |
| Used Server | Operation / Status Display / TimeSync / SNTP |
| | <i>Which Server is used for SNTP synchronization.</i> |
| StratumServer1 | Operation / Status Display / TimeSync / SNTP |
| # | <i>Stratum of Server 1</i> |
| PrecServer1 | Operation / Status Display / TimeSync / SNTP |
| | <i>Precision of Server 1</i> |
| StratumServer2 | Operation / Status Display / TimeSync / SNTP |
| # | <i>Stratum of Server 2</i> |
| PrecServer2 | Operation / Status Display / TimeSync / SNTP |
| | <i>Precision of Server 2</i> |
| ServerQty | Operation / Status Display / TimeSync / SNTP |
| | <i>Quality of Server used for Synchronization (GOOD, SUFFICIENT, BAD)</i> |
| NetConn | Operation / Status Display / TimeSync / SNTP |
| | <i>Quality of Network Connection (GOOD, SUFFICIENT, BAD).</i> |

8 Field settings

8.1 Field Para

Field settings


8.1.1 Field Para: Global Parameters


| Phase Sequence | | Field Para / General Settings | |
|---|-------------------|---------------------------------------|-----|
| ABC | | ABC, ACB ↪ Table | S.3 |
|  | Phase Sequence | | |
| f | | Field Para / General Settings | |
| 50Hz | | 50Hz, 60Hz ↪ Table | S.3 |
|  | Nominal frequency | | |


8.2 VT


Voltage Transformer


8.2.1 VT: Global Parameters


| VT pri | Field Para / VT | |
|---|---|-----|
| 10000V | 60V ... 500000V | S.3 |
|  | <i>Nominal voltage of the Voltage Transformers at the primary side. Note that always the phase-to-phase voltage must be entered here.</i> | |

| VT sec | Field Para / VT | |
|---|---|-----|
| 100V | 60.00V ... 520.00V | S.3 |
|  | <i>Nominal voltage of the Voltage Transformers at the secondary side. Note that always the phase-to-phase voltage must be entered here.</i> | |

| VT con | Field Para / VT | |
|---|--|-----|
| Phase to Ground | Phase to Phase, Phase to Ground | S.3 |
| | ↪ Table | |
|  | <i>This parameter has to be set in order to ensure the correct assignment of the voltage measurement channels in the device.</i> | |


| EVT pri | Field Para / VT | |
|---|--|-----|
| 10000V | 60V ... 500000V | S.3 |
|  | <i>Primary nominal voltage of the e-n winding of the voltage transformers, which is only taken into account in the direct measurement of the residual voltage (GVT con=measured/broken delta).</i> | |


| EVT sec | Field Para / VT | |
|---|--|-----|
| 100V | 35.00V ... 520.00V | S.3 |
|  | <i>Secondary nominal voltage of the e-n winding of the voltage transformers, which is only taken into account in the direct measurement of the residual voltage.</i> | |


| V Block f | Field Para / Frequency | |
|---|---|-----|
| 0.60Vn | 0.15Vn ... 0.90Vn | S.3 |
|  | <i>Threshold for the release of the frequency stages: Frequency-based protection functions are blocked if the voltage drops below this setting.</i> | |
| | <i>This is necessary to avoid an undesired response of the frequency-based protection functions in case of a voltage disturbance caused by a fault. For example, faults with an arc flash generate a high proportion of harmonics in the voltage. Such disturbances will interfere with accurate frequency detection.</i> | |


8 Field settings


8.2.1 VT: Global Parameters


| V Sync | Field Para / VT | |
|---|--|-----|
| L12 | Adjustable range: <ul style="list-style-type: none"> • L1, L2, L3, L12, L23, L31, If: VT con = Phase to Ground • L12, L23, L31, If: VT con ≠ Phase to Ground Table | S.3 |
|  | <i>The fourth measuring input of the voltage measuring card measures the voltage that is to be synchronized.</i> | |


| delta phi - Mode | Field Para / Frequency | |
|---|--|-----|
| two phases | one phase, two phases, three phases Table | S.3 |
|  | <i>The delta phi element (vector surge) trips, if the permissible voltage angle shift (delta phi) of the three measured voltages (phase-ground or phase-phase) in: one phase, two phases or within all phases is exceeded.</i> | |


| Stab. window f | Field Para / Frequency | |
|---|--|-----|
| 4 | 0 ... 10 | S.3 |
|  | <i>Stabilizing window, for stabilizing the frequency values against momentary fluctuations. The setting value is in cycles at the rated frequency.</i> | |


| Stab. window f for df/dt | Field Para / Frequency | |
|---|---|-----|
| 3 | 2 ... 10 | S.3 |
|  | <i>Stabilizing window, for stabilizing the frequency values that are used as input for df/dt calculation against momentary fluctuations. The setting value is in cycles at the rated frequency.</i> | |


| Window df/dt | Field Para / Frequency | |
|---|--|-----|
| 4 | 1 ... 10 | S.3 |
|  | <i>Window for the determination of df/dt (ROCOF). The setting value is in cycles at the rated frequency.</i> | |

| Stab. window df/dt | Field Para / Frequency | |
|---|--|-----|
| 5 | 0 ... 10 | S.3 |
|  | <i>Stabilizing window, for stabilizing the df/dt (ROCOF) values against momentary fluctuations. The setting value is in cycles at the rated frequency.</i> | |


| V Cutoff Level | Device Para / Measurem Display / Voltage | |
|---|--|-----|
| 0.005Vn | 0.0Vn ... 0.100Vn | S.3 |
|  | <i>The Phase Voltage shown in the Display or within the PC Software will be displayed as zero, if the Phase Voltage falls below this Cutoff Level. This parameter has no impact on recorders. This parameter is related to the voltage that is connected to the device (phase-to-phase or phase-to-earth).</i> | |

| VG meas Cutoff Level | Device Para / Measurem Display / Voltage | |
|---|---|-----|
| 0.005Vn | 0.0Vn ... 0.100Vn | S.3 |
|  | <i>The measured Residual Voltage shown in the Display or within the PC Software will be displayed as zero, if the measured Residual Voltage falls below this Cutoff Level. This parameter has no impact on recorders.</i> | |


| | | |
|---|---|-----|
| VG calc Cutoff Level | Device Para / Measurem Display / Voltage | |
| 0.005Vn | 0.0Vn ... 0.100Vn | S.3 |
|  | <i>The calculated Residual Voltage shown in the Display or within the PC Software will be displayed as zero, if the calculated Residual Voltage falls below this Cutoff Level. This parameter has no impact on recorders.</i> | |


| | | |
|---|---|-----|
| V012 Comp Cutoff Level | Device Para / Measurem Display / Voltage | |
| 0.005Vn | 0.0Vn ... 0.100Vn | S.3 |
|  | <i>The Symmetrical Component shown in the Display or within the PC Software will be displayed as zero, if the Symmetrical Component falls below this Cutoff Level. This parameter has no impact on recorders.</i> | |


8.2.2 VT: Signals (Output States)


| | | |
|---|---|--|
| Phase seq. wrong | Operation / Status Display / Supervision / Phase Sequence | |
|  | <i>Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«.</i> | |


8.2.3 VT: Values


| | | |
|---|---------------------------------------|--|
| f | Operation / Measured Values / Voltage | |
|  | <i>Measured value: Frequency</i> | |


| | | |
|---|---|--|
| df/dt | Operation / Measured Values / Voltage | |
|  | <i>Measured value (calculated): Rate-of-frequency-change.</i> | |

| | | |
|---|--|--|
| delta phi | Operation / Measured Values / Voltage | |
|  | <i>Measured value (calculated): Vector surge</i> | |














| | | |
|---|---|--|
| VL12 | Operation / Measured Values / Voltage | |
|  | <i>Measured value: Phase-to-phase voltage (fundamental)</i> | |

| | | |
|---|---|--|
| VL23 | Operation / Measured Values / Voltage | |
|  | <i>Measured value: Phase-to-phase voltage (fundamental)</i> | |

| | | |
|---|---|--|
| VL31 | Operation / Measured Values / Voltage | |
|  | <i>Measured value: Phase-to-phase voltage (fundamental)</i> | |

| | | |
|---|---|--|
| VL1 | Operation / Measured Values / Voltage | |
|  | <i>Measured value: Phase-to-neutral voltage (fundamental)</i> | |


8 Field settings
8.2.3 VT: Values

| | |
|--|---|
| VL2 | Operation / Measured Values / Voltage |
|  Measured value: Phase-to-neutral voltage (fundamental) | |
| VL3 | Operation / Measured Values / Voltage |
|  Measured value: Phase-to-neutral voltage (fundamental) | |
| VX meas | Operation / Measured Values / Voltage |
|  Measured value (measured): VX measured (fundamental) | |
| VG calc | Operation / Measured Values / Voltage |
|  Measured value (calculated): VG (fundamental) | |
| V0 | Operation / Measured Values / Voltage |
|  Measured value (calculated): Symmetrical components Zero voltage(fundamental) | |
| V1 | Operation / Measured Values / Voltage |
|  Measured value (calculated): Symmetrical components positive phase sequence voltage(fundamental) | |
| V2 | Operation / Measured Values / Voltage |
|  Measured value (calculated): Symmetrical components negative phase sequence voltage(fundamental) | |
| VL12 RMS | Operation / Measured Values / Voltage RMS |
|  Measured value: Phase-to-phase voltage (RMS) | |
| VL23 RMS | Operation / Measured Values / Voltage RMS |
|  Measured value: Phase-to-phase voltage (RMS) | |
| VL31 RMS | Operation / Measured Values / Voltage RMS |
|  Measured value: Phase-to-phase voltage (RMS) | |
| VL1 RMS | Operation / Measured Values / Voltage RMS |
|  Measured value: Phase-to-neutral voltage (RMS) | |
| VL2 RMS | Operation / Measured Values / Voltage RMS |
|  Measured value: Phase-to-neutral voltage (RMS) | |
| VL3 RMS | Operation / Measured Values / Voltage RMS |
|  Measured value: Phase-to-neutral voltage (RMS) | |


| | |
|--------------------|---|
| VX meas RMS | Operation / Measured Values / Voltage RMS |
|--------------------|---|

| |
|--|
|  Measured value (measured): VX measured (RMS) |
|--|


| | |
|--------------------|---|
| VG calc RMS | Operation / Measured Values / Voltage RMS |
|--------------------|---|

| |
|---|
|  Measured value (calculated): VG (RMS) |
|---|


| | |
|-----------------|---------------------------------------|
| phi VL12 | Operation / Measured Values / Voltage |
|-----------------|---------------------------------------|

| |
|--|
|  Measured value (calculated): Angle of Phasor VL12 |
| Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |


| | |
|-----------------|---------------------------------------|
| phi VL23 | Operation / Measured Values / Voltage |
|-----------------|---------------------------------------|

| |
|--|
|  Measured value (calculated): Angle of Phasor VL23 |
| Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |


| | |
|-----------------|---------------------------------------|
| phi VL31 | Operation / Measured Values / Voltage |
|-----------------|---------------------------------------|

| |
|--|
|  Measured value (calculated): Angle of Phasor VL31 |
| Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |


| | |
|----------------|---------------------------------------|
| phi VL1 | Operation / Measured Values / Voltage |
|----------------|---------------------------------------|

| |
|--|
|  Measured value (calculated): Angle of Phasor VL1 |
| Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |


| | |
|----------------|---------------------------------------|
| phi VL2 | Operation / Measured Values / Voltage |
|----------------|---------------------------------------|

| |
|--|
|  Measured value (calculated): Angle of Phasor VL2 |
| Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |

| | |
|----------------|---------------------------------------|
| phi VL3 | Operation / Measured Values / Voltage |
|----------------|---------------------------------------|












| |
|--|
|  Measured value (calculated): Angle of Phasor VL3 |
| Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |

| | |
|--------------------|---------------------------------------|
| phi VX meas | Operation / Measured Values / Voltage |
|--------------------|---------------------------------------|

| |
|--|
|  Measured value: Angle of Phasor VX meas |
| Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude. |

8 Field settings

8.2.3 VT: Values

| | |
|---|---|
| phi VG calc | Operation / Measured Values / Voltage |
|  <i>Measured value (calculated): Angle of Phasor VG calc</i> | |
| | <i>Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.</i> |
| phi V0 | Operation / Measured Values / Voltage |
|  <i>Measured value (calculated): Angle Zero Sequence System</i> | |
| | <i>Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.</i> |
| phi V1 | Operation / Measured Values / Voltage |
|  <i>Measured value (calculated): Angle of Positive Sequence System</i> | |
| | <i>Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.</i> |
| phi V2 | Operation / Measured Values / Voltage |
|  <i>Measured Value (calculated): Angle of Negative Sequence System</i> | |
| | <i>Reference phasor is required to calculate the angle. This is the first measured voltage (or current) channel with sufficiently high amplitude.</i> |
| %(V2/V1) | Operation / Measured Values / Voltage |
|  <i>Measured value (calculated): V2/V1, phase sequence will be taken into account automatically.</i> | |
| %VL12 THD | Operation / Measured Values / Voltage RMS |
|  <i>Measured value (calculated): V12 Total Harmonic Distortion / Ground wave</i> | |
| %VL23 THD | Operation / Measured Values / Voltage RMS |
|  <i>Measured value (calculated): V23 Total Harmonic Distortion / Ground wave</i> | |
| %VL31 THD | Operation / Measured Values / Voltage RMS |
|  <i>Measured value (calculated): V31 Total Harmonic Distortion / Ground wave</i> | |
| %VL1 THD | Operation / Measured Values / Voltage RMS |
|  <i>Measured value (calculated): VL1 Total Harmonic Distortion / Ground wave</i> | |
| %VL2 THD | Operation / Measured Values / Voltage RMS |
|  <i>Measured value (calculated): VL2 Total Harmonic Distortion / Ground wave</i> | |
| %VL3 THD | Operation / Measured Values / Voltage RMS |
|  <i>Measured value (calculated): VL3 Total Harmonic Distortion / Ground wave</i> | |

| | |
|---|---|
| VL12 THD | Operation / Measured Values / Voltage RMS |
|  Measured value (calculated): V12 Total Harmonic Distortion | |
| VL23 THD | Operation / Measured Values / Voltage RMS |
|  Measured value (calculated): V23 Total Harmonic Distortion | |
| VL31 THD | Operation / Measured Values / Voltage RMS |
|  Measured value (calculated): V31 Total Harmonic Distortion | |
| VL1 THD | Operation / Measured Values / Voltage RMS |
|  Measured value (calculated): VL1 Total Harmonic Distortion | |
| VL2 THD | Operation / Measured Values / Voltage RMS |
|  Measured value (calculated): VL2 Total Harmonic Distortion | |
| VL3 THD | Operation / Measured Values / Voltage RMS |
|  Measured value (calculated): VL3 Total Harmonic Distortion | |

8.2.4 VT: Statistical Values

| | |
|--|--|
| f max | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> Max. frequency value | |
| f min | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> Min. frequency value | |
| V1 max | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> Maximum value: Symmetrical components positive phase sequence voltage(fundamental) | |
| V1 min | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> Minimum value: Symmetrical components positive phase sequence voltage(fundamental) | |
| V2 max | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> Maximum value: Symmetrical components negative phase sequence voltage(fundamental) | |
| V2 min | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> Minimum value: Symmetrical components negative phase sequence voltage(fundamental) | |

8 Field settings

8.2.4 VT: Statistical Values


| | |
|--|--|
| VL12 max RMS | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> VL12 maximum value (RMS) | |
| VL12 avg RMS | Operation / Statistics / Vavg |
| <input checked="" type="checkbox"/> VL12 average value (RMS) | |
| VL12 min RMS | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> VL12 minimum value (RMS) | |
| VL23 max RMS | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> VL23 maximum value (RMS) | |
| VL23 avg RMS | Operation / Statistics / Vavg |
| <input checked="" type="checkbox"/> VL23 average value (RMS) | |
| VL23 min RMS | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> VL23 minimum value (RMS) | |
| VL31 max RMS | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> VL31 maximum value (RMS) | |
| VL31 avg RMS | Operation / Statistics / Vavg |
| <input checked="" type="checkbox"/> VL31 average value (RMS) | |
| VL31 min RMS | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> VL31 minimum value (RMS) | |
| VL1 max RMS | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> VL1 maximum value (RMS) | |
| VL1 avg RMS | Operation / Statistics / Vavg |
| <input checked="" type="checkbox"/> VL1 average value (RMS) | |
| VL1 min RMS | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> VL1 minimum value (RMS) | |
| VL2 max RMS | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> VL2 maximum value (RMS) | |


| | |
|-------------------------------------|--|
| VL2 avg RMS | Operation / Statistics / Vavg |
| <input checked="" type="checkbox"/> | <i>VL2 average value (RMS)</i> |
| VL2 min RMS | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> | <i>VL2 minimum value (RMS)</i> |
| VL3 max RMS | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> | <i>VL3 maximum value (RMS)</i> |
| VL3 avg RMS | Operation / Statistics / Vavg |
| <input checked="" type="checkbox"/> | <i>VL3 average value (RMS)</i> |
| VL3 min RMS | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> | <i>VL3 minimum value (RMS)</i> |
| VX meas max RMS | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> | <i>Measured value: VX maximum value (RMS)</i> |
| VX meas min RMS | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> | <i>Measured value: VX minimum value (RMS)</i> |
| VG calc max RMS | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> | <i>Measured value (calculated):VX maximum value (RMS)</i> |
| VG calc min RMS | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> | <i>Measured value (calculated):VX minimum value (RMS)</i> |
| %(V2/V1) max | Operation / Statistics / Max / Voltage |
| <input checked="" type="checkbox"/> | <i>Measured value (calculated):V2/V1 maximum value, phase sequence will be taken into account automatically</i> |
| %(V2/V1) min | Operation / Statistics / Min / Voltage |
| <input checked="" type="checkbox"/> | <i>Measured value (calculated):V2/V1 minimum value , phase sequence will be taken into account automatically</i> |


9 Protection


Module General Protection


9.1 Prot: Global Parameters


| Function | Protection Para / Global Prot Para / Prot | |
|---|--|-----|
| Active | Inactive, Active ↪ Table | P.2 |
|  | <i>Permanent activation or deactivation of module/stage.</i> | |

| ExBlo Fc | Protection Para / Global Prot Para / Prot | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate (allow) the external blocking of the global protection functionality of the device.</i> | |


| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Prot | |
|---|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  | <i>If external blocking of this module is activated (allowed), the global protection functionality of the device will be blocked if the state of the assigned signal becomes true.</i> | |

| Blo TripCmd | Protection Para / Global Prot Para / Prot | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Permanent blocking of the Trip Command of the entire Protection.</i> | |


| ExBlo TripCmd Fc | Protection Para / Global Prot Para / Prot | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate (allow) the external blocking of the trip command of the entire device.</i> | |


| | | |
|---|---|-----|
| ExBlo TripCmd | Protection Para / Global Prot Para / Prot | |
| - | - ... Internal test state ↪ Table | P.2 |
|  | <i>If external blocking of the tripping command is activated (allowed), the tripping command of the entire device will be blocked if the state of the assigned signal becomes true.</i> | |


9.2 Prot: Direct Controls

| | | |
|---|---|-----|
| Res FaultNo a GridFaultNo | Operation / Reset | |
| Inactive | Inactive, Active ↪ Table | P.1 |
|  | <i>Resetting of fault number and grid fault number.</i> | |


9.3 Prot: Input States


| | | |
|---|---|--|
| ExBlo1-I ↪ Prot . ExBlo1 | Operation / Status Display / Prot | |
|  | <i>Module input state: External blocking1</i> | |


| | | |
|---|---|--|
| ExBlo2-I | Operation / Status Display / Prot | |
|  | <i>Module input state: External blocking2</i> | |

| | | |
|---|--|--|
| ExBlo TripCmd-I ↪ Prot . ExBlo TripCmd | Operation / Status Display / Prot | |
|  | <i>Module input state: External Blocking of the Trip Command</i> | |

9.4 Prot: Signals (Output States)










| | | |
|---|--|--|
| available | Operation / Status Display / Prot | |
|  | <i>Signal: Protection is available</i> | |

| | | |
|---|---|--|
| Active | Operation / Status Display / All Actives Operation / Status Display / Prot | |
|  | <i>Signal: active</i> | |

| | | |
|---|-----------------------------------|--|
| ExBlo | Operation / Status Display / Prot | |
|  | <i>Signal: External Blocking</i> | |

9 Protection

9.4 Prot: Signals (Output States)

| | |
|--|--|
| Blo TripCmd | Operation / Status Display / Prot |
|  <i>Signal: Trip Command blocked</i> | |
| ExBlo TripCmd | Operation / Status Display / Prot |
|  <i>Signal: External Blocking of the Trip Command</i> | |
| Alarm L1 | Operation / Status Display / Prot |
|  <i>Signal: General-Alarm L1</i> | |
| Alarm L2 | Operation / Status Display / Prot |
|  <i>Signal: General-Alarm L2</i> | |
| Alarm L3 | Operation / Status Display / Prot |
|  <i>Signal: General-Alarm L3</i> | |
| Alarm G | Operation / Status Display / Prot |
|  <i>Signal: General-Alarm - Earth fault</i> | |
| Alarm | Operation / Status Display / Alarms Operation / Status Display / Prot |
|  <i>Signal: General Alarm</i> | |
| Trip L1 | Operation / Status Display / Prot |
|  <i>Signal: General Trip L1</i> | |
| Trip L2 | Operation / Status Display / Prot |
|  <i>Signal: General Trip L2</i> | |
| Trip L3 | Operation / Status Display / Prot |
|  <i>Signal: General Trip L3</i> | |
| Trip G | Operation / Status Display / Prot |
|  <i>Signal: General Trip Ground fault</i> | |
| Trip | Operation / Status Display / Trips Operation / Status Display / Prot |
|  <i>Signal: General Trip</i> | |


| Res FaultNo a GridFaultNo | Operation / Status Display / Prot |
|----------------------------------|---|
| ↑ | <i>Signal: Resetting of fault number and grid fault number.</i> |


| Fault No. | Operation / Count and RevData / Prot |
|------------------|--------------------------------------|
| ↑ | <i>Fault number</i> |

9.5 V[1] ... V[6] [27, 59]


Voltage-stage


9.5.1 V[1] ... V[6]: Device Planning Parameters

| Mode | Device planning / Projected Elements | |
|---|--------------------------------------|-----|
| V> | -, V>, V< ↪ Table | S.3 |
|  Voltage-stage, general operation mode | | |


| Superv. only | Device planning / Definition | |
|--|------------------------------------|-----|
| no | no, yes ↪ Table | S.3 |
|  Voltage-stage, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. | | |


9.5.2 V[1] ... V[6]: Global Parameters


| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / V-Prot / V[1] | |
|---|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. | | |


| ExBlo TripCmd | Protection Para / Global Prot Para / V-Prot / V[1] | |
|---|--|-----|
| <ul style="list-style-type: none"> Only available if: Superv. only = no - | - ... Internal test state ↪ Table | P.2 |
|  External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. | | |

9.5.3 V[1] . . . V[6]: Setting Group Parameters

| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| Active | Inactive, Active ↳ Table | P.2 |
|  | Permanent activation or deactivation of module/stage. | |


| | | |
|---|---|-----|
| ExBlo Fc | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| Inactive | Inactive, Active ↳ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". | |


| | | |
|--|--|-----|
| Blo TripCmd | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↳ Table | P.2 |
|  | Permanent blocking of the Trip Command of the module/stage. | |


| | | |
|--|---|-----|
| ExBlo TripCmd Fc | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↳ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". | |


9 Protection


9.5.3 V[1] ... V[6]: Setting Group Parameters


| | | |
|---|---|-----|
| Measuring Mode | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| Phase to Phase | Adjustable range: <ul style="list-style-type: none"> Phase to Ground, Phase to Phase, If: VT con = Phase to Ground Phase to Phase, If: VT con ≠ Phase to Ground Table | P.2 |
|  | <i>Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised</i> | |


| | | |
|---|--|-----|
| Measuring method | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| Fundamental | Fundamental, True RMS, Vavg Table | P.2 |
|  | <i>Measuring method: fundamental or rms or "sliding average supervision"</i> | |


| | | |
|---|--|-----|
| Alarm Mode | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| any one | any one, any two, all Table | P.2 |
|  | <i>Alarm criterion for the voltage protection stage.</i> | |


| | | |
|---|--|-----|
| V> | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| 1.1Vn | | P.2 |
|  | <p><i>If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started.</i></p> <p><i>The definition of Vn is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«:</i></p> <p><i>If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground")</i></p> <p><i>then the setting</i></p> <p><i>»Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec} / \sqrt{3}$, and</i></p> <p><i>»Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$.</i></p> <p><i>if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase")</i></p> <p><i>then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$.</i></p> | |

| | | |
|---|--|-----|
| V> Reset | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| 98.5% | 80% ... 99.0% | P.2 |
|  | Drop Out (is in percent of setting) | |


| | | |
|---|--|-----|
| V< | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| 0.80Vn | | P.2 |
|  | <p>If the pickup value is exceeded, the module/element will be started. If the pickup value is exceeded, the module/element will be started.</p> <p>The definition of Vn is dependent on both the Field Parameter »VT con« and the Setting Group Parameter »Measuring Mode«:</p> <p>If the measuring inputs of the voltage measuring card are fed with phase-to-ground voltages (»VT con« = "Phase-to-Ground") then the setting »Measuring Mode« = "Phase-to-Ground" means that $V_n = VT_{sec} / \sqrt{3}$, and »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$.</p> <p>if the measuring inputs of the voltage measuring card are fed with phase-to-phase voltages (»VT con« = "Phase-to-Phase") then only following setting is possible: »Measuring Mode« = "Phase-to-Phase" means that $V_n = VT_{sec}$.</p> | |


| | | |
|---|--|-----|
| V< Reset | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| 101.5% | 101% ... 110.0% | P.2 |
|  | Drop Out (is in percent of setting) | |


| | | |
|---|--|-----|
| t | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| 1s | 0.00s ... 3000.00s | P.2 |
|  | Tripping delay | |

| | | |
|---|--|-----|
| Meas Circuit Superv | Protection Para / Set 1 / V-Prot / V[1] Protection Para / Set 2 / V-Prot / V[1] Protection Para / Set 3 / V-Prot / V[1] Protection Para / Set 4 / V-Prot / V[1] | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). | |


9.5.4 V[1] ... V[6]: Input States


| | |
|---|--|
| ExBlo1-I ↪ V[1] . ExBlo1 | Operation / Status Display / V-Prot / V[1] |
|  | Module input state: External blocking1 |


| | |
|---|--|
| ExBlo2-I | Operation / Status Display / V-Prot / V[1] |
|  | Module input state: External blocking2 |


| | |
|---|--|
| ExBlo TripCmd-I | Operation / Status Display / V-Prot / V[1] |
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Module input state: External Blocking of the Trip Command |

9.5.5 V[1] ... V[6]: Signals (Output States)

| | |
|---|--|
| Active | Operation / Status Display / All Actives Operation / Status Display / V-Prot / V[1] |
|  | Signal: active |

| | |
|---|--|
| ExBlo | Operation / Status Display / V-Prot / V[1] |
|  | Signal: External Blocking |

| | |
|---|---|
| Blo TripCmd | Operation / Status Display / V-Prot / V[1] |
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command blocked |


| | |
|---|--|
| ExBlo TripCmd | Operation / Status Display / V-Prot / V[1] |
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: External Blocking of the Trip Command |


| | |
|-----------------|---|
| Alarm L1 | Operation / Status Display / V-Prot / V[1] |
| ↑ | Signal: Alarm L1 |
| Alarm L2 | Operation / Status Display / V-Prot / V[1] |
| ↑ | Signal: Alarm L2 |
| Alarm L3 | Operation / Status Display / V-Prot / V[1] |
| ↑ | Signal: Alarm L3 |
| Alarm | Operation / Status Display / Alarms Operation / Status Display / V-Prot / V[1] |
| ↑ | Signal: Alarm voltage stage |
| Trip L1 | Operation / Status Display / V-Prot / V[1] |
| ↑ | Signal: General Trip Phase L1 |
| Trip L2 | Operation / Status Display / V-Prot / V[1] |
| ↑ | Signal: General Trip Phase L2 |
| Trip L3 | Operation / Status Display / V-Prot / V[1] |
| ↑ | Signal: General Trip Phase L3 |
| Trip | Operation / Status Display / Trips Operation / Status Display / V-Prot / V[1] |
| ↑ | Signal: Trip |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / V-Prot / V[1] |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command |

9.6 df/dt [81R]


Rate-of-frequency-change.


9.6.1 df/dt: Device Planning Parameters

| Mode | Device planning / Projected Elements | |
|--|--------------------------------------|-----|
| - | -, use ↪ Table | S.3 |
|  <i>Frequency Protection Module, general operation mode</i> | | |






| Superv. only | Device planning / Definition | |
|---|------------------------------------|-----|
| no | no, yes ↪ Table | S.3 |
|  <i>Frequency Protection Module, if set to “Yes”: Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command.</i> | | |

9.6.2 df/dt: Global Parameters

| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / df/dt | |
|--|---|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |


| ExBlo TripCmd | Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / df/dt | |
|--|---|-----|
| <ul style="list-style-type: none"> Only available if: Superv. only = no - | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |


9.6.3 df/dt: Setting Group Parameters

| | | |
|--|--|-----|
| Function | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / df/dt | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Permanent activation or deactivation of module/stage.</i> | |
| ExBlo Fc | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / df/dt | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".</i> | |
| Blo TripCmd | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / df/dt | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Permanent blocking of the Trip Command of the module/stage.</i> | |
| ExBlo TripCmd Fc | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / df/dt | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".</i> | |
| df/dt | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / df/dt | |
| 1.000Hz/s | 0.100Hz/s ... 10.000Hz/s | P.2 |
|  | <i>Measured value (calculated): Rate-of-frequency-change.</i> | |


9 Protection


9.6.4 df/dt: Input States


| | |
|--|--|
| t-df/dt | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / df/dt |
| 1.00s | 0.00s ... 300.00s P.2 |
|  Trip delay df/dt | |

| | |
|--|--|
| df/dt mode | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / df/dt Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / df/dt |
| absolute df/dt | absolute df/dt, positive df/dt, negative df/dt P.2 ↪ Table |
|  df/dt mode | |


9.6.4 df/dt: Input States


| | |
|--|---|
| ExBlo1-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
| ↪ df/dt . ExBlo1 | |
|  Module input state: External blocking1 | |


| | |
|--|---|
| ExBlo2-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  Module input state: External blocking2 | |






| | |
|--|---|
| ExBlo TripCmd-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  <ul style="list-style-type: none"> Only available if: Superv. only = no Module input state: External Blocking of the Trip Command | |

9.6.5 df/dt: Signals (Output States)

| | |
|--|---|
| Active | Operation / Status Display / All Actives Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  Signal: active | |

| | |
|---|---|
| ExBlo | Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  Signal: External Blocking | |


| | |
|--|---|
| Blo by V< | Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  Signal: Module is blocked by undervoltage. | |


| | |
|--|--|
| Blo TripCmd | Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  <ul style="list-style-type: none"> • Only available if: Superv. only = no <p><i>Signal: Trip Command blocked</i></p> | |
| ExBlo TripCmd | Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  <ul style="list-style-type: none"> • Only available if: Superv. only = no <p><i>Signal: External Blocking of the Trip Command</i></p> | |
| Alarm | Operation / Status Display / Alarms Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  <p><i>Signal: Alarm Frequency Protection (collective signal)</i></p> | |
| Trip | Operation / Status Display / Trips Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  <p><i>Signal: Trip Frequency Protection (collective signal)</i></p> | |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / Intercon-Prot / Mains Decouplg / df/dt |
|  <ul style="list-style-type: none"> • Only available if: Superv. only = no <p><i>Signal: Trip Command</i></p> | |

9.7 delta phi [78V]


Vector surge


9.7.1 delta phi: Device Planning Parameters

| Mode | Device planning / Projected Elements | |
|--|--------------------------------------|-----|
| - | -, use ↪ Table | S.3 |
|  <i>Frequency Protection Module, general operation mode</i> | | |


| Superv. only | Device planning / Definition | |
|---|------------------------------------|-----|
| no | no, yes ↪ Table | S.3 |
|  <i>Frequency Protection Module, if set to “Yes”: Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command.</i> | | |


9.7.2 delta phi: Global Parameters


| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / delta phi | |
|--|---|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |


| ExBlo TripCmd | Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / delta phi | |
|--|---|-----|
| <ul style="list-style-type: none"> Only available if: Superv. only = no | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |


9.7.3 delta phi: Setting Group Parameters

| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / delta phi | |
| Inactive | Inactive, Active ↳ Table | P.2 |
|  | Permanent activation or deactivation of module/stage. | |

| | | |
|---|--|-----|
| ExBlo Fc | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / delta phi | |
| Inactive | Inactive, Active ↳ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". | |

| | | |
|--|--|-----|
| Blo TripCmd | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / delta phi | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↳ Table | P.2 |
|  | Permanent blocking of the Trip Command of the module/stage. | |

| | | |
|--|---|-----|
| ExBlo TripCmd Fc | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / delta phi | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↳ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". | |

| | | |
|---|--|-----|
| delta phi | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / delta phi Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / delta phi | |
| 10° | 1° ... 30° | P.2 |
|  | Measured value (calculated): Vector surge | |

9.7.4 delta phi: Input States

| | |
|--|--|
| ExBlo1-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| (↪ delta phi . ExBlo1) | |
| ↓ | Module input state: External blocking1 |
| ExBlo2-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↓ | Module input state: External blocking2 |
| ExBlo TripCmd-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↓ | <ul style="list-style-type: none"> Only available if: Superv. only = no Module input state: External Blocking of the Trip Command |


9.7.5 delta phi: Signals (Output States)

| | |
|----------------------|--|
| Active | Operation / Status Display / All Actives Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↑ | Signal: active |
| ExBlo | Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↑ | Signal: External Blocking |
| Blo by V< | Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↑ | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command blocked |
| ExBlo TripCmd | Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: External Blocking of the Trip Command |
| Alarm | Operation / Status Display / Alarms Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↑ | Signal: Alarm Frequency Protection (collective signal) |


| | |
|----------------|--|
| Trip | Operation / Status Display / Trips Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↑↓ | <i>Signal: Trip Frequency Protection (collective signal)</i> |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / Intercon-Prot / Mains Decouplg / delta phi |
| ↑↓ | <ul style="list-style-type: none"> • Only available if: Superv. only = no <i>Signal: Trip Command</i> |


9.8 Intertripping


9.8.1 Intertripping: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|---|-----|
| - | -, use ↳ Table | S.3 |
|  | <i>External Protection - Module, general operation mode</i> | |

9.8.2 Intertripping: Global Parameters


| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping | |
|---|--|-----|
| - | - ... Internal test state ↳ Table | P.2 |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | |


| ExBlo TripCmd | Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping | |
|---|--|-----|
| - | - ... Internal test state ↳ Table | P.2 |
|  | <i>External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | |


| Alarm | Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping | |
|---|---|-----|
| - | - ... Internal test state ↳ Table | P.2 |
|  | <i>Assignment for External Alarm</i> | |


| Trip | Protection Para / Global Prot Para / Intercon-Prot / Mains Decouplg / Intertripping | |
|---|---|-----|
| - | - ... Internal test state ↳ Table | P.2 |
|  | <i>External trip of the CB if the state of the assigned signal is true.</i> | |

9.8.3 Intertripping: Setting Group Parameters


| | |
|---|--|
| Function | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / Intertripping |
| Inactive | Inactive, Active ↪ Table |
|  | <i>Permanent activation or deactivation of module/stage.</i> |

| | |
|---|--|
| ExBlo Fc | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / Intertripping |
| Inactive | Inactive, Active ↪ Table |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".</i> |

| | |
|---|--|
| Blo TripCmd | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / Intertripping |
| Inactive | Inactive, Active ↪ Table |
|  | <i>Permanent blocking of the Trip Command of the module/stage.</i> |

| | |
|---|--|
| ExBlo TripCmd Fc | Protection Para / Set 1 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 2 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 3 / Intercon-Prot / Mains Decouplg / Intertripping Protection Para / Set 4 / Intercon-Prot / Mains Decouplg / Intertripping |
| Inactive | Inactive, Active ↪ Table |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".</i> |

9.8.4 Intertripping: Input States

| | |
|---|---|
| ExBlo1-I ↪ Intertripping . ExBlo1) | Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
|  | <i>Module input state: External blocking1</i> |

9 Protection

9.8.5 Intertripping: Signals (Output States)

| | |
|-----------------|---|
| ExBlo2-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| ↓ | Module input state: External blocking2 |

| | |
|------------------------|---|
| ExBlo TripCmd-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| ↓ | Module input state: External Blocking of the Trip Command |

| | |
|---|---|
| Alarm-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| (Intertripping . Alarm) | |
| ↓ | Module input state: Alarm |

| | |
|--|---|
| Trip-I | Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| (Intertripping . Trip) | |
| ↓ | Module input state: Trip |

9.8.5 Intertripping: Signals (Output States)

| | |
|---------------|---|
| Active | Operation / Status Display / All Actives Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| ↑ | Signal: active |


| | |
|--------------|---|
| ExBlo | Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| ↑ | Signal: External Blocking |

| | |
|--------------------|---|
| Blo TripCmd | Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| ↑ | Signal: Trip Command blocked |

| | |
|----------------------|---|
| ExBlo TripCmd | Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| ↑ | Signal: External Blocking of the Trip Command |

| | |
|--------------|--|
| Alarm | Operation / Status Display / Alarms Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| ↑ | Signal: Alarm |



| | |
|-------------|---|
| Trip | Operation / Status Display / Trips Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
| ↑ | Signal: Trip |

| | |
|---|--|
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / Intercon-Prot / Mains Decouplg / Intertripping |
|  | <i>Signal: Trip Command</i> |



9.9 LVRT[1], LVRT[2] [27]

Low Voltage Ride Through


9.9.1 LVRT[1], LVRT[2]: Device Planning Parameters


| Mode | | Device planning / Projected Elements | |
|---|--|--------------------------------------|-----|
| - | | -, use ↪ Table | S.3 |
|  | <i>general operation mode</i> | | |
| Superv. only | | Device planning / Definition | |
| no | | no, yes ↪ Table | S.3 |
|  | <i>Low Voltage Ride Through, if set to “Yes”: Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command.</i> | | |


9.9.2 LVRT[1], LVRT[2]: Global Parameters


| ExBlo1 ExBlo2 | | Protection Para / Global Prot Para / Intercon-Prot / LVRT[1] | |
|---|--|--|-----|
| - | | - ... Internal test state ↪ Table | P.2 |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |
| ExBlo TripCmd | | Protection Para / Global Prot Para / Intercon-Prot / LVRT[1] | |
| - | <ul style="list-style-type: none"> Only available if: Superv. only = no | - ... Internal test state ↪ Table | P.2 |
|  | <i>External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |

9.9.3 LVRT[1], LVRT[2]: Setting Group Parameters

| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Permanent activation or deactivation of module/stage.</i> | |


| | | |
|---|--|-----|
| ExBlo Fc | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".</i> | |


| | | |
|--|--|-----|
| Blo TripCmd | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Permanent blocking of the Trip Command of the module/stage.</i> | |


| | | |
|--|--|-----|
| ExBlo TripCmd Fc | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".</i> | |


9 Protection


9.9.3 LVRT[1], LVRT[2]: Setting Group Parameters


| | | |
|---|--|-----|
| Measuring Mode | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| Phase to Phase | Adjustable range: <ul style="list-style-type: none"> • Phase to Ground, Phase to Phase, If: VT con = Phase to Ground • Phase to Phase, If: VT con ≠ Phase to Ground ↪ Table | P.2 |
|  | <i>Measuring/Supervision Mode: Determines if the phase-to-phase or phase-to-earth voltages are to be supervised</i> | |


| | | |
|---|--|-----|
| Measuring method | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| Fundamental | Fundamental, True RMS ↪ Table | P.2 |
|  | <i>Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)</i> | |


| | | |
|---|--|-----|
| Alarm Mode | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| any one | any one, any two, all, only 2 ↪ Table | P.2 |
|  | <i>Alarm criterion for the voltage protection stage.</i> | |


| | | |
|---|--|-----|
| Meas Circuit Superv | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).</i> | |


| | | |
|---|--|-----|
| AR controlled LVRT | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activates the supervision of the number of voltage dips during a defined time (t-LVRT).</i> | |


| | | |
|---|--|-----|
| Number of V dips to trip | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| <ul style="list-style-type: none"> Only available if: AR controlled LVRT = Active 1 | 1 ... 6 | P.2 |
|  | Number of voltage dips until the disconnection signal (trip) will be issued. | |

| | | |
|--|--|-----|
| t-LVRT | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 2 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 3 / Intercon-Prot / LVRT[1] / General Settings Protection Para / Set 4 / Intercon-Prot / LVRT[1] / General Settings | |
| <ul style="list-style-type: none"> Only available if: AR controlled LVRT = Active 30.00s | 0.00s ... 3000.00s | P.2 |
|  | This timer defines the supervision interval (window/period) for counting the number of voltage dips to trip ("No of V dips to trip"). The first voltage dip will start the timer. The counted number of voltage dips will be reset if the timer is expired. The timer will also be reset if the maximum "No of V dips to trip" is reached. | |

| | | |
|---|--|-----|
| Vstart< | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile | |
| 0.90Vn | | P.2 |
|  | A voltage dip is detected if the measured voltage falls below this threshold. | |


| | | |
|---|--|-----|
| Vrecover> | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile | |
| 0.93Vn | | P.2 |
|  | The voltage is recovered if the measured voltage raises above this threshold. | |


| | | |
|---|--|-----|
| V(t1) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile | |
| 0.00Vn | | P.2 |
|  | Voltage value of a point V(t(n)). These points define the LVRT profile. | |


| | | |
|---|--|-----|
| t1 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile | |
| 0.00s | 0.00s ... 20.00s | P.2 |
|  | Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile. | |


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9.9.3 LVRT[1], LVRT[2]: Setting Group Parameters


| | |
|--|--|
| V(t2) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.00Vn | P.2 |
|  Voltage value of a point $V(t(n))$. These points define the LVRT profile. | |


| | |
|---|--|
| t2 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.15s | 0.00s ... 20.00s P.2 |
|  Point in time for the corresponding voltage value $V(t(n))$. These points define the LVRT profile. | |


| | |
|--|--|
| V(t3) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.70Vn | P.2 |
|  Voltage value of a point $V(t(n))$. These points define the LVRT profile. | |


| | |
|---|--|
| t3 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.15s | 0.00s ... 20.00s P.2 |
|  Point in time for the corresponding voltage value $V(t(n))$. These points define the LVRT profile. | |


| | |
|--|--|
| V(t4) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.70Vn | P.2 |
|  Voltage value of a point $V(t(n))$. These points define the LVRT profile. | |


| | |
|---|--|
| t4 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.70s | 0.00s ... 20.00s P.2 |
|  Point in time for the corresponding voltage value $V(t(n))$. These points define the LVRT profile. | |


| | |
|---|--|
| V(t5) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.90Vn | P.2 |
|  | <i>Voltage value of a point V(t(n)). These points define the LVRT profile.</i> |

| | |
|---|--|
| t5 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 1.50s | 0.00s ... 20.00s P.2 |
|  | <i>Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile.</i> |

| | |
|---|--|
| V(t6) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.90Vn | P.2 |
|  | <i>Voltage value of a point V(t(n)). These points define the LVRT profile.</i> |


| | |
|---|--|
| t6 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 3.00s | 0.00s ... 20.00s P.2 |
|  | <i>Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile.</i> |


| | |
|---|--|
| V(t7) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.90Vn | P.2 |
|  | <i>Voltage value of a point V(t(n)). These points define the LVRT profile.</i> |


| | |
|---|--|
| t7 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 3.00s | 0.00s ... 20.00s P.2 |
|  | <i>Point in time for the corresponding voltage value V(t(n)). These points define the LVRT profile.</i> |


