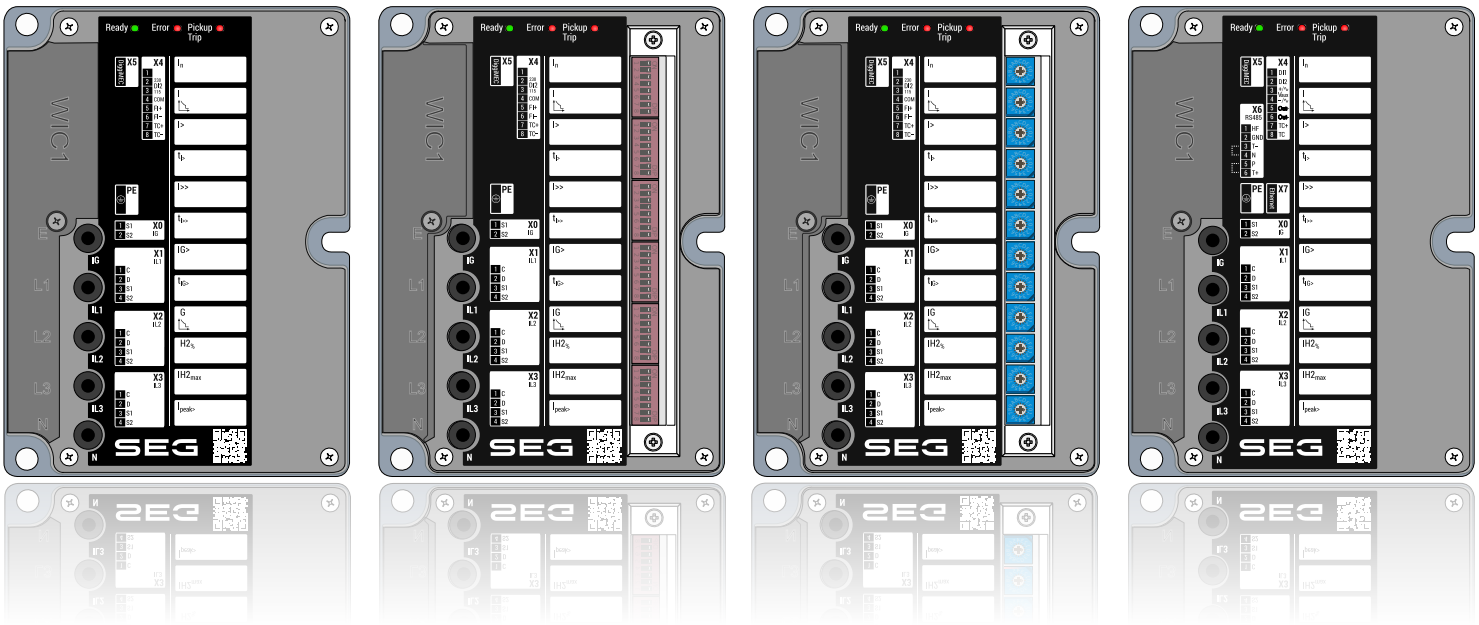
PROTECTION MADE SIMPLE.

WI Line

WIC1

SELF-/DUAL-POWERED PROTECTION DEVICE

WIC1-1	Self-powered device, parameter settings via Smart view (PC) / DiggiMEC
WIC1-2	Self-powered device, parameter settings via DIP switches and/or Smart view (PC) / DiggiMEC
WIC1-3	Self-powered device, parameter settings via HEX switches and/or Smart view (PC) / DiggiMEC
WIC1-4	Dual-powered device, parameter settings via Smart view (PC) / DiggiMEC



SELF-/DUAL-POWERED PROTECTION DEVICE

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Build 64350

Revision B

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Table of Contents

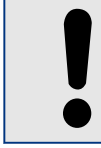
1 About This Reference Manual

This document is a reference of all the Setting Values, Direct Commands and Signals of the WIC1. In other words, it lists all parameters that are available (or can be made available) with the (optionally) full featured versions of the WIC1 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.

NOTICE!



If the settings are being made directly at the (DIP/HEX) switches of the device variants WIC1-2 / WIC1-3 then the available setting ranges are different from the ones listed in this document. (See also the Appendix chapter in the WIC1 User Manual.)