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9.9.3 LVRT[1], LVRT[2]: Setting Group Parameters


| | |
|--|--|
| V(t8) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.90Vn | P.2 |
|  Voltage value of a point $V(t(n))$. These points define the LVRT profile. | |

| | |
|---|--|
| t8 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 3.00s | 0.00s ... 20.00s P.2 |
|  Point in time for the corresponding voltage value $V(t(n))$. These points define the LVRT profile. | |


| | |
|--|--|
| V(t9) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.90Vn | P.2 |
|  Voltage value of a point $V(t(n))$. These points define the LVRT profile. | |

| | |
|---|--|
| t9 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 3.00s | 0.00s ... 20.00s P.2 |
|  Point in time for the corresponding voltage value $V(t(n))$. These points define the LVRT profile. | |


| | |
|--|--|
| V(t10) | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 0.90Vn | P.2 |
|  Voltage value of a point $V(t(n))$. These points define the LVRT profile. | |


| | |
|---|--|
| t10 | Protection Para / Set 1 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 2 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 3 / Intercon-Prot / LVRT[1] / LVRT Profile Protection Para / Set 4 / Intercon-Prot / LVRT[1] / LVRT Profile |
| 3.00s | 0.00s ... 20.00s P.2 |
|  Point in time for the corresponding voltage value $V(t(n))$. These points define the LVRT profile. | |

9.9.4 LVRT[1], LVRT[2]: Direct Controls

| Res LVRT Cr | Operation / Reset | |
|---|--|-----|
| Inactive | Inactive, Active ↪ Table | P.1 |
|  | Reset of the counter for the total number of voltage dips and reset of the counter of the total number of voltage dips that caused a trip. | |


9.9.5 LVRT[1], LVRT[2]: Input States


| ExBlo1-I | Operation / Status Display / Intercon-Prot / LVRT[1] |
|---|--|
| ↪ LVRT[1] . ExBlo1 | |
|  | Module input state: External blocking1 |


| ExBlo2-I | Operation / Status Display / Intercon-Prot / LVRT[1] |
|---|--|
|  | Module input state: External blocking2 |


| ExBlo TripCmd-I | Operation / Status Display / Intercon-Prot / LVRT[1] |
|---|--|
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Module input state: External Blocking of the Trip Command |

9.9.6 LVRT[1], LVRT[2]: Signals (Output States)

| Active | Operation / Status Display / All Actives Operation / Status Display / Intercon-Prot / LVRT[1] |
|---|--|
|  | Signal: active |

| ExBlo | Operation / Status Display / Intercon-Prot / LVRT[1] |
|---|--|
|  | Signal: External Blocking |

| Blo TripCmd | Operation / Status Display / Intercon-Prot / LVRT[1] |
|---|---|
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command blocked |


| ExBlo TripCmd | Operation / Status Display / Intercon-Prot / LVRT[1] |
|---|--|
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: External Blocking of the Trip Command |

9 Protection

9.9.7 LVRT[1], LVRT[2]: Counters

| | |
|--|---|
| Alarm L1 | Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: Alarm L1</i> | |
| Alarm L2 | Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: Alarm L2</i> | |
| Alarm L3 | Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: Alarm L3</i> | |
| Alarm | Operation / Status Display / Alarms Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: Alarm voltage stage</i> | |
| Trip L1 | Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: General Trip Phase L1</i> | |
| Trip L2 | Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: General Trip Phase L2</i> | |
| Trip L3 | Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: General Trip Phase L3</i> | |
| Trip | Operation / Status Display / Trips Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: Trip</i> | |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <ul style="list-style-type: none">• Only available if: Superv. only = no <i>Signal: Trip Command</i> | |
| t-LVRT is running | Operation / Status Display / Intercon-Prot / LVRT[1] |
|  <i>Signal: t-LVRT is running</i> | |

9.9.7 LVRT[1], LVRT[2]: Counters

| | |
|---|---|
| Num Vdips in t-LVRT | Operation / Count and RevData / LVRT[1] |
|  <i>Number of Voltage dips during t-LVRT</i> | |


| Cr Tot Numb of Vdips | Operation / Count and RevData / LVRT[1] |
|-----------------------------|--|
| # | <i>Counter Total number of voltage dips.</i> |


| Cr Num Vdips to Trip | Operation / Count and RevData / LVRT[1] |
|-----------------------------|--|
| # | <i>Counter Total number of voltage dips that caused a Trip</i> |

9.10 VG[1], VG[2] [27A, 59N,A]


Residual voltage-Stage


9.10.1 VG[1], VG[2]: Device Planning Parameters

| Mode | Device planning / Projected Elements | |
|---|---------------------------------------|-----|
| - | - , V>, V< ↪ Table | S.3 |
|  <i>Residual voltage-Stage, general operation mode</i> | | |


| Superv. only | Device planning / Definition | |
|--|------------------------------------|-----|
| no | no, yes ↪ Table | S.3 |
|  <i>Residual voltage-Stage, if set to “Yes”: Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command.</i> | | |


9.10.2 VG[1], VG[2]: Global Parameters


| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / V-Prot / VG[1] | |
|--|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |


| ExBlo TripCmd | Protection Para / Global Prot Para / V-Prot / VG[1] | |
|--|--|-----|
| <ul style="list-style-type: none"> Only available if: Superv. only = no | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |


9.10.3 VG[1], VG[2]: Setting Group Parameters

| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| Inactive | Inactive, Active ↳ Table | P.2 |
|  | Permanent activation or deactivation of module/stage. | |

| | | |
|---|---|-----|
| ExBlo Fc | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| Inactive | Inactive, Active ↳ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". | |







| | | |
|--|--|-----|
| Blo TripCmd | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↳ Table | P.2 |
|  | Permanent blocking of the Trip Command of the module/stage. | |


| | | |
|--|---|-----|
| ExBlo TripCmd Fc | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↳ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". | |

| | | |
|---|--|-----|
| VX Source | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| measured | measured, calculated ↳ Table | P.2 |
|  | Selection if VG is measured or calculated (neutral voltage or residual voltage) | |


9 Protection


9.10.3 VG[1], VG[2]: Setting Group Parameters


| | | |
|---|--|-----|
| Measuring method | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| Fundamental | Fundamental, True RMS ↪ Table | P.2 |
|  | <i>Measuring method: fundamental or rms or 3rd harmonic (only generator protection relays)</i> | |
| VG> | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| 1Vn | | P.2 |
|  | <i>If the pickup value is exceeded, the module/stage will be started.</i> | |
| VG> Reset | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| 97.0% | 80% ... 98.5% | P.2 |
|  | <i>Drop Out (is in percent of setting)</i> | |
| VG< | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| 0.8Vn | | P.2 |
|  | <i>Undervoltage Threshold</i> | |
| VG< Reset | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| 103.0% | 101.5% ... 110.0% | P.2 |
|  | <i>Drop Out (is in percent of setting)</i> | |
| t | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| 0.00s | 0.00s ... 300.00s | P.2 |
|  | <i>Tripping delay</i> | |

| | | |
|---|--|-----|
| Meas Circuit Superv | Protection Para / Set 1 / V-Prot / VG[1] Protection Para / Set 2 / V-Prot / VG[1] Protection Para / Set 3 / V-Prot / VG[1] Protection Para / Set 4 / V-Prot / VG[1] | |
| Inactive | Inactive, Active ↳ Table | P.2 |
|  | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). | |


9.10.4 VG[1], VG[2]: Input States


| | |
|---|---|
| ExBlo1-I ↳ VG[1] . ExBlo1 | Operation / Status Display / V-Prot / VG[1] |
|  | Module input state: External blocking1 |


| | |
|---|---|
| ExBlo2-I | Operation / Status Display / V-Prot / VG[1] |
|  | Module input state: External blocking2 |


| | |
|---|--|
| ExBlo TripCmd-I | Operation / Status Display / V-Prot / VG[1] |
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Module input state: External Blocking of the Trip Command |

9.10.5 VG[1], VG[2]: Signals (Output States)

| | |
|---|---|
| Active | Operation / Status Display / All Actives Operation / Status Display / V-Prot / VG[1] |
|  | Signal: active |




| | |
|---|---|
| ExBlo | Operation / Status Display / V-Prot / VG[1] |
|  | Signal: External Blocking |

| | |
|---|---|
| Blo TripCmd | Operation / Status Display / V-Prot / VG[1] |
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command blocked |

| | |
|---|--|
| ExBlo TripCmd | Operation / Status Display / V-Prot / VG[1] |
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: External Blocking of the Trip Command |

9 Protection


9.10.5 VG[1], VG[2]: Signals (Output States)


| | |
|--|--|
| Alarm | Operation / Status Display / Alarms Operation / Status Display / V-Prot / VG[1] |
|  <i>Signal: Alarm Residual Voltage Supervision-stage</i> | |
| Trip | Operation / Status Display / Trips Operation / Status Display / V-Prot / VG[1] |
|  <i>Signal: Trip</i> | |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / V-Prot / VG[1] |
|  <ul style="list-style-type: none">• Only available if: Superv. only = no <i>Signal: Trip Command</i> | |

9.11 V012[1] ... V012[6] [47]


Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence


9.11.1 V012[1] ... V012[6]: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|--|-----|
| - | -, V1>, V1<, V2> ↪ Table | S.3 |
|  | <i>Unbalance Protection: Supervision of the Voltage System</i> | |

| Superv. only | Device planning / Definition | |
|---|---|-----|
| no | no, yes ↪ Table | S.3 |
|  | <i>Symmetrical Components: Supervision of the Positive Phase Sequence or Negative Phase Sequence, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command.</i> | |


9.11.2 V012[1] ... V012[6]: Global Parameters


| ExBlo1 | Protection Para / Global Prot Para / V-Prot / V012[1] | |
|---|---|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1</i> | |


| ExBlo2 | Protection Para / Global Prot Para / V-Prot / V012[1] | |
|---|---|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2</i> | |


| ExBlo TripCmd | Protection Para / Global Prot Para / V-Prot / V012[1] | |
|---|--|-----|
| <ul style="list-style-type: none"> Only available if: Superv. only = no - | - ... Internal test state ↪ Table | P.2 |
|  | <i>External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | |


9.11.3 V012[1] ... V012[6]: Setting Group Parameters


| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | Permanent activation or deactivation of module/stage. | |


| | | |
|---|---|-----|
| ExBlo Fc | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". | |


| | | |
|--|--|-----|
| Blo TripCmd | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↪ Table | P.2 |
|  | Permanent blocking of the Trip Command of the module/stage. | |


| | | |
|--|---|-----|
| ExBlo TripCmd Fc | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↪ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". | |


| | | |
|---|--|-----|
| V1> | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| 1.00Vn | | P.2 |
|  | Positive Phase Sequence Overvoltage | |


| | | |
|---|--|-----|
| V1> Reset | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| 97.0% | 80% ... 98.5% | P.2 |
|  | <i>Drop Out (is in percent of setting)</i> | |

| | | |
|---|--|-----|
| V1< | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| 1.00Vn | | P.2 |
|  | <i>Positive Phase Sequence Undervoltage</i> | |

| | | |
|---|--|-----|
| V1< Reset | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| 103.0% | 101.5% ... 110.0% | P.2 |
|  | <i>Drop Out (is in percent of setting)</i> | |


| | | |
|---|--|-----|
| V2> | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| 1.00Vn | | P.2 |
|  | <i>Negative Phase Sequence Overvoltage</i> | |


| | | |
|---|--|-----|
| V2> Reset | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| 97.0% | 80% ... 98.5% | P.2 |
|  | <i>Drop Out (is in percent of setting)</i> | |


| | | |
|---|--|-----|
| %(V2/V1) | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| Inactive | Inactive, Active ↩ Table | P.2 |
|  | <i>The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically.</i> | |

9 Protection



9.11.4 V012[1] ... V012[6]: Input States



| | | |
|--|---|-----|
| %(V2/V1) | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| <ul style="list-style-type: none"> Only available if: %(V2/V1) = Active 20% | 2% ... 40% | P.2 |
|  | The %(V2/V1) setting is the unbalance trip pickup setting. It is defined by the ratio of negative sequence voltage to positive sequence voltage (% Unbalance=V2/V1). Phase sequence will be taken into account automatically. | |


| | | |
|---|--|-----|
| t | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| 0.00s | 0.00s ... 300.00s | P.2 |
|  | Tripping delay | |

| | | |
|---|--|-----|
| Meas Circuit Superv | Protection Para / Set 1 / V-Prot / V012[1] Protection Para / Set 2 / V-Prot / V012[1] Protection Para / Set 3 / V-Prot / V012[1] Protection Para / Set 4 / V-Prot / V012[1] | |
| Inactive | Inactive, Active Table | P.2 |
|  | Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure). | |

9.11.4 V012[1] ... V012[6]: Input States

| | |
|--|---|
| ExBlo1-I | Operation / Status Display / V-Prot / V012[1] |
|  V012[1] . ExBlo1 | |
|  | Module input state: External blocking1 |

| | |
|--|---|
| ExBlo2-I | Operation / Status Display / V-Prot / V012[1] |
|  V012[1] . ExBlo2 | |
|  | Module input state: External blocking2 |

| | |
|---|--|
| ExBlo TripCmd-I | Operation / Status Display / V-Prot / V012[1] |
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no Module input state: External Blocking of the Trip Command |


9.11.5 V012[1] ... V012[6]: Signals (Output States)


| | |
|----------------------|--|
| Active | Operation / Status Display / All Actives Operation / Status Display / V-Prot / V012[1] |
| ↑ | Signal: active |
| ExBlo | Operation / Status Display / V-Prot / V012[1] |
| ↑ | Signal: External Blocking |
| Blo TripCmd | Operation / Status Display / V-Prot / V012[1] |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command blocked |
| ExBlo TripCmd | Operation / Status Display / V-Prot / V012[1] |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: External Blocking of the Trip Command |
| Alarm | Operation / Status Display / Alarms Operation / Status Display / V-Prot / V012[1] |
| ↑ | Signal: Alarm voltage asymmetry |
| Trip | Operation / Status Display / Trips Operation / Status Display / V-Prot / V012[1] |
| ↑ | Signal: Trip |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / V-Prot / V012[1] |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command |

9.12 f[1] ... f[6] [81]


Frequency Protection Module


9.12.1 f[1] ... f[6]: Device Planning Parameters

| Mode | Device planning / Projected Elements | |
|--|--|-----|
| f< | - ... delta phi ↪ Table | S.3 |
|  <i>Frequency Protection Module, general operation mode</i> | | |


| Superv. only | Device planning / Definition | |
|---|------------------------------------|-----|
| no | no, yes ↪ Table | S.3 |
|  <i>Frequency Protection Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command.</i> | | |


9.12.2 f[1] ... f[6]: Global Parameters


| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / f-Prot / f[1] | |
|--|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |


| ExBlo TripCmd | Protection Para / Global Prot Para / f-Prot / f[1] | |
|--|--|-----|
| <ul style="list-style-type: none"> Only available if: Superv. only = no - | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |

9.12.3 f[1] ... f[6]: Setting Group Parameters

| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| Active | Inactive, Active ↳ Table | P.2 |
|  | <i>Permanent activation or deactivation of module/stage.</i> | |

| | | |
|---|--|-----|
| ExBlo Fc | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| Inactive | Inactive, Active ↳ Table | P.2 |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".</i> | |

| | | |
|--|--|-----|
| Blo TripCmd | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↳ Table | P.2 |
|  | <i>Permanent blocking of the Trip Command of the module/stage.</i> | |


| | | |
|--|--|-----|
| ExBlo TripCmd Fc | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active ↳ Table | P.2 |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active".</i> | |

| | | |
|---|--|-----|
| f> | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 51.00Hz | 40.00Hz ... 69.00Hz | P.2 |
|  | <i>Pickup value for overfrequency.</i> | |


9 Protection

9.12.3 f[1] ... f[6]: Setting Group Parameters


| | | |
|---|--|-----|
| f< | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 49.00Hz | 40.00Hz ... 69.00Hz | P.2 |
|  | <i>Pickup value for underfrequency.</i> | |


| | | |
|---|--|-----|
| Freq. drop-off | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 0.020Hz | 0.010Hz ... 0.100Hz | P.2 |
|  | <i>Drop-off for the Frequency function. This setting modifies the shape of the hysteresis that is used for the frequency protection.</i> | |


| | | |
|---|--|-----|
| t | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 1.00s | 0.00s ... 3600.00s | P.2 |
|  | <i>Tripping delay</i> | |

| | | |
|---|--|-----|
| df/dt | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 1.000Hz/s | 0.100Hz/s ... 10.000Hz/s | P.2 |
|  | <i>Measured value (calculated): Rate-of-frequency-change.</i> | |

| | | |
|---|--|-----|
| t-df/dt | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 1.00s | 0.00s ... 300.00s | P.2 |
|  | <i>Trip delay df/dt</i> | |


| | | |
|---|--|-----|
| DF | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 1.00Hz | 0.0Hz ... 10.0Hz | P.2 |
|  | <i>Frequency difference for the maximum admissible variation of the mean of the rate of frequency-change. This function is inactive if DF=0.</i> | |


| | | |
|---|--|-----|
| DT | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 1.00s | 0.1s ... 10.0s | P.2 |
|  | <i>Time interval of the maximum admissible rate-of-frequency-change.</i> | |

| | | |
|---|--|-----|
| df/dt mode | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| absolute df/dt | absolute df/dt, positive df/dt, negative df/dt ↪ Table | P.2 |
|  | <i>df/dt mode</i> | |

| | | |
|---|--|-----|
| delta phi | Protection Para / Set 1 / f-Prot / f[1] Protection Para / Set 2 / f-Prot / f[1] Protection Para / Set 3 / f-Prot / f[1] Protection Para / Set 4 / f-Prot / f[1] | |
| 10° | 1° ... 30° | P.2 |
|  | <i>Measured value (calculated): Vector surge</i> | |

9.12.4 f[1] ... f[6]: Input States

| | |
|---|---|
| ExBlo1-I | Operation / Status Display / f-Prot / f[1] |
| ↪ f[1] . ExBlo1 | |
|  | <i>Module input state: External blocking1</i> |

| | |
|---|---|
| ExBlo2-I | Operation / Status Display / f-Prot / f[1] |
|  | <i>Module input state: External blocking2</i> |

| | |
|---|--|
| ExBlo TripCmd-I | Operation / Status Display / f-Prot / f[1] |
|  | <ul style="list-style-type: none"> Only available if: Superv. only = no <i>Module input state: External Blocking of the Trip Command</i> |

9.12.5 f[1] ... f[6]: Signals (Output States)


| | |
|----------------------------|--|
| Active | Operation / Status Display / All Actives Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: active |
| ExBlo | Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: External Blocking |
| Blo by V< | Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Operation / Status Display / f-Prot / f[1] |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command blocked |
| ExBlo TripCmd | Operation / Status Display / f-Prot / f[1] |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: External Blocking of the Trip Command |
| Alarm f | Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: Alarm Frequency Protection |
| Alarm df/dt DF/DT | Operation / Status Display / f-Prot / f[1] |
| ↑ | Alarm instantaneous or average value of the rate-of-frequency-change |
| Alarm delta phi | Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: Alarm Vector Surge |
| Alarm | Operation / Status Display / Alarms Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: Alarm Frequency Protection (collective signal) |
| Trip f | Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: Frequency has exceeded the limit. |
| Trip df/dt DF/DT | Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: Trip df/dt or DF/DT |

| | |
|-----------------------|---|
| Trip delta phi | Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: Trip Vector Surge |
| Trip | Operation / Status Display / Trips Operation / Status Display / f-Prot / f[1] |
| ↑ | Signal: Trip Frequency Protection (collective signal) |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / f-Prot / f[1] |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command |


9.13 ReCon[1], ReCon[2]


Reconnection


9.13.1 ReCon[1], ReCon[2]: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|--------------------------------------|-----|
| - | -, use ↪ Table | S.3 |
|  <i>general operation mode</i> | | |

9.13.2 ReCon[1], ReCon[2]: Global Parameters

| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings | |
|--|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | | |


| V Ext Release PCC | Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings | |
|--|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  <i>Release Signal by the Point of Common Coupling. The line-to-line voltage is greater than 95% of VN.</i> | | |


| PCC Fuse Fail VT | Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings | |
|--|--|-----|
| - | - ... DI 8 ↪ Table | P.2 |
|  <i>Blocking if the fuse of a voltage transformer has tripped at the PCC.</i> | | |


| reconnected | Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / General Settings | |
|--|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  <i>This signal indicates the state "reconnected" (mains parallel).</i> | | |


| | | |
|---|--|-----|
| Decoupling1 ... Decoupling6 | Protection Para / Global Prot Para / Intercon-Prot / ReCon[1] / Decoupling | |
| - | - ... LE80.Out inverted ↪ Table | P.2 |
|  | <i>Decoupling function, that triggers the reconnection.</i> | |

9.13.3 ReCon[1], ReCon[2]: Setting Group Parameters

| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 2 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 3 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 4 / Intercon-Prot / ReCon[1] / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Permanent activation or deactivation of module/stage.</i> | |

| | | |
|---|--|-----|
| ExBlo Fc | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 2 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 3 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 4 / Intercon-Prot / ReCon[1] / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".</i> | |


| | | |
|---|--|-----|
| Meas Circuit Superv | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 2 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 3 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 4 / Intercon-Prot / ReCon[1] / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activates the use of the measuring circuit supervision. In this case the module will be blocked if a measuring circuit supervision module (e.g. LOP, VTS) signals a disturbed measuring circuit (e.g. caused by a fuse failure).</i> | |


| | | |
|---|--|-----|
| V Ext Release PCC Fc | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 2 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 3 / Intercon-Prot / ReCon[1] / General Settings Protection Para / Set 4 / Intercon-Prot / ReCon[1] / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate the release signal of the Point of Common Coupling. The line-to-line voltage is greater than 95% of VN.</i> | |

9 Protection


9.13.3 ReCon[1], ReCon[2]: Setting Group Parameters


| | | |
|---|--|-----|
| Reconnect. Release Cond | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 2 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 3 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 4 / Intercon-Prot / ReCon[1] / Release Para | |
| Both | V Internal Release, V Ext Release PCC, Both ↪ Table | P.2 |
|  | <i>This parameter ensures that the mains voltage is recovered.</i> | |


| | | |
|--|--|-----|
| PCC Fuse Fail VT Fk | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 2 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 3 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 4 / Intercon-Prot / ReCon[1] / Release Para | |
| Only available if: <ul style="list-style-type: none"> • Reconnect. Release Cond = V Ext Release PCC • Reconnect. Release Cond = Both Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Blocking if the fuse of a voltage transformer has tripped at the PCC.</i> | |


| | | |
|---|--|-----|
| Measuring method | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 2 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 3 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 4 / Intercon-Prot / ReCon[1] / Release Para | |
| Fundamental | Fundamental, True RMS, Vavg ↪ Table | P.2 |
|  | <i>Measuring method: fundamental or rms or "sliding average supervision"</i> | |

| | | |
|---|--|-----|
| VLL max Release | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 2 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 3 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 4 / Intercon-Prot / ReCon[1] / Release Para | |
| Only available if: <ul style="list-style-type: none"> • Reconnect. Release Cond = V Internal Release • Reconnect. Release Cond = Both 1.10Vn | 1.00Vn ... 1.50Vn | P.2 |
|  | <i>Maximum voltage (line-to-line) for reclosure (Restoration Voltage)</i> | |



| | | |
|---|--|-----|
| VLL min Release | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 2 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 3 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 4 / Intercon-Prot / ReCon[1] / Release Para | |
| Only available if: <ul style="list-style-type: none"> • Reconnect. Release Cond = V Internal Release • Reconnect. Release Cond = Both 0.95Vn | 0.50Vn ... 1.00Vn | P.2 |
|  <i>Minimum voltage (line-to-line) for reclosure (Restoration Voltage)</i> | | |


| | | |
|--|--|-----|
| f max Release | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 2 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 3 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 4 / Intercon-Prot / ReCon[1] / Release Para | |
| 50.10Hz | 40.00Hz ... 69.90Hz | P.2 |
|  <i>Upper frequency limit for the reclosure</i> | | |

| | | |
|--|--|-----|
| f min Release | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 2 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 3 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 4 / Intercon-Prot / ReCon[1] / Release Para | |
| 49.9Hz | 40.00Hz ... 69.90Hz | P.2 |
|  <i>Lower frequency limit for the reclosure (Restoration Voltage)</i> | | |

| | | |
|--|--|-----|
| t-Release Blo | Protection Para / Set 1 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 2 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 3 / Intercon-Prot / ReCon[1] / Release Para Protection Para / Set 4 / Intercon-Prot / ReCon[1] / Release Para | |
| 600s | 0.00s ... 3600.00s | P.2 |
|  <i>Time stage (delay) for the reclosure of the energy resources. The Mains saddle time takes based on exirience approx. 10 - 15 minutes.</i> | | |

9.13.4 ReCon[1], ReCon[2]: Input States

| | |
|---|---|
| ExBlo1-I | Operation / Status Display / Intercon-Prot / ReCon[1] |
|  ReCon[1] . ExBlo1 | |
|  <i>Module input state: External blocking1</i> | |

| | |
|---|---|
| ExBlo2-I | Operation / Status Display / Intercon-Prot / ReCon[1] |
|  <i>Module input state: External blocking2</i> | |

| | |
|--|---|
| V Ext Release PCC-I (↪ ReCon[1] . V Ext Release PCC) | Operation / Status Display / Intercon-Prot / ReCon[1] |
|--|---|

↓ *Module input state: Release signal is being generated by the PCC (External Release)*

| | |
|--|---|
| PCC Fuse Fail VT-I (↪ ReCon[1] . PCC Fuse Fail VT) | Operation / Status Display / Intercon-Prot / ReCon[1] |
|--|---|

↓ *State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC.*

| | |
|--|---|
| reconnected-I (↪ ReCon[1] . reconnected) | Operation / Status Display / Intercon-Prot / ReCon[1] |
|--|---|

↓ *This signal indicates the state "reconnected" (mains parallel).*

| | |
|---|---|
| Decoupling1-I ... Decoupling6-I (↪ ReCon[1] . Decoupling1) | Operation / Status Display / Intercon-Prot / ReCon[1] |
|---|---|

↓ *Decoupling function, that triggers the reconnection.*

9.13.5 ReCon[1], ReCon[2]: Signals (Output States)

| | |
|---------------|---|
| Active | Operation / Status Display / All Actives Operation / Status Display / Intercon-Prot / ReCon[1] |
|---------------|---|

↑ *Signal: active*

| | |
|--------------|---|
| ExBlo | Operation / Status Display / Intercon-Prot / ReCon[1] |
|--------------|---|

↑ *Signal: External Blocking*

| | |
|--------------------------------|---|
| Blo by Meas Circ Superv | Operation / Status Display / Intercon-Prot / ReCon[1] |
|--------------------------------|---|




↑ *Signal: Module blocked by measuring circuit supervision*

| | |
|------------------------------|---|
| Eval Recon-Conditions | Operation / Status Display / Intercon-Prot / ReCon[1] |
|------------------------------|---|

↑ *Signal: Evaluation of reconnection conditions after decoupling event*

| | |
|--------------------------|---|
| t-Release running | Operation / Status Display / Intercon-Prot / ReCon[1] |
|--------------------------|---|


↑ *Signal: The timer "t-Release" is running. Thus, all conditions for reconnection are fulfilled. After the timer has expired reconnection release will be issued.*

| | |
|--|---|
| Release Energy Res. | Operation / Status Display / Intercon-Prot / ReCon[1] |
|  <i>Signal: Signal: Release Energy Resource.</i> | |
| V out of range | Operation / Status Display / Intercon-Prot / ReCon[1] |
|  <i>Signal: Reconnection release is blocked because voltage is out of range</i> | |
| f out of range | Operation / Status Display / Intercon-Prot / ReCon[1] |
|  <i>Signal: Reconnection release is blocked because frequency is out of range</i> | |


9.14 Sync [25]


Synchrocheck


9.14.1 Sync: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|---|-----|
| - | -, use ↩ Table | S.3 |
|  | <i>Synchrocheck, general operation mode</i> | |


9.14.2 Sync: Global Parameters


| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Intercon-Prot / Sync | |
|---|--|-----|
| - | - ... Internal test state ↩ Table | C.2 |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | |


| Bypass | Protection Para / Global Prot Para / Intercon-Prot / Sync | |
|---|--|-----|
| - | - ... LE80.Out inverted ↩ Table | C.2 |
|  | <i>The Synchrocheck will be bypassed if the state of the assigned signal (logic input) becomes true.</i> | |

| CB Pos Detect | Protection Para / Global Prot Para / Intercon-Prot / Sync | |
|---|--|-----|
| Pos | -, Pos ↩ Table | C.2 |
|  | <i>Criterion by which the Circuit Breaker Switch Position is to be detected.</i> | |


| CBCloseInitiate | Protection Para / Global Prot Para / Intercon-Prot / Sync | |
|---|---|-----|
| - | - ... LE80.Out inverted ↩ Table | C.2 |
|  | <i>Breaker Close Initiate with synchronism check from any control sources (e.g. HMI / SCADA). If the state of the assigned signal becomes true, a Breaker Close will be initiated (Trigger Source).</i> | |


| Transformer-Mode | Protection Para / Global Prot Para / Intercon-Prot / Sync | |
|--|---|-----|
| Inactive | Inactive, Active ↪ Table | C.2 |
|  Activate transformer mode to enable phase and angle corrections for this function. | | |


| V Line / V Bus | Protection Para / Global Prot Para / Intercon-Prot / Sync | |
|--|---|-----|
| <ul style="list-style-type: none"> Only available if: Transformer-Mode = Active 1.000 | 0.002 ... 500.000 | C.2 |
|  Ratio of the voltage amplitudes between the line and bus side when using transformer mode. | | |


| Angle Correction | Protection Para / Global Prot Para / Intercon-Prot / Sync | |
|---|---|-----|
| <ul style="list-style-type: none"> Only available if: Transformer-Mode = Active 0.0° | -360.0° ... 360.0° | C.2 |
|  Correction angle resulting from the difference in angle between the line and bus side when using transformer mode. | | |


9.14.3 Sync: Setting Group Parameters


| Function | Protection Para / Set 1 / Intercon-Prot / Sync / General Settings Protection Para / Set 2 / Intercon-Prot / Sync / General Settings Protection Para / Set 3 / Intercon-Prot / Sync / General Settings Protection Para / Set 4 / Intercon-Prot / Sync / General Settings | |
|---|--|-----|
| Inactive | Inactive, Active ↪ Table | P.2 |
|  Permanent activation or deactivation of module/stage. | | |


| ExBlo Fc | Protection Para / Set 1 / Intercon-Prot / Sync / General Settings Protection Para / Set 2 / Intercon-Prot / Sync / General Settings Protection Para / Set 3 / Intercon-Prot / Sync / General Settings Protection Para / Set 4 / Intercon-Prot / Sync / General Settings | |
|---|--|-----|
| Inactive | Inactive, Active ↪ Table | P.2 |
|  Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". | | |

| | | |
|---|--|-----|
| Bypass Fc | Protection Para / Set 1 / Intercon-Prot / Sync / General Settings Protection Para / Set 2 / Intercon-Prot / Sync / General Settings Protection Para / Set 3 / Intercon-Prot / Sync / General Settings Protection Para / Set 4 / Intercon-Prot / Sync / General Settings | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Allowing to bypass the Synchrocheck, if the state signal that is assigned to the parameter with the same name within the Global Parameters (logic input) becomes true.</i> | |


| | | |
|---|--|-----|
| SyncMode | Protection Para / Set 1 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 2 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 3 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 4 / Intercon-Prot / Sync / Mode / Times | |
| System2System | System2System, Generator2System ↪ Table | P.2 |
|  | <i>Synchrocheck mode: GENERATOR2SYSTEM = Synchronizing generator to system (breaker close initiate needed). SYSTEM2SYSTEM = SynchonCheck between two systems (Stand-Alone, no breaker info needed)</i> | |


| | | |
|---|--|-----|
| t-MaxCBCloseDelay | Protection Para / Set 1 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 2 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 3 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 4 / Intercon-Prot / Sync / Mode / Times | |
| <ul style="list-style-type: none"> Only available if: SyncMode = Generator2System 0.05s | 0.00s ... 300.00s | P.2 |
|  | <i>Maximum circuit breaker close time delay (Only used for GENERATOR-SYSTEM working mode and is critical for a correct synchronized switching)</i> | |


| | | |
|--|--|-----|
| t-MaxSyncSuperv | Protection Para / Set 1 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 2 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 3 / Intercon-Prot / Sync / Mode / Times Protection Para / Set 4 / Intercon-Prot / Sync / Mode / Times | |
| <ul style="list-style-type: none"> Only available if: SyncMode = Generator2System 30.00s | 0.00s ... 3000.00s | P.2 |
|  | <i>Synchron-Run timer: Max. time allowed for synchronizing process after a close initiate. Only used for GENERATOR2SYSTEM working mode.</i> | |


| | | |
|---|--|-----|
| MinLiveBusVoltage | Protection Para / Set 1 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 2 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 3 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 4 / Intercon-Prot / Sync / DeadLiveVLevels | |
| 0.65Vn | | P.2 |
|  | <i>Minimum Live Bus voltage (Live bus detected, when all three phase bus voltages are above this limit).</i> | |


| | |
|--|--|
| MaxDeadBusVoltage | Protection Para / Set 1 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 2 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 3 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 4 / Intercon-Prot / Sync / DeadLiveVLevels |
| 0.03Vn | 0.01Vn ... 1.00Vn P.2 |
|  <i>Maximum Dead Bus voltage (Dead bus detected, when all three phase bus voltages are below this limit).</i> | |

| | |
|--|--|
| MinLiveLineVoltage | Protection Para / Set 1 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 2 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 3 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 4 / Intercon-Prot / Sync / DeadLiveVLevels |
| 0.65Vn | P.2 |
|  <i>Minimum Live Line voltage (Live line detected, when line voltage above this limit).</i> | |

| | |
|--|--|
| MaxDeadLineVoltage | Protection Para / Set 1 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 2 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 3 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 4 / Intercon-Prot / Sync / DeadLiveVLevels |
| 0.03Vn | 0.01Vn ... 1.00Vn P.2 |
|  <i>Maximum Dead Line voltage (Dead Line detected, when line voltage below this limit).</i> | |


| | |
|--|--|
| t-VoltDead | Protection Para / Set 1 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 2 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 3 / Intercon-Prot / Sync / DeadLiveVLevels Protection Para / Set 4 / Intercon-Prot / Sync / DeadLiveVLevels |
| 0.167s | 0.000s ... 300.000s P.2 |
|  <i>Voltage dead time (A Dead Bus/Line condition will be accepted only if the voltage falls below the set dead voltage levels longer than this time setting).</i> | |


| | |
|---|--|
| MaxVoltageDiff | Protection Para / Set 1 / Intercon-Prot / Sync / Conditions Protection Para / Set 2 / Intercon-Prot / Sync / Conditions Protection Para / Set 3 / Intercon-Prot / Sync / Conditions Protection Para / Set 4 / Intercon-Prot / Sync / Conditions |
| 0.24Vn | 0.01Vn ... 1.00Vn P.2 |
|  <i>Maximum voltage difference between bus and line voltage phasors (Delta V)for synchronism (Related to bus voltage secondary rating)</i> | |

| | |
|--|--|
| MaxSlipFrequency | Protection Para / Set 1 / Intercon-Prot / Sync / Conditions Protection Para / Set 2 / Intercon-Prot / Sync / Conditions Protection Para / Set 3 / Intercon-Prot / Sync / Conditions Protection Para / Set 4 / Intercon-Prot / Sync / Conditions |
| 0.20Hz | 0.01Hz ... 2.00Hz P.2 |
|  <i>Maximum frequency difference (Slip: Delta f) between bus and line voltage allowed for synchronism</i> | |


9 Protection

9.14.4 Sync: Input States


| | |
|---|--|
| MaxAngleDiff | Protection Para / Set 1 / Intercon-Prot / Sync / Conditions Protection Para / Set 2 / Intercon-Prot / Sync / Conditions Protection Para / Set 3 / Intercon-Prot / Sync / Conditions Protection Para / Set 4 / Intercon-Prot / Sync / Conditions |
| 20° | 1° ... 60° P.2 |
|  | <i>Maximum phase angle difference (Delta-Phi in degree) between bus and line voltages allowed for synchronism</i> |


| | |
|---|--|
| DBDL | Protection Para / Set 1 / Intercon-Prot / Sync / Override Protection Para / Set 2 / Intercon-Prot / Sync / Override Protection Para / Set 3 / Intercon-Prot / Sync / Override Protection Para / Set 4 / Intercon-Prot / Sync / Override |
| Inactive | Inactive, Active P.2 ↳ Table |
|  | <i>Enable/disable Dead-Bus AND Dead-Line synchronism overriding</i> |

| | |
|---|--|
| DBLL | Protection Para / Set 1 / Intercon-Prot / Sync / Override Protection Para / Set 2 / Intercon-Prot / Sync / Override Protection Para / Set 3 / Intercon-Prot / Sync / Override Protection Para / Set 4 / Intercon-Prot / Sync / Override |
| Inactive | Inactive, Active P.2 ↳ Table |
|  | <i>Enable/disable Dead-Bus AND Live-Line synchronism overriding</i> |

| | |
|---|--|
| LBDL | Protection Para / Set 1 / Intercon-Prot / Sync / Override Protection Para / Set 2 / Intercon-Prot / Sync / Override Protection Para / Set 3 / Intercon-Prot / Sync / Override Protection Para / Set 4 / Intercon-Prot / Sync / Override |
| Inactive | Inactive, Active P.2 ↳ Table |
|  | <i>Enable/disable Live-Bus AND Dead-Line synchronism overriding</i> |

9.14.4 Sync: Input States

| | |
|---|---|
| ExBlo1-I | Operation / Status Display / Intercon-Prot / Sync |
| ↳ Sync . ExBlo1 | |
|  | <i>Module input state: External blocking1</i> |

| | |
|---|---|
| ExBlo2-I | Operation / Status Display / Intercon-Prot / Sync |
|  | <i>Module input state: External blocking2</i> |

| | |
|-------------------------------------|--|
| Bypass-I | Operation / Status Display / Intercon-Prot / Sync |
| (↩ Sync . Bypass) | |
| ↓ | State of the module input: The Synchrocheck will be bypassed if the state of the assigned signal (logic input) becomes true. |

| | |
|--|---|
| CBCloseInitiate-I | Operation / Status Display / Intercon-Prot / Sync |
| (↩ Sync . CBCloseInitiate) | |
| ↓ | State of the module input: Breaker Close Initiate with synchronism check from any control sources (e.g. HMI / SCADA). If the state of the assigned signal becomes true, a Breaker Close will be initiated (Trigger Source). |

9.14.5 Sync: Signals (Output States)

| | |
|---------------|---|
| Active | Operation / Status Display / All Actives Operation / Status Display / Intercon-Prot / Sync |
| ↑ | Signal: active |

| | |
|--------------|---|
| ExBlo | Operation / Status Display / Intercon-Prot / Sync |
| ↑ | Signal: External Blocking |

| | |
|----------------|---|
| LiveBus | Operation / Status Display / Intercon-Prot / Sync |
| ↑ | Signal: Live-Bus flag: 1=Live-Bus, 0=Voltage is below the LiveBus threshold |





| | |
|-----------------|--|
| LiveLine | Operation / Status Display / Intercon-Prot / Sync |
| ↑ | Signal: Live Line flag: 1=Live-Line, 0=Voltage is below the LiveLine threshold |

| | |
|--------------------------|--|
| SynchronRunTiming | Operation / Status Display / Intercon-Prot / Sync |
| ↑ | Signal: Synchron-Run-timer is timing (This timer starts when Close-Initiate is coming and stops if breaker is closed. Timeout means synchronizing failed.) |









| | |
|-----------------------|---|
| SynchronFailed | Operation / Status Display / Intercon-Prot / Sync |
| ↑ | Signal: This signal indicates a failed synchronization. It is set for 5s when the circuit breaker is still open after the Synchron-Run-timer has timed out. |


| | |
|-----------------------|---|
| SyncOverridden | Operation / Status Display / Intercon-Prot / Sync |
| ↑ | Signal: Synchronism Check is overridden because one of the Synchronism overriding conditions (DB/DL or ExtBypass) is met. |

| | |
|---------------------|---|
| VDiffTooHigh | Operation / Status Display / Intercon-Prot / Sync |
| ↑ | Signal: Voltage difference between bus and line too high. |

| | |
|---|---|
| SlipTooHigh | Operation / Status Display / Intercon-Prot / Sync |
|  <i>Signal: Frequency difference (slip frequency) between bus and line voltages too high.</i> | |
| AngleDiffTooHigh | Operation / Status Display / Intercon-Prot / Sync |
|  <i>Signal: Phase Angle difference between bus and line voltages too high.</i> | |
| Sys-in-Sync | Operation / Status Display / Intercon-Prot / Sync |
|  <i>Signal: Bus and line voltages are in synchronism according to the system synchronism criteria.</i> | |
| Ready to Close | Operation / Status Display / Intercon-Prot / Sync |
|  <i>Signal: Ready to Close</i> | |

9.14.6 Sync: Values


| | |
|--|---|
| Slip Freq | Operation / Measured Values / Synchronism |
|  <i>Slip frequency</i> | |
| Volt Diff | Operation / Measured Values / Synchronism |
|  <i>Voltage difference between bus and line.</i> | |
| Angle Diff | Operation / Measured Values / Synchronism |
|  <i>Angle difference between bus and line voltages.</i> | |
| f Bus | Operation / Measured Values / Synchronism |
|  <i>Bus frequency</i> | |
| f Line | Operation / Measured Values / Synchronism |
|  <i>Line frequency</i> | |
| V Bus | Operation / Measured Values / Synchronism |
|  <i>Bus Voltage</i> | |
| V Line | Operation / Measured Values / Synchronism |
|  <i>Line Voltage</i> | |
| Angle Bus | Operation / Measured Values / Synchronism |
|  <i>Bus Angle (Reference)</i> | |


| | |
|---|---|
| Angle Line | Operation / Measured Values / Synchronism |
|  <i>Line Angle</i> | |

9.15 Exp[1] ... Exp[4]


External Protection - Module


9.15.1 Exp[1] ... Exp[4]: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|--|--------------------------------------|-----|
| - | -, use ↪ Table | S.3 |
|  External Protection - Module, general operation mode | | |


| Superv. only | Device planning / Definition | |
|---|------------------------------------|-----|
| no | no, yes ↪ Table | S.3 |
|  External Protection - Module, if set to "Yes": Restriction of the function to a supervision functionality, i.e. there is no general alarm, no general trip and no trip command. | | |

9.15.2 Exp[1] ... Exp[4]: Global Parameters


| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Exp / Exp[1] | |
|---|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. | | |


| ExBlo TripCmd | Protection Para / Global Prot Para / Exp / Exp[1] | |
|---|--|-----|
| <ul style="list-style-type: none"> Only available if: Superv. only = no - | - ... Internal test state ↪ Table | P.2 |
|  External blocking of the Trip Command of the module/the stage, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. | | |


| Alarm | Protection Para / Global Prot Para / Exp / Exp[1] | |
|---|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  Assignment for External Alarm | | |


| | | |
|---|--|-----|
| Trip | Protection Para / Global Prot Para / Exp / Exp[1] | |
| - | - ... Internal test state Table | P.2 |
|  | External trip of the CB if the state of the assigned signal is true. | |