This document is a reference of all the Setting Values, Direct Commands and Signals of the WIC1.

Every WI Line 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 WI Line 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 WI Line 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 WI Line 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 For some parameters: • Availability restrictions	Value Range	
Type	*Short descriptive text explaining the functionality of this parameter.*	

“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 WIC1 User Manual.)

For the WIC1 (connected to a DiggiMEC), there is currently only the permission (access level) “**P.1**” implemented. It permits changing all protection settings.

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	P.1
general operation mode		

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.

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 WIC1 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

Self-/Dual-Powered Protection Device										
WIC1	**#**	**#**	**#**	**#**	**#**	**#**	**#**	**#**	**#**	**#**
Device Variant										
Self-powered device, parameter settings via Smart view (PC) / DiggiMEC	-**1**									
Self-powered device, parameter settings via DIP switches and/or Smart view (PC) / DiggiMEC	-**2**									
Self-powered device, parameter settings via HEX switches and/or Smart view (PC) / DiggiMEC	-**3**									
Dual-powered device, parameter settings via Smart view (PC) / DiggiMEC	-**4**									
CT Type, DIP/HEX Range										
Following CTs are used for the phase current measuring inputs: Wx CTs (WE2, W2, W3, W4, W5, W6) or alternatively WC1 Converter-CTs. DIP/HEX uses scheme 1 for the setting ranges.		**S**								
Following CTs are used for the phase current measuring inputs: WC2 Converter CTs. DIP/HEX uses scheme 2 for the setting ranges.		**D**								
Following CTs are used for the phase current measuring inputs: Wx CTs (WE2, W2, W3, W4, W5, W6) or alternatively WC1 Converter-CTs. DIP/HEX uses scheme 3 for the setting ranges.		**Z**								
Ground Current Method										
The ground (earth) current is calculated out of the measured phase currents. Measuring is not possible.			**N**							
The ground (earth) current can be measured at a dedicated 4th CT input. However, the device can also be set (via DiggiMEC / Smart view) to operate using calculated ground (earth) current.			**G**							
The ground (earth) current is calculated out of the measured phase currents. However, the device can also be set (via DiggiMEC / Smart view) to operate using a dedicated 4th CT input as measured ground (earth) current.			**B**							
Nominal Frequency										
The nominal frequency can be set to 50 Hz or 60 Hz (via DiggiMEC / Smart view).				**0**						
The factory preset for the nominal frequency is 50 Hz, but can also be set to 60 Hz (via DiggiMEC / Smart view).				**5**						
The factory preset for the nominal frequency is 60 Hz, but can also be set to 50 Hz (via DiggiMEC / Smart view).				**6**						
Outputs										
The Trip Command is assigned to the “TC” (Trip Coil pulse) output. (This assignment is pre-defined and fixed.) The “FI” (Flag Indicator) output can be used alternatively as Self-Supervision output signal. (see Option "Backup Protection / Self-Supervision")					**N**					
The Trip Command is assigned to both the “TC” (Trip Coil pulse) output and to the “FI” (Flag Indicator) output. (These assignments are pre-defined and fixed.)					**F**					

Self-/Dual-Powered Protection Device										
WIC1	**#**	**#**	**#**	**#**	**#**	**#**	**#**	**#**	**#**	**#**
The Trip Command is fixed and assigned to the “TC” (Trip Coil pulse) output. The “FI” (Flag Indicator) output is configurable, i.e. can be set to any output signal.					**C**					
Inputs										
Without Digital Inputs						**N**				
Digital Input (115 VAC or 230 VAC) for external trip.						**F**				
Digital Input (115 VAC or 230 VAC), configurable.						**C**				
Without Digital Inputs						**M**				
Digital Inputs for external trip and external reset.						**G**				
The Digital Inputs are configurable.						**D**				
Backup Protection / Self-Supervision										
The integrated Self-Supervision operates the Flag Indicator "FI" as soon as there is enough electrical energy available for an impulse.							**0**			
The integrated Self-Supervision operates the Trip Coil "TC" as soon as there is enough electrical energy available for a trip impulse. (Backup Phase Overcurrent Protection)							**1**			
The integrated Self-Supervision operates the Trip Coil "TC" as soon as I > 20 In,max. (Backup Phase Overcurrent Protection)							**2**			
Protection Packages										
ANSI 50, 51, 50G/N, 51G/N, inrush, 50BF, 74TC								**S**		
Package “S” + 46, 49, 51Q, Breaker Wear, Condition Monit.								**A**		
Package “A” + SOTF, CLPU, ExP, ultra-f.OC								**P**		
Communication										
Without									**A**	
RS 485: Modbus RTU									**B**	
Ethernet: Modbus TCP									**C**	
Ethernet/Fiber Optics: Modbus TCP									**L**	
Customized Version										
Standard										**0**
Customized Version 1										**H**