9.15.3 Exp[1] ... Exp[4]: Setting Group Parameters

| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / Exp / Exp[1] Protection Para / Set 2 / Exp / Exp[1] Protection Para / Set 3 / Exp / Exp[1] Protection Para / Set 4 / Exp / Exp[1] | |
| Inactive | Inactive, Active Table | P.2 |
|  | Permanent activation or deactivation of module/stage. | |

| | | |
|---|---|-----|
| ExBlo Fc | Protection Para / Set 1 / Exp / Exp[1] Protection Para / Set 2 / Exp / Exp[1] Protection Para / Set 3 / Exp / Exp[1] Protection Para / Set 4 / Exp / Exp[1] | |
| Inactive | Inactive, Active Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". | |

| | | |
|--|--|-----|
| Blo TripCmd | Protection Para / Set 1 / Exp / Exp[1] Protection Para / Set 2 / Exp / Exp[1] Protection Para / Set 3 / Exp / Exp[1] Protection Para / Set 4 / Exp / Exp[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active Table | P.2 |
|  | Permanent blocking of the Trip Command of the module/stage. | |

| | | |
|--|---|-----|
| ExBlo TripCmd Fc | Protection Para / Set 1 / Exp / Exp[1] Protection Para / Set 2 / Exp / Exp[1] Protection Para / Set 3 / Exp / Exp[1] Protection Para / Set 4 / Exp / Exp[1] | |
| <ul style="list-style-type: none"> Only available if: Superv. only = no Inactive | Inactive, Active Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo TripCmd Fc=active". | |

9.15.4 ExP[1] ... ExP[4]: Input States

| | |
|--|--|
| ExBlo1-I (↳ ExP[1] . ExBlo1) | Operation / Status Display / ExP / ExP[1] |
| ↓ | Module input state: External blocking1 |
| ExBlo2-I | Operation / Status Display / ExP / ExP[1] |
| ↓ | Module input state: External blocking2 |
| ExBlo TripCmd-I | Operation / Status Display / ExP / ExP[1] |
| ↓ | <ul style="list-style-type: none"> Only available if: Superv. only = no Module input state: External Blocking of the Trip Command |
| Alarm-I (↳ ExP[1] . Alarm) | Operation / Status Display / ExP / ExP[1] |
| ↓ | Module input state: Alarm |
| Trip-I (↳ ExP[1] . Trip) | Operation / Status Display / ExP / ExP[1] |
| ↓ | Module input state: Trip |

9.15.5 ExP[1] ... ExP[4]: Signals (Output States)


| | |
|--------------------|---|
| Active | Operation / Status Display / All Actives Operation / Status Display / ExP / ExP[1] |
| ↑ | Signal: active |
| ExBlo | Operation / Status Display / ExP / ExP[1] |
| ↑ | Signal: External Blocking |
| Blo TripCmd | Operation / Status Display / ExP / ExP[1] |
| ↑ | <ul style="list-style-type: none"> Only available if: Superv. only = no Signal: Trip Command blocked |

| | |
|--|--|
| ExBlo TripCmd | Operation / Status Display / Exp / Exp[1] |
|  <ul style="list-style-type: none"> • Only available if: Superv. only = no <p><i>Signal: External Blocking of the Trip Command</i></p> | |
| Alarm | Operation / Status Display / Alarms Operation / Status Display / Exp / Exp[1] |
|  <p><i>Signal: Alarm</i></p> | |
| Trip | Operation / Status Display / Trips Operation / Status Display / Exp / Exp[1] |
|  <p><i>Signal: Trip</i></p> | |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / Exp / Exp[1] |
|  <ul style="list-style-type: none"> • Only available if: Superv. only = no <p><i>Signal: Trip Command</i></p> | |


9.16 CBF [62BF]


Circuit breaker failure protection module

9.16.1 CBF: Device Planning Parameters

| | | |
|---|--|-----|
| Mode | Device planning / Projected Elements | |
| - | - , use ↪ Table | S.3 |
|  | <i>Module Circuit Breaker Failure protection, general operation mode</i> | |


9.16.2 CBF: Global Parameters


| | | |
|---|--|-----|
| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Supervision / CBF | |
| - | - ... Internal test state ↪ Table | P.2 |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | |


| | | |
|---|---|-----|
| Trigger | Protection Para / Global Prot Para / Supervision / CBF | |
| All TripCmds | - . -, All TripCmds, External TripCmds ↪ Table | P.2 |
|  | <i>Determining the trigger mode for the Breaker Failure.</i> | |

| | | |
|---|--|-----|
| Trigger1 Trigger2 , | Protection Para / Global Prot Para / Supervision / CBF | |
| Trigger3 | | |
| - | - ... LE80.Out inverted ↪ Table | P.2 |
|  | <i>Trigger that will start the CBF</i> | |


9.16.3 CBF: Setting Group Parameters

| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / Supervision / CBF Protection Para / Set 2 / Supervision / CBF Protection Para / Set 3 / Supervision / CBF Protection Para / Set 4 / Supervision / CBF | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | Permanent activation or deactivation of module/stage. | |


| | | |
|---|---|-----|
| ExBlo Fc | Protection Para / Set 1 / Supervision / CBF Protection Para / Set 2 / Supervision / CBF Protection Para / Set 3 / Supervision / CBF Protection Para / Set 4 / Supervision / CBF | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". | |


| | | |
|---|--|-----|
| t-CBF | Protection Para / Set 1 / Supervision / CBF Protection Para / Set 2 / Supervision / CBF Protection Para / Set 3 / Supervision / CBF Protection Para / Set 4 / Supervision / CBF | |
| 0.20s | 0.00s ... 10.00s | P.2 |
|  | If the delay time is expired, a CBF alarm is issued. | |

9.16.4 CBF: Direct Controls

| | | |
|---|---|-----|
| Res Lockout | Operation / Reset | |
| Inactive | Inactive, Active ↪ Table | P.1 |
|  | Reset Lockout | |

9.16.5 CBF: Input States

| | | |
|---|--|--|
| ExBlo1-I | Operation / Status Display / Supervision / CBF | |
| ↪ CBF . ExBlo1 | | |
|  | Module input state: External blocking1 | |

| | | |
|---|--|--|
| ExBlo2-I | Operation / Status Display / Supervision / CBF | |
|  | Module input state: External blocking2 | |

| | |
|---|--|
| Trigger1-I Trigger2-I , Trigger3-I (↪ CBF . Trigger1) | Operation / Status Display / Supervision / CBF |
| ⬇ | <i>Module Input: Trigger that will start the CBF</i> |

9.16.6 CBF: Signals (Output States)

| | |
|---------------|--|
| Active | Operation / Status Display / All Actives Operation / Status Display / Supervision / CBF |
| ⬆ | <i>Signal: active</i> |

| | |
|--------------|--|
| ExBlo | Operation / Status Display / Supervision / CBF |
| ⬆ | <i>Signal: External Blocking</i> |

| | |
|----------------------------|--|
| Waiting for Trigger | Operation / Status Display / Supervision / CBF |
| ⬆ | <i>Waiting for Trigger</i> |

| | |
|----------------|--|
| running | Operation / Status Display / Supervision / CBF |
| ⬆ | <i>Signal: CBF-Module started</i> |

| | |
|--------------|--|
| Alarm | Operation / Status Display / Trips Operation / Status Display / Supervision / CBF |
| ⬆ | <i>Signal: Circuit Breaker Failure</i> |

| | |
|----------------|--|
| Lockout | Operation / Status Display / Supervision / CBF |
| ⬆ | <i>Signal: Lockout</i> |


| | |
|--------------------|--|
| Res Lockout | Operation / Status Display / Supervision / CBF |
| ⬆ | <i>Signal: Reset Lockout</i> |

9.17 Supervision


9.17.1 TCS [74TC]


Trip Circuit Supervision


9.17.1.1 TCS: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|---|-----|
| - | -, use Table | S.3 |
|  | <i>Trip Circuit Supervision, general operation mode</i> | |

9.17.1.2 TCS: Global Parameters


| Mode | Protection Para / Global Prot Para / Supervision / TCS | |
|---|--|-----|
| Closed | Closed, Either Table | P.2 |
|  | <i>Select if trip circuit is going to be monitored when the breaker is closed or when the breaker is either open or close.</i> | |


| Input 1 | Protection Para / Global Prot Para / Supervision / TCS | |
|---|---|-----|
| - | - ... DI 8 Table | P.2 |
|  | <i>Select the input configured to monitor the trip coil when the breaker is closed.</i> | |


| Input 2 | Protection Para / Global Prot Para / Supervision / TCS | |
|---|---|-----|
| <ul style="list-style-type: none"> Only available if: Mode = Either - | - ... DI 8 Table | P.2 |
|  | <i>Select the input configured to monitor the trip coil when the breaker is open. Only available if Mode set to "Either".</i> | |

| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Supervision / TCS | |
|---|--|-----|
| - | - ... Internal test state Table | P.2 |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.</i> | |


9.17.1.3 TCS: Setting Group Parameters


| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / Supervision / TCS Protection Para / Set 2 / Supervision / TCS Protection Para / Set 3 / Supervision / TCS Protection Para / Set 4 / Supervision / TCS | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | Permanent activation or deactivation of module/stage. | |


| | | |
|---|---|-----|
| ExBlo Fc | Protection Para / Set 1 / Supervision / TCS Protection Para / Set 2 / Supervision / TCS Protection Para / Set 3 / Supervision / TCS Protection Para / Set 4 / Supervision / TCS | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active". | |

| | | |
|---|--|-----|
| t-TCS | Protection Para / Set 1 / Supervision / TCS Protection Para / Set 2 / Supervision / TCS Protection Para / Set 3 / Supervision / TCS Protection Para / Set 4 / Supervision / TCS | |
| 0.2s | 0.10s ... 10.00s | P.2 |
|  | Delay time of the Trip Circuit Supervision | |

9.17.1.4 TCS: Input States

| | | |
|---|--|--|
| Aux ON-I ↪ TCS . Input 1 | Operation / Status Display / Supervision / TCS | |
|  | Module Input State: Position indicator/check-back signal of the CB (52a) | |

| | | |
|---|--|--|
| Aux OFF-I | Operation / Status Display / Supervision / TCS | |
|  | Module input state: Position indicator/check-back signal of the CB (52b) | |

| | | |
|---|--|--|
| ExBlo1-I ↪ TCS . ExBlo1 | Operation / Status Display / Supervision / TCS | |
|  | Module input state: External blocking1 | |

| | |
|-----------------|--|
| ExBlo2-I | Operation / Status Display / Supervision / TCS |
| ↓ | <i>Module input state: External blocking2</i> |

9.17.1.5 TCS: Signals (Output States)

| | |
|---------------|--|
| Active | Operation / Status Display / All Actives Operation / Status Display / Supervision / TCS |
| ↑ | <i>Signal: active</i> |

| | |
|--------------|--|
| ExBlo | Operation / Status Display / Supervision / TCS |
| ↑ | <i>Signal: External Blocking</i> |


| | |
|--------------|---|
| Alarm | Operation / Status Display / Alarms Operation / Status Display / Supervision / TCS |
| ↑ | <i>Signal: Alarm Trip Circuit Supervision</i> |

| | |
|---------------------|---|
| Not Possible | Operation / Status Display / Supervision / TCS |
| ↑ | <i>Not possible because no state indicator assigned to the breaker.</i> |


9.17.2 VTS


Voltage transformer supervision


9.17.2.1 VTS: Device Planning Parameters

| | | |
|---|---|-----|
| Mode | Device planning / Projected Elements | |
| - | -, use ↳ Table | S.3 |
|  | Voltage transformer supervision, general operation mode | |


9.17.2.2 VTS: Global Parameters


| | | |
|---|---|-----|
| ExBlo1 ExBlo2 | Protection Para / Global Prot Para / Supervision / VTS | |
| - | - ... Internal test state ↳ Table | P.2 |
|  | External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true. | |


| | | |
|---|--|-----|
| Ex FF VT-I | Protection Para / Global Prot Para / Supervision / VTS | |
| - | - ... Internal test state ↳ Table | P.2 |
|  | State of the module input: Alarm Fuse Failure Voltage Transformers | |


| | | |
|---|--|-----|
| Ex FF EVT-I | Protection Para / Global Prot Para / Supervision / VTS | |
| - | - ... Internal test state ↳ Table | P.2 |
|  | State of the module input: Alarm Fuse Failure Earth Voltage Transformers | |

9.17.2.3 VTS: Setting Group Parameters


| | | |
|---|--|-----|
| Function | Protection Para / Set 1 / Supervision / VTS Protection Para / Set 2 / Supervision / VTS Protection Para / Set 3 / Supervision / VTS Protection Para / Set 4 / Supervision / VTS | |
| Inactive | Inactive, Active ↳ Table | P.2 |
|  | Permanent activation or deactivation of module/stage. | |


| | | |
|---|--|-----|
| ExBlo Fc | Protection Para / Set 1 / Supervision / VTS Protection Para / Set 2 / Supervision / VTS Protection Para / Set 3 / Supervision / VTS Protection Para / Set 4 / Supervision / VTS | |
| Inactive | Inactive, Active ↪ Table | P.2 |
|  | <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".</i> | |


| | | |
|---|--|-----|
| ΔV | Protection Para / Set 1 / Supervision / VTS Protection Para / Set 2 / Supervision / VTS Protection Para / Set 3 / Supervision / VTS Protection Para / Set 4 / Supervision / VTS | |
| 0.50Vn | 0.20Vn ... 1.00Vn | P.2 |
|  | <i>In order to prevent faulty tripping of phase selective protection functions that use the voltage as tripping criterion. If the difference of the residual voltage and the calculated value V_0 is higher than the pick up value ΔV, an alarm event effected after the excitation time. In such a case, the existence of a fuse failure, a broken wire or a faulty measuring circuit can be assumed.</i> | |

| | | |
|---|--|-----|
| Alarm delay | Protection Para / Set 1 / Supervision / VTS Protection Para / Set 2 / Supervision / VTS Protection Para / Set 3 / Supervision / VTS Protection Para / Set 4 / Supervision / VTS | |
| 1.0s | 0.0s ... 9999.0s | P.2 |
|  | <i>Alarm delay</i> | |

9.17.2.4 VTS: Input States


| | | |
|---|---|--|
| Ex Fuse Fail VT-I ↪ VTS . Ex FF VT-I | Operation / Status Display / Supervision / VTS | |
|  | <i>Module input state: External fuse failure voltage transformers</i> | |

| | | |
|---|--|--|
| Ex Fuse Fail EVT-I ↪ VTS . Ex FF EVT-I | Operation / Status Display / Supervision / VTS | |
|  | <i>Module input state: External fuse failure earth voltage transformer</i> | |


| | | |
|---|--|--|
| ExBlo1-I ↪ VTS . ExBlo1 | Operation / Status Display / Supervision / VTS | |
|  | <i>Module input state: External blocking1</i> | |


9 Protection


9.17.2.5 VTS: Signals (Output States)


| | |
|---|--|
| ExBlo2-I | Operation / Status Display / Supervision / VTS |
|  <i>Module input state: External blocking2</i> | |


9.17.2.5 VTS: Signals (Output States)


| | |
|---|--|
| Active | Operation / Status Display / All Actives Operation / Status Display / Supervision / VTS |
|  <i>Signal: active</i> | |

| | |
|--|--|
| ExBlo | Operation / Status Display / Supervision / VTS |
|  <i>Signal: External Blocking</i> | |

| | |
|---|--|
| Alarm ΔV | Operation / Status Display / Supervision / VTS |
|  <i>Signal: Alarm ΔV Voltage Transformer Measuring Circuit Supervision</i> | |

| | |
|--|---|
| Alarm | Operation / Status Display / Alarms Operation / Status Display / Supervision / VTS |
|  <i>Signal: Alarm Voltage Transformer Measuring Circuit Supervision</i> | |

| | |
|---|--|
| Ex FF VT | Operation / Status Display / Supervision / VTS |
|  <i>Signal: Ex FF VT</i> | |


| | |
|--|--|
| Ex FF EVT | Operation / Status Display / Supervision / VTS |
|  <i>Signal: Alarm Fuse Failure Earth Voltage Transformers</i> | |


10 Control


Control

| Control Page | |
|---|--|
|  | Control Page This item represents a special dialog. (See the Technical Manual for details.) |


10.1 Ctrl: Global Parameters

| Res NonIL | Control / General Settings |
|---|---|
| single Operation | single Operation, timeout, permanent ↪ Table |
|  | Resetmode Non-Interlocking |

| Timeout NonIL | Control / General Settings |
|--|----------------------------|
| <ul style="list-style-type: none"> Only available if: Res NonIL ≠ permanent 60s | 2s ... 3600s C.2 |
|  | Timeout Non-Interlocking |

| NonIL Assign | Control / General Settings |
|---|--|
| - | - ... Internal test state ↪ Table |
|  | Assignment Non-Interlocking |

10.2 Ctrl: Direct Controls

| Switching Authority | Control / General Settings |
|---|--|
| Local | None, Local, Remote, Local and Remote ↪ Table |
|  | Switching Authority |

| NonInterl | Control / General Settings |
|---|---|
| Inactive | Inactive, Active ↪ Table |
|  | DC for Non-Interlocking |

| | | |
|-------------------------|--|-----|
| Reset max values | Operation / Reset | |
| False | False, True ↩ Table | C.1 |
| ☉ | <i>Direct Command to reset the maximum values of: switching comands per second, and percentage of rejected commands.</i> | |

10.3 Ctrl: Input States

| | | |
|---|--|--|
| NonInterl-I ↩ Ctrl . NonIL Assign | Operation / Status Display / Control / General Control | |
| ↓ | <i>Non-Interlocking</i> | |

10.4 Ctrl: Signals (Output States)

| | | |
|-------------------|--|--|
| Local | Operation / Status Display / Control / General Control | |
| ↑ | <i>Switching Authority: Local</i> | |

| | | |
|-------------------|--|--|
| Remote | Operation / Status Display / Control / General Control | |
| ↑ | <i>Switching Authority: Remote</i> | |

| | | |
|-------------------|--|--|
| NonInterl | Operation / Status Display / Control / General Control | |
| ↑ | <i>Non-Interlocking is active</i> | |






| | | |
|--------------------|---|--|
| SG Indeterm | Operation / Status Display / Control / General Control | |
| ↑ | <i>(At least one) Switchgear is moving (Position cannot be determined).</i> | |

| | | |
|-------------------|--|--|
| SG Disturb | Operation / Status Display / Control / General Control | |
| ↑ | <i>(At least one) Switchgear is disturbed.</i> | |

| | | |
|-----------------------|---|--|
| CES SAuthority | Operation / Status Display / Control / General Control | |
| ↑ | <i>Command Execution Supervision: Number of rejected Commands because of missing switching authority.</i> | |

| | | |
|----------------------------|--|--|
| CES DoubleOperating | Operation / Status Display / Control / General Control | |
| ↑ | <i>Command Execution Supervision: Number of rejected Commands because a second switch command is in conflict with a pending one.</i> | |





10.5 Ctrl: Values


| | |
|---|--|
| Switching Authority | Operation / Security / Security States |
|  Switching Authority | |
| Switch.Cmds per s | Operation / Count and RevData / Control / Ctrl |
|  The number of switching commands per second. (This is mainly an internal diagnosis value.) | |
| Rej. Switch.Cmds | Operation / Count and RevData / Control / Ctrl |
|  The percentage of rejected switching commands per second. (This is mainly an internal diagnosis value.) | |
| Switch.Cmds max | Operation / Count and RevData / Control / Ctrl |
|  The maximum number of switching commands per second. (This is mainly an internal diagnosis value.) | |
| Rej.Switch.Cmds max | Operation / Count and RevData / Control / Ctrl |
|  The maximum percentage of rejected switching commands per second. (This is mainly an internal diagnosis value.) | |


10.6 SG[1]


Switchgear


10.6.1 SG[1]: Global Parameters


| Aux ON | | Control / SG / SG[1] / Pos Indicatr Wirng |
|--|--|---|
| DI 1 | - ... LE80.Out inverted ↪ Table | C.2 |
|  The CB is in ON-position if the state of the assigned signal is true (52a). | | |
| Aux OFF | | Control / SG / SG[1] / Pos Indicatr Wirng |
| DI 2 | - ... LE80.Out inverted ↪ Table | C.2 |
|  The CB is in OFF-position if the state of the assigned signal is true (52b). | | |
| Ready | | Control / SG / SG[1] / Pos Indicatr Wirng |
| Only available if: - | - ... LE80.Out inverted ↪ Table | C.2 |
|  Circuit breaker is ready for operation if the state of the assigned signal is true. This digital input can be used by some protective elements (if they are available within the device) like Auto Reclosure (AR), e.g. as a trigger signal. | | |
| Removed | | Control / SG / SG[1] / Pos Indicatr Wirng |
| Only available if: - | - ... LE80.Out inverted ↪ Table | C.2 |
|  The withdrawable circuit breaker is Removed | | |
| Interl ON1 Interl ON2 , Interl ON3 | | Control / SG / SG[1] / Interlockings |
| Only available if: - | - ... Internal test state ↪ Table | C.2 |
|  Interlocking of the ON command | | |


| | | |
|--|--------------------------------------|-----|
| Interl OFF1 | Control / SG / SG[1] / Interlockings | |
| Interl OFF2 | | |
| , | | |
| Interl OFF3 | | |
| Only available if: | - ... Internal test state | C.2 |
| - | ↪ Table | |
|  <i>Interlocking of the OFF command</i> | | |

| | | |
|---|--------------------------------------|-----|
| SCmd ON | Control / SG / SG[1] / Ex ON/OFF Cmd | |
| Only available if: | - ... LE80.Out inverted | C.2 |
| - | ↪ Table | |
|  <i>Switching ON Command, e.g. the state of the Logics or the state of the digital input</i> | | |

| | | |
|--|--------------------------------------|-----|
| SCmd OFF | Control / SG / SG[1] / Ex ON/OFF Cmd | |
| Only available if: | - ... LE80.Out inverted | C.2 |
| - | ↪ Table | |
|  <i>Switching OFF Command, e.g. the state of the Logics or the state of the digital input</i> | | |








| | | |
|--|-------------------------------------|-----|
| t-TripCmd | Control / SG / SG[1] / Trip Manager | |
| Only available if: | 0s ... 300.00s | P.2 |
| 0.2s | | |
|  <i>Minimum hold time of the OFF-command (circuit breaker, load break switch)</i> | | |


| | | |
|---|-------------------------------------|-----|
| Latched | Control / SG / SG[1] / Trip Manager | |
| Only available if: | Inactive, Active | P.2 |
| Inactive | ↪ Table | |
|  <i>Defines whether the Trip Command is latched.</i> | | |


| | | |
|--|-------------------------------------|-----|
| Ack TripCmd | Control / SG / SG[1] / Trip Manager | |
| Only available if: | - ... Internal test state | P.2 |
| - | ↪ Table | |
|  <i>Ack TripCmd</i> | | |


10 Control


10.6.1 SG[1]: Global Parameters


| | | |
|---|---|-----|
| Off Cmd1 | Control / SG / SG[1] / Trip Manager | |
| Only available if: | - ... TripCmd | P.2 |
| TripCmd | ↪ Table | |
|  | <i>Off Command to the Circuit Breaker if the state of the assigned signal becomes true.</i> | |
| Off Cmd2 | Control / SG / SG[1] / Trip Manager | |
| Only available if: | - ... TripCmd | P.2 |
| TripCmd | ↪ Table | |
|  | <i>Off Command to the Circuit Breaker if the state of the assigned signal becomes true.</i> | |
| Off Cmd3 | Control / SG / SG[1] / Trip Manager | |
| Only available if: | - ... TripCmd | P.2 |
| TripCmd | ↪ Table | |
|  | <i>Off Command to the Circuit Breaker if the state of the assigned signal becomes true.</i> | |
| Off Cmd4 | Control / SG / SG[1] / Trip Manager | |
| Only available if: | - ... TripCmd | P.2 |
| TripCmd | ↪ Table | |
|  | <i>Off Command to the Circuit Breaker if the state of the assigned signal becomes true.</i> | |
| Off Cmd5 | Control / SG / SG[1] / Trip Manager | |
| ... | | |
| Off Cmd30 | Control / SG / SG[1] / Trip Manager | |
| Only available if: | - ... TripCmd | P.2 |
| - | ↪ Table | |
|  | <i>Off Command to the Circuit Breaker if the state of the assigned signal becomes true.</i> | |
| Synchronism | Control / SG / SG[1] / Synchron Switchg | |
| - | - ... LE80.Out inverted | C.2 |
| | ↪ Table | |
|  | <i>Synchronism</i> | |
| t-MaxSyncSuperv | Control / SG / SG[1] / Synchron Switchg | |
| 0.2s | 0s ... 3000.00s | C.2 |
|  | <i>Synchron-Run timer: Max. time allowed for synchronizing process after a close initiate. Only used for GENERATOR2SYSTEM working mode.</i> | |

| | | |
|---|--|-----|
| ON incl Prot ON | Control / SG / SG[1] / General Settings | |
| Active | Inactive, Active ↪ Table | C.2 |
|  | <i>The ON Command includes the ON Command issued by the Protection module.</i> | |


| | | |
|---|--|-----|
| OFF incl TripCmd | Control / SG / SG[1] / General Settings | |
| Active | Inactive, Active ↪ Table | C.2 |
|  | <i>The OFF Command includes the OFF Command issued by the Protection module.</i> | |


| | | |
|---|---|-----|
| t-Move ON | Control / SG / SG[1] / General Settings | |
| 0.1s | 0.01s ... 100.00s | C.2 |
|  | <i>Time to move to the ON Position</i> | |

| | | |
|---|---|-----|
| t-Move OFF | Control / SG / SG[1] / General Settings | |
| 0.1s | 0.01s ... 100.00s | C.2 |
|  | <i>Time to move to the OFF Position</i> | |

| | | |
|---|---|-----|
| t-Dwell | Control / SG / SG[1] / General Settings | |
| Only available if: | 0s ... 100.00s | C.2 |
| 0s | | |
|  | <i>Dwell time</i> | |

10.6.2 SG[1]: Direct Controls

| | | |
|---|--|-----|
| Manipulate Position | Control / SG / SG[1] / General Settings | |
| Inactive | Inactive, Pos OFF, Pos ON ↪ Table | C.2 |
|  | <i>WARNING! Fake Position - Manual Position Manipulation</i> | |

| | | |
|---|---|-----|
| Res SGwear SI SG | Operation / Reset | |
| Inactive | Inactive, Active ↪ Table | P.1 |
|  | <i>Resetting the slow Switchgear Alarm</i> | |

| | | |
|--------------------------|-------------------------|-----|
| Ack TripCmd | Operation / Acknowledge | |
| Only available if: | Inactive, Active | P.1 |
| Inactive | ↪ Table | |
| Acknowledge Trip Command | | |

| | | |
|--|---|-----|
| Force Trip Cmd | Service / Test - Prot inhib. / Force SG | |
| Only available if: | Inactive, Active | P.1 |
| Inactive | ↪ Table | |
| Direct Command to force the device to issue a trip command (for testing purposes). | | |

10.6.3 SG[1]: Input States

| | | |
|--|--|--|
| Aux ON-I | Operation / Status Display / Control / SG[1] | |
| ↪ SG[1] . Aux ON | | |
| Module Input State: Position indicator/check-back signal of the CB (52a) | | |

| | | |
|--|--|--|
| Aux OFF-I | Operation / Status Display / Control / SG[1] | |
| ↪ SG[1] . Aux OFF | | |
| Module input state: Position indicator/check-back signal of the CB (52b) | | |

| | | |
|-------------------------------------|--|--|
| Ready-I | Operation / Status Display / Control / SG[1] | |
| Only available if: | | |
| <i>Module input state: CB ready</i> | | |

| | | |
|--|--|--|
| Sys-in-Sync-I | Operation / Status Display / Control / SG[1] | |
| State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful. | | |

| | | |
|---|--|--|
| Removed-I | Operation / Status Display / Control / SG[1] | |
| Only available if: | | |
| <i>State of the module input: The withdrawable circuit breaker is Removed</i> | | |

| | | |
|---|--|--|
| Ack TripCmd-I | Operation / Status Display / Control / SG[1] | |
| Only available if: | | |
| <i>State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal</i> | | |

| | |
|---------------------|--|
| Interl ON1-I | Operation / Status Display / Control / SG[1] |
| Interl ON2-I | |
| Interl ON3-I | |
| ↓ | Only available if: <i>State of the module input: Interlocking of the ON command</i> |

| | |
|----------------------|---|
| Interl OFF1-I | Operation / Status Display / Control / SG[1] |
| Interl OFF2-I | |
| Interl OFF3-I | |
| ↓ | Only available if: <i>State of the module input: Interlocking of the OFF command</i> |

| | |
|------------------|--|
| SCmd ON-I | Operation / Status Display / Control / SG[1] |
| ↓ | Only available if: <i>State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input</i> |

| | |
|-------------------|---|
| SCmd OFF-I | Operation / Status Display / Control / SG[1] |
| ↓ | Only available if: <i>State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input</i> |

10.6.4 SG[1]: Signals (Output States)

| | |
|----------------------------|--|
| SI SingleContactInd | Operation / Status Display / Control / SG[1] |
| ↓ | <i>Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected.</i> |




| | |
|-------------------|--|
| Pos not ON | Operation / Status Display / Control / SG[1] |
| ↓ | <i>Signal: Pos not ON</i> |

| | |
|---------------|--|
| Pos ON | Operation / Status Display / Control / SG[1] |
| ↓ | <i>Signal: Circuit Breaker is in ON-Position</i> |

| | |
|----------------|---|
| Pos OFF | Operation / Status Display / Control / SG[1] |
| ↓ | <i>Signal: Circuit Breaker is in OFF-Position</i> |

10 Control

10.6.4 SG[1]: Signals (Output States)



| | |
|---|--|
| Pos Indeterm | Operation / Status Display / Control / SG[1] |
|  <i>Signal: Circuit Breaker is in Indeterminate Position</i> | |
| Pos Disturb | Operation / Status Display / Control / SG[1] |
|  <i>Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true.</i> | |
| Pos | Operation / Status Display / Control / SG[1] |
|  <i>Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)</i> | |
| Ready | Operation / Status Display / Control / SG[1] |
|  Only available if: <i>Signal: Circuit breaker is ready for operation.</i> | |
| t-Dwell | Operation / Status Display / Control / SG[1] |
|  Only available if: <i>Signal: Dwell time</i> | |
| Removed | Operation / Status Display / Control / SG[1] |
|  Only available if: <i>Signal: The withdrawable circuit breaker is Removed</i> | |
| Interl ON | Operation / Status Display / Control / SG[1] |
|  Only available if: <i>Signal: One or more IL_On inputs are active.</i> | |
| Interl OFF | Operation / Status Display / Control / SG[1] |
|  Only available if: <i>Signal: One or more IL_Off inputs are active.</i> | |
| CES succesf | Operation / Status Display / Control / SG[1] |
|  Only available if: <i>Signal: Command Execution Supervision: Switching command executed successfully.</i> | |
| CES Disturbed | Operation / Status Display / Control / SG[1] |
|  Only available if: <i>Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position.</i> | |

| | |
|-------------------------|--|
| CES Fail TripCmd | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: Command Execution Supervision: Command execution failed because trip command is pending.</i> |
| CES SwitchDir | Operation / Status Display / Control / SG[1] |
| ↑ | Only available if: <i>Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands.</i> |
| CES ON d OFF | Operation / Status Display / Control / SG[1] |
| ↑ | Only available if: <i>Signal: Command Execution Supervision: On Command during a pending OFF Command.</i> |
| CES SG not ready | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: Command Execution Supervision: Switchgear not ready</i> |
| CES Fiel Interl | Operation / Status Display / Control / SG[1] |
| ↑ | Only available if: <i>Signal: Command Execution Supervision: Switching Command not executed because of field interlocking.</i> |
| CES SyncTimeout | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running.</i> |
| CES SG removed | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed.</i> |
| Prot ON | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: ON Command issued by the Prot module</i> |
| TripCmd | Operation / Status Display / TripCmds Operation / Status Display / Control / SG[1] |
| ↑ | Only available if: <i>Signal: Trip Command</i> |

10 Control

10.6.4 SG[1]: Signals (Output States)


| | |
|-----------------------------|--|
| Ack TripCmd | Operation / Status Display / Control / SG[1] |
| ↑ | Only available if: <i>Signal: Acknowledge Trip Command</i> |
| ON incl Prot ON | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: The ON Command includes the ON Command issued by the Protection module.</i> |
| OFF incl TripCmd | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: The OFF Command includes the OFF Command issued by the Protection module.</i> |
| Position Ind manipul | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: Position Indicators faked</i> |
| SGwear Slow SG | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: Alarm, the circuit breaker (load-break switch) becomes slower</i> |
| Res SGwear SI SG | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: Resetting the slow Switchgear Alarm</i> |
| ON Cmd | Operation / Status Display / Control / SG[1] |
| ↑ | Only available if: <i>Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module.</i> |
| OFF Cmd | Operation / Status Display / Control / SG[1] |
| ↑ | Only available if: <i>Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module.</i> |
| ON Cmd manual | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: ON Cmd manual</i> |
| OFF Cmd manual | Operation / Status Display / Control / SG[1] |
| ↑ | <i>Signal: OFF Cmd manual</i> |

| | |
|---|---|
| Sync ON request | Operation / Status Display / Control / SG[1] |
|  | <i>Signal: Synchronous ON request</i> |
| Test Trip Cmd | Operation / Status Display / Control / SG[1] |
|  | Only available if: <i>A trip command has been triggered manually (for testing purposes).</i> |


10.6.5 SG[1]

Switchgear


10.6.5.1 SG[1]: Global Parameters


| | | |
|---|---|-----|
| Operations Alarm | Control / SG / SG[1] / SG Wear | |
| 9999 | 1 ... 100000 | C.2 |
|  | <i>Maximum number of operations. If the operations counter »TripCmd Cr« exceeds this limit then the signal »Operations Alarm« is set.</i> | |

10.6.5.2 SG[1]: Direct Controls


| | | |
|---|--|-----|
| Res TripCmd Cr | Operation / Reset | |
| Inactive | Inactive, Active ↳ Table | P.1 |
|  | <i>Resetting of the Counter: Total number of trips of the switchgear</i> | |

10.6.5.3 SG[1]: Signals (Output States)

| | | |
|---|---|--|
| Operations Alarm | Operation / Status Display / Control / SG[1] | |
|  | <i>Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.)</i> | |

| | | |
|---|--|--|
| Res TripCmd Cr | Operation / Status Display / Control / SG[1] | |
|  | <i>Signal: Resetting of the Counter: Total number of trips of the switchgear</i> | |


10.6.5.4 SG[1]: Counters

| | | |
|---|--|--|
| TripCmd Cr | Operation / Count and RevData / Control / SG[1] | |
|  | <i>Counter: Total number of trips of the switchgear.</i> | |


11 System Alarms


System Alarms

11.1 SysA: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|--------------------------------------|-----|
| - | -, use ↪ Table | S.3 |
|  <i>general operation mode</i> | | |


11.2 SysA: Global Parameters

| Function | SysA / General Settings | |
|---|---|-----|
| Inactive | Inactive, Active ↪ Table | P.2 |
|  <i>Permanent activation or deactivation of module/stage.</i> | | |

| ExBlo Fc | SysA / General Settings | |
|--|--|-----|
| - | - ... Internal test state ↪ Table | P.2 |
|  <i>Activate (allow) or inactivate (disallow) blocking of the module/stage. This parameter is only effective if a signal is assigned to the corresponding global protection parameter. If the signal becomes true, those modules/stages are blocked that are parameterized "ExBlo Fc=active".</i> | | |

| Alarm | SysA / THD / V THD | |
|--|---|-----|
| Inactive | Inactive, Active ↪ Table | P.2 |
|  <i>Alarm</i> | | |

| Threshold | SysA / THD / V THD | |
|---|--------------------|-----|
| 10000V | 1V ... 500000V | P.2 |
|  <i>Threshold (to be entered as primary value)</i> | | |

| t-Delay | SysA / THD / V THD | |
|---|--------------------|-----|
| 0s | 0s ... 3600s | P.2 |
|  <i>Tripping Delay</i> | | |

11.3 SysA: Input States

| | |
|---------------------------------------|---------------------------------------|
| ExBlo-I (↳ SysA . ExBlo Fc) | Operation / Status Display / SysA |
| ⬇ | Module input state: External blocking |

11.4 SysA: Signals (Output States)

| | |
|---------------|---|
| Active | Operation / Status Display / All Actives Operation / Status Display / SysA |
| ⬆ | Signal: active |

| | |
|--------------|-----------------------------------|
| ExBlo | Operation / Status Display / SysA |
| ⬆ | Signal: External Blocking |


| | |
|--------------------|---|
| Alarm V THD | Operation / Status Display / SysA |
| ⬆ | Signal: Alarm Total Harmonic Distortion Voltage |

| | |
|-------------------|--|
| Trip V THD | Operation / Status Display / SysA |
| ⬆ | Signal: Trip Total Harmonic Distortion Voltage |


12 Recorders

12.1 Event rec


The event recorder logs all events like switching operations, change of parameters, alarms, trips, operating mode selections, blockings and state transitions of inputs and outputs.

| Event rec | |
|---|---|
|  | <i>The event recorder logs all events like switching operations, change of parameters, alarms, trips, operating mode selections, blockings and state transitions of inputs and outputs.</i> |
| | This item represents a special dialog. (See the Technical Manual for details.) |

12.1.1 Event rec: Direct Controls


| Res all rec | Operation / Reset |
|---|--|
| Inactive | Inactive, Active ↩️ Table |
|  | Reset all records |

12.1.2 Event rec: Signals (Output States)


| Res all records | Operation / Status Display / Recorders / Event rec |
|---|--|
|  | Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.) |


12.2 Disturb rec


After a trigger event has become true, the disturbance recorder writes analogue and digital tracks


| Disturb rec | |
|---|--|
|  | After a trigger event has become true, the disturbance recorder writes analogue and digital tracks This item represents a special dialog. (See the Technical Manual for details.) |


12.2.1 Disturb rec: Global Parameters


| Start: 1 | Device Para / Recorders / Disturb rec | |
|---|--|-----|
| Trip | - ... Internal test state Table | S.3 |
|  | Start recording if the assigned signal is true. | |

| Start: 2 | Device Para / Recorders / Disturb rec | |
|---|--|-----|
| ... | | |
| Start: 8 | Device Para / Recorders / Disturb rec | |
| - | - ... Internal test state Table | S.3 |
|  | Start recording if the assigned signal is true. | |

| Auto overwriting | Device Para / Recorders / Disturb rec | |
|---|---|-----|
| Active | Inactive, Active Table | S.3 |
|  | If there is no more free memory capacity left, the oldest file will be overwritten. | |

| Pre-trigger time | Device Para / Recorders / Disturb rec | |
|---|---|-----|
| 20% | 0% ... 99% | S.3 |
|  | The pre trigger time is set in percent of the »Max file size« value. It corresponds to the part of recording before the onset of the trigger event. | |

| Post-trigger time | Device Para / Recorders / Disturb rec | |
|---|--|-----|
| 20% | 0% ... 99% | S.3 |
|  | The post trigger time is set in percent of the »Max file size« value. It is the remaining time of the »Max file size«, depending on the »Pre-trigger time« setting and the duration of the trigger event, but at maximum the »Post-trigger time« set here. | |


| | | |
|---|---|-----|
| Max file size | Device Para / Recorders / Disturb rec | |
| 2s | 0.1s ... 15.0s | S.3 |
|  | <i>The maximum storage capacity per record, including pre-trigger and post-trigger time. The amount of records depends on the size of each record, on the max. file size (set here), and on the total storage capacity.</i> | |

12.2.2 Disturb rec: Direct Controls




| | | |
|----------------------------------|--|-----|
| Man Trigger | Operation / Recorders / Man Trigger | |
| False | False, True ↳ Table | P.1 |
| <input checked="" type="radio"/> | <i>Manual Trigger</i> | |




| | | |
|----------------------------------|---|-----|
| Res all rec | Operation / Reset | |
| Inactive | Inactive, Active ↳ Table | P.1 |
| <input checked="" type="radio"/> | <i>Reset all records</i> | |

12.2.3 Disturb rec: Input States



| | | |
|---|--|--|
| Start1-I ... Start8-I (↳ Disturb rec . Start: 1) | Operation / Status Display / Recorders / Disturb rec | |
|  | <i>State of the module input:: Trigger event / start recording</i> | |

12.2.4 Disturb rec: Signals (Output States)

| | | |
|---|--|--|
| recording | Operation / Status Display / Recorders / Disturb rec | |
|  | <i>Signal: Recording</i> | |
| memory full | Operation / Status Display / Recorders / Disturb rec | |
|  | <i>Signal: Memory full</i> | |
| Clear fail | Operation / Status Display / Recorders / Disturb rec | |
|  | <i>Signal: Clear failure in memory</i> | |


| | |
|---|--|
| Res all records | Operation / Status Display / Recorders / Disturb rec |
|  <i>Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.)</i> | |
| Res record | Operation / Status Display / Recorders / Disturb rec |
|  <i>Signal: Delete record</i> | |
| Man Trigger | Operation / Status Display / Recorders / Disturb rec |
|  <i>Signal: Manual Trigger</i> | |

12.2.5 Disturb rec: Values

| | |
|--|--|
| Rec state | Operation / Status Display / Recorders / Disturb rec |
|  <i>Recording state</i> | |
| Error code | Operation / Status Display / Recorders / Disturb rec |
|  <i>Error code</i> | |


12.3 Fault rec

The values measured at the time of tripping are saved by the Fault Recorder.


| Fault rec | |
|---|--|
|  | The values measured at the time of tripping are saved by the Fault Recorder. This item represents a special dialog. (See the Technical Manual for details.) |

12.3.1 Fault rec: Global Parameters


| Record-Mode | | Device Para / Recorders / Fault rec |
|---|---|-------------------------------------|
| Trips only | Alarms and Trips, Trips only | S.3 |
| | | Table |
|  | Recorder Mode (Set the behaviour of the recorder) | |

| t-meas-delay | | Device Para / Recorders / Fault rec |
|---|--|-------------------------------------|
| 0ms | 0ms ... 60ms | S.3 |
|  | After the Trip, the measurement will be delayed for this time. | |

12.3.2 Fault rec: Direct Controls


| Res all rec | | Operation / Reset |
|---|-------------------|-----------------------|
| Inactive | Inactive, Active | P.1 |
| | | Table |
|  | Reset all records | |

12.3.3 Fault rec: Signals (Output States)

| Res record | | Operation / Status Display / Recorders / Fault rec |
|---|-----------------------|--|
|  | Signal: Delete record | |


12.4 Trend rec


Trend Recorder

| Trend rec | |
|---|---|
|  | <i>Trend Recorder</i> This item represents a special dialog. (See the Technical Manual for details.) |

12.4.1 Trend rec: Global Parameters

| Resolution | Device Para / Recorders / Trend rec | |
|---|---|-----|
| 15 min | 60 min, 30 min, 15 min, 10 min, 5 min, 1 min Table | S.3 |
|  | <i>Resolution (recording frequency)</i> | |

| Trend1 | Device Para / Recorders / Trend rec | |
|---|---|-----|
| VL1 RMS | - ... VL31 THD Table | S.3 |
|  | <i>Observed Value1</i> | |


| Trend2 | Device Para / Recorders / Trend rec | |
|---|---|-----|
| VL2 RMS | - ... VL31 THD Table | S.3 |
|  | <i>Observed Value2</i> | |


| Trend3 | Device Para / Recorders / Trend rec | |
|---|---|-----|
| VL3 RMS | - ... VL31 THD Table | S.3 |
|  | <i>Observed Value3</i> | |

| Trend4 | Device Para / Recorders / Trend rec | |
|---|---|-----|
| VX meas RMS | - ... VL31 THD Table | S.3 |
|  | <i>Observed Value4</i> | |


| Trend5 | | Device Para / Recorders / Trend rec | |
|---|-------------------------|-------------------------------------|-----|
| VL12 RMS | - ... VL31 THD | | S.3 |
| | ↩ Table | | |
|  | <i>Observed Value5</i> | | |

| Trend6 | | Device Para / Recorders / Trend rec | |
|---|-------------------------|-------------------------------------|-----|
| VL23 RMS | - ... VL31 THD | | S.3 |
| | ↩ Table | | |
|  | <i>Observed Value6</i> | | |


| Trend7 | | Device Para / Recorders / Trend rec | |
|---|-------------------------|-------------------------------------|-----|
| VL31 RMS | - ... VL31 THD | | S.3 |
| | ↩ Table | | |
|  | <i>Observed Value7</i> | | |

| Trend8 | | Device Para / Recorders / Trend rec | |
|---|-------------------------|-------------------------------------|-----|
| f | - ... VL31 THD | | S.3 |
| | ↩ Table | | |
|  | <i>Observed Value8</i> | | |


| Trend9 | | Device Para / Recorders / Trend rec | |
|---|-------------------------|-------------------------------------|-----|
| V1 | - ... VL31 THD | | S.3 |
| | ↩ Table | | |
|  | <i>Observed Value9</i> | | |

| Trend10 | | Device Para / Recorders / Trend rec | |
|---|-------------------------|-------------------------------------|-----|
| V2 | - ... VL31 THD | | S.3 |
| | ↩ Table | | |
|  | <i>Observed Value10</i> | | |


12.4.2 Trend rec: Direct Controls

| | | |
|---|---|-----|
| Res all rec | Operation / Reset | |
| Inactive | Inactive, Active ↩ Table | P.1 |
|  | Reset all records | |

12.4.3 Trend rec: Signals (Output States)

| | | |
|---|--|--|
| Res all records | Operation / Status Display / Recorders / Trend rec | |
|  | Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.) | |

12.4.4 Trend rec: Counters


| | | |
|--|--|--|
| Max avail Entries | Operation / Count and RevData / Trend rec | |
|  | Maximum available entries in the current configuration | |

13 Logic

13.1 Logics

Logic


13.1.1 Logics: Device Planning Parameters


| No of Equations: | Device planning / Projected Elements | |
|---|---|-----|
| 20 | 0, 5, 10, 20, 40, 80 ↩> Table | S.3 |
|  Number of required Logic Equations: | | |

13.1.2 Logics ... Logics


Logic


13.1.2.1 Logics ... Logics: Global Parameters


| | | | |
|---|-------------------|---|-----|
| LE1.Gate | | Logics / LE 1 | |
| AND | | AND, OR, NAND, NOR ↳ Table | S.3 |
|  | <i>Logic gate</i> | | |

| | | | |
|---|---------------------------------------|--|-----|
| LE1.Input1 ... LE1.Input4 | | Logics / LE 1 | |
| - | | - ... Internal test state ↳ Table | S.3 |
|  | <i>Assignment of the Input Signal</i> | | |

| | | | |
|---|-------------------------------------|---|-----|
| LE1.Inverting1 ... LE1.Inverting4 | | Logics / LE 1 | |
| Inactive | | Inactive, Active ↳ Table | S.3 |
|  | <i>Inverting the input signals.</i> | | |

| | | | |
|---|------------------------|---------------------|-----|
| LE1.t-On Delay | | Logics / LE 1 | |
| 0.00s | | 0.00s ... 36000.00s | S.3 |
|  | <i>Switch On Delay</i> | | |


| | | | |
|---|-------------------------|---------------------|-----|
| LE1.t-Off Delay | | Logics / LE 1 | |
| 0.00s | | 0.00s ... 36000.00s | S.3 |
|  | <i>Switch Off Delay</i> | | |


| | | | |
|---|--------------------------------------|--|-----|
| LE1.Reset Latched | | Logics / LE 1 | |
| - | | - ... Internal test state ↳ Table | S.3 |
|  | <i>Reset Signal for the Latching</i> | | |

| | | |
|---|--|-----|
| LE1.Inverting Reset | Logics / LE 1 | |
| Inactive | Inactive, Active Table | S.3 |
|  | <i>Inverting Reset Signal for the Latching</i> | |


| | | |
|---|--|-----|
| LE1.Inverting Set | Logics / LE 1 | |
| Inactive | Inactive, Active Table | S.3 |
|  | <i>Inverting the Setting Signal for the Latching</i> | |


13.1.2.2 Logics ... Logics: Input States


| | | |
|--|--|--|
| LE1.Gate In1-I ... LE1.Gate In4-I Logics . LE1.Input1 | Operation / Status Display / Logics | |
|  | <i>State of the module input: Assignment of the Input Signal</i> | |

| | | |
|---|---|--|
| LE1.Reset Latch-I Logics . LE1.Reset Latched | Operation / Status Display / Logics | |
|  | <i>State of the module input: Reset Signal for the Latching</i> | |

13.1.2.3 Logics ... Logics: Signals (Output States)

| | | |
|---|---|--|
| LE1.Gate Out | Operation / Status Display / Logics | |
|  | <i>Signal: Output of the logic gate</i> | |

| | | |
|---|-------------------------------------|--|
| LE1.Timer Out | Operation / Status Display / Logics | |
|  | <i>Signal: Timer Output</i> | |

| | | |
|---|-------------------------------------|--|
| LE1.Out | Operation / Status Display / Logics | |
|  | <i>Signal: Latched Output (Q)</i> | |

13 Logic

13.1.2.3 Logics ... Logics: Signals (Output States)

LE1.Out inverted


Operation / Status Display / Logics


 *Signal: Negated Latched Output (Q NOT)*

14 SelfSupervision


SelfSupervision


14.1 SSV: Direct Controls


| Ack System LED | Operation / Acknowledge | |
|---|--------------------------------------|-----|
| False | False, True Table | P.1 |
|  Acknowledge System LED (red/green flashing LED) | | |


| Force SC | Service / Test - Prot inhib. / Force SC | |
|---|---|-----|
| Inactive | Inactive, Active Table | P.1 |
|  Direct Command to force the device to drop SelfSuperVision Contact (SC) for 5 seconds (for testing purposes). | | |


14.2 SSV: Signals (Output States)

| System Error | Operation / Self-Supervision / System State |
|--|---|
|  Signal: Device Failure | |


| SelfSuperVision Contact | Operation / Self-Supervision / System State |
|---|---|
|  Signal: SelfSuperVision Contact | |

| New error | Operation / Self-Supervision / System State |
|--|---|
|  Signal: A new error message has been issued. | |

| New warning | Operation / Self-Supervision / System State |
|--|---|
|  Signal: A new warning message has been issued. | |

| Test SC | Operation / Self-Supervision / System State |
|--|---|
|  A drop of SelfSuperVision Contact (SC) has been triggered manually (for testing purposes). | |

14.3 SSV: Counters


| Cr No of free sockets | Operation / Self-Supervision / System State |
|--|---|
|  Counter for network diagnosis. Number of free sockets. | |

15 Service


15.1 Sgen


Sine wave generator


15.1.1 Sgen: Device Planning Parameters


| Mode | Device planning / Projected Elements | |
|---|--|-----|
| use | -, use ↪ Table | S.3 |
|  | <i>Sine wave generator, general operation mode</i> | |


15.1.2 Sgen: Global Parameters


| PreFault | Service / Test - Prot inhib. / Sgen / Configuration / Times | |
|---|---|-----|
| 0.0s | 0.00s ... 300.00s | S.3 |
|  | <i>Pre Fault Duration</i> | |


| FaultSimulation | Service / Test - Prot inhib. / Sgen / Configuration / Times | |
|---|---|-----|
| 0.0s | 0.00s ... 10800.00s | S.3 |
|  | <i>Duration of Fault Simulation</i> | |


| PostFault | Service / Test - Prot inhib. / Sgen / Configuration / Times | |
|---|---|-----|
| 0.0s | 0.00s ... 300.00s | S.3 |
|  | <i>Post Fault Duration</i> | |

| TripCmd Mode | Service / Test - Prot inhib. / Sgen / Process | |
|---|---|-----|
| No TripCmd | No TripCmd, With TripCmd ↪ Table | S.3 |
|  | <i>Trip Command Mode: Select between two operating modes for the Fault Simulator: "cold simulation" (without tripping the circuit breaker), or "hot simulation" (i.e. the simulation is authorized to trip the circuit breaker)</i> | |


| Ex Start Simulation | Service / Test - Prot inhib. / Sgen / Process | |
|---|---|-----|
| - | - ... Internal test state ↪ Table | S.3 |
|  | <i>External Start of Fault Simulation (Using the test parameters)</i> | |

| ExBlo1 | | Service / Test - Prot inhib. / Sgen / Process |
|---|---|---|
| Pos ON | - ... Internal test state | S.3 |
| | Table | |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.1</i> | |

| ExBlo2 | | Service / Test - Prot inhib. / Sgen / Process |
|---|---|---|
| - | - ... Internal test state | S.3 |
| | Table | |
|  | <i>External blocking of the module, if blocking is activated (allowed) within a parameter set and if the state of the assigned signal is true.2</i> | |


| Ex ForcePost | | Service / Test - Prot inhib. / Sgen / Process |
|---|--|---|
| - | - ... Internal test state | S.3 |
| | Table | |
|  | <i>Force Post state. Abort simulation.</i> | |

15.1.3 Sgen: Direct Controls


| Start Simulation | | Service / Test - Prot inhib. / Sgen / Process |
|---|---|---|
| Inactive | Inactive, Active | S.3 |
| | Table | |
|  | <i>Start Fault Simulation (Using the test parameters)</i> | |

| Stop Simulation | | Service / Test - Prot inhib. / Sgen / Process |
|---|---|---|
| Inactive | Inactive, Active | S.3 |
| | Table | |
|  | <i>Stopp Fault Simulation (Using the test parameters)</i> | |


15.1.4 Sgen: Input States

| Ex Start Simulation-I | | Operation / Status Display / Sgen |
|---|---|-----------------------------------|
| Sgen . Ex Start Simulation | | |
|  | <i>State of the module input:External Start of Fault Simulation (Using the test parameters)</i> | |


| | |
|--|--|
| ExBlo1-I (↪ Sgen . ExBlo1) | Operation / Status Display / Sgen Service / Test - Prot inhib. / Sgen / State |
|--|--|

 *Module input state: External blocking1*

| | |
|--|--|
| ExBlo2-I (↪ Sgen . ExBlo2) | Operation / Status Display / Sgen Service / Test - Prot inhib. / Sgen / State |
|--|--|

 *Module input state: External blocking2*

| | |
|--|--|
| Ex ForcePost-I (↪ Sgen . Ex ForcePost) | Operation / Status Display / Sgen Service / Test - Prot inhib. / Sgen / State |
|--|--|

 *State of the module input:Force Post state. Abort simulation.*

15.1.5 Sgen: Signals (Output States)


| | |
|---------------------|-----------------------------------|
| Manual Start | Operation / Status Display / Sgen |
|---------------------|-----------------------------------|

 *Fault Simulation has been started manually.*

| | |
|--------------------|-----------------------------------|
| Manual Stop | Operation / Status Display / Sgen |
|--------------------|-----------------------------------|

 *Fault Simulation has been stopped manually.*

| | |
|----------------|--|
| Running | Operation / Status Display / Sgen Service / Test - Prot inhib. / Sgen / State |
|----------------|--|

 *Signal: Measuring value simulation is running*

| | |
|----------------|-----------------------------------|
| Started | Operation / Status Display / Sgen |
|----------------|-----------------------------------|

 *Fault Simulation has been started*

| | |
|----------------|-----------------------------------|
| Stopped | Operation / Status Display / Sgen |
|----------------|-----------------------------------|

 *Fault Simulation has been stopped*

| | |
|--------------|-----------------------------------|
| State | Operation / Status Display / Sgen |
|--------------|-----------------------------------|

 *Signal: Wave generation states: 0=Off, 1=PreFault, 2=Fault, 3=PostFault, 4=InitReset*

15.1.6 Sgen: Values


| | |
|--------------|---|
| State | Service / Test - Prot inhib. / Sgen / State |
|--------------|---|


 *Wave generation states: 0=Off, 1=PreFault, 2=Fault, 3=PostFault, 4=InitReset*


15.1.7 Sgen


Sine wave generator


15.1.7.1 Sgen: Global Parameters


| | | |
|---|---|-----|
| VL1 | Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT | |
| 0.57Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude in Pre State: phase L1</i> | |


| | | |
|---|---|-----|
| VL2 | Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT | |
| 0.57Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude in Pre State: phase L2</i> | |


| | | |
|---|---|-----|
| VL3 | Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT | |
| 0.57Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude in Pre State: phase L3</i> | |

| | | |
|---|---|-----|
| VX | Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT | |
| 0.0Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude in Pre State: VX</i> | |




| | | |
|---|--|-----|
| phi VL1 | Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT | |
| 0° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L1</i> | |

| | | |
|---|--|-----|
| phi VL2 | Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT | |
| 240° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L2</i> | |

| | | |
|---|--|-----|
| phi VL3 | Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT | |
| 120° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase:phase L3</i> | |


| | | |
|---|---|-----|
| phi VX meas | Service / Test - Prot inhib. / Sgen / Configuration / PreFault / VT | |
| 0° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Pre-Phase: VX</i> | |


| | | |
|---|--|-----|
| VL1 | Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT | |
| 0.29Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude in Fault State: phase L1</i> | |
| VL2 | Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT | |
| 0.29Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude in Fault State: phase L2</i> | |
| VL3 | Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT | |
| 0.29Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude in Fault State: phase L3</i> | |
| VX | Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT | |
| 0.29Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude in Fault State: phase VX</i> | |
| phi VL1 | Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT | |
| 0° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L1</i> | |
| phi VL2 | Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT | |
| 240° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L2</i> | |
| phi VL3 | Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT | |
| 120° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase:phase L3</i> | |
| phi VX meas | Service / Test - Prot inhib. / Sgen / Configuration / FaultSimulation / VT | |
| 0° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Fault-Phase: VX</i> | |
| VL1 | Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT | |
| 0.57Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude during Post phase: phase L1</i> | |


| | | |
|---|--|-----|
| VL2 | Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT | |
| 0.57Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude during Post phase: phase L2</i> | |
| VL3 | Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT | |
| 0.57Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude during Post phase: phase L3</i> | |
| VX | Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT | |
| 0.0Vn | | S.3 |
|  | <i>Voltage Fundamental Magnitude during Post phase: phase VX</i> | |
| phi VL1 | Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT | |
| 0° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L1</i> | |
| phi VL2 | Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT | |
| 240° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L2</i> | |
| phi VL3 | Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT | |
| 120° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase L3</i> | |
| phi VX meas | Service / Test - Prot inhib. / Sgen / Configuration / PostFault / VT | |
| 0° | -360° ... 360° | S.3 |
|  | <i>Start Position respectively Start Angle of the Voltage Phasor during Post phase: phase VX</i> | |


16 Statistics


16.1 Statistics: Global Parameters


| ResFc Max | | Device Para / Statistics / Min / Max |
|--|---------------------------|--------------------------------------|
| - | - ... Internal test state | S.3 |
| | | ↪ Table |
|  <i>Resetting of all Maximum values</i> | | |

| ResFc Min | | Device Para / Statistics / Min / Max |
|--|---------------------------|--------------------------------------|
| - | - ... Internal test state | S.3 |
| | | ↪ Table |
|  <i>Resetting of all Minimum values</i> | | |

| Start Vavg via: | | Device Para / Statistics / Vavg |
|---|--------------------|---------------------------------|
| Duration | Duration, StartFct | S.3 |
| | | ↪ Table |
|  <i>Statistics: Start sliding supervision of the average voltage by the set trigger.</i> | | |

| Start Vavg Fc | | Device Para / Statistics / Vavg |
|---|---------------------------|---------------------------------|
| <ul style="list-style-type: none"> Only available if: Start Vavg via: = StartFct | - ... Internal test state | S.3 |
| | | ↪ Table |
|  <i>Start of the calculation, if the assigned signal becomes true.</i> | | |

| ResFc Vavg | | Device Para / Statistics / Vavg |
|--|---------------------------|---------------------------------|
| - | - ... Internal test state | S.3 |
| | | ↪ Table |
|  <i>Resetting of the sliding average calculation.</i> | | |

| Duration Vavg | | Device Para / Statistics / Vavg |
|---|-------------------------|---------------------------------|
| <ul style="list-style-type: none"> Only available if: Start Vavg via: = Duration | 2 s ... 30 d | S.3 |
| 10 min | ↪ Table | |
|  <i>Recording time</i> | | |

| Window Vavg | | Device Para / Statistics / Vavg | |
|---|-------------------------|---------------------------------|-----|
| sliding | sliding, fixed | | 5.3 |
| | ↪ Table | | |
|  | Window configuration | | |

16.2 Statistics: Direct Controls


| ResFc all | | Operation / Reset | |
|----------------------------------|--|-------------------|-----|
| Inactive | Inactive, Active | | P.1 |
| | ↪ Table | | |
| <input checked="" type="radio"/> | Resetting of all Statistic values (Current Demand, Power Demand, Min, Max) | | |

| ResFc Vavg | | Operation / Reset | |
|----------------------------------|---|-------------------|-----|
| Inactive | Inactive, Active | | P.1 |
| | ↪ Table | | |
| <input checked="" type="radio"/> | Resetting of the sliding average calculation. | | |


| ResFc Min | | Operation / Reset | |
|----------------------------------|---------------------------------|-------------------|-----|
| Inactive | Inactive, Active | | P.1 |
| | ↪ Table | | |
| <input checked="" type="radio"/> | Resetting of all Minimum values | | |

| ResFc Max | | Operation / Reset | |
|----------------------------------|---------------------------------|-------------------|-----|
| Inactive | Inactive, Active | | P.1 |
| | ↪ Table | | |
| <input checked="" type="radio"/> | Resetting of all Maximum values | | |

16.3 Statistics: Input States

| StartFc Vavg-I | | Operation / Status Display / Statistics | |
|---|--|---|--|
|  | State of the module input: Start of Statistics Average Voltage | | |

16.4 Statistics: Signals (Output States)

| ResFc all | | Operation / Status Display / Statistics | |
|---|--|---|--|
|  | Signal: Resetting of all Statistic values (Current Demand, Power Demand, Min, Max) | | |

16 Statistics

16.5 Statistics: Counters

| | |
|-------------------|---|
| ResFc Vavg | Operation / Status Display / Statistics |
| ⬆️ | Signal: Resetting of the sliding average calculation. |
| ResFc Max | Operation / Status Display / Statistics |
| ⬆️ | Signal: Resetting of all Maximum values |
| ResFc Min | Operation / Status Display / Statistics |
| ⬆️ | Signal: Resetting of all Minimum values |

16.5 Statistics: Counters

| | |
|--------------------------|--|
| Res Cr V avg | Operation / Statistics / Vavg |
| # | Number of resets since the last device restart. The timestamp shows date and time of the last reset. |
| Res Cr Min values | Operation / Statistics / Min / Voltage |
| # | Number of resets since the last device restart. The timestamp shows date and time of the last reset. |
| Res Cr Max values | Operation / Statistics / Max / Voltage |
| # | Number of resets since the last device restart. The timestamp shows date and time of the last reset. |

17 Selection Lists

17.1 yes/no

Selection list referenced by the following parameters:

- [Sys . Reboot](#)
- [V\[1\] . Superv. only](#)
- [\[...\]](#)

| yes/no | Description |
|--------|-------------|
| no | no |
| yes | yes |

17.2 active/inactive

Selection list referenced by the following parameters:

- [Prot . ExBlo Fc](#)
- [Prot . ExBlo TripCmd Fc](#)
- [V\[1\] . ExBlo Fc](#)
- [V\[1\] . ExBlo TripCmd Fc](#)
- [BO Slot X2 . DISARMED](#)
- [\[...\]](#)

| active/inactive | Description |
|-----------------|-------------|
| Inactive | Inactive |
| Active | Active |

17.3 Mode

Selection list referenced by the following parameters:

- [Prot . Function](#)
- [Prot . Blo TripCmd](#)
- [Prot . Res FaultNo a GridFaultNo](#)
- [Sys . Ack BO LED Scd Trips](#)
- [Sys . Ack LED](#)
- [Sys . Ack BO](#)
- [\[...\]](#)

| Mode | Description |
|----------|-------------|
| Inactive | Inactive |
| Active | Active |

17.4 True or not true

Selection list referenced by the following parameters:

- [Ctrl . Reset max values](#)
- [Disturb rec . Man Trigger](#)
- [SSV . Ack System LED](#)

| True or not true | Description |
|------------------|-------------|
| False | False |
| True | True |

17.5 Scaling

Referenced by:

- [Sys . Scaling](#)

| Scaling | Description |
|------------------|------------------|
| Per unit values | Per unit values |
| Primary values | Primary values |
| Secondary values | Secondary values |

17.6 PSet-Switch

Referenced by:

- [Sys . PSet-Switch](#)

| PSet-Switch | Description |
|-----------------|---|
| PS1 | The currently active Parameter Set is PS1 |
| PS2 | The currently active Parameter Set is PS2 |
| PS3 | The currently active Parameter Set is PS3 |
| PS4 | The currently active Parameter Set is PS4 |
| PSS via Inp fct | Parameter Set Switch via input function |
| PSS via Scada | Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4). |

17.7 Mode

Referenced by:

- [Sys . Maint Mode](#)

| Mode | Description |
|----------------------|--|
| Inactive | Inactive |
| Activation Manually | Arc Flash Reduction Maintenance Manual Mode |
| Activation via SCADA | Arc Flash Reduction Maintenance SCADA Mode |
| Activation via DI | Arc Flash Reduction Maintenance Digital Input Mode |

17.8 Ack via »C« key

Referenced by:

- [Sys . Ack via »C« key](#)

| Ack via »C« key | Description |
|---------------------|--|
| Nothing | No elements can be simply reset via pressing the »C« key for a long time (ca. 1 second). This has the consequence that pressing the »C« key is only a shortcut to the Acknowledge menu, from which the user has to select the elements to be reset. |
| Ack LEDs w/o passw. | All LEDs are acknowledged (reset) via pressing the »C« key for ca. 1 second. No password has to be entered for this. The reset activity can be recognized from the fact that it always includes an LED test, i.e. all LEDs flash in red color for a second, then flash in green color for a second. |
| Ack LEDs | All LEDs are reset via pressing the »C« key (for ca. 1 second). The reset activity can be recognized from the fact that it always includes an LED test, i.e. all LEDs flash in red color for a second, then flash in green color for a second. |
| Ack LEDs and relays | All LEDs and all acknowledgeable binary output relays are reset via pressing the »C« key (for ca. 1 second). The reset activity can be recognized from the fact that it always includes an LED test, i.e. all LEDs flash in red color for a second, then flash in green color for a second. |
| Ack Everything | All acknowledgeable elements are reset via pressing the »C« key (for ca. 1 second): \n- All LEDs, and \n- all binary output relays, and \n- all latched SCADA signals, and \n- the Trip command. The reset activity can be recognized from the fact that it always includes an LED test, i.e. all LEDs flash in red color for a second, then flash in green color for a second. |

17.9 fN

Referenced by:

- [Field Para . f](#)

| fN | Description |
|----|-----------------|
| 50 | Rated frequency |
| 60 | Rated frequency |

17.10 Phase Sequence

Referenced by:

- [Field Para . Phase Sequence](#)

| Phase Sequence | Description |
|----------------|--|
| ABC | rotating clockwise |
| ACB | Counter-clockwise phase sequence. Positive and negative phase sequence are exchanged and MTA is turned for 180°. |

17.11 VT con

Referenced by:

- [VT . VT con](#)

| VT con | Description |
|-----------------|--|
| Phase to Phase | The phase voltage measuring inputs are fed with "Phase-to-Phase" voltages (Delta-Connection) |
| Phase to Ground | The phase voltage measuring inputs are fed with "Phase-to-Ground" voltages (Star-Connection) |

17.12 Voltages to be synchronized

Referenced by:

- [VT . V Sync](#)

| Voltages to be synchronized | Description |
|-----------------------------|-------------|
| L1 | Phase L1 |
| L2 | Phase L2 |
| L3 | Phase L3 |
| L12 | L12 |
| L23 | L23 |
| L31 | L31 |

17.13 delta phi - Mode

Referenced by:

- [VT . delta phi - Mode](#)

| delta phi - Mode | Description |
|------------------|--------------|
| one phase | one phase |
| two phases | two phases |
| three phases | three phases |

17.14 Switching Authority

Selection list referenced by the following parameters:

- [Ctrl . Switching Authority](#)
- [Ctrl . Switching Authority](#)

| Switching Authority | Description |
|---------------------|------------------|
| None | None |
| Local | Local |
| Remote | Remote |
| Local and Remote | Local and Remote |

17.15 NonIL ResetMode

Referenced by:

- [Ctrl . Res NonIL](#)

| NonIL ResetMode | Description |
|------------------|------------------|
| single Operation | single Operation |
| timeout | timeout |
| permanent | permanent |

17.16 Manipulate Position

Referenced by:

- [SG\[1\] . Manipulate Position](#)

| Manipulate Position | Description |
|---------------------|--|
| Inactive | Inactive |
| Pos OFF | Signal: Circuit Breaker is in OFF-Position |
| Pos ON | Signal: Circuit Breaker is in ON-Position |

17.17 Device planning

Selection list referenced by the following parameters:

- [V\[1\] . Mode](#)
- [VG\[1\] . Mode](#)

| Device planning | Description |
|-----------------|--------------|
| - | Do not use |
| V> | V> |
| V< | Pickup value |

17.18 Alarm Mode

Selection list referenced by the following parameters:

- [V\[1\] . Alarm Mode](#)

| Alarm Mode | Description |
|------------|---|
| any one | any one: Trip Command, if the tripping criterion is fulfilled within at least one phase. |
| any two | any two |
| all | all: Trip Command for 3p-faults, i.e. if the tripping criterion is fulfilled in all three phases. |

17.19 Measuring Mode

Selection list referenced by the following parameters:

- [V\[1\] . Measuring Mode](#)
- [LVRT\[1\] . Measuring Mode](#)

| Measuring Mode | Description |
|-----------------|--|
| Phase to Ground | The voltage transformers are connected to phase-to-ground voltages |
| Phase to Phase | The voltage transformers are connected to phase-to-phase voltages |

17.20 Measuring method

Selection list referenced by the following parameters:

- [V\[1\] . Measuring method](#)
- [ReCon\[1\] . Measuring method](#)

| Measuring method | Description |
|------------------|--|
| Fundamental | Protection is based on Fundamental (1st. Harmonic) |
| True RMS | Protection is based on root-mean-square value (True RMS) |
| Vavg | Sliding Voltage Average Supervision. Note: The settings for the average calculation have to be made within menu [Device Para/Statistics/Vavg]. |

17.21 Device planning

Selection list referenced by the following parameters:

- [df/dt . Mode](#)
- [delta phi . Mode](#)
- [Intertripping . Mode](#)
- [LVRT\[1\] . Mode](#)
- [Exp\[1\] . Mode](#)
- [CBF . Mode](#)
- [TCS . Mode](#)
- [VTS . Mode](#)

| Device planning | Description |
|-----------------|-------------|
| - | Do not use |
| use | use |

17.22 Mode

Selection list referenced by the following parameters:

- [df/dt . df/dt mode](#)
- [f\[1\] . df/dt mode](#)

| Mode | Description |
|----------------|---|
| absolute df/dt | positive and negative rise of frequency frequency |
| positive df/dt | positive rise of frequency |
| negative df/dt | negative rise of frequency frequency |

17.23 Alarm Mode

Selection list referenced by the following parameters:

- [LVRT\[1\] . Alarm Mode](#)

| Alarm Mode | Description |
|------------|--|
| any one | any one: Trip Command, if the tripping criterion is fulfilled within at least one phase. |
| any two | any two: Trip Command only if the tripping criterion is fulfilled in minimum two phases. |
| all | all: Trip Command for 3p-faults, i.e. if the tripping criterion is fulfilled in all three phases. |
| only 2 | only 2: Trip Command for 2p-faults, i.e. if the tripping criterion is fulfilled in exactly two phases. |

17.24 Measuring method

Selection list referenced by the following parameters:

- [LVRT\[1\] . Measuring method](#)
- [VG\[1\] . Measuring method](#)

| Measuring method | Description |
|------------------|--|
| Fundamental | Protection is based on Fundamental (1st. Harmonic) |
| True RMS | Protection is based on root-mean-square value (True RMS) |

17.25 VX Source

Selection list referenced by the following parameters:

- [VG\[1\] . VX Source](#)

| VX Source | Description |
|------------|--|
| measured | VX/VG is measured at the 4th measuring input |
| calculated | VX/VG is calculated from the three phase-to-ground voltages. |

17.26 Device planning

Selection list referenced by the following parameters:

- [V012\[1\] . Mode](#)

| Device planning | Description |
|-----------------|--------------------------------------|
| - | Do not use |
| V1> | Positive Phase Sequence Overvoltage |
| V1< | Positive Phase Sequence Undervoltage |
| V2> | Negative Phase Sequence Overvoltage |

17.27 Device planning

Selection list referenced by the following parameters:

- [f\[1\] . Mode](#)

| Device planning | Description |
|-----------------|---|
| - | Do not use |
| f< | Underfrequency |
| f> | Overfrequency |
| f< and df/dt | Underfrequency and (instantaneous) rate of frequency change |
| f> and df/dt | Overfrequency and (instantaneous) rate of frequency change |
| f< and DF/DT | Underfrequency and (averaged) rate of frequency change |
| f> and DF/DT | Overfrequency and (averaged) rate of frequency change |
| df/dt | Measured value (calculated): Rate-of-frequency-change. |
| delta phi | Measured value (calculated): Vector surge |

17.28 Mode

Selection list referenced by the following parameters:

- [ReCon\[1\] . Mode](#)
- [Sync . Mode](#)
- [SysA . Mode](#)
- [Syslog . Mode](#)
- [IRIG-B . Mode](#)
- [SNTP . Mode](#)
- [Sgen . Mode](#)

| Mode | Description |
|------|-------------|
| - | Do not use |
| use | use |

17.29 Reconnect. Release Cond

Selection list referenced by the following parameters:

- [ReCon\[1\] . Reconnect. Release Cond](#)

| Reconnect. Release Cond | Description |
|-------------------------|--|
| V Internal Release | Release signal is being generated by internal voltage measuring values. The line-to-line voltage exceeds 95% Vn. |
| V Ext Release PCC | Release signal is being generated by the PCC (External Release). The line-to-line voltage exceeds 95% Vn. |
| Both | Both: Release signal is being generated by the PCC (External Release) and by internal voltage measuring values. |

17.30 SyncMode

Referenced by:

- [Sync . SyncMode](#)

| SyncMode | Description |
|------------------|---|
| System2System | SYSTEM2SYSTEM = SynchronCheck between two systems (Stand-Alone, no breaker info needed) |
| Generator2System | GENERATOR2SYSTEM = Synchronizing generator to system (breaker close initiate needed). |

17.31 Trigger

Referenced by:

- [CBF . Trigger](#)

| Trigger | Description |
|-------------------|--|
| - . - | no assignment |
| All TripCmds | All trip commands that are assigned to this breaker (within the trip manager) will start the BF module. |
| External TripCmds | All external trip commands that are assigned to this breaker (within the trip manager) will start the BF module. |

17.32 Mode

Referenced by:

- [TCS . Mode](#)

| Mode | Description |
|--------|--|
| Closed | Selects that the breaker is going to be monitored when the breaker is closed. |
| Either | Selects that the breaker is going to be monitored when the breaker is either closed or open. |

17.33 Nom voltage

Selection list referenced by the following parameters:

- [DI Slot X1 . Nom voltage](#)
- [DI Slot X1 . Nom voltage](#)
- [DI Slot X1 . Nom voltage](#)

| Nom voltage | Description |
|-------------|-------------|
| 24 VDC | 24 VDC |
| 48 VDC | 48 VDC |
| 60 VDC | 60 VDC |
| 110 VDC | 110 VDC |
| 230 VDC | 230 VDC |
| 110 VAC | 110 VAC |
| 230 VAC | 230 VAC |

17.34 Debouncing time

Selection list referenced by the following parameters:

- [DI Slot X1 . Debouncing time 1](#)
- [DI Slot X1 . Debouncing time 2](#)
- [DI Slot X1 . Debouncing time 3](#)
- [DI Slot X1 . Debouncing time 4](#)
- [DI Slot X1 . Debouncing time 5](#)
- [DI Slot X1 . Debouncing time 6](#)
- [\[...\]](#)

| Debouncing time | Description |
|--------------------|--------------------|
| no debouncing time | no debouncing time |
| 20 ms | 20 ms |
| 50 ms | 50 ms |
| 100 ms | 100 ms |

17.35 Relay operating modes

Selection list referenced by the following parameters:

- [BO Slot X2 . Force all Outs](#)
- [BO Slot X2 . Force OR1](#)

| Relay operating modes | Description |
|-----------------------|--------------|
| Normal | Normal |
| De-Energized | De-Energized |
| Energized | Energized |

17.36 Mode

Selection list referenced by the following parameters:

- [BO Slot X2 . Disarm Mode](#)
- [BO Slot X2 . Force Mode](#)

| Mode | Description |
|-----------|-------------|
| permanent | permanent |
| timeout | timeout |

17.37 1...n Operating Modes

Selection list referenced by the following parameters:

- [BO Slot X2 . Operating Mode](#)
- [BO Slot X2 . Operating Mode](#)
- [BO Slot X2 . Operating Mode](#)
- [BO Slot X2 . Operating Mode](#)
- [BO Slot X2 . Operating Mode](#)

| 1...n Operating Modes | Description |
|-----------------------|--|
| Normally open (NO) | The working principle of the relay corresponds to a normally open contact. |
| Normally closed (NC) | The working principle of the relay corresponds to a normally closed contact. |

17.38 Mode

Selection list referenced by the following parameters:

- [LEDs group A . Latched](#)
- [LEDs group A . Latched](#)
- [LEDs group A . Latched](#)
- [LEDs group A . Latched](#)
- [LEDs group A . Latched](#)
- [LEDs group A . Latched](#)
- [LEDs group A . Latched](#)
- [\[...\]](#)

| Mode | Description |
|-----------------------|---|
| Inactive | Inactive |
| Active | Active |
| active, ack. by alarm | Latching of LEDs is active, but will be acknowledged (reset) automatically (by the »Prot« module) in case of a General Alarm. |

17.39 LED active color

Selection list referenced by the following parameters:

- [LEDs group A . LED active color](#)
- [LEDs group A . LED inactive color](#)
- [LEDs group A . LED active color](#)
- [LEDs group A . LED inactive color](#)
- [LEDs group A . LED active color](#)
- [LEDs group A . LED inactive color](#)
- [\[...\]](#)

| LED active color | Description |
|------------------|----------------|
| green | green |
| red | red |
| red flash | red flashing |
| green flash | green blinking |
| - | No assignment |

17.40 Rec state

Referenced by:

- [Disturb rec . Rec state](#)

| Rec state | Description |
|--------------|---|
| Ready | Ready |
| Recording | Recording |
| Writing file | Signal: Writing file |
| Trigger Blo | Trigger signal is still active - wait for fallback. A new record can only be started if and only the trigger signal that started the previous record has fallen back once. Therewith endless records are prevented. |

17.41 Fault

Referenced by:

- [Disturb rec . Error code](#)

| Fault | Description |
|----------------------|---|
| OK | OK |
| Write err | Signal: Writing error in memory |
| Clear fail | Signal: Clear failure in memory |
| Calculation err | Calculation error |
| File not found | File not found |
| Auto overwriting off | If there is no more memory available the record is being stopped. |

17.42 Record-Mode

Referenced by:

- [Fault rec . Record-Mode](#)

| Record-Mode | Description |
|------------------|---|
| Alarms and Trips | A recording is started in case of an alarm or a trip. |
| Trips only | A recording is started only in case of a trip. |

17.43 Resolution

Referenced by:

- [Trend rec . Resolution](#)

| Resolution | Description |
|------------|------------------------|
| 60 min | Add next entry: 60 min |
| 30 min | Add next entry: 30 min |
| 15 min | Add next entry: 15 min |
| 10 min | Add next entry: 10 min |
| 5 min | Add next entry: 5 min |
| 1 min | Add next entry: 1 min |

17.44 TLS Certificate

Referenced by:

- [Sys . TLS Certificate](#)

| TLS Certificate | Description |
|-----------------|---|
| Device-specific | The device uses a device-specific certificate for the encrypted communication. This corresponds to the highest security-level of the communication. |
| Basic | The device uses a basic certificate for the encrypted communication. Compared with a device-specific certificate, this means a slightly reduced security level. |
| Corrupt | The certificate for the encrypted communication is corrupt and therefore unusable. |

17.45 Type of passw. def.

Selection list referenced by the following parameters:

- [Sys . Passw.remote net.conn.](#)
- [Sys . Passw. for USB conn.](#)

| Type of passw. def. | Description |
|---------------------|--|
| disabled | The password disabled. |
| default | The password is the same as the factory default, i.e. it has not been altered by the user. (However, for devices with a disabled default password the password type is displayed as "disabled", not as "default".) |
| def. by user | The password has been defined by the user. This corresponds to the highest security-level of the access to the device. |

17.46 Conf. Dev. Reset

Selection list referenced by the following parameters:

- [HMI . Conf. Dev. Reset](#)
- [HMI . Conf. Dev. Reset](#)

| Conf. Dev. Reset | Description |
|-----------------------|---|
| "Fact.def.", "PW rst" | Two Reset Options shall be available:\n- "Reset to factory defaults",\n- "Reset passwords". |
| Only "Fact.defaults" | Only one Reset Option shall be available:\n- "Reset to factory defaults".\nCAUTION: If this option has been chosen and the password should ever get lost then the only chance to recover control is to reset the protection device to factory defaults. |
| Reset deact. | The Reset Options shall be deactivated.\nCAUTION: If this option has been chosen and the password should ever get lost, then the protection device has to be sent to the manufacturer as a service request. |

17.47 Baud rate

Referenced by:

- [DNP3 . Baud rate](#)

| Baud rate | Description |
|-----------|-------------|
| 1200 | 1200 |
| 2400 | 2400 |
| 4800 | 4800 |
| 9600 | 9600 |
| 19200 | 19200 |
| 38400 | 38400 |
| 57600 | 57600 |
| 115200 | 115200 |

17.48 Byte Frame

Selection list referenced by the following parameters:

- [DNP3 . Frame Layout](#)
- [Modbus . Physical Settings](#)
- [IEC103 . Physical Settings](#)

| Byte Frame | Description |
|------------|--------------------------------------|
| 8E1 | 8 data bits, even parity, 1 stopbit. |
| 8O1 | 8 data bits, odd, 1 stopbit. |
| 8N1 | 8 data bits, no parity, 1 stopbit. |
| 8N2 | 8 data bits, no parity, 2 stopbits. |

17.49 Optical rest position

Selection list referenced by the following parameters:

- [DNP3 . Optical rest position](#)
- [Modbus . Optical rest position](#)

| Optical rest position | Description |
|-----------------------|-------------|
| Light off | Light off |
| Light on | Light on |

17.50 Communication Start Variants

Referenced by:

- [DNP3 . DataLink confirm](#)

| Communication Start Variants | Description |
|------------------------------|---|
| Never | Option Never is recommended |
| Always | If this variable is set to Always then LinkLayer needs to establish a connection before sending any Frame. |
| On_Large | If set to On_Large then a connection needs to be established before sending the first Frame of a multi Term Message |

17.51 _AL_ResponseType_k

Referenced by:

- [DNP3 . AppLink confirm](#)

| _AL_ResponseType_k | Description |
|--------------------|-------------|
| Never | Never |
| Always | Always |
| Event | Event |

17.52 Scale Factor

Referenced by:

- [DNP3 . Scale Factor 0](#)
- *[...]*

| Scale Factor | Description |
|--------------|-------------|
| 0.001 | 0.001 |
| 0.01 | 0.01 |
| 0.1 | 0.1 |
| 1 | 1 |
| 10 | 10 |
| 100 | 100 |
| 1000 | 1000 |
| 10000 | 10000 |
| 100000 | 100000 |
| 1000000 | 1000000 |

17.53 Baud rate

Referenced by:

- [Modbus . Baud rate](#)

| Baud rate | Description |
|-----------|-------------|
| 1200 | 1200 |
| 2400 | 2400 |
| 4800 | 4800 |
| 9600 | 9600 |
| 19200 | 19200 |
| 38400 | 38400 |

17.54 Port selection

Selection list referenced by the following parameters:

- [Modbus . TCP Port Config](#)
- [IEC104 . TCP Port Config](#)

| Port selection | Description |
|----------------|--------------|
| Default | Default Port |
| Private | Private Port |

17.55 Type of SCADA mapping

Selection list referenced by the following parameters:

- [Modbus . Type of SCADA mapping](#)
- [IEC103 . Type of SCADA mapping](#)
- [IEC104 . Type of SCADA mapping](#)
- [Profibus . Type of SCADA mapping](#)

| Type of SCADA mapping | Description |
|-----------------------|--------------------------------------|
| Standard | Default mapping of data objects |
| User-defined | User-defined mapping of data objects |

17.56 Config status

Selection list referenced by the following parameters:

- [Modbus . Config status](#)
- [IEC103 . Config status](#)
- [IEC104 . Config status](#)
- [Profibus . Config status](#)

| Config status | Description |
|--------------------|---|
| Changing | New SCADA configuration is being loaded, but not active yet. |
| OK | The SCADA configuration is active. |
| Config. not avail. | The user-defined SCADA configuration is not available (e.g. has not been loaded into the device). |
| Error | Unexpected error. Please contact our service-team. |

17.57 1..n, OnOffList

Referenced by:

- [IEC 61850 . Function](#)

| 1..n, OnOffList | Description |
|-----------------|-------------|
| Inactive | Inactive |
| Active | Active |

17.58 State

Selection list referenced by the following parameters:

- [IEC 61850 . GoosePublisherState](#)
- [IEC 61850 . GooseSubscriberState](#)
- [IEC 61850 . MmsServerState](#)

| State | Description |
|-------|-------------|
| Off | Off |
| On | On |
| Error | Error |

17.59 Baud rate

Referenced by:

- [IEC103 . Baud rate](#)

| Baud rate | Description |
|-----------|-------------|
| 1200 | 1200 |
| 2400 | 2400 |
| 4800 | 4800 |
| 9600 | 9600 |
| 19200 | 19200 |
| 38400 | 38400 |
| 57600 | 57600 |

17.60 Timezone

Selection list referenced by the following parameters:

- [IEC103 . Timezone](#)
- [IEC104 . Timezone](#)

| Timezone | Description |
|------------|---|
| UTC | UTC |
| Local Time | Local time according to the »Time Zones« setting (in Device Parameters) (incl. daylight saving settings). |