3 Menu

3.1 Operation

3.1.1 Operation / Measured Values

3.1.1.1 Operation / Measured Values / Current

	»IA «	Measured value: Phase current (fundamental)
	»IB «	Measured value: Phase current (fundamental)
	»IC «	Measured value: Phase current (fundamental)
	»IG meas «	Measured value (measured): IG (fundamental)
	»IG calc «	Measured value (calculated): IG (fundamental) Since the value might be unreliable or invalid for low phase currents it is displayed as “-0.0” in this case.
	»phi IA«	Measured value (calculated): Angle of Phasor IA Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.
	»phi IB«	Measured value (calculated): Angle of Phasor IB Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.
	»phi IC«	Measured value (calculated): Angle of Phasor IC Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.
	»phi IG meas«	Measured value (calculated): Angle of Phasor IG meas Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.
	»phi IG calc«	Measured value (calculated): Angle of Phasor IG calc Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.
	»IA H2«	Measured Value: Ratio of 2nd harmonic over fundamental of IA
	»IB H2«	Measured Value: Ratio of 2nd harmonic over fundamental of IB
	»IC H2«	Measured Value: Ratio of 2nd harmonic over fundamental of IC
	»I0 «	Measured value (calculated): Zero current (fundamental)
	»I1 «	Measured value (calculated): Positive phase sequence current (fundamental)
	»I2 «	Measured value (calculated): Unbalanced load current (fundamental)
	»%(I2/I1)«	Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.

3.1.1.2 Operation / Measured Values / Current RMS

	»IA RMS«	Measured value: Phase current (RMS)
	»IB RMS«	Measured value: Phase current (RMS)
	»IC RMS«	Measured value: Phase current (RMS)
	»IG meas RMS«	Measured value (measured): IG (RMS)
	»IG calc RMS«	Measured value (calculated): IG (RMS) Since the value might be unreliable or invalid for low phase currents it is displayed as “-0.0” in this case.
	»%IA THD«	Measured value (calculated): IA Total Harmonic Distortion
	»%IB THD«	Measured value (calculated): IB Total Harmonic Distortion
	»%IC THD«	Measured value (calculated): IC Total Harmonic Distortion

3.1.1.3 Operation / Measured Values / ThR

	»Therm. Lev.«	Measured value: Ongoing thermal level

3.1.2 Operation / Condition Monitoring

3.1.2.1 Operation / Condition Monitoring / Peak Current Ptr (Val.)

	»Imax«	Maximum value of the averaged phase current »Iavg« since the last reset
	»Iavg«	Maximum value of the phase current, time-averaged over the set time-window As long as the displayed value of »Iavg« is not significant yet, because the calculation is ongoing, the value is displayed as “-0.0”. (After the set time window has elapsed a valid value is displayed.)
	»Iavg invalid«	Signal: The displayed value of »Iavg« is not yet significant, the calculation is ongoing. (After the calculated value has become stable this signal changes to “False”.)

3.1.2.2 Operation / Condition Monitoring / Life Load (Values)

	»< 0.4 In«	Number of operating days with measured current values within this range
	»0.4 ... 0.5 In«	Number of operating days with measured current values within this range
	»0.5 ... 0.6 In«	Number of operating days with measured current values within this range
	»0.6 ... 0.7 In«	Number of operating days with measured current values within this range
	»0.7 ... 0.8 In«	Number of operating days with measured current values within this range
	»0.8 ... 0.9 In«	Number of operating days with measured current values within this range
	»0.9 ... 1.0 In«	Number of operating days with measured current values within this range
	»1.0 ... 1.1 In«	Number of operating days with measured current values within this range
	»1.1 ... 1.2 In«	Number of operating days with measured current values within this range
	»> 1.2 In«	Number of operating days with measured current values within this range
	»Time to Alarm«	Time (displayed in days) until an alarm signal is issued, because the device has been connected to too high phase currents for a too long time. (The time counts backwards from the »Threshold t« setting to 0. The Direct Command »Rst. Alarm« sets it back to »Threshold t«.)