17.61 PNO Id

Referenced by:

- [Profibus . PNO Id](#)

| PNO Id | Description |
|--------|-----------------------------|
| 0C50h | PnodID for the Config file. |

17.62 Baud rate

Referenced by:

- [Profibus . Baud rate](#)

| Baud rate | Description |
|-------------|-------------|
| 12 Mb/s | 12 Mb/s |
| 6 Mb/s | 6 Mb/s |
| 3 Mb/s | 3 Mb/s |
| 1.5 Mb/s | 1.5 Mb/s |
| 0.5 Mb/s | 0.5 Mb/s |
| 187500 baud | 187500 baud |
| 93750 baud | 93750 baud |
| 45450 baud | 45450 baud |
| 19200 baud | 19200 baud |
| 9600 baud | 9600 baud |
| -- | -- |

17.63 State

Referenced by:

- [Profibus . Slave State](#)

| State | Description |
|---------------|---|
| Baud Search | No connection to the PROFIBUS-DP Master |
| Baud Found | The PROFIBUS DP Slave is connected to the bus. The Slave has not yet been addressed by the Master Device (and it was not yet addressed since the last break of the connection). |
| PRM OK | The slave was addressed by the master, the parameter setting message was received and is OK, a configuration message is expected from the master. |
| PRM REQ | The slave is no longer addressed by the master (modified parameters within the master without having the connection stopped, master software is tuned off but lower PROFIBUS layer is still active) |
| PRM Fault | An Error in the parameter setting message (e.g. wrong PNO identification number) |
| CFG Fault | Configuration error the number of input/output bytes parameterised in the master does not match the number parametrised in the device (slave). |
| Clear Data | Master sends a General Control command to clear the data. |
| Data exchange | Master and slave exchange data. |

17.64 IRIG-B00X

Referenced by:

- [IRIG-B . IRIG-B00X](#)

| IRIG-B00X | Description |
|-----------|---------------------------------------|
| IRIGB-000 | Please refer to: IRIG STANDARD 200-04 |
| IRIGB-001 | Please refer to: IRIG STANDARD 200-04 |
| IRIGB-002 | Please refer to: IRIG STANDARD 200-04 |
| IRIGB-003 | Please refer to: IRIG STANDARD 200-04 |
| IRIGB-004 | Please refer to: IRIG STANDARD 200-04 |
| IRIGB-005 | Please refer to: IRIG STANDARD 200-04 |
| IRIGB-006 | Please refer to: IRIG STANDARD 200-04 |
| IRIGB-007 | Please refer to: IRIG STANDARD 200-04 |

17.65 Server State

Referenced by:

- [SNTP . Used Server](#)

| Server State | Description |
|--------------|-----------------|
| Server1 | Server1 used. |
| Server2 | Server2 used. |
| None | No Server used. |

17.66 State

Selection list referenced by the following parameters:

- [SNTP . ServerQty](#)
- [SNTP . NetConn](#)

| State | Description |
|------------|---------------|
| GOOD | GOOD |
| SUFFICIENT | SUFFICIENT |
| BAD | BAD |
| - | NO CONNECTION |

17.67 Time Zones

Referenced by:

• TimeSync . Time Zones

| Time Zones | Description |
|---------------------------|---------------------------|
| UTC+14 Kiritimati | UTC+14 Kiritimati |
| UTC+13 Rawaki | UTC+13 Rawaki |
| UTC+12.75 Chatham Island | UTC+12.75 Chatham Island |
| UTC+12 Wellington | UTC+12 Wellington |
| UTC+11.5 Kingston | UTC+11.5 Kingston |
| UTC+11 Port Vila | UTC+11 Port Vila |
| UTC+10.5 Lord Howe Island | UTC+10.5 Lord Howe Island |
| UTC+10 Sydney | UTC+10 Sydney |
| UTC+9.5 Adelaide | UTC+9.5 Adelaide |
| UTC+9 Tokyo | UTC+9 Tokyo |
| UTC+8 Hong Kong | UTC+8 Hong Kong |
| UTC+7 Bangkok | UTC+7 Bangkok |
| UTC+6.5 Rangoon | UTC+6.5 Rangoon |
| UTC+6 Colombo | UTC+6 Colombo |
| UTC+5.75 Kathmandu | UTC+5.75 Kathmandu |
| UTC+5.5 New Delhi | UTC+5.5 New Delhi |
| UTC+5 Islamabad | UTC+5 Islamabad |
| UTC+4.5 Kabul | UTC+4.5 Kabul |
| UTC+4 Abu Dhabi | UTC+4 Abu Dhabi |
| UTC+3.5 Tehran | UTC+3.5 Tehran |
| UTC+3 Moscow | UTC+3 Moscow |
| UTC+2 Athens | UTC+2 Athens |
| UTC+1 Berlin | UTC+1 Berlin |
| UTC+0 London | UTC+0 London |
| UTC-1 Azores | UTC-1 Azores |
| UTC-2 Fern. d. Noronha | UTC-2 Fern. d. Noronha |
| UTC-3 Buenos Aires | UTC-3 Buenos Aires |
| UTC-3.5 St. John's | UTC-3.5 St. John's |
| UTC-4 Santiago | UTC-4 Santiago |
| UTC-5 New York | UTC-5 New York |
| UTC-6 Chicago | UTC-6 Chicago |
| UTC-7 Salt Lake City | UTC-7 Salt Lake City |
| UTC-8 Los Angeles | UTC-8 Los Angeles |
| UTC-9 Anchorage | UTC-9 Anchorage |
| UTC-9.5 Taiohae | UTC-9.5 Taiohae |
| UTC-10 Honolulu | UTC-10 Honolulu |

| Time Zones | Description |
|-----------------------|-----------------------|
| UTC-11 Midway Islands | UTC-11 Midway Islands |

17.68 Month of clock change

Selection list referenced by the following parameters:

- [TimeSync . Summertime m](#)
- [TimeSync . Wintertime m](#)

| Month of clock change | Description |
|-----------------------|-------------|
| January | January |
| February | February |
| March | March |
| April | April |
| May | May |
| June | June |
| July | July |
| August | August |
| September | September |
| October | October |
| November | November |
| December | December |

17.69 Date

Selection list referenced by the following parameters:

- [TimeSync . Summertime d](#)
- [TimeSync . Wintertime d](#)

| Date | Description |
|-------------|--|
| Sunday | Sunday |
| Monday | Monday |
| Tuesday | Tuesday |
| Wednesday | Wednesday |
| Thursday | Thursday |
| Friday | Friday |
| Saturday | Saturday |
| General day | General day: Examples: first day of month, last day of month |

17.70 Day of clock change

Selection list referenced by the following parameters:

- [TimeSync . Summertime w](#)
- [TimeSync . Wintertime w](#)

| Day of clock change | Description |
|---------------------|--------------------------|
| First | First week of the month |
| Second | Second week of the month |
| Third | Third week of the month |
| Fourth | Fourth week of the month |
| Last | Last week of the month |

17.71 Duration

Referenced by:

- [Statistics . Start Vavg via:](#)

| Duration | Description |
|----------|----------------|
| Duration | Recording time |
| StartFct | Start function |

17.72 Duration

Referenced by:

- [Statistics . Duration Vavg](#)

| Duration | Description |
|----------|-------------|
| 2 s | s |
| 5 s | s |
| 10 s | s |
| 15 s | seconds |
| 30 s | seconds |
| 1 min | minute |
| 5 min | minute |
| 10 min | minute |
| 15 min | minute |
| 30 min | minute |
| 1 h | Hours |
| 2 h | Hours |
| 6 h | Hours |
| 12 h | Hours |
| 1 d | days |
| 2 d | days |
| 5 d | days |
| 7 d | days |
| 10 d | days |
| 30 d | days |

17.73 Window configuration

Referenced by:

- [Statistics . Window Vavg](#)

| Window configuration | Description |
|----------------------|---|
| sliding | Moving mean: Continuously the newest measuring value is added and the oldest measuring value is removed from the moving mean (average value). |
| fixed | The average value is calculated for a fixed window. |

17.74 No of Equations:

Referenced by:

- [Logics . No of Equations:](#)

| No of Equations: | Description |
|------------------|-------------|
| 0 | 0 |
| 5 | 5 |
| 10 | 10 |
| 20 | 20 |
| 40 | 40 |
| 80 | 80 |

17.75 LE1.Gate

Referenced by:

- [Logics . LE1.Gate](#)

| LE1.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.76 LE2.Gate

Referenced by:

| LE2.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.77 LE3.Gate

Referenced by:

| LE3.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.78 LE4.Gate

Referenced by:

| LE4.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.79 LE5.Gate

Referenced by:

| LE5.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.80 LE6.Gate

Referenced by:

| LE6.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.81 LE7.Gate

Referenced by:

| LE7.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.82 LE8.Gate

Referenced by:

| LE8.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.83 LE9.Gate

Referenced by:

| LE9.Gate | Description |
|----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.84 LE10.Gate

Referenced by:

| LE10.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.85 LE11.Gate

Referenced by:

| LE11.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.86 LE12.Gate

Referenced by:

| LE12.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.87 LE13.Gate

Referenced by:

| LE13.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.88 LE14.Gate

Referenced by:

| LE14.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.89 LE15.Gate

Referenced by:

| LE15.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.90 LE16.Gate

Referenced by:

| LE16.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.91 LE17.Gate

Referenced by:

| LE17.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.92 LE18.Gate

Referenced by:

| LE18.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.93 LE19.Gate

Referenced by:

| LE19.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.94 LE20.Gate

Referenced by:

| LE20.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.95 LE21.Gate

Referenced by:

| LE21.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.96 LE22.Gate

Referenced by:

| LE22.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.97 LE23.Gate

Referenced by:

| LE23.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.98 LE24.Gate

Referenced by:

| LE24.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.99 LE25.Gate

Referenced by:

| LE25.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.100 LE26.Gate

Referenced by:

| LE26.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.101 LE27.Gate

Referenced by:

| LE27.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.102 LE28.Gate

Referenced by:

| LE28.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.103 LE29.Gate

Referenced by:

| LE29.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.104 LE30.Gate

Referenced by:

| LE30.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.105 LE31.Gate

Referenced by:

| LE31.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.106 LE32.Gate

Referenced by:

| LE32.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.107 LE33.Gate

Referenced by:

| LE33.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.108 LE34.Gate

Referenced by:

| LE34.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.109 LE35.Gate

Referenced by:

| LE35.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.110 LE36.Gate

Referenced by:

| LE36.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.111 LE37.Gate

Referenced by:

| LE37.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.112 LE38.Gate

Referenced by:

| LE38.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.113 LE39.Gate

Referenced by:

| LE39.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.114 LE40.Gate

Referenced by:

| LE40.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.115 LE41.Gate

Referenced by:

| LE41.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.116 LE42.Gate

Referenced by:

| LE42.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.117 LE43.Gate

Referenced by:

| LE43.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.118 LE44.Gate

Referenced by:

| LE44.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.119 LE45.Gate

Referenced by:

| LE45.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.120 LE46.Gate

Referenced by:

| LE46.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.121 LE47.Gate

Referenced by:

| LE47.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.122 LE48.Gate

Referenced by:

| LE48.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.123 LE49.Gate

Referenced by:

| LE49.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.124 LE50.Gate

Referenced by:

| LE50.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.125 LE51.Gate

Referenced by:

| LE51.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.126 LE52.Gate

Referenced by:

| LE52.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.127 LE53.Gate

Referenced by:

| LE53.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.128 LE54.Gate

Referenced by:

| LE54.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.129 LE55.Gate

Referenced by:

| LE55.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.130 LE56.Gate

Referenced by:

| LE56.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.131 LE57.Gate

Referenced by:

| LE57.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.132 LE58.Gate

Referenced by:

| LE58.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.133 LE59.Gate

Referenced by:

| LE59.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.134 LE60.Gate

Referenced by:

| LE60.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.135 LE61.Gate

Referenced by:

| LE61.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.136 LE62.Gate

Referenced by:

| LE62.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.137 LE63.Gate

Referenced by:

| LE63.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.138 LE64.Gate

Referenced by:

| LE64.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.139 LE65.Gate

Referenced by:

| LE65.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.140 LE66.Gate

Referenced by:

| LE66.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.141 LE67.Gate

Referenced by:

| LE67.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.142 LE68.Gate

Referenced by:

| LE68.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.143 LE69.Gate

Referenced by:

| LE69.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.144 LE70.Gate

Referenced by:

| LE70.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.145 LE71.Gate

Referenced by:

| LE71.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.146 LE72.Gate

Referenced by:

| LE72.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.147 LE73.Gate

Referenced by:

| LE73.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.148 LE74.Gate

Referenced by:

| LE74.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.149 LE75.Gate

Referenced by:

| LE75.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.150 LE76.Gate

Referenced by:

| LE76.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.151 LE77.Gate

Referenced by:

| LE77.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.152 LE78.Gate

Referenced by:

| LE78.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.153 LE79.Gate

Referenced by:

| LE79.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.154 LE80.Gate

Referenced by:

| LE80.Gate | Description |
|-----------|-------------|
| AND | AND Gate |
| OR | OR Gate |
| NAND | NAND Gate |
| NOR | NOR Gate |

17.155 TripCmd Mode

Referenced by:

- [Sgen . TripCmd Mode](#)

| TripCmd Mode | Description |
|--------------|---|
| No TripCmd | No Trip Command: The TripCmd of all protection functions is blocked. The protection function will possibly trip but not generate a TripCmd. |
| With TripCmd | With Trip Command: The trip of a protection function generates a TripCmd, that can open the circuit breaker. |

17.156 State

Referenced by:

- [Sgen . State](#)

| State | Description |
|-----------------|------------------------------|
| Off | Off |
| PreFault | Pre Fault Duration |
| FaultSimulation | Duration of Fault Simulation |
| PostFault | Post Fault Duration |
| Init Res | Init Reset |

17.157 1..n, Assignment List

Selection list referenced by the following parameters:

- [Prot . ExBlo1](#)
- [Prot . ExBlo TripCmd](#)
- [Sys . Ack LED](#)
- [Sys . Ack BO](#)
- [Sys . Ack Scada](#)
- [\[...\]](#)

| 1..n, Assignment List | Description |
|-----------------------|---|
| - | No assignment |
| available | Signal: Protection is available |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm L1 | Signal: General-Alarm L1 |
| Alarm L2 | Signal: General-Alarm L2 |
| Alarm L3 | Signal: General-Alarm L3 |
| Alarm G | Signal: General-Alarm - Earth fault |
| Alarm | Signal: General Alarm |
| Trip L1 | Signal: General Trip L1 |
| Trip L2 | Signal: General Trip L2 |
| Trip L3 | Signal: General Trip L3 |
| Trip G | Signal: General Trip Ground fault |
| Trip | Signal: General Trip |

| 1..n, Assignment List | Description |
|---------------------------|---|
| Res FaultNo a GridFaultNo | Signal: Resetting of fault number and grid fault number. |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Phase seq. wrong | Signal that the device has detected a phase sequence (L1-L2-L3 / L1-L3-L2) that is different from the one that had been set at [Field settings / General Settings] »Phase Sequence«. |
| Local | Switching Authority: Local |
| Remote | Switching Authority: Remote |
| NonInterl | Non-Interlocking is active |
| SG Indeterm | (At least one) Switchgear is moving (Position cannot be determined). |
| SG Disturb | (At least one) Switchgear is disturbed. |
| NonInterl-I | Non-Interlocking |
| SI SingleContactInd | Signal: The Position of the Switchgear is detected by one auxiliary contact (pole) only. Thus indeterminate and disturbed Positions cannot be detected. |
| Pos not ON | Signal: Pos not ON |
| Pos ON | Signal: Circuit Breaker is in ON-Position |
| Pos OFF | Signal: Circuit Breaker is in OFF-Position |
| Pos Indeterm | Signal: Circuit Breaker is in Indeterminate Position |
| Pos Disturb | Signal: Circuit Breaker Disturbed - Undefined Breaker Position. The Position Indicators contradict themselves. After expiring of a supervision timer this signal becomes true. |
| Ready | Signal: Circuit breaker is ready for operation. |
| t-Dwell | Signal: Dwell time |
| Removed | Signal: The withdrawable circuit breaker is Removed |
| Interl ON | Signal: One or more IL_On inputs are active. |
| Interl OFF | Signal: One or more IL_Off inputs are active. |
| CES succesf | Signal: Command Execution Supervision: Switching command executed successfully. |
| CES Disturbed | Signal: Command Execution Supervision: Switching Command unsuccessful. Switchgear in disturbed position. |
| CES Fail TripCmd | Signal: Command Execution Supervision: Command execution failed because trip command is pending. |
| CES SwitchDir | Signal: Command Execution Supervision respectively Switching Direction Control: This signal becomes true, if a switch command is issued even though the switchgear is already in the requested position. Example: A switchgear that is already OFF should be switched OFF again (doubly). The same applies to CLOSE commands. |
| CES ON d OFF | Signal: Command Execution Supervision: On Command during a pending OFF Command. |
| CES SG not ready | Signal: Command Execution Supervision: Switchgear not ready |
| CES Fiel Interl | Signal: Command Execution Supervision: Switching Command not executed because of field interlocking. |
| CES SyncTimeout | Signal: Command Execution Supervision: Switching Command not executed. No Synchronization signal while t-sync was running. |
| CES SG removed | Signal: Command Execution Supervision: Switching Command unsuccessful, Switchgear removed. |

| 1..n, Assignment List | Description |
|-----------------------|---|
| Prot ON | Signal: ON Command issued by the Prot module |
| TripCmd | Signal: Trip Command |
| Ack TripCmd | Signal: Acknowledge Trip Command |
| ON incl Prot ON | Signal: The ON Command includes the ON Command issued by the Protection module. |
| OFF incl TripCmd | Signal: The OFF Command includes the OFF Command issued by the Protection module. |
| Position Ind manipul | Signal: Position Indicators faked |
| SGwear Slow SG | Signal: Alarm, the circuit breaker (load-break switch) becomes slower |
| Res SGwear SI SG | Signal: Resetting the slow Switchgear Alarm |
| ON Cmd | Signal: ON Command issued to the switchgear. Depending on the setting the signal may include the ON command of the Prot module. |
| OFF Cmd | Signal: OFF Command issued to the switchgear. Depending on the setting the signal may include the OFF command of the Prot module. |
| ON Cmd manual | Signal: ON Cmd manual |
| OFF Cmd manual | Signal: OFF Cmd manual |
| Sync ON request | Signal: Synchronous ON request |
| Test Trip Cmd | A trip command has been triggered manually (for testing purposes). |
| Aux ON-I | Module Input State: Position indicator/check-back signal of the CB (52a) |
| Aux OFF-I | Module input state: Position indicator/check-back signal of the CB (52b) |
| Ready-I | Module input state: CB ready |
| Sys-in-Sync-I | State of the module input: This signals has to become true within the synchronization time. If not, switching is unsuccessful. |
| Removed-I | State of the module input: The withdrawable circuit breaker is Removed |
| Ack TripCmd-I | State of the module input: Acknowledgement Signal (for the Trip Command) Module input signal |
| Interl ON1-I | State of the module input: Interlocking of the ON command |
| Interl ON2-I | State of the module input: Interlocking of the ON command |
| Interl ON3-I | State of the module input: Interlocking of the ON command |
| Interl OFF1-I | State of the module input: Interlocking of the OFF command |
| Interl OFF2-I | State of the module input: Interlocking of the OFF command |
| Interl OFF3-I | State of the module input: Interlocking of the OFF command |
| SCmd ON-I | State of the module input: Switching ON Command, e.g. the state of the Logics or the state of the digital input |
| SCmd OFF-I | State of the module input: Switching OFF Command, e.g. the state of the Logics or the state of the digital input |
| Operations Alarm | Signal: Too many Operations. (The operations counter »TripCmd Cr« has exceeded the limit set at »Operations Alarm«.) |
| Res TripCmd Cr | Signal: Resetting of the Counter: Total number of trips of the switchgear |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |

| 1..n, Assignment List | Description |
|-----------------------|---|
| Alarm L1 | Signal: Alarm L1 |
| Alarm L2 | Signal: Alarm L2 |
| Alarm L3 | Signal: Alarm L3 |
| Alarm | Signal: Alarm voltage stage |
| Trip L1 | Signal: General Trip Phase L1 |
| Trip L2 | Signal: General Trip Phase L2 |
| Trip L3 | Signal: General Trip Phase L3 |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm L1 | Signal: Alarm L1 |
| Alarm L2 | Signal: Alarm L2 |
| Alarm L3 | Signal: Alarm L3 |
| Alarm | Signal: Alarm voltage stage |
| Trip L1 | Signal: General Trip Phase L1 |
| Trip L2 | Signal: General Trip Phase L2 |
| Trip L3 | Signal: General Trip Phase L3 |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm L1 | Signal: Alarm L1 |
| Alarm L2 | Signal: Alarm L2 |
| Alarm L3 | Signal: Alarm L3 |
| Alarm | Signal: Alarm voltage stage |
| Trip L1 | Signal: General Trip Phase L1 |
| Trip L2 | Signal: General Trip Phase L2 |

17 Selection Lists

17.157 1..n, Assignment List

| 1..n, Assignment List | Description |
|------------------------------|---|
| Trip L3 | Signal: General Trip Phase L3 |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm L1 | Signal: Alarm L1 |
| Alarm L2 | Signal: Alarm L2 |
| Alarm L3 | Signal: Alarm L3 |
| Alarm | Signal: Alarm voltage stage |
| Trip L1 | Signal: General Trip Phase L1 |
| Trip L2 | Signal: General Trip Phase L2 |
| Trip L3 | Signal: General Trip Phase L3 |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm L1 | Signal: Alarm L1 |
| Alarm L2 | Signal: Alarm L2 |
| Alarm L3 | Signal: Alarm L3 |
| Alarm | Signal: Alarm voltage stage |
| Trip L1 | Signal: General Trip Phase L1 |
| Trip L2 | Signal: General Trip Phase L2 |
| Trip L3 | Signal: General Trip Phase L3 |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |

| 1..n, Assignment List | Description |
|-----------------------|---|
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm L1 | Signal: Alarm L1 |
| Alarm L2 | Signal: Alarm L2 |
| Alarm L3 | Signal: Alarm L3 |
| Alarm | Signal: Alarm voltage stage |
| Trip L1 | Signal: General Trip Phase L1 |
| Trip L2 | Signal: General Trip Phase L2 |
| Trip L3 | Signal: General Trip Phase L3 |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by V< | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm Frequency Protection (collective signal) |
| Trip | Signal: Trip Frequency Protection (collective signal) |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by V< | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm Frequency Protection (collective signal) |
| Trip | Signal: Trip Frequency Protection (collective signal) |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |

17 Selection Lists

17.157 1..n, Assignment List

| 1..n, Assignment List | Description |
|------------------------------|---|
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Alarm-I | Module input state: Alarm |
| Trip-I | Module input state: Trip |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm L1 | Signal: Alarm L1 |
| Alarm L2 | Signal: Alarm L2 |
| Alarm L3 | Signal: Alarm L3 |
| Alarm | Signal: Alarm voltage stage |
| Trip L1 | Signal: General Trip Phase L1 |
| Trip L2 | Signal: General Trip Phase L2 |
| Trip L3 | Signal: General Trip Phase L3 |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| t-LVRT is running | Signal: t-LVRT is running |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm L1 | Signal: Alarm L1 |
| Alarm L2 | Signal: Alarm L2 |
| Alarm L3 | Signal: Alarm L3 |
| Alarm | Signal: Alarm voltage stage |
| Trip L1 | Signal: General Trip Phase L1 |

| 1..n, Assignment List | Description |
|-----------------------|---|
| Trip L2 | Signal: General Trip Phase L2 |
| Trip L3 | Signal: General Trip Phase L3 |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| t-LVRT is running | Signal: t-LVRT is running |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm Residual Voltage Supervision-stage |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm Residual Voltage Supervision-stage |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm voltage asymmetry |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |

17 Selection Lists

17.157 1..n, Assignment List

| 1..n, Assignment List | Description |
|------------------------------|---|
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm voltage asymmetry |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm voltage asymmetry |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm voltage asymmetry |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm voltage asymmetry |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |

| 1..n, Assignment List | Description |
|-----------------------|--|
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm voltage asymmetry |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by V< | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm f | Signal: Alarm Frequency Protection |
| Alarm df/dt DF/DT | Alarm instantaneous or average value of the rate-of-frequency-change |
| Alarm delta phi | Signal: Alarm Vector Surge |
| Alarm | Signal: Alarm Frequency Protection (collective signal) |
| Trip f | Signal: Frequency has exceeded the limit. |
| Trip df/dt DF/DT | Signal: Trip df/dt or DF/DT |
| Trip delta phi | Signal: Trip Vector Surge |
| Trip | Signal: Trip Frequency Protection (collective signal) |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by V< | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm f | Signal: Alarm Frequency Protection |
| Alarm df/dt DF/DT | Alarm instantaneous or average value of the rate-of-frequency-change |
| Alarm delta phi | Signal: Alarm Vector Surge |
| Alarm | Signal: Alarm Frequency Protection (collective signal) |

17 Selection Lists

17.157 1..n, Assignment List

| 1..n, Assignment List | Description |
|-----------------------|--|
| Trip f | Signal: Frequency has exceeded the limit. |
| Trip df/dt DF/DT | Signal: Trip df/dt or DF/DT |
| Trip delta phi | Signal: Trip Vector Surge |
| Trip | Signal: Trip Frequency Protection (collective signal) |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by V< | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm f | Signal: Alarm Frequency Protection |
| Alarm df/dt DF/DT | Alarm instantaneous or average value of the rate-of-frequency-change |
| Alarm delta phi | Signal: Alarm Vector Surge |
| Alarm | Signal: Alarm Frequency Protection (collective signal) |
| Trip f | Signal: Frequency has exceeded the limit. |
| Trip df/dt DF/DT | Signal: Trip df/dt or DF/DT |
| Trip delta phi | Signal: Trip Vector Surge |
| Trip | Signal: Trip Frequency Protection (collective signal) |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by V< | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm f | Signal: Alarm Frequency Protection |
| Alarm df/dt DF/DT | Alarm instantaneous or average value of the rate-of-frequency-change |
| Alarm delta phi | Signal: Alarm Vector Surge |
| Alarm | Signal: Alarm Frequency Protection (collective signal) |
| Trip f | Signal: Frequency has exceeded the limit. |
| Trip df/dt DF/DT | Signal: Trip df/dt or DF/DT |
| Trip delta phi | Signal: Trip Vector Surge |
| Trip | Signal: Trip Frequency Protection (collective signal) |

| 1..n, Assignment List | Description |
|-----------------------|--|
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by V< | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm f | Signal: Alarm Frequency Protection |
| Alarm df/dt DF/DT | Alarm instantaneous or average value of the rate-of-frequency-change |
| Alarm delta phi | Signal: Alarm Vector Surge |
| Alarm | Signal: Alarm Frequency Protection (collective signal) |
| Trip f | Signal: Frequency has exceeded the limit. |
| Trip df/dt DF/DT | Signal: Trip df/dt or DF/DT |
| Trip delta phi | Signal: Trip Vector Surge |
| Trip | Signal: Trip Frequency Protection (collective signal) |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by V< | Signal: Module is blocked by undervoltage. |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm f | Signal: Alarm Frequency Protection |
| Alarm df/dt DF/DT | Alarm instantaneous or average value of the rate-of-frequency-change |
| Alarm delta phi | Signal: Alarm Vector Surge |
| Alarm | Signal: Alarm Frequency Protection (collective signal) |
| Trip f | Signal: Frequency has exceeded the limit. |
| Trip df/dt DF/DT | Signal: Trip df/dt or DF/DT |
| Trip delta phi | Signal: Trip Vector Surge |
| Trip | Signal: Trip Frequency Protection (collective signal) |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |

| 1..n, Assignment List | Description |
|------------------------------|---|
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by Meas Circ Superv | Signal: Module blocked by measuring circuit supervision |
| Eval Recon-Conditions | Signal: Evaluation of reconnection conditions after decoupling event |
| t-Release running | Signal: The timer "t-Release" is running. Thus, all conditions for reconnection are fulfilled. After the timer has expired reconnection release will be issued. |
| Release Energy Res. | Signal: Signal: Release Energy Resource. |
| V out of range | Signal: Reconnection release is blocked because voltage is out of range |
| f out of range | Signal: Reconnection release is blocked because frequency is out of range |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| V Ext Release PCC-I | Module input state: Release signal is being generated by the PCC (External Release) |
| PCC Fuse Fail VT-I | State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC. |
| reconnected-I | This signal indicates the state "reconnected" (mains parallel). |
| Decoupling1-I | Decoupling function, that triggers the reconnection. |
| Decoupling2-I | Decoupling function, that triggers the reconnection. |
| Decoupling3-I | Decoupling function, that triggers the reconnection. |
| Decoupling4-I | Decoupling function, that triggers the reconnection. |
| Decoupling5-I | Decoupling function, that triggers the reconnection. |
| Decoupling6-I | Decoupling function, that triggers the reconnection. |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo by Meas Circ Superv | Signal: Module blocked by measuring circuit supervision |
| Eval Recon-Conditions | Signal: Evaluation of reconnection conditions after decoupling event |
| t-Release running | Signal: The timer "t-Release" is running. Thus, all conditions for reconnection are fulfilled. After the timer has expired reconnection release will be issued. |
| Release Energy Res. | Signal: Signal: Release Energy Resource. |
| V out of range | Signal: Reconnection release is blocked because voltage is out of range |
| f out of range | Signal: Reconnection release is blocked because frequency is out of range |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| V Ext Release PCC-I | Module input state: Release signal is being generated by the PCC (External Release) |
| PCC Fuse Fail VT-I | State of the module input: Blocking if the fuse of a voltage transformer has tripped at the PCC. |
| reconnected-I | This signal indicates the state "reconnected" (mains parallel). |
| Decoupling1-I | Decoupling function, that triggers the reconnection. |
| Decoupling2-I | Decoupling function, that triggers the reconnection. |
| Decoupling3-I | Decoupling function, that triggers the reconnection. |
| Decoupling4-I | Decoupling function, that triggers the reconnection. |

| 1..n, Assignment List | Description |
|-----------------------|---|
| Decoupling5-I | Decoupling function, that triggers the reconnection. |
| Decoupling6-I | Decoupling function, that triggers the reconnection. |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| LiveBus | Signal: Live-Bus flag: 1=Live-Bus, 0=Voltage is below the LiveBus threshold |
| LiveLine | Signal: Live Line flag: 1=Live-Line, 0=Voltage is below the LiveLine threshold |
| SynchronRunTiming | Signal: Synchron-Run-timer is timing (This timer starts when Close-Initiate is coming and stops if breaker is closed. Timeout means synchronizing failed.) |
| SynchronFailed | Signal: This signal indicates a failed synchronization. It is set for 5s when the circuit breaker is still open after the Synchron-Run-timer has timed out. |
| SyncOverridden | Signal:Synchronism Check is overridden because one of the Synchronism overriding conditions (DB/DL or ExtBypass) is met. |
| VDiffTooHigh | Signal: Voltage difference between bus and line too high. |
| SlipTooHigh | Signal: Frequency difference (slip frequency) between bus and line voltages too high. |
| AngleDiffTooHigh | Signal: Phase Angle difference between bus and line voltages too high. |
| Sys-in-Sync | Signal: Bus and line voltages are in synchronism according to the system synchronism criteria. |
| Ready to Close | Signal: Ready to Close |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| Bypass-I | State of the module input: The Synchrocheck will be bypassed if the state of the assigned signal (logic input) becomes true. |
| CBCloseInitiate-I | State of the module input: Breaker Close Initiate with synchronism check from any control sources (e.g. HMI / SCADA). If the state of the assigned signal becomes true, a Breaker Close will be initiated (Trigger Source). |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Alarm-I | Module input state: Alarm |
| Trip-I | Module input state: Trip |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |

17 Selection Lists

17.157 1..n, Assignment List

| 1..n, Assignment List | Description |
|-----------------------|---|
| Alarm | Signal: Alarm |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Alarm-I | Module input state: Alarm |
| Trip-I | Module input state: Trip |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Alarm-I | Module input state: Alarm |
| Trip-I | Module input state: Trip |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Blo TripCmd | Signal: Trip Command blocked |
| ExBlo TripCmd | Signal: External Blocking of the Trip Command |
| Alarm | Signal: Alarm |
| Trip | Signal: Trip |
| TripCmd | Signal: Trip Command |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| ExBlo TripCmd-I | Module input state: External Blocking of the Trip Command |
| Alarm-I | Module input state: Alarm |
| Trip-I | Module input state: Trip |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Waiting for Trigger | Waiting for Trigger |
| running | Signal: CBF-Module started |
| Alarm | Signal: Circuit Breaker Failure |
| Lockout | Signal: Lockout |

| 1..n, Assignment List | Description |
|-----------------------|--|
| Res Lockout | Signal: Reset Lockout |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| Trigger1-I | Module Input: Trigger that will start the CBF |
| Trigger2-I | Module Input: Trigger that will start the CBF |
| Trigger3-I | Module Input: Trigger that will start the CBF |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Alarm | Signal: Alarm Trip Circuit Supervision |
| Not Possible | Not possible because no state indicator assigned to the breaker. |
| Aux ON-I | Module Input State: Position indicator/check-back signal of the CB (52a) |
| Aux OFF-I | Module input state: Position indicator/check-back signal of the CB (52b) |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Alarm ΔV | Signal: Alarm ΔV Voltage Transformer Measuring Circuit Supervision |
| Alarm | Signal: Alarm Voltage Transformer Measuring Circuit Supervision |
| Ex FF VT | Signal: Ex FF VT |
| Ex FF EVT | Signal: Alarm Fuse Failure Earth Voltage Transformers |
| Ex Fuse Fail VT-I | Module input state: External fuse failure voltage transformers |
| Ex Fuse Fail EVT-I | Module input state: External fuse failure earth voltage transformer |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| Active | Signal: active |
| ExBlo | Signal: External Blocking |
| Alarm V THD | Signal: Alarm Total Harmonic Distortion Voltage |
| Trip V THD | Signal: Trip Total Harmonic Distortion Voltage |
| ExBlo-I | Module input state: External blocking |
| DI 1 | Signal: Digital Input |
| DI 2 | Signal: Digital Input |
| DI 3 | Signal: Digital Input |
| DI 4 | Signal: Digital Input |
| DI 5 | Signal: Digital Input |
| DI 6 | Signal: Digital Input |
| DI 7 | Signal: Digital Input |
| DI 8 | Signal: Digital Input |
| BO 1 | Signal: Binary Output Relay |

| 1..n, Assignment List | Description |
|-----------------------|---|
| BO 2 | Signal: Binary Output Relay |
| BO 3 | Signal: Binary Output Relay |
| BO 4 | Signal: Binary Output Relay |
| BO 5 | Signal: Binary Output Relay |
| DISARMED! | Signal: CAUTION! RELAYS DISARMED in order to safely perform maintenance while eliminating the risk of taking an entire process off-line. (Note: The Self Supervision Contact cannot be disarmed). YOU MUST ENSURE that the relays are ARMED AGAIN after maintenance |
| Outs forced | Signal: The State of at least one Relay Output has been set by force. That means that the state of at least one Relay is forced and hence does not show the state of the assigned signals. |
| Res all records | Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.) |
| recording | Signal: Recording |
| memory full | Signal: Memory full |
| Clear fail | Signal: Clear failure in memory |
| Res all records | Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.) |
| Res record | Signal: Delete record |
| Man Trigger | Signal: Manual Trigger |
| Start1-I | State of the module input:: Trigger event / start recording |
| Start2-I | State of the module input:: Trigger event / start recording |
| Start3-I | State of the module input:: Trigger event / start recording |
| Start4-I | State of the module input:: Trigger event / start recording |
| Start5-I | State of the module input:: Trigger event / start recording |
| Start6-I | State of the module input:: Trigger event / start recording |
| Start7-I | State of the module input:: Trigger event / start recording |
| Start8-I | State of the module input:: Trigger event / start recording |
| Res record | Signal: Delete record |
| Res all records | Signal: All records are being deleted. (Remark: Immediately afterwards, this signal becomes inactive again.) |
| System Error | Signal: Device Failure |
| New error | Signal: A new error message has been issued. |
| New warning | Signal: A new warning message has been issued. |
| Test SC | A drop of SelfSuperVIsion Contact (SC) has been triggered manually (for testing purposes). |
| Active | Signal: active |
| Smart view via USB | Information whether or not the Smart view access via the USB interface is activated (allowed). |
| Smart view via Eth | Information whether or not the Smart view access via the Ethernet interface is activated (allowed). |
| SCADA connected | At least one SCADA System is connected to the device. |
| SCADA not connected | No SCADA System is connected to the device |

| 1..n, Assignment List | Description |
|-----------------------|--|
| busy | This message is set if the protocol is started. It will be reset if the protocol is shut down. |
| ready | The message will be set if the protocol is successfully started and ready for data exchange. |
| Active | The communication with the Master (SCADA) is active. Note that for TCP/UDP, this state is permanently "Low" unless »DataLink confirm« is set to "Always". |
| BinaryOutput0 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput1 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput2 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput3 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput4 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput5 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput6 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput7 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput8 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput9 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput10 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput11 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput12 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput13 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput14 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput15 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput16 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput17 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput18 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput19 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput20 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput21 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |

| 1..n, Assignment List | Description |
|------------------------------|--|
| BinaryOutput22 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput23 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput24 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput25 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput26 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput27 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput28 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput29 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput30 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput31 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryInput0-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput1-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput2-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput3-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput4-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput5-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput6-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput7-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput8-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput9-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput10-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput11-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput12-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput13-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput14-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |

| 1..n, Assignment List | Description |
|------------------------------|--|
| BinaryInput40-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput41-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput42-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput43-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput44-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput45-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput46-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput47-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput48-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput49-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput50-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput51-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput52-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput53-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput54-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput55-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput56-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput57-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput58-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput59-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput60-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput61-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput62-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| BinaryInput63-I | Virtual Digital Input (DNP). This corresponds to a virtual binary output of the protective device. |
| Transmission RTU | Signal: SCADA active |

| 1..n, Assignment List | Description |
|-----------------------|---|
| Transmission TCP | Signal: SCADA active |
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |
| Scada Cmd 10 | Scada Command |
| Scada Cmd 11 | Scada Command |
| Scada Cmd 12 | Scada Command |
| Scada Cmd 13 | Scada Command |
| Scada Cmd 14 | Scada Command |
| Scada Cmd 15 | Scada Command |
| Scada Cmd 16 | Scada Command |
| Config Bin Inp1-I | State of the module input: Config Bin Inp |
| Config Bin Inp2-I | State of the module input: Config Bin Inp |
| Config Bin Inp3-I | State of the module input: Config Bin Inp |
| Config Bin Inp4-I | State of the module input: Config Bin Inp |
| Config Bin Inp5-I | State of the module input: Config Bin Inp |
| Config Bin Inp6-I | State of the module input: Config Bin Inp |
| Config Bin Inp7-I | State of the module input: Config Bin Inp |
| Config Bin Inp8-I | State of the module input: Config Bin Inp |
| Config Bin Inp9-I | State of the module input: Config Bin Inp |
| Config Bin Inp10-I | State of the module input: Config Bin Inp |
| Config Bin Inp11-I | State of the module input: Config Bin Inp |
| Config Bin Inp12-I | State of the module input: Config Bin Inp |
| Config Bin Inp13-I | State of the module input: Config Bin Inp |
| Config Bin Inp14-I | State of the module input: Config Bin Inp |
| Config Bin Inp15-I | State of the module input: Config Bin Inp |
| Config Bin Inp16-I | State of the module input: Config Bin Inp |
| Config Bin Inp17-I | State of the module input: Config Bin Inp |
| Config Bin Inp18-I | State of the module input: Config Bin Inp |
| Config Bin Inp19-I | State of the module input: Config Bin Inp |
| Config Bin Inp20-I | State of the module input: Config Bin Inp |
| Config Bin Inp21-I | State of the module input: Config Bin Inp |

| 1..n, Assignment List | Description |
|-----------------------------|--|
| Config Bin Inp22-I | State of the module input: Config Bin Inp |
| Config Bin Inp23-I | State of the module input: Config Bin Inp |
| Config Bin Inp24-I | State of the module input: Config Bin Inp |
| Config Bin Inp25-I | State of the module input: Config Bin Inp |
| Config Bin Inp26-I | State of the module input: Config Bin Inp |
| Config Bin Inp27-I | State of the module input: Config Bin Inp |
| Config Bin Inp28-I | State of the module input: Config Bin Inp |
| Config Bin Inp29-I | State of the module input: Config Bin Inp |
| Config Bin Inp30-I | State of the module input: Config Bin Inp |
| Config Bin Inp31-I | State of the module input: Config Bin Inp |
| Config Bin Inp32-I | State of the module input: Config Bin Inp |
| MMS Client connected | At least one MMS client is connected to the device |
| All Goose Subscriber active | All Goose subscriber in the device are working |
| GOSINGGIO1.Ind1.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind2.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind3.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind4.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind5.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind6.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind7.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind8.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind9.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind10.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind11.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind12.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind13.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind14.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind15.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind16.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind17.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind18.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind19.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind20.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind21.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind22.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind23.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind24.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind25.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |

| 1..n, Assignment List | Description |
|------------------------|--|
| GOSINGGIO1.Ind26.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind27.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind28.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind29.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind30.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind31.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind32.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind1.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind2.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind3.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind4.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind5.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind6.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind7.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind8.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind9.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind10.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind11.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind12.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind13.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind14.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind15.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind16.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind17.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind18.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind19.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind20.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind21.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind22.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind23.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind24.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind25.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind26.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind27.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind28.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind29.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind30.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO2.Ind31.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |

| 1..n, Assignment List | Description |
|-----------------------|--|
| GOSINGGIO2.Ind6.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind7.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind8.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind9.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind10.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind11.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind12.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind13.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind14.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind15.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind16.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind17.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind18.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind19.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind20.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind21.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind22.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind23.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind24.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind25.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind26.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind27.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind28.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind29.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind30.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind31.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| GOSINGGIO2.Ind32.q | Signal: Virtual Input (IEC61850 GGIO Ind): Self-Supervision of the GGIO Input |
| CTLGGIO1.SPCSO1.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO2.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO3.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO4.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO5.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO6.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO7.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |

| 1..n, Assignment List | Description |
|------------------------------|--|
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |
| Scada Cmd 10 | Scada Command |
| Transmission | Signal: SCADA active |
| Failure Event lost | Failure event lost |
| Test mode active | Signal: IEC103 communication has been switched over into Test Mode. |
| Block MD active | Signal: The blocking of IEC103 transmission in monitor direction has been activated. |
| Ex activate test mode-I | Module input state: Test Mode of the IEC103 communication. |
| Ex activate Block MD-I | Module input state: Activation of the blocking of IEC103 transmission in monitor direction. |
| busy | This message is set if the protocol is started. It will be reset if the protocol is shut down. |
| ready | The message will be set if the protocol is successfully started and ready for data exchange. |
| Transmission | Signal: SCADA active |
| Failure Event lost | Failure event lost |
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |
| Scada Cmd 10 | Scada Command |
| Scada Cmd 11 | Scada Command |
| Scada Cmd 12 | Scada Command |
| Scada Cmd 13 | Scada Command |
| Scada Cmd 14 | Scada Command |
| Scada Cmd 15 | Scada Command |
| Scada Cmd 16 | Scada Command |
| Data OK | Data within the Input field are OK (Yes=1) |

| 1..n, Assignment List | Description |
|-----------------------|--|
| SubModul Err | Assignable Signal, Failure in Sub-Module, Communication Failure. |
| Connection active | Connection active |
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |
| Scada Cmd 10 | Scada Command |
| Scada Cmd 11 | Scada Command |
| Scada Cmd 12 | Scada Command |
| Scada Cmd 13 | Scada Command |
| Scada Cmd 14 | Scada Command |
| Scada Cmd 15 | Scada Command |
| Scada Cmd 16 | Scada Command |
| IRIG-B active | Signal: If there is no valid IRIG-B signal for 60 sec, IRIG-B is regarded as inactive. |
| High-Low Invert | Signal: The High and Low signals of the IRIG-B are inverted. This does NOT mean that the wiring is faulty. If the wiring is faulty no IRIG-B signal will be detected. |
| Control Signal1 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal2 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal3 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal4 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal5 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal6 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal7 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal8 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal9 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal10 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal11 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |

| 1..n, Assignment List | Description |
|-----------------------|--|
| Control Signal12 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal13 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal14 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal15 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal16 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal17 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| Control Signal18 | Signal: IRIG-B Control Signal. The external IRIG-B generator can set these signals. They can be used for further control procedures inside the device (e.g. logic funtions). |
| SNTP active | Signal: If there is no valid SNTP signal for 120 sec, SNTP is regarded as inactive. |
| synchronized | Clock is synchronized. |
| ResFc all | Signal: Resetting of all Statistic values (Current Demand, Power Demand, Min, Max) |
| ResFc Vavg | Signal: Resetting of the sliding average calculation. |
| ResFc Max | Signal: Resetting of all Maximum values |
| ResFc Min | Signal: Resetting of all Minimum values |
| StartFc Vavg-I | State of the module input: Start of Statistics Average Voltage |
| LE1.Gate Out | Signal: Output of the logic gate |
| LE1.Timer Out | Signal: Timer Output |
| LE1.Out | Signal: Latched Output (Q) |
| LE1.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE1.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE1.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE1.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE1.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE1.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE2.Gate Out | Signal: Output of the logic gate |
| LE2.Timer Out | Signal: Timer Output |
| LE2.Out | Signal: Latched Output (Q) |
| LE2.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE2.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE2.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE2.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE2.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE2.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE3.Gate Out | Signal: Output of the logic gate |
| LE3.Timer Out | Signal: Timer Output |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE3.Out | Signal: Latched Output (Q) |
| LE3.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE3.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE3.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE3.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE3.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE3.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE4.Gate Out | Signal: Output of the logic gate |
| LE4.Timer Out | Signal: Timer Output |
| LE4.Out | Signal: Latched Output (Q) |
| LE4.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE4.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE4.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE4.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE4.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE4.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE5.Gate Out | Signal: Output of the logic gate |
| LE5.Timer Out | Signal: Timer Output |
| LE5.Out | Signal: Latched Output (Q) |
| LE5.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE5.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE5.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE5.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE5.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE5.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE6.Gate Out | Signal: Output of the logic gate |
| LE6.Timer Out | Signal: Timer Output |
| LE6.Out | Signal: Latched Output (Q) |
| LE6.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE6.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE6.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE6.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE6.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE6.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE7.Gate Out | Signal: Output of the logic gate |
| LE7.Timer Out | Signal: Timer Output |
| LE7.Out | Signal: Latched Output (Q) |
| LE7.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE7.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE7.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE7.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE7.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE7.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE8.Gate Out | Signal: Output of the logic gate |
| LE8.Timer Out | Signal: Timer Output |
| LE8.Out | Signal: Latched Output (Q) |
| LE8.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE8.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE8.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE8.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE8.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE8.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE9.Gate Out | Signal: Output of the logic gate |
| LE9.Timer Out | Signal: Timer Output |
| LE9.Out | Signal: Latched Output (Q) |
| LE9.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE9.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE9.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE9.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE9.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE9.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE10.Gate Out | Signal: Output of the logic gate |
| LE10.Timer Out | Signal: Timer Output |
| LE10.Out | Signal: Latched Output (Q) |
| LE10.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE10.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE10.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE10.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE10.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE10.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE11.Gate Out | Signal: Output of the logic gate |
| LE11.Timer Out | Signal: Timer Output |
| LE11.Out | Signal: Latched Output (Q) |
| LE11.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE11.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE11.Gate In2-I | State of the module input: Assignment of the Input Signal |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE11.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE11.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE11.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE12.Gate Out | Signal: Output of the logic gate |
| LE12.Timer Out | Signal: Timer Output |
| LE12.Out | Signal: Latched Output (Q) |
| LE12.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE12.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE12.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE12.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE12.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE12.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE13.Gate Out | Signal: Output of the logic gate |
| LE13.Timer Out | Signal: Timer Output |
| LE13.Out | Signal: Latched Output (Q) |
| LE13.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE13.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE13.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE13.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE13.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE13.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE14.Gate Out | Signal: Output of the logic gate |
| LE14.Timer Out | Signal: Timer Output |
| LE14.Out | Signal: Latched Output (Q) |
| LE14.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE14.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE14.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE14.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE14.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE14.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE15.Gate Out | Signal: Output of the logic gate |
| LE15.Timer Out | Signal: Timer Output |
| LE15.Out | Signal: Latched Output (Q) |
| LE15.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE15.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE15.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE15.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE15.Gate In4-I | State of the module input: Assignment of the Input Signal |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE15.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE16.Gate Out | Signal: Output of the logic gate |
| LE16.Timer Out | Signal: Timer Output |
| LE16.Out | Signal: Latched Output (Q) |
| LE16.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE16.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE16.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE16.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE16.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE16.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE17.Gate Out | Signal: Output of the logic gate |
| LE17.Timer Out | Signal: Timer Output |
| LE17.Out | Signal: Latched Output (Q) |
| LE17.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE17.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE17.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE17.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE17.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE17.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE18.Gate Out | Signal: Output of the logic gate |
| LE18.Timer Out | Signal: Timer Output |
| LE18.Out | Signal: Latched Output (Q) |
| LE18.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE18.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE18.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE18.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE18.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE18.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE19.Gate Out | Signal: Output of the logic gate |
| LE19.Timer Out | Signal: Timer Output |
| LE19.Out | Signal: Latched Output (Q) |
| LE19.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE19.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE19.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE19.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE19.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE19.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE20.Gate Out | Signal: Output of the logic gate |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE20.Timer Out | Signal: Timer Output |
| LE20.Out | Signal: Latched Output (Q) |
| LE20.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE20.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE20.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE20.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE20.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE20.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE21.Gate Out | Signal: Output of the logic gate |
| LE21.Timer Out | Signal: Timer Output |
| LE21.Out | Signal: Latched Output (Q) |
| LE21.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE21.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE21.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE21.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE21.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE21.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE22.Gate Out | Signal: Output of the logic gate |
| LE22.Timer Out | Signal: Timer Output |
| LE22.Out | Signal: Latched Output (Q) |
| LE22.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE22.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE22.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE22.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE22.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE22.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE23.Gate Out | Signal: Output of the logic gate |
| LE23.Timer Out | Signal: Timer Output |
| LE23.Out | Signal: Latched Output (Q) |
| LE23.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE23.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE23.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE23.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE23.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE23.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE24.Gate Out | Signal: Output of the logic gate |
| LE24.Timer Out | Signal: Timer Output |
| LE24.Out | Signal: Latched Output (Q) |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE24.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE24.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE24.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE24.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE24.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE24.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE25.Gate Out | Signal: Output of the logic gate |
| LE25.Timer Out | Signal: Timer Output |
| LE25.Out | Signal: Latched Output (Q) |
| LE25.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE25.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE25.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE25.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE25.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE25.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE26.Gate Out | Signal: Output of the logic gate |
| LE26.Timer Out | Signal: Timer Output |
| LE26.Out | Signal: Latched Output (Q) |
| LE26.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE26.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE26.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE26.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE26.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE26.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE27.Gate Out | Signal: Output of the logic gate |
| LE27.Timer Out | Signal: Timer Output |
| LE27.Out | Signal: Latched Output (Q) |
| LE27.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE27.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE27.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE27.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE27.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE27.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE28.Gate Out | Signal: Output of the logic gate |
| LE28.Timer Out | Signal: Timer Output |
| LE28.Out | Signal: Latched Output (Q) |
| LE28.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE28.Gate In1-I | State of the module input: Assignment of the Input Signal |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE28.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE28.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE28.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE28.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE29.Gate Out | Signal: Output of the logic gate |
| LE29.Timer Out | Signal: Timer Output |
| LE29.Out | Signal: Latched Output (Q) |
| LE29.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE29.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE29.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE29.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE29.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE29.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE30.Gate Out | Signal: Output of the logic gate |
| LE30.Timer Out | Signal: Timer Output |
| LE30.Out | Signal: Latched Output (Q) |
| LE30.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE30.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE30.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE30.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE30.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE30.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE31.Gate Out | Signal: Output of the logic gate |
| LE31.Timer Out | Signal: Timer Output |
| LE31.Out | Signal: Latched Output (Q) |
| LE31.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE31.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE31.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE31.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE31.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE31.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE32.Gate Out | Signal: Output of the logic gate |
| LE32.Timer Out | Signal: Timer Output |
| LE32.Out | Signal: Latched Output (Q) |
| LE32.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE32.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE32.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE32.Gate In3-I | State of the module input: Assignment of the Input Signal |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE32.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE32.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE33.Gate Out | Signal: Output of the logic gate |
| LE33.Timer Out | Signal: Timer Output |
| LE33.Out | Signal: Latched Output (Q) |
| LE33.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE33.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE33.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE33.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE33.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE33.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE34.Gate Out | Signal: Output of the logic gate |
| LE34.Timer Out | Signal: Timer Output |
| LE34.Out | Signal: Latched Output (Q) |
| LE34.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE34.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE34.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE34.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE34.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE34.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE35.Gate Out | Signal: Output of the logic gate |
| LE35.Timer Out | Signal: Timer Output |
| LE35.Out | Signal: Latched Output (Q) |
| LE35.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE35.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE35.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE35.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE35.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE35.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE36.Gate Out | Signal: Output of the logic gate |
| LE36.Timer Out | Signal: Timer Output |
| LE36.Out | Signal: Latched Output (Q) |
| LE36.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE36.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE36.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE36.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE36.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE36.Reset Latch-I | State of the module input: Reset Signal for the Latching |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE37.Gate Out | Signal: Output of the logic gate |
| LE37.Timer Out | Signal: Timer Output |
| LE37.Out | Signal: Latched Output (Q) |
| LE37.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE37.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE37.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE37.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE37.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE37.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE38.Gate Out | Signal: Output of the logic gate |
| LE38.Timer Out | Signal: Timer Output |
| LE38.Out | Signal: Latched Output (Q) |
| LE38.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE38.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE38.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE38.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE38.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE38.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE39.Gate Out | Signal: Output of the logic gate |
| LE39.Timer Out | Signal: Timer Output |
| LE39.Out | Signal: Latched Output (Q) |
| LE39.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE39.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE39.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE39.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE39.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE39.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE40.Gate Out | Signal: Output of the logic gate |
| LE40.Timer Out | Signal: Timer Output |
| LE40.Out | Signal: Latched Output (Q) |
| LE40.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE40.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE40.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE40.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE40.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE40.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE41.Gate Out | Signal: Output of the logic gate |
| LE41.Timer Out | Signal: Timer Output |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE41.Out | Signal: Latched Output (Q) |
| LE41.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE41.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE41.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE41.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE41.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE41.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE42.Gate Out | Signal: Output of the logic gate |
| LE42.Timer Out | Signal: Timer Output |
| LE42.Out | Signal: Latched Output (Q) |
| LE42.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE42.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE42.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE42.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE42.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE42.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE43.Gate Out | Signal: Output of the logic gate |
| LE43.Timer Out | Signal: Timer Output |
| LE43.Out | Signal: Latched Output (Q) |
| LE43.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE43.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE43.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE43.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE43.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE43.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE44.Gate Out | Signal: Output of the logic gate |
| LE44.Timer Out | Signal: Timer Output |
| LE44.Out | Signal: Latched Output (Q) |
| LE44.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE44.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE44.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE44.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE44.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE44.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE45.Gate Out | Signal: Output of the logic gate |
| LE45.Timer Out | Signal: Timer Output |
| LE45.Out | Signal: Latched Output (Q) |
| LE45.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE45.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE45.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE45.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE45.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE45.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE46.Gate Out | Signal: Output of the logic gate |
| LE46.Timer Out | Signal: Timer Output |
| LE46.Out | Signal: Latched Output (Q) |
| LE46.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE46.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE46.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE46.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE46.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE46.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE47.Gate Out | Signal: Output of the logic gate |
| LE47.Timer Out | Signal: Timer Output |
| LE47.Out | Signal: Latched Output (Q) |
| LE47.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE47.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE47.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE47.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE47.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE47.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE48.Gate Out | Signal: Output of the logic gate |
| LE48.Timer Out | Signal: Timer Output |
| LE48.Out | Signal: Latched Output (Q) |
| LE48.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE48.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE48.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE48.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE48.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE48.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE49.Gate Out | Signal: Output of the logic gate |
| LE49.Timer Out | Signal: Timer Output |
| LE49.Out | Signal: Latched Output (Q) |
| LE49.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE49.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE49.Gate In2-I | State of the module input: Assignment of the Input Signal |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE49.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE49.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE49.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE50.Gate Out | Signal: Output of the logic gate |
| LE50.Timer Out | Signal: Timer Output |
| LE50.Out | Signal: Latched Output (Q) |
| LE50.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE50.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE50.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE50.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE50.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE50.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE51.Gate Out | Signal: Output of the logic gate |
| LE51.Timer Out | Signal: Timer Output |
| LE51.Out | Signal: Latched Output (Q) |
| LE51.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE51.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE51.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE51.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE51.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE51.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE52.Gate Out | Signal: Output of the logic gate |
| LE52.Timer Out | Signal: Timer Output |
| LE52.Out | Signal: Latched Output (Q) |
| LE52.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE52.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE52.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE52.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE52.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE52.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE53.Gate Out | Signal: Output of the logic gate |
| LE53.Timer Out | Signal: Timer Output |
| LE53.Out | Signal: Latched Output (Q) |
| LE53.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE53.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE53.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE53.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE53.Gate In4-I | State of the module input: Assignment of the Input Signal |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE53.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE54.Gate Out | Signal: Output of the logic gate |
| LE54.Timer Out | Signal: Timer Output |
| LE54.Out | Signal: Latched Output (Q) |
| LE54.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE54.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE54.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE54.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE54.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE54.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE55.Gate Out | Signal: Output of the logic gate |
| LE55.Timer Out | Signal: Timer Output |
| LE55.Out | Signal: Latched Output (Q) |
| LE55.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE55.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE55.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE55.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE55.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE55.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE56.Gate Out | Signal: Output of the logic gate |
| LE56.Timer Out | Signal: Timer Output |
| LE56.Out | Signal: Latched Output (Q) |
| LE56.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE56.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE56.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE56.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE56.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE56.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE57.Gate Out | Signal: Output of the logic gate |
| LE57.Timer Out | Signal: Timer Output |
| LE57.Out | Signal: Latched Output (Q) |
| LE57.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE57.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE57.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE57.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE57.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE57.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE58.Gate Out | Signal: Output of the logic gate |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE58.Timer Out | Signal: Timer Output |
| LE58.Out | Signal: Latched Output (Q) |
| LE58.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE58.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE58.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE58.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE58.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE58.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE59.Gate Out | Signal: Output of the logic gate |
| LE59.Timer Out | Signal: Timer Output |
| LE59.Out | Signal: Latched Output (Q) |
| LE59.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE59.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE59.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE59.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE59.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE59.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE60.Gate Out | Signal: Output of the logic gate |
| LE60.Timer Out | Signal: Timer Output |
| LE60.Out | Signal: Latched Output (Q) |
| LE60.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE60.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE60.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE60.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE60.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE60.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE61.Gate Out | Signal: Output of the logic gate |
| LE61.Timer Out | Signal: Timer Output |
| LE61.Out | Signal: Latched Output (Q) |
| LE61.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE61.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE61.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE61.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE61.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE61.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE62.Gate Out | Signal: Output of the logic gate |
| LE62.Timer Out | Signal: Timer Output |
| LE62.Out | Signal: Latched Output (Q) |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE62.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE62.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE62.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE62.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE62.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE62.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE63.Gate Out | Signal: Output of the logic gate |
| LE63.Timer Out | Signal: Timer Output |
| LE63.Out | Signal: Latched Output (Q) |
| LE63.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE63.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE63.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE63.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE63.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE63.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE64.Gate Out | Signal: Output of the logic gate |
| LE64.Timer Out | Signal: Timer Output |
| LE64.Out | Signal: Latched Output (Q) |
| LE64.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE64.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE64.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE64.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE64.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE64.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE65.Gate Out | Signal: Output of the logic gate |
| LE65.Timer Out | Signal: Timer Output |
| LE65.Out | Signal: Latched Output (Q) |
| LE65.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE65.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE65.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE65.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE65.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE65.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE66.Gate Out | Signal: Output of the logic gate |
| LE66.Timer Out | Signal: Timer Output |
| LE66.Out | Signal: Latched Output (Q) |
| LE66.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE66.Gate In1-I | State of the module input: Assignment of the Input Signal |

| 1..n, Assignment List | Description |
|-----------------------|---|
| LE66.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE66.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE66.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE66.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE67.Gate Out | Signal: Output of the logic gate |
| LE67.Timer Out | Signal: Timer Output |
| LE67.Out | Signal: Latched Output (Q) |
| LE67.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE67.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE67.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE67.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE67.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE67.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE68.Gate Out | Signal: Output of the logic gate |
| LE68.Timer Out | Signal: Timer Output |
| LE68.Out | Signal: Latched Output (Q) |
| LE68.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE68.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE68.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE68.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE68.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE68.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE69.Gate Out | Signal: Output of the logic gate |
| LE69.Timer Out | Signal: Timer Output |
| LE69.Out | Signal: Latched Output (Q) |
| LE69.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE69.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE69.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE69.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE69.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE69.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE70.Gate Out | Signal: Output of the logic gate |
| LE70.Timer Out | Signal: Timer Output |
| LE70.Out | Signal: Latched Output (Q) |
| LE70.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE70.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE70.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE70.Gate In3-I | State of the module input: Assignment of the Input Signal |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE70.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE70.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE71.Gate Out | Signal: Output of the logic gate |
| LE71.Timer Out | Signal: Timer Output |
| LE71.Out | Signal: Latched Output (Q) |
| LE71.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE71.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE71.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE71.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE71.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE71.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE72.Gate Out | Signal: Output of the logic gate |
| LE72.Timer Out | Signal: Timer Output |
| LE72.Out | Signal: Latched Output (Q) |
| LE72.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE72.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE72.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE72.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE72.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE72.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE73.Gate Out | Signal: Output of the logic gate |
| LE73.Timer Out | Signal: Timer Output |
| LE73.Out | Signal: Latched Output (Q) |
| LE73.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE73.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE73.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE73.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE73.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE73.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE74.Gate Out | Signal: Output of the logic gate |
| LE74.Timer Out | Signal: Timer Output |
| LE74.Out | Signal: Latched Output (Q) |
| LE74.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE74.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE74.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE74.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE74.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE74.Reset Latch-I | State of the module input: Reset Signal for the Latching |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE75.Gate Out | Signal: Output of the logic gate |
| LE75.Timer Out | Signal: Timer Output |
| LE75.Out | Signal: Latched Output (Q) |
| LE75.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE75.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE75.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE75.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE75.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE75.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE76.Gate Out | Signal: Output of the logic gate |
| LE76.Timer Out | Signal: Timer Output |
| LE76.Out | Signal: Latched Output (Q) |
| LE76.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE76.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE76.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE76.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE76.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE76.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE77.Gate Out | Signal: Output of the logic gate |
| LE77.Timer Out | Signal: Timer Output |
| LE77.Out | Signal: Latched Output (Q) |
| LE77.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE77.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE77.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE77.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE77.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE77.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE78.Gate Out | Signal: Output of the logic gate |
| LE78.Timer Out | Signal: Timer Output |
| LE78.Out | Signal: Latched Output (Q) |
| LE78.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE78.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE78.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE78.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE78.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE78.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE79.Gate Out | Signal: Output of the logic gate |
| LE79.Timer Out | Signal: Timer Output |

| 1..n, Assignment List | Description |
|------------------------------|---|
| LE79.Out | Signal: Latched Output (Q) |
| LE79.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE79.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE79.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE79.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE79.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE79.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| LE80.Gate Out | Signal: Output of the logic gate |
| LE80.Timer Out | Signal: Timer Output |
| LE80.Out | Signal: Latched Output (Q) |
| LE80.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE80.Gate In1-I | State of the module input: Assignment of the Input Signal |
| LE80.Gate In2-I | State of the module input: Assignment of the Input Signal |
| LE80.Gate In3-I | State of the module input: Assignment of the Input Signal |
| LE80.Gate In4-I | State of the module input: Assignment of the Input Signal |
| LE80.Reset Latch-I | State of the module input: Reset Signal for the Latching |
| Manual Start | Fault Simulation has been started manually. |
| Manual Stop | Fault Simulation has been stopped manually. |
| Running | Signal: Measuring value simulation is running |
| Started | Fault Simulation has been started |
| Stopped | Fault Simulation has been stopped |
| Ex Start Simulation-I | State of the module input: External Start of Fault Simulation (Using the test parameters) |
| ExBlo1-I | Module input state: External blocking1 |
| ExBlo2-I | Module input state: External blocking2 |
| Ex ForcePost-I | State of the module input: Force Post state. Abort simulation. |
| PS 1 | Signal: The currently active Parameter Set is PS 1 |
| PS 2 | Signal: The currently active Parameter Set is PS 2 |
| PS 3 | Signal: The currently active Parameter Set is PS 3 |
| PS 4 | Signal: The currently active Parameter Set is PS 4 |
| PSS manual | Signal: Manual Switch over of a Parameter Set |
| PSS via Scada | Signal: Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4). |
| PSS via Inp fct | Signal: Parameter Set Switch via input function |
| min 1 param changed | Signal: At least one parameter has been changed |
| Setting Lock Bypass | Signal: Short-period unlock of the Setting Lock |
| Maint Mode Active | Signal: Arc Flash Reduction Maintenance Active |
| Maint Mode Inactive | Signal: Arc Flash Reduction Maintenance Inactive |
| MaintMode Manually | Signal: Arc Flash Reduction Maintenance Manual Mode |

| 1..n, Assignment List | Description |
|-----------------------|---|
| Maint Mode SCADA | Signal: Arc Flash Reduction Maintenance SCADA Mode |
| Maint Mode DI | Signal: Arc Flash Reduction Maintenance Digital Input Mode |
| Ack LED | Signal: LEDs acknowledgement |
| Ack BO | Signal: Acknowledgement of the Binary Outputs |
| Ack Scada | Signal: Acknowledge latched SCADA signals |
| Ack TripCmd | Signal: Reset Trip Command |
| Ack LED-HMI | Signal: LEDs acknowledgement, triggered at the HMI |
| Ack BO-HMI | Signal: Acknowledgement of the Binary Outputs, triggered at the HMI |
| Ack Scada-HMI | Signal: Acknowledge latched SCADA signals, triggered at the HMI |
| Ack TripCmd-HMI | Signal: Reset Trip Command, triggered at the HMI |
| Ack LED-Sca | Signal: LEDs acknowledgement, triggered via SCADA |
| Ack BO-Sca | Signal: Acknowledgement of the Binary Outputs, triggered via SCADA |
| Ack Counter-Sca | Signal: Reset of all Counters, triggered via SCADA |
| Ack Scada-Sca | Signal: Acknowledge latched SCADA signals, triggered via SCADA |
| Ack TripCmd-Sca | Signal: Reset Trip Command, triggered via SCADA |
| Res OperationsCr | Signal:: Res OperationsCr |
| Res AlarmCr | Signal:: Res AlarmCr |
| Res TripCmdCr | Signal:: Res TripCmdCr |
| Res TotalCr | Signal:: Res TotalCr |
| Ack LED-I | Module input state: LEDs acknowledgement by digital input |
| Ack BO-I | Module input state: Acknowledgement of the binary Output Relays |
| Ack Scada-I | Module input state: Acknowledge latched SCADA signals. |
| PS1-I | State of the module input respectively of the signal, that should activate this Parameter Setting Group. |
| PS2-I | State of the module input respectively of the signal, that should activate this Parameter Setting Group. |
| PS3-I | State of the module input respectively of the signal, that should activate this Parameter Setting Group. |
| PS4-I | State of the module input respectively of the signal, that should activate this Parameter Setting Group. |
| Setting Lock-I | State of the module input: No parameters can be changed as long as this input is true. The parameter settings are locked. |
| Maint Mode-I | Module Input State: Arc Flash Reduction Maintenance Switch |
| Internal test state | Auxiliary state for testing purposes. |

17.158 VTS Block

Selection list referenced by the following parameters:

- [V\[1\] . Meas Circuit Superv](#)
- [\[...\]](#)

| VTS Block | Description |
|-----------|-------------|
| Inactive | Inactive |
| Active | Active |

17.159 CB Manager

Referenced by:

- [Sync . CB Pos Detect](#)

| CB Manager | Description |
|------------|--|
| - | No assignment |
| Pos | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |

17.160 1..n, Dig Inputs

Selection list referenced by the following parameters:

- [ReCon\[1\] . PCC Fuse Fail VT](#)
- [TCS . Input 1](#)
- [TCS . Input 2](#)

| 1..n, Dig Inputs | Description |
|------------------|-----------------------|
| - | No assignment |
| DI 1 | Signal: Digital Input |
| DI 2 | Signal: Digital Input |
| DI 3 | Signal: Digital Input |
| DI 4 | Signal: Digital Input |
| DI 5 | Signal: Digital Input |
| DI 6 | Signal: Digital Input |
| DI 7 | Signal: Digital Input |
| DI 8 | Signal: Digital Input |

17.161 1..n, DI-LogicList

Selection list referenced by the following parameters:

- [Sys . Maint Mode Activated by](#)
- [SG\[1\] . Aux ON](#)
- [SG\[1\] . Aux OFF](#)
- [SG\[1\] . Ready](#)
- [SG\[1\] . Removed](#)
- [SG\[1\] . SCmd ON](#)
- [\[...\]](#)

| 1..n, DI-LogicList | Description |
|--------------------|--|
| - | No assignment |
| DI 1 | Signal: Digital Input |
| DI 2 | Signal: Digital Input |
| DI 3 | Signal: Digital Input |
| DI 4 | Signal: Digital Input |
| DI 5 | Signal: Digital Input |
| DI 6 | Signal: Digital Input |
| DI 7 | Signal: Digital Input |
| DI 8 | Signal: Digital Input |
| BinaryOutput0 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput1 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput2 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput3 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput4 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput5 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput6 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput7 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput8 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput9 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput10 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput11 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput12 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| BinaryOutput13 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput14 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput15 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput16 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput17 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput18 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput19 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput20 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput21 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput22 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput23 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput24 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput25 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput26 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput27 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput28 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput29 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput30 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput31 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| Scada Cmd 10 | Scada Command |
| Scada Cmd 11 | Scada Command |
| Scada Cmd 12 | Scada Command |
| Scada Cmd 13 | Scada Command |
| Scada Cmd 14 | Scada Command |
| Scada Cmd 15 | Scada Command |
| Scada Cmd 16 | Scada Command |
| LE1.Gate Out | Signal: Output of the logic gate |
| LE1.Timer Out | Signal: Timer Output |
| LE1.Out | Signal: Latched Output (Q) |
| LE1.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE2.Gate Out | Signal: Output of the logic gate |
| LE2.Timer Out | Signal: Timer Output |
| LE2.Out | Signal: Latched Output (Q) |
| LE2.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE3.Gate Out | Signal: Output of the logic gate |
| LE3.Timer Out | Signal: Timer Output |
| LE3.Out | Signal: Latched Output (Q) |
| LE3.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE4.Gate Out | Signal: Output of the logic gate |
| LE4.Timer Out | Signal: Timer Output |
| LE4.Out | Signal: Latched Output (Q) |
| LE4.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE5.Gate Out | Signal: Output of the logic gate |
| LE5.Timer Out | Signal: Timer Output |
| LE5.Out | Signal: Latched Output (Q) |
| LE5.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE6.Gate Out | Signal: Output of the logic gate |
| LE6.Timer Out | Signal: Timer Output |
| LE6.Out | Signal: Latched Output (Q) |
| LE6.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE7.Gate Out | Signal: Output of the logic gate |
| LE7.Timer Out | Signal: Timer Output |
| LE7.Out | Signal: Latched Output (Q) |
| LE7.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE8.Gate Out | Signal: Output of the logic gate |
| LE8.Timer Out | Signal: Timer Output |
| LE8.Out | Signal: Latched Output (Q) |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| LE8.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE9.Gate Out | Signal: Output of the logic gate |
| LE9.Timer Out | Signal: Timer Output |
| LE9.Out | Signal: Latched Output (Q) |
| LE9.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE10.Gate Out | Signal: Output of the logic gate |
| LE10.Timer Out | Signal: Timer Output |
| LE10.Out | Signal: Latched Output (Q) |
| LE10.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE11.Gate Out | Signal: Output of the logic gate |
| LE11.Timer Out | Signal: Timer Output |
| LE11.Out | Signal: Latched Output (Q) |
| LE11.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE12.Gate Out | Signal: Output of the logic gate |
| LE12.Timer Out | Signal: Timer Output |
| LE12.Out | Signal: Latched Output (Q) |
| LE12.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE13.Gate Out | Signal: Output of the logic gate |
| LE13.Timer Out | Signal: Timer Output |
| LE13.Out | Signal: Latched Output (Q) |
| LE13.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE14.Gate Out | Signal: Output of the logic gate |
| LE14.Timer Out | Signal: Timer Output |
| LE14.Out | Signal: Latched Output (Q) |
| LE14.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE15.Gate Out | Signal: Output of the logic gate |
| LE15.Timer Out | Signal: Timer Output |
| LE15.Out | Signal: Latched Output (Q) |
| LE15.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE16.Gate Out | Signal: Output of the logic gate |
| LE16.Timer Out | Signal: Timer Output |
| LE16.Out | Signal: Latched Output (Q) |
| LE16.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE17.Gate Out | Signal: Output of the logic gate |
| LE17.Timer Out | Signal: Timer Output |
| LE17.Out | Signal: Latched Output (Q) |
| LE17.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE18.Gate Out | Signal: Output of the logic gate |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| LE18.Timer Out | Signal: Timer Output |
| LE18.Out | Signal: Latched Output (Q) |
| LE18.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE19.Gate Out | Signal: Output of the logic gate |
| LE19.Timer Out | Signal: Timer Output |
| LE19.Out | Signal: Latched Output (Q) |
| LE19.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE20.Gate Out | Signal: Output of the logic gate |
| LE20.Timer Out | Signal: Timer Output |
| LE20.Out | Signal: Latched Output (Q) |
| LE20.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE21.Gate Out | Signal: Output of the logic gate |
| LE21.Timer Out | Signal: Timer Output |
| LE21.Out | Signal: Latched Output (Q) |
| LE21.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE22.Gate Out | Signal: Output of the logic gate |
| LE22.Timer Out | Signal: Timer Output |
| LE22.Out | Signal: Latched Output (Q) |
| LE22.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE23.Gate Out | Signal: Output of the logic gate |
| LE23.Timer Out | Signal: Timer Output |
| LE23.Out | Signal: Latched Output (Q) |
| LE23.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE24.Gate Out | Signal: Output of the logic gate |
| LE24.Timer Out | Signal: Timer Output |
| LE24.Out | Signal: Latched Output (Q) |
| LE24.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE25.Gate Out | Signal: Output of the logic gate |
| LE25.Timer Out | Signal: Timer Output |
| LE25.Out | Signal: Latched Output (Q) |
| LE25.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE26.Gate Out | Signal: Output of the logic gate |
| LE26.Timer Out | Signal: Timer Output |
| LE26.Out | Signal: Latched Output (Q) |
| LE26.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE27.Gate Out | Signal: Output of the logic gate |
| LE27.Timer Out | Signal: Timer Output |
| LE27.Out | Signal: Latched Output (Q) |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| LE27.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE28.Gate Out | Signal: Output of the logic gate |
| LE28.Timer Out | Signal: Timer Output |
| LE28.Out | Signal: Latched Output (Q) |
| LE28.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE29.Gate Out | Signal: Output of the logic gate |
| LE29.Timer Out | Signal: Timer Output |
| LE29.Out | Signal: Latched Output (Q) |
| LE29.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE30.Gate Out | Signal: Output of the logic gate |
| LE30.Timer Out | Signal: Timer Output |
| LE30.Out | Signal: Latched Output (Q) |
| LE30.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE31.Gate Out | Signal: Output of the logic gate |
| LE31.Timer Out | Signal: Timer Output |
| LE31.Out | Signal: Latched Output (Q) |
| LE31.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE32.Gate Out | Signal: Output of the logic gate |
| LE32.Timer Out | Signal: Timer Output |
| LE32.Out | Signal: Latched Output (Q) |
| LE32.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE33.Gate Out | Signal: Output of the logic gate |
| LE33.Timer Out | Signal: Timer Output |
| LE33.Out | Signal: Latched Output (Q) |
| LE33.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE34.Gate Out | Signal: Output of the logic gate |
| LE34.Timer Out | Signal: Timer Output |
| LE34.Out | Signal: Latched Output (Q) |
| LE34.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE35.Gate Out | Signal: Output of the logic gate |
| LE35.Timer Out | Signal: Timer Output |
| LE35.Out | Signal: Latched Output (Q) |
| LE35.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE36.Gate Out | Signal: Output of the logic gate |
| LE36.Timer Out | Signal: Timer Output |
| LE36.Out | Signal: Latched Output (Q) |
| LE36.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE37.Gate Out | Signal: Output of the logic gate |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| LE37.Timer Out | Signal: Timer Output |
| LE37.Out | Signal: Latched Output (Q) |
| LE37.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE38.Gate Out | Signal: Output of the logic gate |
| LE38.Timer Out | Signal: Timer Output |
| LE38.Out | Signal: Latched Output (Q) |
| LE38.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE39.Gate Out | Signal: Output of the logic gate |
| LE39.Timer Out | Signal: Timer Output |
| LE39.Out | Signal: Latched Output (Q) |
| LE39.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE40.Gate Out | Signal: Output of the logic gate |
| LE40.Timer Out | Signal: Timer Output |
| LE40.Out | Signal: Latched Output (Q) |
| LE40.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE41.Gate Out | Signal: Output of the logic gate |
| LE41.Timer Out | Signal: Timer Output |
| LE41.Out | Signal: Latched Output (Q) |
| LE41.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE42.Gate Out | Signal: Output of the logic gate |
| LE42.Timer Out | Signal: Timer Output |
| LE42.Out | Signal: Latched Output (Q) |
| LE42.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE43.Gate Out | Signal: Output of the logic gate |
| LE43.Timer Out | Signal: Timer Output |
| LE43.Out | Signal: Latched Output (Q) |
| LE43.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE44.Gate Out | Signal: Output of the logic gate |
| LE44.Timer Out | Signal: Timer Output |
| LE44.Out | Signal: Latched Output (Q) |
| LE44.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE45.Gate Out | Signal: Output of the logic gate |
| LE45.Timer Out | Signal: Timer Output |
| LE45.Out | Signal: Latched Output (Q) |
| LE45.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE46.Gate Out | Signal: Output of the logic gate |
| LE46.Timer Out | Signal: Timer Output |
| LE46.Out | Signal: Latched Output (Q) |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| LE46.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE47.Gate Out | Signal: Output of the logic gate |
| LE47.Timer Out | Signal: Timer Output |
| LE47.Out | Signal: Latched Output (Q) |
| LE47.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE48.Gate Out | Signal: Output of the logic gate |
| LE48.Timer Out | Signal: Timer Output |
| LE48.Out | Signal: Latched Output (Q) |
| LE48.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE49.Gate Out | Signal: Output of the logic gate |
| LE49.Timer Out | Signal: Timer Output |
| LE49.Out | Signal: Latched Output (Q) |
| LE49.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE50.Gate Out | Signal: Output of the logic gate |
| LE50.Timer Out | Signal: Timer Output |
| LE50.Out | Signal: Latched Output (Q) |
| LE50.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE51.Gate Out | Signal: Output of the logic gate |
| LE51.Timer Out | Signal: Timer Output |
| LE51.Out | Signal: Latched Output (Q) |
| LE51.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE52.Gate Out | Signal: Output of the logic gate |
| LE52.Timer Out | Signal: Timer Output |
| LE52.Out | Signal: Latched Output (Q) |
| LE52.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE53.Gate Out | Signal: Output of the logic gate |
| LE53.Timer Out | Signal: Timer Output |
| LE53.Out | Signal: Latched Output (Q) |
| LE53.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE54.Gate Out | Signal: Output of the logic gate |
| LE54.Timer Out | Signal: Timer Output |
| LE54.Out | Signal: Latched Output (Q) |
| LE54.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE55.Gate Out | Signal: Output of the logic gate |
| LE55.Timer Out | Signal: Timer Output |
| LE55.Out | Signal: Latched Output (Q) |
| LE55.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE56.Gate Out | Signal: Output of the logic gate |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| LE56.Timer Out | Signal: Timer Output |
| LE56.Out | Signal: Latched Output (Q) |
| LE56.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE57.Gate Out | Signal: Output of the logic gate |
| LE57.Timer Out | Signal: Timer Output |
| LE57.Out | Signal: Latched Output (Q) |
| LE57.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE58.Gate Out | Signal: Output of the logic gate |
| LE58.Timer Out | Signal: Timer Output |
| LE58.Out | Signal: Latched Output (Q) |
| LE58.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE59.Gate Out | Signal: Output of the logic gate |
| LE59.Timer Out | Signal: Timer Output |
| LE59.Out | Signal: Latched Output (Q) |
| LE59.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE60.Gate Out | Signal: Output of the logic gate |
| LE60.Timer Out | Signal: Timer Output |
| LE60.Out | Signal: Latched Output (Q) |
| LE60.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE61.Gate Out | Signal: Output of the logic gate |
| LE61.Timer Out | Signal: Timer Output |
| LE61.Out | Signal: Latched Output (Q) |
| LE61.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE62.Gate Out | Signal: Output of the logic gate |
| LE62.Timer Out | Signal: Timer Output |
| LE62.Out | Signal: Latched Output (Q) |
| LE62.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE63.Gate Out | Signal: Output of the logic gate |
| LE63.Timer Out | Signal: Timer Output |
| LE63.Out | Signal: Latched Output (Q) |
| LE63.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE64.Gate Out | Signal: Output of the logic gate |
| LE64.Timer Out | Signal: Timer Output |
| LE64.Out | Signal: Latched Output (Q) |
| LE64.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE65.Gate Out | Signal: Output of the logic gate |
| LE65.Timer Out | Signal: Timer Output |
| LE65.Out | Signal: Latched Output (Q) |

| 1..n, DI-LogicList | Description |
|---------------------------|--|
| LE65.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE66.Gate Out | Signal: Output of the logic gate |
| LE66.Timer Out | Signal: Timer Output |
| LE66.Out | Signal: Latched Output (Q) |
| LE66.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE67.Gate Out | Signal: Output of the logic gate |
| LE67.Timer Out | Signal: Timer Output |
| LE67.Out | Signal: Latched Output (Q) |
| LE67.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE68.Gate Out | Signal: Output of the logic gate |
| LE68.Timer Out | Signal: Timer Output |
| LE68.Out | Signal: Latched Output (Q) |
| LE68.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE69.Gate Out | Signal: Output of the logic gate |
| LE69.Timer Out | Signal: Timer Output |
| LE69.Out | Signal: Latched Output (Q) |
| LE69.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE70.Gate Out | Signal: Output of the logic gate |
| LE70.Timer Out | Signal: Timer Output |
| LE70.Out | Signal: Latched Output (Q) |
| LE70.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE71.Gate Out | Signal: Output of the logic gate |
| LE71.Timer Out | Signal: Timer Output |
| LE71.Out | Signal: Latched Output (Q) |
| LE71.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE72.Gate Out | Signal: Output of the logic gate |
| LE72.Timer Out | Signal: Timer Output |
| LE72.Out | Signal: Latched Output (Q) |
| LE72.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE73.Gate Out | Signal: Output of the logic gate |
| LE73.Timer Out | Signal: Timer Output |
| LE73.Out | Signal: Latched Output (Q) |
| LE73.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE74.Gate Out | Signal: Output of the logic gate |
| LE74.Timer Out | Signal: Timer Output |
| LE74.Out | Signal: Latched Output (Q) |
| LE74.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE75.Gate Out | Signal: Output of the logic gate |

| 1..n, DI-LogicList | Description |
|--------------------|--|
| LE75.Timer Out | Signal: Timer Output |
| LE75.Out | Signal: Latched Output (Q) |
| LE75.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE76.Gate Out | Signal: Output of the logic gate |
| LE76.Timer Out | Signal: Timer Output |
| LE76.Out | Signal: Latched Output (Q) |
| LE76.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE77.Gate Out | Signal: Output of the logic gate |
| LE77.Timer Out | Signal: Timer Output |
| LE77.Out | Signal: Latched Output (Q) |
| LE77.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE78.Gate Out | Signal: Output of the logic gate |
| LE78.Timer Out | Signal: Timer Output |
| LE78.Out | Signal: Latched Output (Q) |
| LE78.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE79.Gate Out | Signal: Output of the logic gate |
| LE79.Timer Out | Signal: Timer Output |
| LE79.Out | Signal: Latched Output (Q) |
| LE79.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE80.Gate Out | Signal: Output of the logic gate |
| LE80.Timer Out | Signal: Timer Output |
| LE80.Out | Signal: Latched Output (Q) |
| LE80.Out inverted | Signal: Negated Latched Output (Q NOT) |

17.162 1..n, TrendRecList

Selection list referenced by the following parameters:

- [Trend rec . Trend1](#)
- [Trend rec . Trend2](#)
- [Trend rec . Trend3](#)
- [Trend rec . Trend4](#)
- [Trend rec . Trend5](#)
- [Trend rec . Trend6](#)
- [\[...\]](#)

| 1..n, TrendRecList | Description |
|--------------------|---------------|
| - | No assignment |