3.1.2.3 Operation / Condition Monitoring / BkrWear

#	»Sum Trips«	Sum of the previously executed open commands
	»Sum Itrip«	Sum of the ruptured fault currents
	»Bkr Wear Level«	Wear level of the circuit breaker. (100% means that the circuit breaker has to be maintained.)

3.1.2.4 Operation / Condition Monitoring / SBM

	»V Batt«	Voltage of the station battery (measured at the aux. voltage input terminals L+, L-)
	»V Batt max«	Maximum measured station battery voltage
	»V Batt min«	Minimum measured station battery voltage

3.1.3 Operation / Status Display

3.1.3.1 Operation / Status Display / All Actives

	»IH2 . Active«	Signal: active
	»I> . Active«	Signal: active
	»I>> . Active«	Signal: active
	»I>>> . Active«	Signal: active
	»IG> . Active«	Signal: active
	»IG>> . Active«	Signal: active
	»I2/I1> . Active«	Signal: active
	»I2> . Active«	Signal: active
	»ThR . Active«	Signal: active
	»Ipeak> . Active«	Signal: active
	»SOTF . Active«	Signal: active
	»ExP[1] . Active«	Signal: active
	»ExP[2] . Active«	Signal: active
	»TCM . Active«	Signal: active
	»CBF . Active«	Signal: active
	»BkrWear . Active«	Signal: active
	»CLPU . Active«	Signal: active
	»SBM . Active«	Signal: active
	»Life Load . Active«	Signal: active
	»Prot . Active«	Signal: active

3.1.3.2 Operation / Status Display / Trips

⇧	»I> . Trip«	Signal: Trip
⇧	»I>> . Trip«	Signal: Trip
⇧	»I>>> . Trip«	Signal: Trip
⇧	»IG> . Trip«	Signal: Trip
⇧	»IG>> . Trip«	Signal: Trip
⇧	»I2/I1> . Trip«	Signal: Trip
⇧	»I2> . Trip«	Signal: Trip
⇧	»ThR . Trip«	Signal: Trip
⇧	»Ipeak> . Trip«	Signal: Trip
⇧	»SOTF . Trip«	Signal: Trip
⇧	»ExP[1] . Trip«	Signal: Trip
⇧	»ExP[2] . Trip«	Signal: Trip
⇧	»SBM . Trip«	Signal: Trip
⇧	»Prot . Trip«	Signal: General Trip
⇧	»Prot . TripCmd«	Signal: Trip Command

3.1.3.3 Operation / Status Display / Alarms

	»I> . Alarm«	Signal: Alarm
	»I>> . Alarm«	Signal: Alarm
	»I>>> . Alarm«	Signal: Alarm
	»IG> . Alarm«	Signal: Alarm
	»IG>> . Alarm«	Signal: Alarm
	»I2/I1> . Alarm«	Signal: Alarm
	»I2> . Alarm«	Signal: Alarm
	»ThR . Alarm«	Signal: Alarm
	»Ipeak> . Alarm«	Signal: Alarm
	»SOTF . Alarm«	Signal: Alarm
	»ExP[1] . Alarm«	Alarm
	»ExP[2] . Alarm«	Alarm
	»TCM . Alarm«	Signal: Alarm
	»CBF . Alarm«	Signal: Alarm
	»BkrWear . Alarm«	Signal: Alarm: The maximum number of open commands or the maximum value for the sum of ruptured currents has been exceeded.
	»SBM . Alarm«	Signal: Alarm
	»Life Load . Alarm«	Signal: Alarm
	»Prot . Alarm«	Signal: General Alarm