17 Selection Lists

17.162 1..n, TrendRecList

| 1..n, TrendRecList | Description |
|--------------------|--|
| VL1 | Measured value: Phase-to-neutral voltage (fundamental) |
| VL2 | Measured value: Phase-to-neutral voltage (fundamental) |
| VL3 | Measured value: Phase-to-neutral voltage (fundamental) |
| VX meas | Measured value (measured): VX measured (fundamental) |
| VG calc | Measured value (calculated): VG (fundamental) |
| VL12 | Measured value: Phase-to-phase voltage (fundamental) |
| VL23 | Measured value: Phase-to-phase voltage (fundamental) |
| VL31 | Measured value: Phase-to-phase voltage (fundamental) |
| VL1 RMS | Measured value: Phase-to-neutral voltage (RMS) |
| VL2 RMS | Measured value: Phase-to-neutral voltage (RMS) |
| VL3 RMS | Measured value: Phase-to-neutral voltage (RMS) |
| VX meas RMS | Measured value (measured): VX measured (RMS) |
| VG calc RMS | Measured value (calculated): VG (RMS) |
| VL12 RMS | Measured value: Phase-to-phase voltage (RMS) |
| VL23 RMS | Measured value: Phase-to-phase voltage (RMS) |
| VL31 RMS | Measured value: Phase-to-phase voltage (RMS) |
| V0 | Measured value (calculated): Symmetrical components Zero voltage(fundamental) |
| V1 | Measured value (calculated): Symmetrical components positive phase sequence voltage(fundamental) |
| V2 | Measured value (calculated): Symmetrical components negative phase sequence voltage(fundamental) |
| %(V2/V1) | Measured value (calculated): V2/V1, phase sequence will be taken into account automatically. |
| VL1 avg RMS | VL1 average value (RMS) |
| VL2 avg RMS | VL2 average value (RMS) |
| VL3 avg RMS | VL3 average value (RMS) |
| VL12 avg RMS | VL12 average value (RMS) |
| VL23 avg RMS | VL23 average value (RMS) |
| VL31 avg RMS | VL31 average value (RMS) |
| f | Measured value: Frequency |
| VL1 THD | Measured value (calculated): VL1 Total Harmonic Distortion |
| VL2 THD | Measured value (calculated): VL2 Total Harmonic Distortion |
| VL3 THD | Measured value (calculated): VL3 Total Harmonic Distortion |
| VL12 THD | Measured value (calculated): V12 Total Harmonic Distortion |
| VL23 THD | Measured value (calculated): V23 Total Harmonic Distortion |
| VL31 THD | Measured value (calculated): V31 Total Harmonic Distortion |

17.163 Selection

Referenced by:

- [HMI . Menu language](#)

| Selection | Description |
|------------|-------------|
| English | English |
| German | German |
| Russian | Russian |
| Polish | Polish |
| French | French |
| Portuguese | Portuguese |
| Spanish | Spanish |
| Romanian | Romanian |

17.164 Options

Referenced by:

- [Sys . DM version](#)

| | Description |
|--------|-------------|
| 3.10.a | Version |

17.165 1..n, PSS

Referenced by:

- [Sys . PS1: activated by](#)

| 1..n, PSS | Description |
|--------------|---|
| - | No assignment |
| Alarm | Signal: Alarm Voltage Transformer Measuring Circuit Supervision |
| DI 1 | Signal: Digital Input |
| DI 2 | Signal: Digital Input |
| DI 3 | Signal: Digital Input |
| DI 4 | Signal: Digital Input |
| DI 5 | Signal: Digital Input |
| DI 6 | Signal: Digital Input |
| DI 7 | Signal: Digital Input |
| DI 8 | Signal: Digital Input |
| LE1.Gate Out | Signal: Output of the logic gate |

| 1..n, PSS | Description |
|------------------|--|
| LE1.Timer Out | Signal: Timer Output |
| LE1.Out | Signal: Latched Output (Q) |
| LE1.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE2.Gate Out | Signal: Output of the logic gate |
| LE2.Timer Out | Signal: Timer Output |
| LE2.Out | Signal: Latched Output (Q) |
| LE2.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE3.Gate Out | Signal: Output of the logic gate |
| LE3.Timer Out | Signal: Timer Output |
| LE3.Out | Signal: Latched Output (Q) |
| LE3.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE4.Gate Out | Signal: Output of the logic gate |
| LE4.Timer Out | Signal: Timer Output |
| LE4.Out | Signal: Latched Output (Q) |
| LE4.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE5.Gate Out | Signal: Output of the logic gate |
| LE5.Timer Out | Signal: Timer Output |
| LE5.Out | Signal: Latched Output (Q) |
| LE5.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE6.Gate Out | Signal: Output of the logic gate |
| LE6.Timer Out | Signal: Timer Output |
| LE6.Out | Signal: Latched Output (Q) |
| LE6.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE7.Gate Out | Signal: Output of the logic gate |
| LE7.Timer Out | Signal: Timer Output |
| LE7.Out | Signal: Latched Output (Q) |
| LE7.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE8.Gate Out | Signal: Output of the logic gate |
| LE8.Timer Out | Signal: Timer Output |
| LE8.Out | Signal: Latched Output (Q) |
| LE8.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE9.Gate Out | Signal: Output of the logic gate |
| LE9.Timer Out | Signal: Timer Output |
| LE9.Out | Signal: Latched Output (Q) |
| LE9.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE10.Gate Out | Signal: Output of the logic gate |
| LE10.Timer Out | Signal: Timer Output |
| LE10.Out | Signal: Latched Output (Q) |

| 1..n, PSS | Description |
|-------------------|--|
| LE10.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE11.Gate Out | Signal: Output of the logic gate |
| LE11.Timer Out | Signal: Timer Output |
| LE11.Out | Signal: Latched Output (Q) |
| LE11.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE12.Gate Out | Signal: Output of the logic gate |
| LE12.Timer Out | Signal: Timer Output |
| LE12.Out | Signal: Latched Output (Q) |
| LE12.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE13.Gate Out | Signal: Output of the logic gate |
| LE13.Timer Out | Signal: Timer Output |
| LE13.Out | Signal: Latched Output (Q) |
| LE13.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE14.Gate Out | Signal: Output of the logic gate |
| LE14.Timer Out | Signal: Timer Output |
| LE14.Out | Signal: Latched Output (Q) |
| LE14.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE15.Gate Out | Signal: Output of the logic gate |
| LE15.Timer Out | Signal: Timer Output |
| LE15.Out | Signal: Latched Output (Q) |
| LE15.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE16.Gate Out | Signal: Output of the logic gate |
| LE16.Timer Out | Signal: Timer Output |
| LE16.Out | Signal: Latched Output (Q) |
| LE16.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE17.Gate Out | Signal: Output of the logic gate |
| LE17.Timer Out | Signal: Timer Output |
| LE17.Out | Signal: Latched Output (Q) |
| LE17.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE18.Gate Out | Signal: Output of the logic gate |
| LE18.Timer Out | Signal: Timer Output |
| LE18.Out | Signal: Latched Output (Q) |
| LE18.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE19.Gate Out | Signal: Output of the logic gate |
| LE19.Timer Out | Signal: Timer Output |
| LE19.Out | Signal: Latched Output (Q) |
| LE19.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE20.Gate Out | Signal: Output of the logic gate |

| 1..n, PSS | Description |
|-------------------|--|
| LE20.Timer Out | Signal: Timer Output |
| LE20.Out | Signal: Latched Output (Q) |
| LE20.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE21.Gate Out | Signal: Output of the logic gate |
| LE21.Timer Out | Signal: Timer Output |
| LE21.Out | Signal: Latched Output (Q) |
| LE21.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE22.Gate Out | Signal: Output of the logic gate |
| LE22.Timer Out | Signal: Timer Output |
| LE22.Out | Signal: Latched Output (Q) |
| LE22.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE23.Gate Out | Signal: Output of the logic gate |
| LE23.Timer Out | Signal: Timer Output |
| LE23.Out | Signal: Latched Output (Q) |
| LE23.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE24.Gate Out | Signal: Output of the logic gate |
| LE24.Timer Out | Signal: Timer Output |
| LE24.Out | Signal: Latched Output (Q) |
| LE24.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE25.Gate Out | Signal: Output of the logic gate |
| LE25.Timer Out | Signal: Timer Output |
| LE25.Out | Signal: Latched Output (Q) |
| LE25.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE26.Gate Out | Signal: Output of the logic gate |
| LE26.Timer Out | Signal: Timer Output |
| LE26.Out | Signal: Latched Output (Q) |
| LE26.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE27.Gate Out | Signal: Output of the logic gate |
| LE27.Timer Out | Signal: Timer Output |
| LE27.Out | Signal: Latched Output (Q) |
| LE27.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE28.Gate Out | Signal: Output of the logic gate |
| LE28.Timer Out | Signal: Timer Output |
| LE28.Out | Signal: Latched Output (Q) |
| LE28.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE29.Gate Out | Signal: Output of the logic gate |
| LE29.Timer Out | Signal: Timer Output |
| LE29.Out | Signal: Latched Output (Q) |

| 1..n, PSS | Description |
|-------------------|--|
| LE29.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE30.Gate Out | Signal: Output of the logic gate |
| LE30.Timer Out | Signal: Timer Output |
| LE30.Out | Signal: Latched Output (Q) |
| LE30.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE31.Gate Out | Signal: Output of the logic gate |
| LE31.Timer Out | Signal: Timer Output |
| LE31.Out | Signal: Latched Output (Q) |
| LE31.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE32.Gate Out | Signal: Output of the logic gate |
| LE32.Timer Out | Signal: Timer Output |
| LE32.Out | Signal: Latched Output (Q) |
| LE32.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE33.Gate Out | Signal: Output of the logic gate |
| LE33.Timer Out | Signal: Timer Output |
| LE33.Out | Signal: Latched Output (Q) |
| LE33.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE34.Gate Out | Signal: Output of the logic gate |
| LE34.Timer Out | Signal: Timer Output |
| LE34.Out | Signal: Latched Output (Q) |
| LE34.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE35.Gate Out | Signal: Output of the logic gate |
| LE35.Timer Out | Signal: Timer Output |
| LE35.Out | Signal: Latched Output (Q) |
| LE35.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE36.Gate Out | Signal: Output of the logic gate |
| LE36.Timer Out | Signal: Timer Output |
| LE36.Out | Signal: Latched Output (Q) |
| LE36.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE37.Gate Out | Signal: Output of the logic gate |
| LE37.Timer Out | Signal: Timer Output |
| LE37.Out | Signal: Latched Output (Q) |
| LE37.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE38.Gate Out | Signal: Output of the logic gate |
| LE38.Timer Out | Signal: Timer Output |
| LE38.Out | Signal: Latched Output (Q) |
| LE38.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE39.Gate Out | Signal: Output of the logic gate |

| 1..n, PSS | Description |
|-------------------|--|
| LE39.Timer Out | Signal: Timer Output |
| LE39.Out | Signal: Latched Output (Q) |
| LE39.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE40.Gate Out | Signal: Output of the logic gate |
| LE40.Timer Out | Signal: Timer Output |
| LE40.Out | Signal: Latched Output (Q) |
| LE40.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE41.Gate Out | Signal: Output of the logic gate |
| LE41.Timer Out | Signal: Timer Output |
| LE41.Out | Signal: Latched Output (Q) |
| LE41.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE42.Gate Out | Signal: Output of the logic gate |
| LE42.Timer Out | Signal: Timer Output |
| LE42.Out | Signal: Latched Output (Q) |
| LE42.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE43.Gate Out | Signal: Output of the logic gate |
| LE43.Timer Out | Signal: Timer Output |
| LE43.Out | Signal: Latched Output (Q) |
| LE43.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE44.Gate Out | Signal: Output of the logic gate |
| LE44.Timer Out | Signal: Timer Output |
| LE44.Out | Signal: Latched Output (Q) |
| LE44.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE45.Gate Out | Signal: Output of the logic gate |
| LE45.Timer Out | Signal: Timer Output |
| LE45.Out | Signal: Latched Output (Q) |
| LE45.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE46.Gate Out | Signal: Output of the logic gate |
| LE46.Timer Out | Signal: Timer Output |
| LE46.Out | Signal: Latched Output (Q) |
| LE46.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE47.Gate Out | Signal: Output of the logic gate |
| LE47.Timer Out | Signal: Timer Output |
| LE47.Out | Signal: Latched Output (Q) |
| LE47.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE48.Gate Out | Signal: Output of the logic gate |
| LE48.Timer Out | Signal: Timer Output |
| LE48.Out | Signal: Latched Output (Q) |

| 1..n, PSS | Description |
|-------------------|--|
| LE48.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE49.Gate Out | Signal: Output of the logic gate |
| LE49.Timer Out | Signal: Timer Output |
| LE49.Out | Signal: Latched Output (Q) |
| LE49.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE50.Gate Out | Signal: Output of the logic gate |
| LE50.Timer Out | Signal: Timer Output |
| LE50.Out | Signal: Latched Output (Q) |
| LE50.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE51.Gate Out | Signal: Output of the logic gate |
| LE51.Timer Out | Signal: Timer Output |
| LE51.Out | Signal: Latched Output (Q) |
| LE51.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE52.Gate Out | Signal: Output of the logic gate |
| LE52.Timer Out | Signal: Timer Output |
| LE52.Out | Signal: Latched Output (Q) |
| LE52.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE53.Gate Out | Signal: Output of the logic gate |
| LE53.Timer Out | Signal: Timer Output |
| LE53.Out | Signal: Latched Output (Q) |
| LE53.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE54.Gate Out | Signal: Output of the logic gate |
| LE54.Timer Out | Signal: Timer Output |
| LE54.Out | Signal: Latched Output (Q) |
| LE54.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE55.Gate Out | Signal: Output of the logic gate |
| LE55.Timer Out | Signal: Timer Output |
| LE55.Out | Signal: Latched Output (Q) |
| LE55.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE56.Gate Out | Signal: Output of the logic gate |
| LE56.Timer Out | Signal: Timer Output |
| LE56.Out | Signal: Latched Output (Q) |
| LE56.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE57.Gate Out | Signal: Output of the logic gate |
| LE57.Timer Out | Signal: Timer Output |
| LE57.Out | Signal: Latched Output (Q) |
| LE57.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE58.Gate Out | Signal: Output of the logic gate |

| 1..n, PSS | Description |
|-------------------|--|
| LE58.Timer Out | Signal: Timer Output |
| LE58.Out | Signal: Latched Output (Q) |
| LE58.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE59.Gate Out | Signal: Output of the logic gate |
| LE59.Timer Out | Signal: Timer Output |
| LE59.Out | Signal: Latched Output (Q) |
| LE59.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE60.Gate Out | Signal: Output of the logic gate |
| LE60.Timer Out | Signal: Timer Output |
| LE60.Out | Signal: Latched Output (Q) |
| LE60.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE61.Gate Out | Signal: Output of the logic gate |
| LE61.Timer Out | Signal: Timer Output |
| LE61.Out | Signal: Latched Output (Q) |
| LE61.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE62.Gate Out | Signal: Output of the logic gate |
| LE62.Timer Out | Signal: Timer Output |
| LE62.Out | Signal: Latched Output (Q) |
| LE62.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE63.Gate Out | Signal: Output of the logic gate |
| LE63.Timer Out | Signal: Timer Output |
| LE63.Out | Signal: Latched Output (Q) |
| LE63.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE64.Gate Out | Signal: Output of the logic gate |
| LE64.Timer Out | Signal: Timer Output |
| LE64.Out | Signal: Latched Output (Q) |
| LE64.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE65.Gate Out | Signal: Output of the logic gate |
| LE65.Timer Out | Signal: Timer Output |
| LE65.Out | Signal: Latched Output (Q) |
| LE65.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE66.Gate Out | Signal: Output of the logic gate |
| LE66.Timer Out | Signal: Timer Output |
| LE66.Out | Signal: Latched Output (Q) |
| LE66.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE67.Gate Out | Signal: Output of the logic gate |
| LE67.Timer Out | Signal: Timer Output |
| LE67.Out | Signal: Latched Output (Q) |

| 1..n, PSS | Description |
|-------------------|--|
| LE67.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE68.Gate Out | Signal: Output of the logic gate |
| LE68.Timer Out | Signal: Timer Output |
| LE68.Out | Signal: Latched Output (Q) |
| LE68.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE69.Gate Out | Signal: Output of the logic gate |
| LE69.Timer Out | Signal: Timer Output |
| LE69.Out | Signal: Latched Output (Q) |
| LE69.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE70.Gate Out | Signal: Output of the logic gate |
| LE70.Timer Out | Signal: Timer Output |
| LE70.Out | Signal: Latched Output (Q) |
| LE70.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE71.Gate Out | Signal: Output of the logic gate |
| LE71.Timer Out | Signal: Timer Output |
| LE71.Out | Signal: Latched Output (Q) |
| LE71.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE72.Gate Out | Signal: Output of the logic gate |
| LE72.Timer Out | Signal: Timer Output |
| LE72.Out | Signal: Latched Output (Q) |
| LE72.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE73.Gate Out | Signal: Output of the logic gate |
| LE73.Timer Out | Signal: Timer Output |
| LE73.Out | Signal: Latched Output (Q) |
| LE73.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE74.Gate Out | Signal: Output of the logic gate |
| LE74.Timer Out | Signal: Timer Output |
| LE74.Out | Signal: Latched Output (Q) |
| LE74.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE75.Gate Out | Signal: Output of the logic gate |
| LE75.Timer Out | Signal: Timer Output |
| LE75.Out | Signal: Latched Output (Q) |
| LE75.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE76.Gate Out | Signal: Output of the logic gate |
| LE76.Timer Out | Signal: Timer Output |
| LE76.Out | Signal: Latched Output (Q) |
| LE76.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE77.Gate Out | Signal: Output of the logic gate |

| 1..n, PSS | Description |
|---------------------|--|
| LE77.Timer Out | Signal: Timer Output |
| LE77.Out | Signal: Latched Output (Q) |
| LE77.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE78.Gate Out | Signal: Output of the logic gate |
| LE78.Timer Out | Signal: Timer Output |
| LE78.Out | Signal: Latched Output (Q) |
| LE78.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE79.Gate Out | Signal: Output of the logic gate |
| LE79.Timer Out | Signal: Timer Output |
| LE79.Out | Signal: Latched Output (Q) |
| LE79.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE80.Gate Out | Signal: Output of the logic gate |
| LE80.Timer Out | Signal: Timer Output |
| LE80.Out | Signal: Latched Output (Q) |
| LE80.Out inverted | Signal: Negated Latched Output (Q NOT) |
| Maint Mode Active | Signal: Arc Flash Reduction Maintenance Active |
| Maint Mode Inactive | Signal: Arc Flash Reduction Maintenance Inactive |

17.166 Trigger

Referenced by:

- [CBF . Trigger1](#)

| Trigger | Description |
|---------|----------------------|
| - | No assignment |
| TripCmd | Signal: Trip Command |
| TripCmd | Signal: Trip Command |
| TripCmd | Signal: Trip Command |
| TripCmd | Signal: Trip Command |
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| Trigger | Description |
|------------------|--|
| TripCmd | Signal: Trip Command |
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| TripCmd | Signal: Trip Command |
| TripCmd | Signal: Trip Command |
| TripCmd | Signal: Trip Command |
| TripCmd | Signal: Trip Command |
| TripCmd | Signal: Trip Command |
| DI 1 | Signal: Digital Input |
| DI 2 | Signal: Digital Input |
| DI 3 | Signal: Digital Input |
| DI 4 | Signal: Digital Input |
| DI 5 | Signal: Digital Input |
| DI 6 | Signal: Digital Input |
| DI 7 | Signal: Digital Input |
| DI 8 | Signal: Digital Input |
| LE1.Gate Out | Signal: Output of the logic gate |
| LE1.Timer Out | Signal: Timer Output |
| LE1.Out | Signal: Latched Output (Q) |
| LE1.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE2.Gate Out | Signal: Output of the logic gate |
| LE2.Timer Out | Signal: Timer Output |
| LE2.Out | Signal: Latched Output (Q) |
| LE2.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE3.Gate Out | Signal: Output of the logic gate |
| LE3.Timer Out | Signal: Timer Output |
| LE3.Out | Signal: Latched Output (Q) |
| LE3.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE4.Gate Out | Signal: Output of the logic gate |
| LE4.Timer Out | Signal: Timer Output |

17 Selection Lists

17.166 Trigger

| Trigger | Description |
|-------------------|--|
| LE4.Out | Signal: Latched Output (Q) |
| LE4.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE5.Gate Out | Signal: Output of the logic gate |
| LE5.Timer Out | Signal: Timer Output |
| LE5.Out | Signal: Latched Output (Q) |
| LE5.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE6.Gate Out | Signal: Output of the logic gate |
| LE6.Timer Out | Signal: Timer Output |
| LE6.Out | Signal: Latched Output (Q) |
| LE6.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE7.Gate Out | Signal: Output of the logic gate |
| LE7.Timer Out | Signal: Timer Output |
| LE7.Out | Signal: Latched Output (Q) |
| LE7.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE8.Gate Out | Signal: Output of the logic gate |
| LE8.Timer Out | Signal: Timer Output |
| LE8.Out | Signal: Latched Output (Q) |
| LE8.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE9.Gate Out | Signal: Output of the logic gate |
| LE9.Timer Out | Signal: Timer Output |
| LE9.Out | Signal: Latched Output (Q) |
| LE9.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE10.Gate Out | Signal: Output of the logic gate |
| LE10.Timer Out | Signal: Timer Output |
| LE10.Out | Signal: Latched Output (Q) |
| LE10.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE11.Gate Out | Signal: Output of the logic gate |
| LE11.Timer Out | Signal: Timer Output |
| LE11.Out | Signal: Latched Output (Q) |
| LE11.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE12.Gate Out | Signal: Output of the logic gate |
| LE12.Timer Out | Signal: Timer Output |
| LE12.Out | Signal: Latched Output (Q) |
| LE12.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE13.Gate Out | Signal: Output of the logic gate |
| LE13.Timer Out | Signal: Timer Output |
| LE13.Out | Signal: Latched Output (Q) |
| LE13.Out inverted | Signal: Negated Latched Output (Q NOT) |

| Trigger | Description |
|-------------------|--|
| LE14.Gate Out | Signal: Output of the logic gate |
| LE14.Timer Out | Signal: Timer Output |
| LE14.Out | Signal: Latched Output (Q) |
| LE14.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE15.Gate Out | Signal: Output of the logic gate |
| LE15.Timer Out | Signal: Timer Output |
| LE15.Out | Signal: Latched Output (Q) |
| LE15.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE16.Gate Out | Signal: Output of the logic gate |
| LE16.Timer Out | Signal: Timer Output |
| LE16.Out | Signal: Latched Output (Q) |
| LE16.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE17.Gate Out | Signal: Output of the logic gate |
| LE17.Timer Out | Signal: Timer Output |
| LE17.Out | Signal: Latched Output (Q) |
| LE17.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE18.Gate Out | Signal: Output of the logic gate |
| LE18.Timer Out | Signal: Timer Output |
| LE18.Out | Signal: Latched Output (Q) |
| LE18.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE19.Gate Out | Signal: Output of the logic gate |
| LE19.Timer Out | Signal: Timer Output |
| LE19.Out | Signal: Latched Output (Q) |
| LE19.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE20.Gate Out | Signal: Output of the logic gate |
| LE20.Timer Out | Signal: Timer Output |
| LE20.Out | Signal: Latched Output (Q) |
| LE20.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE21.Gate Out | Signal: Output of the logic gate |
| LE21.Timer Out | Signal: Timer Output |
| LE21.Out | Signal: Latched Output (Q) |
| LE21.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE22.Gate Out | Signal: Output of the logic gate |
| LE22.Timer Out | Signal: Timer Output |
| LE22.Out | Signal: Latched Output (Q) |
| LE22.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE23.Gate Out | Signal: Output of the logic gate |
| LE23.Timer Out | Signal: Timer Output |

17 Selection Lists

17.166 Trigger

| Trigger | Description |
|-------------------|--|
| LE23.Out | Signal: Latched Output (Q) |
| LE23.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE24.Gate Out | Signal: Output of the logic gate |
| LE24.Timer Out | Signal: Timer Output |
| LE24.Out | Signal: Latched Output (Q) |
| LE24.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE25.Gate Out | Signal: Output of the logic gate |
| LE25.Timer Out | Signal: Timer Output |
| LE25.Out | Signal: Latched Output (Q) |
| LE25.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE26.Gate Out | Signal: Output of the logic gate |
| LE26.Timer Out | Signal: Timer Output |
| LE26.Out | Signal: Latched Output (Q) |
| LE26.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE27.Gate Out | Signal: Output of the logic gate |
| LE27.Timer Out | Signal: Timer Output |
| LE27.Out | Signal: Latched Output (Q) |
| LE27.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE28.Gate Out | Signal: Output of the logic gate |
| LE28.Timer Out | Signal: Timer Output |
| LE28.Out | Signal: Latched Output (Q) |
| LE28.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE29.Gate Out | Signal: Output of the logic gate |
| LE29.Timer Out | Signal: Timer Output |
| LE29.Out | Signal: Latched Output (Q) |
| LE29.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE30.Gate Out | Signal: Output of the logic gate |
| LE30.Timer Out | Signal: Timer Output |
| LE30.Out | Signal: Latched Output (Q) |
| LE30.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE31.Gate Out | Signal: Output of the logic gate |
| LE31.Timer Out | Signal: Timer Output |
| LE31.Out | Signal: Latched Output (Q) |
| LE31.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE32.Gate Out | Signal: Output of the logic gate |
| LE32.Timer Out | Signal: Timer Output |
| LE32.Out | Signal: Latched Output (Q) |
| LE32.Out inverted | Signal: Negated Latched Output (Q NOT) |

| Trigger | Description |
|-------------------|--|
| LE33.Gate Out | Signal: Output of the logic gate |
| LE33.Timer Out | Signal: Timer Output |
| LE33.Out | Signal: Latched Output (Q) |
| LE33.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE34.Gate Out | Signal: Output of the logic gate |
| LE34.Timer Out | Signal: Timer Output |
| LE34.Out | Signal: Latched Output (Q) |
| LE34.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE35.Gate Out | Signal: Output of the logic gate |
| LE35.Timer Out | Signal: Timer Output |
| LE35.Out | Signal: Latched Output (Q) |
| LE35.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE36.Gate Out | Signal: Output of the logic gate |
| LE36.Timer Out | Signal: Timer Output |
| LE36.Out | Signal: Latched Output (Q) |
| LE36.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE37.Gate Out | Signal: Output of the logic gate |
| LE37.Timer Out | Signal: Timer Output |
| LE37.Out | Signal: Latched Output (Q) |
| LE37.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE38.Gate Out | Signal: Output of the logic gate |
| LE38.Timer Out | Signal: Timer Output |
| LE38.Out | Signal: Latched Output (Q) |
| LE38.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE39.Gate Out | Signal: Output of the logic gate |
| LE39.Timer Out | Signal: Timer Output |
| LE39.Out | Signal: Latched Output (Q) |
| LE39.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE40.Gate Out | Signal: Output of the logic gate |
| LE40.Timer Out | Signal: Timer Output |
| LE40.Out | Signal: Latched Output (Q) |
| LE40.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE41.Gate Out | Signal: Output of the logic gate |
| LE41.Timer Out | Signal: Timer Output |
| LE41.Out | Signal: Latched Output (Q) |
| LE41.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE42.Gate Out | Signal: Output of the logic gate |
| LE42.Timer Out | Signal: Timer Output |

17 Selection Lists

17.166 Trigger

| Trigger | Description |
|-------------------|--|
| LE42.Out | Signal: Latched Output (Q) |
| LE42.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE43.Gate Out | Signal: Output of the logic gate |
| LE43.Timer Out | Signal: Timer Output |
| LE43.Out | Signal: Latched Output (Q) |
| LE43.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE44.Gate Out | Signal: Output of the logic gate |
| LE44.Timer Out | Signal: Timer Output |
| LE44.Out | Signal: Latched Output (Q) |
| LE44.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE45.Gate Out | Signal: Output of the logic gate |
| LE45.Timer Out | Signal: Timer Output |
| LE45.Out | Signal: Latched Output (Q) |
| LE45.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE46.Gate Out | Signal: Output of the logic gate |
| LE46.Timer Out | Signal: Timer Output |
| LE46.Out | Signal: Latched Output (Q) |
| LE46.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE47.Gate Out | Signal: Output of the logic gate |
| LE47.Timer Out | Signal: Timer Output |
| LE47.Out | Signal: Latched Output (Q) |
| LE47.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE48.Gate Out | Signal: Output of the logic gate |
| LE48.Timer Out | Signal: Timer Output |
| LE48.Out | Signal: Latched Output (Q) |
| LE48.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE49.Gate Out | Signal: Output of the logic gate |
| LE49.Timer Out | Signal: Timer Output |
| LE49.Out | Signal: Latched Output (Q) |
| LE49.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE50.Gate Out | Signal: Output of the logic gate |
| LE50.Timer Out | Signal: Timer Output |
| LE50.Out | Signal: Latched Output (Q) |
| LE50.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE51.Gate Out | Signal: Output of the logic gate |
| LE51.Timer Out | Signal: Timer Output |
| LE51.Out | Signal: Latched Output (Q) |
| LE51.Out inverted | Signal: Negated Latched Output (Q NOT) |

| Trigger | Description |
|-------------------|--|
| LE52.Gate Out | Signal: Output of the logic gate |
| LE52.Timer Out | Signal: Timer Output |
| LE52.Out | Signal: Latched Output (Q) |
| LE52.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE53.Gate Out | Signal: Output of the logic gate |
| LE53.Timer Out | Signal: Timer Output |
| LE53.Out | Signal: Latched Output (Q) |
| LE53.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE54.Gate Out | Signal: Output of the logic gate |
| LE54.Timer Out | Signal: Timer Output |
| LE54.Out | Signal: Latched Output (Q) |
| LE54.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE55.Gate Out | Signal: Output of the logic gate |
| LE55.Timer Out | Signal: Timer Output |
| LE55.Out | Signal: Latched Output (Q) |
| LE55.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE56.Gate Out | Signal: Output of the logic gate |
| LE56.Timer Out | Signal: Timer Output |
| LE56.Out | Signal: Latched Output (Q) |
| LE56.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE57.Gate Out | Signal: Output of the logic gate |
| LE57.Timer Out | Signal: Timer Output |
| LE57.Out | Signal: Latched Output (Q) |
| LE57.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE58.Gate Out | Signal: Output of the logic gate |
| LE58.Timer Out | Signal: Timer Output |
| LE58.Out | Signal: Latched Output (Q) |
| LE58.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE59.Gate Out | Signal: Output of the logic gate |
| LE59.Timer Out | Signal: Timer Output |
| LE59.Out | Signal: Latched Output (Q) |
| LE59.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE60.Gate Out | Signal: Output of the logic gate |
| LE60.Timer Out | Signal: Timer Output |
| LE60.Out | Signal: Latched Output (Q) |
| LE60.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE61.Gate Out | Signal: Output of the logic gate |
| LE61.Timer Out | Signal: Timer Output |

17 Selection Lists

17.166 Trigger

| Trigger | Description |
|-------------------|--|
| LE61.Out | Signal: Latched Output (Q) |
| LE61.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE62.Gate Out | Signal: Output of the logic gate |
| LE62.Timer Out | Signal: Timer Output |
| LE62.Out | Signal: Latched Output (Q) |
| LE62.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE63.Gate Out | Signal: Output of the logic gate |
| LE63.Timer Out | Signal: Timer Output |
| LE63.Out | Signal: Latched Output (Q) |
| LE63.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE64.Gate Out | Signal: Output of the logic gate |
| LE64.Timer Out | Signal: Timer Output |
| LE64.Out | Signal: Latched Output (Q) |
| LE64.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE65.Gate Out | Signal: Output of the logic gate |
| LE65.Timer Out | Signal: Timer Output |
| LE65.Out | Signal: Latched Output (Q) |
| LE65.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE66.Gate Out | Signal: Output of the logic gate |
| LE66.Timer Out | Signal: Timer Output |
| LE66.Out | Signal: Latched Output (Q) |
| LE66.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE67.Gate Out | Signal: Output of the logic gate |
| LE67.Timer Out | Signal: Timer Output |
| LE67.Out | Signal: Latched Output (Q) |
| LE67.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE68.Gate Out | Signal: Output of the logic gate |
| LE68.Timer Out | Signal: Timer Output |
| LE68.Out | Signal: Latched Output (Q) |
| LE68.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE69.Gate Out | Signal: Output of the logic gate |
| LE69.Timer Out | Signal: Timer Output |
| LE69.Out | Signal: Latched Output (Q) |
| LE69.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE70.Gate Out | Signal: Output of the logic gate |
| LE70.Timer Out | Signal: Timer Output |
| LE70.Out | Signal: Latched Output (Q) |
| LE70.Out inverted | Signal: Negated Latched Output (Q NOT) |

| Trigger | Description |
|-------------------|--|
| LE71.Gate Out | Signal: Output of the logic gate |
| LE71.Timer Out | Signal: Timer Output |
| LE71.Out | Signal: Latched Output (Q) |
| LE71.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE72.Gate Out | Signal: Output of the logic gate |
| LE72.Timer Out | Signal: Timer Output |
| LE72.Out | Signal: Latched Output (Q) |
| LE72.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE73.Gate Out | Signal: Output of the logic gate |
| LE73.Timer Out | Signal: Timer Output |
| LE73.Out | Signal: Latched Output (Q) |
| LE73.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE74.Gate Out | Signal: Output of the logic gate |
| LE74.Timer Out | Signal: Timer Output |
| LE74.Out | Signal: Latched Output (Q) |
| LE74.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE75.Gate Out | Signal: Output of the logic gate |
| LE75.Timer Out | Signal: Timer Output |
| LE75.Out | Signal: Latched Output (Q) |
| LE75.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE76.Gate Out | Signal: Output of the logic gate |
| LE76.Timer Out | Signal: Timer Output |
| LE76.Out | Signal: Latched Output (Q) |
| LE76.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE77.Gate Out | Signal: Output of the logic gate |
| LE77.Timer Out | Signal: Timer Output |
| LE77.Out | Signal: Latched Output (Q) |
| LE77.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE78.Gate Out | Signal: Output of the logic gate |
| LE78.Timer Out | Signal: Timer Output |
| LE78.Out | Signal: Latched Output (Q) |
| LE78.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE79.Gate Out | Signal: Output of the logic gate |
| LE79.Timer Out | Signal: Timer Output |
| LE79.Out | Signal: Latched Output (Q) |
| LE79.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE80.Gate Out | Signal: Output of the logic gate |
| LE80.Timer Out | Signal: Timer Output |

| Decoupling Functions | Description |
|----------------------|--|
| TripCmd | Signal: Trip Command |
| TripCmd | Signal: Trip Command |
| DI 1 | Signal: Digital Input |
| DI 2 | Signal: Digital Input |
| DI 3 | Signal: Digital Input |
| DI 4 | Signal: Digital Input |
| DI 5 | Signal: Digital Input |
| DI 6 | Signal: Digital Input |
| DI 7 | Signal: Digital Input |
| DI 8 | Signal: Digital Input |
| BinaryOutput0 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput1 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput2 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput3 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput4 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput5 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput6 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput7 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput8 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput9 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput10 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput11 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput12 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput13 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput14 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput15 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput16 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput17 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |

| Decoupling Functions | Description |
|-----------------------------|--|
| BinaryOutput18 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput19 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput20 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput21 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput22 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput23 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput24 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput25 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput26 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput27 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput28 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput29 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput30 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| BinaryOutput31 | Virtual Digital Output (DNP). This corresponds to a virtual binary input of the protective device. |
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |
| Scada Cmd 10 | Scada Command |
| Scada Cmd 11 | Scada Command |
| Scada Cmd 12 | Scada Command |
| Scada Cmd 13 | Scada Command |
| Scada Cmd 14 | Scada Command |
| Scada Cmd 15 | Scada Command |
| Scada Cmd 16 | Scada Command |
| GOSINGGIO1.Ind1.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |

| Decoupling Functions | Description |
|-----------------------------|--|
| GOSINGGIO1.Ind2.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind3.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind4.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind5.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind6.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind7.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind8.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind9.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind10.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind11.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind12.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind13.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind14.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind15.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind16.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind17.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind18.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind19.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind20.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind21.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind22.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind23.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind24.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind25.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind26.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind27.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind28.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind29.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind30.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind31.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| GOSINGGIO1.Ind32.stVal | Signal: Virtual Input (IEC61850 GGIO Ind): State |
| CTLGGIO1.SPCSO1.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO2.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO3.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCSO4.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |

17 Selection Lists
 17.167 Decoupling Functions

| Decoupling Functions | Description |
|-----------------------------|--|
| CTLGGIO1.SPCS05.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS06.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS07.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS08.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS09.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS010.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS011.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS012.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS013.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS014.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS015.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| CTLGGIO1.SPCS016.stVal | Status bit that can be set by clients like e.g. SCADA (Single Point Controllable Status Output). |
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |
| Scada Cmd 10 | Scada Command |
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |
| Scada Cmd 10 | Scada Command |

| Decoupling Functions | Description |
|----------------------|--|
| Scada Cmd 11 | Scada Command |
| Scada Cmd 12 | Scada Command |
| Scada Cmd 13 | Scada Command |
| Scada Cmd 14 | Scada Command |
| Scada Cmd 15 | Scada Command |
| Scada Cmd 16 | Scada Command |
| Scada Cmd 1 | Scada Command |
| Scada Cmd 2 | Scada Command |
| Scada Cmd 3 | Scada Command |
| Scada Cmd 4 | Scada Command |
| Scada Cmd 5 | Scada Command |
| Scada Cmd 6 | Scada Command |
| Scada Cmd 7 | Scada Command |
| Scada Cmd 8 | Scada Command |
| Scada Cmd 9 | Scada Command |
| Scada Cmd 10 | Scada Command |
| Scada Cmd 11 | Scada Command |
| Scada Cmd 12 | Scada Command |
| Scada Cmd 13 | Scada Command |
| Scada Cmd 14 | Scada Command |
| Scada Cmd 15 | Scada Command |
| Scada Cmd 16 | Scada Command |
| LE1.Gate Out | Signal: Output of the logic gate |
| LE1.Timer Out | Signal: Timer Output |
| LE1.Out | Signal: Latched Output (Q) |
| LE1.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE2.Gate Out | Signal: Output of the logic gate |
| LE2.Timer Out | Signal: Timer Output |
| LE2.Out | Signal: Latched Output (Q) |
| LE2.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE3.Gate Out | Signal: Output of the logic gate |
| LE3.Timer Out | Signal: Timer Output |
| LE3.Out | Signal: Latched Output (Q) |
| LE3.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE4.Gate Out | Signal: Output of the logic gate |
| LE4.Timer Out | Signal: Timer Output |
| LE4.Out | Signal: Latched Output (Q) |
| LE4.Out inverted | Signal: Negated Latched Output (Q NOT) |

| Decoupling Functions | Description |
|-----------------------------|--|
| LE5.Gate Out | Signal: Output of the logic gate |
| LE5.Timer Out | Signal: Timer Output |
| LE5.Out | Signal: Latched Output (Q) |
| LE5.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE6.Gate Out | Signal: Output of the logic gate |
| LE6.Timer Out | Signal: Timer Output |
| LE6.Out | Signal: Latched Output (Q) |
| LE6.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE7.Gate Out | Signal: Output of the logic gate |
| LE7.Timer Out | Signal: Timer Output |
| LE7.Out | Signal: Latched Output (Q) |
| LE7.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE8.Gate Out | Signal: Output of the logic gate |
| LE8.Timer Out | Signal: Timer Output |
| LE8.Out | Signal: Latched Output (Q) |
| LE8.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE9.Gate Out | Signal: Output of the logic gate |
| LE9.Timer Out | Signal: Timer Output |
| LE9.Out | Signal: Latched Output (Q) |
| LE9.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE10.Gate Out | Signal: Output of the logic gate |
| LE10.Timer Out | Signal: Timer Output |
| LE10.Out | Signal: Latched Output (Q) |
| LE10.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE11.Gate Out | Signal: Output of the logic gate |
| LE11.Timer Out | Signal: Timer Output |
| LE11.Out | Signal: Latched Output (Q) |
| LE11.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE12.Gate Out | Signal: Output of the logic gate |
| LE12.Timer Out | Signal: Timer Output |
| LE12.Out | Signal: Latched Output (Q) |
| LE12.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE13.Gate Out | Signal: Output of the logic gate |
| LE13.Timer Out | Signal: Timer Output |
| LE13.Out | Signal: Latched Output (Q) |
| LE13.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE14.Gate Out | Signal: Output of the logic gate |
| LE14.Timer Out | Signal: Timer Output |

| Decoupling Functions | Description |
|-----------------------------|--|
| LE14.Out | Signal: Latched Output (Q) |
| LE14.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE15.Gate Out | Signal: Output of the logic gate |
| LE15.Timer Out | Signal: Timer Output |
| LE15.Out | Signal: Latched Output (Q) |
| LE15.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE16.Gate Out | Signal: Output of the logic gate |
| LE16.Timer Out | Signal: Timer Output |
| LE16.Out | Signal: Latched Output (Q) |
| LE16.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE17.Gate Out | Signal: Output of the logic gate |
| LE17.Timer Out | Signal: Timer Output |
| LE17.Out | Signal: Latched Output (Q) |
| LE17.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE18.Gate Out | Signal: Output of the logic gate |
| LE18.Timer Out | Signal: Timer Output |
| LE18.Out | Signal: Latched Output (Q) |
| LE18.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE19.Gate Out | Signal: Output of the logic gate |
| LE19.Timer Out | Signal: Timer Output |
| LE19.Out | Signal: Latched Output (Q) |
| LE19.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE20.Gate Out | Signal: Output of the logic gate |
| LE20.Timer Out | Signal: Timer Output |
| LE20.Out | Signal: Latched Output (Q) |
| LE20.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE21.Gate Out | Signal: Output of the logic gate |
| LE21.Timer Out | Signal: Timer Output |
| LE21.Out | Signal: Latched Output (Q) |
| LE21.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE22.Gate Out | Signal: Output of the logic gate |
| LE22.Timer Out | Signal: Timer Output |
| LE22.Out | Signal: Latched Output (Q) |
| LE22.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE23.Gate Out | Signal: Output of the logic gate |
| LE23.Timer Out | Signal: Timer Output |
| LE23.Out | Signal: Latched Output (Q) |
| LE23.Out inverted | Signal: Negated Latched Output (Q NOT) |

| Decoupling Functions | Description |
|-----------------------------|--|
| LE24.Gate Out | Signal: Output of the logic gate |
| LE24.Timer Out | Signal: Timer Output |
| LE24.Out | Signal: Latched Output (Q) |
| LE24.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE25.Gate Out | Signal: Output of the logic gate |
| LE25.Timer Out | Signal: Timer Output |
| LE25.Out | Signal: Latched Output (Q) |
| LE25.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE26.Gate Out | Signal: Output of the logic gate |
| LE26.Timer Out | Signal: Timer Output |
| LE26.Out | Signal: Latched Output (Q) |
| LE26.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE27.Gate Out | Signal: Output of the logic gate |
| LE27.Timer Out | Signal: Timer Output |
| LE27.Out | Signal: Latched Output (Q) |
| LE27.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE28.Gate Out | Signal: Output of the logic gate |
| LE28.Timer Out | Signal: Timer Output |
| LE28.Out | Signal: Latched Output (Q) |
| LE28.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE29.Gate Out | Signal: Output of the logic gate |
| LE29.Timer Out | Signal: Timer Output |
| LE29.Out | Signal: Latched Output (Q) |
| LE29.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE30.Gate Out | Signal: Output of the logic gate |
| LE30.Timer Out | Signal: Timer Output |
| LE30.Out | Signal: Latched Output (Q) |
| LE30.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE31.Gate Out | Signal: Output of the logic gate |
| LE31.Timer Out | Signal: Timer Output |
| LE31.Out | Signal: Latched Output (Q) |
| LE31.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE32.Gate Out | Signal: Output of the logic gate |
| LE32.Timer Out | Signal: Timer Output |
| LE32.Out | Signal: Latched Output (Q) |
| LE32.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE33.Gate Out | Signal: Output of the logic gate |
| LE33.Timer Out | Signal: Timer Output |

| Decoupling Functions | Description |
|----------------------|--|
| LE33.Out | Signal: Latched Output (Q) |
| LE33.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE34.Gate Out | Signal: Output of the logic gate |
| LE34.Timer Out | Signal: Timer Output |
| LE34.Out | Signal: Latched Output (Q) |
| LE34.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE35.Gate Out | Signal: Output of the logic gate |
| LE35.Timer Out | Signal: Timer Output |
| LE35.Out | Signal: Latched Output (Q) |
| LE35.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE36.Gate Out | Signal: Output of the logic gate |
| LE36.Timer Out | Signal: Timer Output |
| LE36.Out | Signal: Latched Output (Q) |
| LE36.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE37.Gate Out | Signal: Output of the logic gate |
| LE37.Timer Out | Signal: Timer Output |
| LE37.Out | Signal: Latched Output (Q) |
| LE37.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE38.Gate Out | Signal: Output of the logic gate |
| LE38.Timer Out | Signal: Timer Output |
| LE38.Out | Signal: Latched Output (Q) |
| LE38.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE39.Gate Out | Signal: Output of the logic gate |
| LE39.Timer Out | Signal: Timer Output |
| LE39.Out | Signal: Latched Output (Q) |
| LE39.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE40.Gate Out | Signal: Output of the logic gate |
| LE40.Timer Out | Signal: Timer Output |
| LE40.Out | Signal: Latched Output (Q) |
| LE40.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE41.Gate Out | Signal: Output of the logic gate |
| LE41.Timer Out | Signal: Timer Output |
| LE41.Out | Signal: Latched Output (Q) |
| LE41.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE42.Gate Out | Signal: Output of the logic gate |
| LE42.Timer Out | Signal: Timer Output |
| LE42.Out | Signal: Latched Output (Q) |
| LE42.Out inverted | Signal: Negated Latched Output (Q NOT) |

| Decoupling Functions | Description |
|-----------------------------|--|
| LE43.Gate Out | Signal: Output of the logic gate |
| LE43.Timer Out | Signal: Timer Output |
| LE43.Out | Signal: Latched Output (Q) |
| LE43.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE44.Gate Out | Signal: Output of the logic gate |
| LE44.Timer Out | Signal: Timer Output |
| LE44.Out | Signal: Latched Output (Q) |
| LE44.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE45.Gate Out | Signal: Output of the logic gate |
| LE45.Timer Out | Signal: Timer Output |
| LE45.Out | Signal: Latched Output (Q) |
| LE45.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE46.Gate Out | Signal: Output of the logic gate |
| LE46.Timer Out | Signal: Timer Output |
| LE46.Out | Signal: Latched Output (Q) |
| LE46.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE47.Gate Out | Signal: Output of the logic gate |
| LE47.Timer Out | Signal: Timer Output |
| LE47.Out | Signal: Latched Output (Q) |
| LE47.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE48.Gate Out | Signal: Output of the logic gate |
| LE48.Timer Out | Signal: Timer Output |
| LE48.Out | Signal: Latched Output (Q) |
| LE48.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE49.Gate Out | Signal: Output of the logic gate |
| LE49.Timer Out | Signal: Timer Output |
| LE49.Out | Signal: Latched Output (Q) |
| LE49.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE50.Gate Out | Signal: Output of the logic gate |
| LE50.Timer Out | Signal: Timer Output |
| LE50.Out | Signal: Latched Output (Q) |
| LE50.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE51.Gate Out | Signal: Output of the logic gate |
| LE51.Timer Out | Signal: Timer Output |
| LE51.Out | Signal: Latched Output (Q) |
| LE51.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE52.Gate Out | Signal: Output of the logic gate |
| LE52.Timer Out | Signal: Timer Output |

| Decoupling Functions | Description |
|----------------------|--|
| LE52.Out | Signal: Latched Output (Q) |
| LE52.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE53.Gate Out | Signal: Output of the logic gate |
| LE53.Timer Out | Signal: Timer Output |
| LE53.Out | Signal: Latched Output (Q) |
| LE53.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE54.Gate Out | Signal: Output of the logic gate |
| LE54.Timer Out | Signal: Timer Output |
| LE54.Out | Signal: Latched Output (Q) |
| LE54.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE55.Gate Out | Signal: Output of the logic gate |
| LE55.Timer Out | Signal: Timer Output |
| LE55.Out | Signal: Latched Output (Q) |
| LE55.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE56.Gate Out | Signal: Output of the logic gate |
| LE56.Timer Out | Signal: Timer Output |
| LE56.Out | Signal: Latched Output (Q) |
| LE56.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE57.Gate Out | Signal: Output of the logic gate |
| LE57.Timer Out | Signal: Timer Output |
| LE57.Out | Signal: Latched Output (Q) |
| LE57.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE58.Gate Out | Signal: Output of the logic gate |
| LE58.Timer Out | Signal: Timer Output |
| LE58.Out | Signal: Latched Output (Q) |
| LE58.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE59.Gate Out | Signal: Output of the logic gate |
| LE59.Timer Out | Signal: Timer Output |
| LE59.Out | Signal: Latched Output (Q) |
| LE59.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE60.Gate Out | Signal: Output of the logic gate |
| LE60.Timer Out | Signal: Timer Output |
| LE60.Out | Signal: Latched Output (Q) |
| LE60.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE61.Gate Out | Signal: Output of the logic gate |
| LE61.Timer Out | Signal: Timer Output |
| LE61.Out | Signal: Latched Output (Q) |
| LE61.Out inverted | Signal: Negated Latched Output (Q NOT) |

| Decoupling Functions | Description |
|-----------------------------|--|
| LE62.Gate Out | Signal: Output of the logic gate |
| LE62.Timer Out | Signal: Timer Output |
| LE62.Out | Signal: Latched Output (Q) |
| LE62.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE63.Gate Out | Signal: Output of the logic gate |
| LE63.Timer Out | Signal: Timer Output |
| LE63.Out | Signal: Latched Output (Q) |
| LE63.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE64.Gate Out | Signal: Output of the logic gate |
| LE64.Timer Out | Signal: Timer Output |
| LE64.Out | Signal: Latched Output (Q) |
| LE64.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE65.Gate Out | Signal: Output of the logic gate |
| LE65.Timer Out | Signal: Timer Output |
| LE65.Out | Signal: Latched Output (Q) |
| LE65.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE66.Gate Out | Signal: Output of the logic gate |
| LE66.Timer Out | Signal: Timer Output |
| LE66.Out | Signal: Latched Output (Q) |
| LE66.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE67.Gate Out | Signal: Output of the logic gate |
| LE67.Timer Out | Signal: Timer Output |
| LE67.Out | Signal: Latched Output (Q) |
| LE67.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE68.Gate Out | Signal: Output of the logic gate |
| LE68.Timer Out | Signal: Timer Output |
| LE68.Out | Signal: Latched Output (Q) |
| LE68.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE69.Gate Out | Signal: Output of the logic gate |
| LE69.Timer Out | Signal: Timer Output |
| LE69.Out | Signal: Latched Output (Q) |
| LE69.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE70.Gate Out | Signal: Output of the logic gate |
| LE70.Timer Out | Signal: Timer Output |
| LE70.Out | Signal: Latched Output (Q) |
| LE70.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE71.Gate Out | Signal: Output of the logic gate |
| LE71.Timer Out | Signal: Timer Output |

| Decoupling Functions | Description |
|----------------------|--|
| LE71.Out | Signal: Latched Output (Q) |
| LE71.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE72.Gate Out | Signal: Output of the logic gate |
| LE72.Timer Out | Signal: Timer Output |
| LE72.Out | Signal: Latched Output (Q) |
| LE72.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE73.Gate Out | Signal: Output of the logic gate |
| LE73.Timer Out | Signal: Timer Output |
| LE73.Out | Signal: Latched Output (Q) |
| LE73.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE74.Gate Out | Signal: Output of the logic gate |
| LE74.Timer Out | Signal: Timer Output |
| LE74.Out | Signal: Latched Output (Q) |
| LE74.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE75.Gate Out | Signal: Output of the logic gate |
| LE75.Timer Out | Signal: Timer Output |
| LE75.Out | Signal: Latched Output (Q) |
| LE75.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE76.Gate Out | Signal: Output of the logic gate |
| LE76.Timer Out | Signal: Timer Output |
| LE76.Out | Signal: Latched Output (Q) |
| LE76.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE77.Gate Out | Signal: Output of the logic gate |
| LE77.Timer Out | Signal: Timer Output |
| LE77.Out | Signal: Latched Output (Q) |
| LE77.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE78.Gate Out | Signal: Output of the logic gate |
| LE78.Timer Out | Signal: Timer Output |
| LE78.Out | Signal: Latched Output (Q) |
| LE78.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE79.Gate Out | Signal: Output of the logic gate |
| LE79.Timer Out | Signal: Timer Output |
| LE79.Out | Signal: Latched Output (Q) |
| LE79.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE80.Gate Out | Signal: Output of the logic gate |
| LE80.Timer Out | Signal: Timer Output |
| LE80.Out | Signal: Latched Output (Q) |

| Decoupling Functions | Description |
|----------------------|--|
| LE80.Out inverted | Signal: Negated Latched Output (Q NOT) |

17.168 1..n, SyncRequestList

Referenced by:

- [Sync . CBCloseInitiate](#)

| 1..n, SyncRequestList | Description |
|-----------------------|--|
| - | No assignment |
| Sync ON request | Signal: Synchronous ON request |
| DI 1 | Signal: Digital Input |
| DI 2 | Signal: Digital Input |
| DI 3 | Signal: Digital Input |
| DI 4 | Signal: Digital Input |
| DI 5 | Signal: Digital Input |
| DI 6 | Signal: Digital Input |
| DI 7 | Signal: Digital Input |
| DI 8 | Signal: Digital Input |
| LE1.Gate Out | Signal: Output of the logic gate |
| LE1.Timer Out | Signal: Timer Output |
| LE1.Out | Signal: Latched Output (Q) |
| LE1.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE2.Gate Out | Signal: Output of the logic gate |
| LE2.Timer Out | Signal: Timer Output |
| LE2.Out | Signal: Latched Output (Q) |
| LE2.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE3.Gate Out | Signal: Output of the logic gate |
| LE3.Timer Out | Signal: Timer Output |
| LE3.Out | Signal: Latched Output (Q) |
| LE3.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE4.Gate Out | Signal: Output of the logic gate |
| LE4.Timer Out | Signal: Timer Output |
| LE4.Out | Signal: Latched Output (Q) |
| LE4.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE5.Gate Out | Signal: Output of the logic gate |
| LE5.Timer Out | Signal: Timer Output |
| LE5.Out | Signal: Latched Output (Q) |
| LE5.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, SyncRequestList | Description |
|------------------------------|--|
| LE6.Gate Out | Signal: Output of the logic gate |
| LE6.Timer Out | Signal: Timer Output |
| LE6.Out | Signal: Latched Output (Q) |
| LE6.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE7.Gate Out | Signal: Output of the logic gate |
| LE7.Timer Out | Signal: Timer Output |
| LE7.Out | Signal: Latched Output (Q) |
| LE7.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE8.Gate Out | Signal: Output of the logic gate |
| LE8.Timer Out | Signal: Timer Output |
| LE8.Out | Signal: Latched Output (Q) |
| LE8.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE9.Gate Out | Signal: Output of the logic gate |
| LE9.Timer Out | Signal: Timer Output |
| LE9.Out | Signal: Latched Output (Q) |
| LE9.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE10.Gate Out | Signal: Output of the logic gate |
| LE10.Timer Out | Signal: Timer Output |
| LE10.Out | Signal: Latched Output (Q) |
| LE10.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE11.Gate Out | Signal: Output of the logic gate |
| LE11.Timer Out | Signal: Timer Output |
| LE11.Out | Signal: Latched Output (Q) |
| LE11.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE12.Gate Out | Signal: Output of the logic gate |
| LE12.Timer Out | Signal: Timer Output |
| LE12.Out | Signal: Latched Output (Q) |
| LE12.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE13.Gate Out | Signal: Output of the logic gate |
| LE13.Timer Out | Signal: Timer Output |
| LE13.Out | Signal: Latched Output (Q) |
| LE13.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE14.Gate Out | Signal: Output of the logic gate |
| LE14.Timer Out | Signal: Timer Output |
| LE14.Out | Signal: Latched Output (Q) |
| LE14.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE15.Gate Out | Signal: Output of the logic gate |
| LE15.Timer Out | Signal: Timer Output |

| 1..n, SyncRequestList | Description |
|------------------------------|--|
| LE15.Out | Signal: Latched Output (Q) |
| LE15.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE16.Gate Out | Signal: Output of the logic gate |
| LE16.Timer Out | Signal: Timer Output |
| LE16.Out | Signal: Latched Output (Q) |
| LE16.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE17.Gate Out | Signal: Output of the logic gate |
| LE17.Timer Out | Signal: Timer Output |
| LE17.Out | Signal: Latched Output (Q) |
| LE17.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE18.Gate Out | Signal: Output of the logic gate |
| LE18.Timer Out | Signal: Timer Output |
| LE18.Out | Signal: Latched Output (Q) |
| LE18.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE19.Gate Out | Signal: Output of the logic gate |
| LE19.Timer Out | Signal: Timer Output |
| LE19.Out | Signal: Latched Output (Q) |
| LE19.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE20.Gate Out | Signal: Output of the logic gate |
| LE20.Timer Out | Signal: Timer Output |
| LE20.Out | Signal: Latched Output (Q) |
| LE20.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE21.Gate Out | Signal: Output of the logic gate |
| LE21.Timer Out | Signal: Timer Output |
| LE21.Out | Signal: Latched Output (Q) |
| LE21.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE22.Gate Out | Signal: Output of the logic gate |
| LE22.Timer Out | Signal: Timer Output |
| LE22.Out | Signal: Latched Output (Q) |
| LE22.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE23.Gate Out | Signal: Output of the logic gate |
| LE23.Timer Out | Signal: Timer Output |
| LE23.Out | Signal: Latched Output (Q) |
| LE23.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE24.Gate Out | Signal: Output of the logic gate |
| LE24.Timer Out | Signal: Timer Output |
| LE24.Out | Signal: Latched Output (Q) |
| LE24.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, SyncRequestList | Description |
|------------------------------|--|
| LE25.Gate Out | Signal: Output of the logic gate |
| LE25.Timer Out | Signal: Timer Output |
| LE25.Out | Signal: Latched Output (Q) |
| LE25.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE26.Gate Out | Signal: Output of the logic gate |
| LE26.Timer Out | Signal: Timer Output |
| LE26.Out | Signal: Latched Output (Q) |
| LE26.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE27.Gate Out | Signal: Output of the logic gate |
| LE27.Timer Out | Signal: Timer Output |
| LE27.Out | Signal: Latched Output (Q) |
| LE27.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE28.Gate Out | Signal: Output of the logic gate |
| LE28.Timer Out | Signal: Timer Output |
| LE28.Out | Signal: Latched Output (Q) |
| LE28.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE29.Gate Out | Signal: Output of the logic gate |
| LE29.Timer Out | Signal: Timer Output |
| LE29.Out | Signal: Latched Output (Q) |
| LE29.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE30.Gate Out | Signal: Output of the logic gate |
| LE30.Timer Out | Signal: Timer Output |
| LE30.Out | Signal: Latched Output (Q) |
| LE30.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE31.Gate Out | Signal: Output of the logic gate |
| LE31.Timer Out | Signal: Timer Output |
| LE31.Out | Signal: Latched Output (Q) |
| LE31.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE32.Gate Out | Signal: Output of the logic gate |
| LE32.Timer Out | Signal: Timer Output |
| LE32.Out | Signal: Latched Output (Q) |
| LE32.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE33.Gate Out | Signal: Output of the logic gate |
| LE33.Timer Out | Signal: Timer Output |
| LE33.Out | Signal: Latched Output (Q) |
| LE33.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE34.Gate Out | Signal: Output of the logic gate |
| LE34.Timer Out | Signal: Timer Output |

| 1..n, SyncRequestList | Description |
|------------------------------|--|
| LE34.Out | Signal: Latched Output (Q) |
| LE34.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE35.Gate Out | Signal: Output of the logic gate |
| LE35.Timer Out | Signal: Timer Output |
| LE35.Out | Signal: Latched Output (Q) |
| LE35.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE36.Gate Out | Signal: Output of the logic gate |
| LE36.Timer Out | Signal: Timer Output |
| LE36.Out | Signal: Latched Output (Q) |
| LE36.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE37.Gate Out | Signal: Output of the logic gate |
| LE37.Timer Out | Signal: Timer Output |
| LE37.Out | Signal: Latched Output (Q) |
| LE37.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE38.Gate Out | Signal: Output of the logic gate |
| LE38.Timer Out | Signal: Timer Output |
| LE38.Out | Signal: Latched Output (Q) |
| LE38.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE39.Gate Out | Signal: Output of the logic gate |
| LE39.Timer Out | Signal: Timer Output |
| LE39.Out | Signal: Latched Output (Q) |
| LE39.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE40.Gate Out | Signal: Output of the logic gate |
| LE40.Timer Out | Signal: Timer Output |
| LE40.Out | Signal: Latched Output (Q) |
| LE40.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE41.Gate Out | Signal: Output of the logic gate |
| LE41.Timer Out | Signal: Timer Output |
| LE41.Out | Signal: Latched Output (Q) |
| LE41.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE42.Gate Out | Signal: Output of the logic gate |
| LE42.Timer Out | Signal: Timer Output |
| LE42.Out | Signal: Latched Output (Q) |
| LE42.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE43.Gate Out | Signal: Output of the logic gate |
| LE43.Timer Out | Signal: Timer Output |
| LE43.Out | Signal: Latched Output (Q) |
| LE43.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, SyncRequestList | Description |
|------------------------------|--|
| LE44.Gate Out | Signal: Output of the logic gate |
| LE44.Timer Out | Signal: Timer Output |
| LE44.Out | Signal: Latched Output (Q) |
| LE44.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE45.Gate Out | Signal: Output of the logic gate |
| LE45.Timer Out | Signal: Timer Output |
| LE45.Out | Signal: Latched Output (Q) |
| LE45.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE46.Gate Out | Signal: Output of the logic gate |
| LE46.Timer Out | Signal: Timer Output |
| LE46.Out | Signal: Latched Output (Q) |
| LE46.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE47.Gate Out | Signal: Output of the logic gate |
| LE47.Timer Out | Signal: Timer Output |
| LE47.Out | Signal: Latched Output (Q) |
| LE47.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE48.Gate Out | Signal: Output of the logic gate |
| LE48.Timer Out | Signal: Timer Output |
| LE48.Out | Signal: Latched Output (Q) |
| LE48.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE49.Gate Out | Signal: Output of the logic gate |
| LE49.Timer Out | Signal: Timer Output |
| LE49.Out | Signal: Latched Output (Q) |
| LE49.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE50.Gate Out | Signal: Output of the logic gate |
| LE50.Timer Out | Signal: Timer Output |
| LE50.Out | Signal: Latched Output (Q) |
| LE50.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE51.Gate Out | Signal: Output of the logic gate |
| LE51.Timer Out | Signal: Timer Output |
| LE51.Out | Signal: Latched Output (Q) |
| LE51.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE52.Gate Out | Signal: Output of the logic gate |
| LE52.Timer Out | Signal: Timer Output |
| LE52.Out | Signal: Latched Output (Q) |
| LE52.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE53.Gate Out | Signal: Output of the logic gate |
| LE53.Timer Out | Signal: Timer Output |

| 1..n, SyncRequestList | Description |
|------------------------------|--|
| LE53.Out | Signal: Latched Output (Q) |
| LE53.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE54.Gate Out | Signal: Output of the logic gate |
| LE54.Timer Out | Signal: Timer Output |
| LE54.Out | Signal: Latched Output (Q) |
| LE54.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE55.Gate Out | Signal: Output of the logic gate |
| LE55.Timer Out | Signal: Timer Output |
| LE55.Out | Signal: Latched Output (Q) |
| LE55.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE56.Gate Out | Signal: Output of the logic gate |
| LE56.Timer Out | Signal: Timer Output |
| LE56.Out | Signal: Latched Output (Q) |
| LE56.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE57.Gate Out | Signal: Output of the logic gate |
| LE57.Timer Out | Signal: Timer Output |
| LE57.Out | Signal: Latched Output (Q) |
| LE57.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE58.Gate Out | Signal: Output of the logic gate |
| LE58.Timer Out | Signal: Timer Output |
| LE58.Out | Signal: Latched Output (Q) |
| LE58.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE59.Gate Out | Signal: Output of the logic gate |
| LE59.Timer Out | Signal: Timer Output |
| LE59.Out | Signal: Latched Output (Q) |
| LE59.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE60.Gate Out | Signal: Output of the logic gate |
| LE60.Timer Out | Signal: Timer Output |
| LE60.Out | Signal: Latched Output (Q) |
| LE60.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE61.Gate Out | Signal: Output of the logic gate |
| LE61.Timer Out | Signal: Timer Output |
| LE61.Out | Signal: Latched Output (Q) |
| LE61.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE62.Gate Out | Signal: Output of the logic gate |
| LE62.Timer Out | Signal: Timer Output |
| LE62.Out | Signal: Latched Output (Q) |
| LE62.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, SyncRequestList | Description |
|------------------------------|--|
| LE63.Gate Out | Signal: Output of the logic gate |
| LE63.Timer Out | Signal: Timer Output |
| LE63.Out | Signal: Latched Output (Q) |
| LE63.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE64.Gate Out | Signal: Output of the logic gate |
| LE64.Timer Out | Signal: Timer Output |
| LE64.Out | Signal: Latched Output (Q) |
| LE64.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE65.Gate Out | Signal: Output of the logic gate |
| LE65.Timer Out | Signal: Timer Output |
| LE65.Out | Signal: Latched Output (Q) |
| LE65.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE66.Gate Out | Signal: Output of the logic gate |
| LE66.Timer Out | Signal: Timer Output |
| LE66.Out | Signal: Latched Output (Q) |
| LE66.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE67.Gate Out | Signal: Output of the logic gate |
| LE67.Timer Out | Signal: Timer Output |
| LE67.Out | Signal: Latched Output (Q) |
| LE67.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE68.Gate Out | Signal: Output of the logic gate |
| LE68.Timer Out | Signal: Timer Output |
| LE68.Out | Signal: Latched Output (Q) |
| LE68.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE69.Gate Out | Signal: Output of the logic gate |
| LE69.Timer Out | Signal: Timer Output |
| LE69.Out | Signal: Latched Output (Q) |
| LE69.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE70.Gate Out | Signal: Output of the logic gate |
| LE70.Timer Out | Signal: Timer Output |
| LE70.Out | Signal: Latched Output (Q) |
| LE70.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE71.Gate Out | Signal: Output of the logic gate |
| LE71.Timer Out | Signal: Timer Output |
| LE71.Out | Signal: Latched Output (Q) |
| LE71.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE72.Gate Out | Signal: Output of the logic gate |
| LE72.Timer Out | Signal: Timer Output |

| 1..n, SyncRequestList | Description |
|------------------------------|--|
| LE72.Out | Signal: Latched Output (Q) |
| LE72.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE73.Gate Out | Signal: Output of the logic gate |
| LE73.Timer Out | Signal: Timer Output |
| LE73.Out | Signal: Latched Output (Q) |
| LE73.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE74.Gate Out | Signal: Output of the logic gate |
| LE74.Timer Out | Signal: Timer Output |
| LE74.Out | Signal: Latched Output (Q) |
| LE74.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE75.Gate Out | Signal: Output of the logic gate |
| LE75.Timer Out | Signal: Timer Output |
| LE75.Out | Signal: Latched Output (Q) |
| LE75.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE76.Gate Out | Signal: Output of the logic gate |
| LE76.Timer Out | Signal: Timer Output |
| LE76.Out | Signal: Latched Output (Q) |
| LE76.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE77.Gate Out | Signal: Output of the logic gate |
| LE77.Timer Out | Signal: Timer Output |
| LE77.Out | Signal: Latched Output (Q) |
| LE77.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE78.Gate Out | Signal: Output of the logic gate |
| LE78.Timer Out | Signal: Timer Output |
| LE78.Out | Signal: Latched Output (Q) |
| LE78.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE79.Gate Out | Signal: Output of the logic gate |
| LE79.Timer Out | Signal: Timer Output |
| LE79.Out | Signal: Latched Output (Q) |
| LE79.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE80.Gate Out | Signal: Output of the logic gate |
| LE80.Timer Out | Signal: Timer Output |
| LE80.Out | Signal: Latched Output (Q) |
| LE80.Out inverted | Signal: Negated Latched Output (Q NOT) |

17.169 1..n, In-SyncList

Referenced by:

• [SG\[1\] . Synchronism](#)

| 1..n, In-SyncList | Description |
|-------------------|--|
| - | No assignment |
| Ready to Close | Signal: Ready to Close |
| DI 1 | Signal: Digital Input |
| DI 2 | Signal: Digital Input |
| DI 3 | Signal: Digital Input |
| DI 4 | Signal: Digital Input |
| DI 5 | Signal: Digital Input |
| DI 6 | Signal: Digital Input |
| DI 7 | Signal: Digital Input |
| DI 8 | Signal: Digital Input |
| LE1.Gate Out | Signal: Output of the logic gate |
| LE1.Timer Out | Signal: Timer Output |
| LE1.Out | Signal: Latched Output (Q) |
| LE1.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE2.Gate Out | Signal: Output of the logic gate |
| LE2.Timer Out | Signal: Timer Output |
| LE2.Out | Signal: Latched Output (Q) |
| LE2.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE3.Gate Out | Signal: Output of the logic gate |
| LE3.Timer Out | Signal: Timer Output |
| LE3.Out | Signal: Latched Output (Q) |
| LE3.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE4.Gate Out | Signal: Output of the logic gate |
| LE4.Timer Out | Signal: Timer Output |
| LE4.Out | Signal: Latched Output (Q) |
| LE4.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE5.Gate Out | Signal: Output of the logic gate |
| LE5.Timer Out | Signal: Timer Output |
| LE5.Out | Signal: Latched Output (Q) |
| LE5.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE6.Gate Out | Signal: Output of the logic gate |
| LE6.Timer Out | Signal: Timer Output |
| LE6.Out | Signal: Latched Output (Q) |
| LE6.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE7.Gate Out | Signal: Output of the logic gate |
| LE7.Timer Out | Signal: Timer Output |

| 1..n, In-SyncList | Description |
|--------------------------|--|
| LE7.Out | Signal: Latched Output (Q) |
| LE7.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE8.Gate Out | Signal: Output of the logic gate |
| LE8.Timer Out | Signal: Timer Output |
| LE8.Out | Signal: Latched Output (Q) |
| LE8.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE9.Gate Out | Signal: Output of the logic gate |
| LE9.Timer Out | Signal: Timer Output |
| LE9.Out | Signal: Latched Output (Q) |
| LE9.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE10.Gate Out | Signal: Output of the logic gate |
| LE10.Timer Out | Signal: Timer Output |
| LE10.Out | Signal: Latched Output (Q) |
| LE10.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE11.Gate Out | Signal: Output of the logic gate |
| LE11.Timer Out | Signal: Timer Output |
| LE11.Out | Signal: Latched Output (Q) |
| LE11.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE12.Gate Out | Signal: Output of the logic gate |
| LE12.Timer Out | Signal: Timer Output |
| LE12.Out | Signal: Latched Output (Q) |
| LE12.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE13.Gate Out | Signal: Output of the logic gate |
| LE13.Timer Out | Signal: Timer Output |
| LE13.Out | Signal: Latched Output (Q) |
| LE13.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE14.Gate Out | Signal: Output of the logic gate |
| LE14.Timer Out | Signal: Timer Output |
| LE14.Out | Signal: Latched Output (Q) |
| LE14.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE15.Gate Out | Signal: Output of the logic gate |
| LE15.Timer Out | Signal: Timer Output |
| LE15.Out | Signal: Latched Output (Q) |
| LE15.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE16.Gate Out | Signal: Output of the logic gate |
| LE16.Timer Out | Signal: Timer Output |
| LE16.Out | Signal: Latched Output (Q) |
| LE16.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, In-SyncList | Description |
|--------------------------|--|
| LE17.Gate Out | Signal: Output of the logic gate |
| LE17.Timer Out | Signal: Timer Output |
| LE17.Out | Signal: Latched Output (Q) |
| LE17.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE18.Gate Out | Signal: Output of the logic gate |
| LE18.Timer Out | Signal: Timer Output |
| LE18.Out | Signal: Latched Output (Q) |
| LE18.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE19.Gate Out | Signal: Output of the logic gate |
| LE19.Timer Out | Signal: Timer Output |
| LE19.Out | Signal: Latched Output (Q) |
| LE19.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE20.Gate Out | Signal: Output of the logic gate |
| LE20.Timer Out | Signal: Timer Output |
| LE20.Out | Signal: Latched Output (Q) |
| LE20.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE21.Gate Out | Signal: Output of the logic gate |
| LE21.Timer Out | Signal: Timer Output |
| LE21.Out | Signal: Latched Output (Q) |
| LE21.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE22.Gate Out | Signal: Output of the logic gate |
| LE22.Timer Out | Signal: Timer Output |
| LE22.Out | Signal: Latched Output (Q) |
| LE22.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE23.Gate Out | Signal: Output of the logic gate |
| LE23.Timer Out | Signal: Timer Output |
| LE23.Out | Signal: Latched Output (Q) |
| LE23.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE24.Gate Out | Signal: Output of the logic gate |
| LE24.Timer Out | Signal: Timer Output |
| LE24.Out | Signal: Latched Output (Q) |
| LE24.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE25.Gate Out | Signal: Output of the logic gate |
| LE25.Timer Out | Signal: Timer Output |
| LE25.Out | Signal: Latched Output (Q) |
| LE25.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE26.Gate Out | Signal: Output of the logic gate |
| LE26.Timer Out | Signal: Timer Output |

| 1..n, In-SyncList | Description |
|--------------------------|--|
| LE26.Out | Signal: Latched Output (Q) |
| LE26.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE27.Gate Out | Signal: Output of the logic gate |
| LE27.Timer Out | Signal: Timer Output |
| LE27.Out | Signal: Latched Output (Q) |
| LE27.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE28.Gate Out | Signal: Output of the logic gate |
| LE28.Timer Out | Signal: Timer Output |
| LE28.Out | Signal: Latched Output (Q) |
| LE28.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE29.Gate Out | Signal: Output of the logic gate |
| LE29.Timer Out | Signal: Timer Output |
| LE29.Out | Signal: Latched Output (Q) |
| LE29.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE30.Gate Out | Signal: Output of the logic gate |
| LE30.Timer Out | Signal: Timer Output |
| LE30.Out | Signal: Latched Output (Q) |
| LE30.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE31.Gate Out | Signal: Output of the logic gate |
| LE31.Timer Out | Signal: Timer Output |
| LE31.Out | Signal: Latched Output (Q) |
| LE31.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE32.Gate Out | Signal: Output of the logic gate |
| LE32.Timer Out | Signal: Timer Output |
| LE32.Out | Signal: Latched Output (Q) |
| LE32.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE33.Gate Out | Signal: Output of the logic gate |
| LE33.Timer Out | Signal: Timer Output |
| LE33.Out | Signal: Latched Output (Q) |
| LE33.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE34.Gate Out | Signal: Output of the logic gate |
| LE34.Timer Out | Signal: Timer Output |
| LE34.Out | Signal: Latched Output (Q) |
| LE34.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE35.Gate Out | Signal: Output of the logic gate |
| LE35.Timer Out | Signal: Timer Output |
| LE35.Out | Signal: Latched Output (Q) |
| LE35.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, In-SyncList | Description |
|--------------------------|--|
| LE36.Gate Out | Signal: Output of the logic gate |
| LE36.Timer Out | Signal: Timer Output |
| LE36.Out | Signal: Latched Output (Q) |
| LE36.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE37.Gate Out | Signal: Output of the logic gate |
| LE37.Timer Out | Signal: Timer Output |
| LE37.Out | Signal: Latched Output (Q) |
| LE37.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE38.Gate Out | Signal: Output of the logic gate |
| LE38.Timer Out | Signal: Timer Output |
| LE38.Out | Signal: Latched Output (Q) |
| LE38.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE39.Gate Out | Signal: Output of the logic gate |
| LE39.Timer Out | Signal: Timer Output |
| LE39.Out | Signal: Latched Output (Q) |
| LE39.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE40.Gate Out | Signal: Output of the logic gate |
| LE40.Timer Out | Signal: Timer Output |
| LE40.Out | Signal: Latched Output (Q) |
| LE40.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE41.Gate Out | Signal: Output of the logic gate |
| LE41.Timer Out | Signal: Timer Output |
| LE41.Out | Signal: Latched Output (Q) |
| LE41.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE42.Gate Out | Signal: Output of the logic gate |
| LE42.Timer Out | Signal: Timer Output |
| LE42.Out | Signal: Latched Output (Q) |
| LE42.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE43.Gate Out | Signal: Output of the logic gate |
| LE43.Timer Out | Signal: Timer Output |
| LE43.Out | Signal: Latched Output (Q) |
| LE43.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE44.Gate Out | Signal: Output of the logic gate |
| LE44.Timer Out | Signal: Timer Output |
| LE44.Out | Signal: Latched Output (Q) |
| LE44.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE45.Gate Out | Signal: Output of the logic gate |
| LE45.Timer Out | Signal: Timer Output |

| 1..n, In-SyncList | Description |
|--------------------------|--|
| LE45.Out | Signal: Latched Output (Q) |
| LE45.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE46.Gate Out | Signal: Output of the logic gate |
| LE46.Timer Out | Signal: Timer Output |
| LE46.Out | Signal: Latched Output (Q) |
| LE46.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE47.Gate Out | Signal: Output of the logic gate |
| LE47.Timer Out | Signal: Timer Output |
| LE47.Out | Signal: Latched Output (Q) |
| LE47.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE48.Gate Out | Signal: Output of the logic gate |
| LE48.Timer Out | Signal: Timer Output |
| LE48.Out | Signal: Latched Output (Q) |
| LE48.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE49.Gate Out | Signal: Output of the logic gate |
| LE49.Timer Out | Signal: Timer Output |
| LE49.Out | Signal: Latched Output (Q) |
| LE49.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE50.Gate Out | Signal: Output of the logic gate |
| LE50.Timer Out | Signal: Timer Output |
| LE50.Out | Signal: Latched Output (Q) |
| LE50.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE51.Gate Out | Signal: Output of the logic gate |
| LE51.Timer Out | Signal: Timer Output |
| LE51.Out | Signal: Latched Output (Q) |
| LE51.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE52.Gate Out | Signal: Output of the logic gate |
| LE52.Timer Out | Signal: Timer Output |
| LE52.Out | Signal: Latched Output (Q) |
| LE52.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE53.Gate Out | Signal: Output of the logic gate |
| LE53.Timer Out | Signal: Timer Output |
| LE53.Out | Signal: Latched Output (Q) |
| LE53.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE54.Gate Out | Signal: Output of the logic gate |
| LE54.Timer Out | Signal: Timer Output |
| LE54.Out | Signal: Latched Output (Q) |
| LE54.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, In-SyncList | Description |
|--------------------------|--|
| LE55.Gate Out | Signal: Output of the logic gate |
| LE55.Timer Out | Signal: Timer Output |
| LE55.Out | Signal: Latched Output (Q) |
| LE55.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE56.Gate Out | Signal: Output of the logic gate |
| LE56.Timer Out | Signal: Timer Output |
| LE56.Out | Signal: Latched Output (Q) |
| LE56.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE57.Gate Out | Signal: Output of the logic gate |
| LE57.Timer Out | Signal: Timer Output |
| LE57.Out | Signal: Latched Output (Q) |
| LE57.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE58.Gate Out | Signal: Output of the logic gate |
| LE58.Timer Out | Signal: Timer Output |
| LE58.Out | Signal: Latched Output (Q) |
| LE58.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE59.Gate Out | Signal: Output of the logic gate |
| LE59.Timer Out | Signal: Timer Output |
| LE59.Out | Signal: Latched Output (Q) |
| LE59.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE60.Gate Out | Signal: Output of the logic gate |
| LE60.Timer Out | Signal: Timer Output |
| LE60.Out | Signal: Latched Output (Q) |
| LE60.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE61.Gate Out | Signal: Output of the logic gate |
| LE61.Timer Out | Signal: Timer Output |
| LE61.Out | Signal: Latched Output (Q) |
| LE61.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE62.Gate Out | Signal: Output of the logic gate |
| LE62.Timer Out | Signal: Timer Output |
| LE62.Out | Signal: Latched Output (Q) |
| LE62.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE63.Gate Out | Signal: Output of the logic gate |
| LE63.Timer Out | Signal: Timer Output |
| LE63.Out | Signal: Latched Output (Q) |
| LE63.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE64.Gate Out | Signal: Output of the logic gate |
| LE64.Timer Out | Signal: Timer Output |

| 1..n, In-SyncList | Description |
|--------------------------|--|
| LE64.Out | Signal: Latched Output (Q) |
| LE64.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE65.Gate Out | Signal: Output of the logic gate |
| LE65.Timer Out | Signal: Timer Output |
| LE65.Out | Signal: Latched Output (Q) |
| LE65.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE66.Gate Out | Signal: Output of the logic gate |
| LE66.Timer Out | Signal: Timer Output |
| LE66.Out | Signal: Latched Output (Q) |
| LE66.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE67.Gate Out | Signal: Output of the logic gate |
| LE67.Timer Out | Signal: Timer Output |
| LE67.Out | Signal: Latched Output (Q) |
| LE67.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE68.Gate Out | Signal: Output of the logic gate |
| LE68.Timer Out | Signal: Timer Output |
| LE68.Out | Signal: Latched Output (Q) |
| LE68.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE69.Gate Out | Signal: Output of the logic gate |
| LE69.Timer Out | Signal: Timer Output |
| LE69.Out | Signal: Latched Output (Q) |
| LE69.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE70.Gate Out | Signal: Output of the logic gate |
| LE70.Timer Out | Signal: Timer Output |
| LE70.Out | Signal: Latched Output (Q) |
| LE70.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE71.Gate Out | Signal: Output of the logic gate |
| LE71.Timer Out | Signal: Timer Output |
| LE71.Out | Signal: Latched Output (Q) |
| LE71.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE72.Gate Out | Signal: Output of the logic gate |
| LE72.Timer Out | Signal: Timer Output |
| LE72.Out | Signal: Latched Output (Q) |
| LE72.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE73.Gate Out | Signal: Output of the logic gate |
| LE73.Timer Out | Signal: Timer Output |
| LE73.Out | Signal: Latched Output (Q) |
| LE73.Out inverted | Signal: Negated Latched Output (Q NOT) |

| 1..n, In-SyncList | Description |
|-------------------|--|
| LE74.Gate Out | Signal: Output of the logic gate |
| LE74.Timer Out | Signal: Timer Output |
| LE74.Out | Signal: Latched Output (Q) |
| LE74.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE75.Gate Out | Signal: Output of the logic gate |
| LE75.Timer Out | Signal: Timer Output |
| LE75.Out | Signal: Latched Output (Q) |
| LE75.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE76.Gate Out | Signal: Output of the logic gate |
| LE76.Timer Out | Signal: Timer Output |
| LE76.Out | Signal: Latched Output (Q) |
| LE76.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE77.Gate Out | Signal: Output of the logic gate |
| LE77.Timer Out | Signal: Timer Output |
| LE77.Out | Signal: Latched Output (Q) |
| LE77.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE78.Gate Out | Signal: Output of the logic gate |
| LE78.Timer Out | Signal: Timer Output |
| LE78.Out | Signal: Latched Output (Q) |
| LE78.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE79.Gate Out | Signal: Output of the logic gate |
| LE79.Timer Out | Signal: Timer Output |
| LE79.Out | Signal: Latched Output (Q) |
| LE79.Out inverted | Signal: Negated Latched Output (Q NOT) |
| LE80.Gate Out | Signal: Output of the logic gate |
| LE80.Timer Out | Signal: Timer Output |
| LE80.Out | Signal: Latched Output (Q) |
| LE80.Out inverted | Signal: Negated Latched Output (Q NOT) |

17.170 1..n, Trip Cmds

Selection list referenced by the following parameters:

- [SG\[1\] . Off Cmd1](#)
- [SG\[1\] . Off Cmd2](#)
- [SG\[1\] . Off Cmd3](#)
- [SG\[1\] . Off Cmd4](#)
- [SG\[1\] . Off Cmd5](#)

- [...]

| 1..n, Trip Cmds | Description |
|-----------------|----------------------|
| - | No assignment |
| TripCmd | Signal: Trip Command |
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| TripCmd | Signal: Trip Command |

17.171 Used Protocol

Referenced by:

- [TimeSync . TimeSync](#)

| Used Protocol | Description |
|-----------------|-------------------------------|
| - | - |
| IRIG-B | IRIG-B-Module |
| SNTP | SNTP-Module |
| Modbus | Modbus Protocol |
| IEC 60870-5-103 | IEC 60870-5-103 Protocol |
| IEC104 | IEC 60870-5-104 communication |
| DNP3 | Distributed Network Protocol |

17.172 1..n, Assignment List

Referenced by:

- [DNP3 . BinaryCounter 0](#)
- [\[...\]](#)

| 1..n, Assignment List | Description |
|-----------------------|--|
| - | No assignment |
| Fault No. | Fault number |
| No. of Grid Faults | Number of grid faults: This is a counter for all faults (i.e. General Alarms »Prot . Alarm«), but except faults during a running cycle of the Automatic Reclosure module (signal »AR . running«). (Remark: The »Fault No.« counts every new fault independent of AR cycles. This means that for protective devices without AR module these two counters are equivalent.) |
| TripCmd Cr | Counter: Total number of trips of the switchgear. |
| Num Vdips in t-LVRT | Number of Voltage dips during t-LVRT |
| Cr Tot Numb of Vdips | Counter Total number of voltage dips. |
| Cr Num Vdips to Trip | Counter Total number of voltage dips that caused a Trip |
| Num Vdips in t-LVRT | Number of Voltage dips during t-LVRT |
| Cr Tot Numb of Vdips | Counter Total number of voltage dips. |
| Cr Num Vdips to Trip | Counter Total number of voltage dips that caused a Trip |
| Operating hours Cr | Operating hours counter of the protective device |

17.173 1..n, Assignment List

Referenced by:

- [DNP3 . DoubleBitInput 0](#)

| 1..n, Assignment List | Description |
|-----------------------|--|
| - | No assignment |
| Pos | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |

17.174 Used Protocol

Referenced by:

- [Scada . Protocol](#)

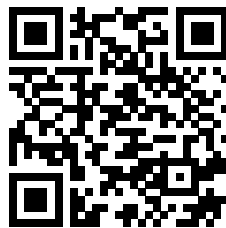
| Used Protocol | Description |
|-----------------|----------------------------------|
| - | Do not use |
| Modbus RTU | Modbus Protocol RTU |
| Modbus TCP | Modbus Protocol TCP |
| Modbus TCP/RTU | Modbus Protocol TCP/RTU |
| DNP3 RTU | Distributed Network Protocol RTU |
| DNP3 TCP | Distributed Network Protocol TCP |
| DNP3 UDP | Distributed Network Protocol UDP |
| IEC 60870-5-103 | IEC 60870-5-103 Protocol |
| IEC 60870-5-104 | IEC 60870-5-104 Protocol |
| IEC 61850 | IEC 61850 communication |
| Profibus | Profibus Module |

High **PROTEC**

MRU4

REFERENCE MANUAL

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