3.1.3.4 Operation / Status Display / Pickups

⇧	»I> . Pickup«	Signal: Pickup
⇧	»I>> . Pickup«	Signal: Pickup
⇧	»I>>> . Pickup«	Signal: Pickup
⇧	»IG> . Pickup«	Signal: Pickup
⇧	»IG>> . Pickup«	Signal: Pickup
⇧	»I2/I1> . Pickup«	Signal: Pickup
⇧	»I2> . Pickup«	Signal: Pickup
⇧	»ThR . Pickup«	Signal: Pickup
⇧	»Ipeak> . Pickup«	Signal: Pickup
⇧	»SOTF . Pickup«	Signal: Pickup
⇧	»ExP[1] . Pickup«	Signal: Pickup
⇧	»ExP[2] . Pickup«	Signal: Pickup
⇧	»SBM . Pickup«	Signal: Pickup
⇧	»Prot . Pickup«	Signal: General Pickup

3.1.3.5 Operation / Status Display / Prot

⇧	»TripCmd«	Signal: Trip Command
⇧	»Trip«	Signal: General Trip
⇧	»Alarm«	Signal: General Alarm
⇧	»Pickup«	Signal: General Pickup
⇧	»Active«	Signal: active
⇧	»Trip IPh«	Signal: General Trip due to a phase current fault
⇧	»Trip IG«	Signal: General Trip due to a ground current fault
⇧	»Trip Ext.«	Signal: General Trip due to an external signal
⇧	»Trip IA«	Signal: General Trip due to a fault in phase A
⇧	»Trip IB«	Signal: General Trip due to a fault in phase B
⇧	»Trip IC«	Signal: General Trip due to a fault in phase C
⇧	»Pickup I Ph«	Signal: General Pickup due to a phase current fault
⇧	»Pickup IG«	Signal: General Pickup due to a ground current fault
⇧	»Pickup Ext.«	Signal: General Pickup due to an external signal
⇧	»Pickup IA«	Signal: General Pickup due to a fault in phase A
⇧	»Pickup IB«	Signal: General Pickup due to a fault in phase B
⇧	»Pickup IC«	Signal: General Pickup due to a fault in phase C
⇧	»Pos ON«	Signal: Circuit Breaker is in ON-Position
⇧	»Pos OFF«	Signal: Circuit Breaker is in OFF-Position
⇧	»ON Cmd«	Signal: ON command issued to the breaker
⇧	»Syst. OK. & Ext.Suppl.«	Signal: The WIC1 is running and is supplied by external auxiliary power and has loaded sufficient electrical energy for triggering the trip impulse output.
⇧	»DI 1«	Signal: Digital Input
⇧	»DI 2«	Signal: Digital Input
⇩	»ExBlo TripCmd-I«	Module input state: External Blocking of the Trip Command

3.1.3.6 Operation / Status Display / IH2

⇧	»Active«	Signal: active
⇧	»Block. A«	Signal: Inrush blocking of phase A of the phase overcurrent protection
⇧	»Block. B«	Signal: Inrush blocking of phase B of the phase overcurrent protection
⇧	»Block. C«	Signal: Inrush blocking of phase C of the phase overcurrent protection
⇧	»Block. Ground«	Signal: Inrush blocking of the ground (earth) overcurrent protection and min. 1 phase of the phase overcurrent protection.
⇧	»Block. 3-ph«	Signal: 3-phase Inrush blocking: An inrush has been detected in (at least) one phase, so that all three phases are blocked.
⇧	»Imax exceeded«	Signal: The Inrush limit value has been exceeded, so that the inrush blocking has been cancelled.
⇧	»tmax elapsed«	Signal: The (phase-selective) maximum duration of an inrush blocking has been reached, so that the inrush blocking has been stopped.

3.1.3.7 Operation / Status Display / I>

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»Trip IA«	Signal: Trip due to a fault in phase A
⇧	»Trip IB«	Signal: Trip due to a fault in phase B
⇧	»Trip IC«	Signal: Trip due to a fault in phase C
⇧	»Alarm IA«	Signal: Alarm due to a fault in phase A
⇧	»Alarm IB«	Signal: Alarm due to a fault in phase B
⇧	»Alarm IC«	Signal: Alarm due to a fault in phase C
⇧	»Pickup IA«	Signal: Pickup in phase A
⇧	»Pickup IB«	Signal: Pickup in phase B
⇧	»Pickup IC«	Signal: Pickup in phase C
⇧	»IH2 Blo«	Signal: Blocking the trip command by an inrush
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.8 Operation / Status Display / I>>

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»Trip IA«	Signal: Trip due to a fault in phase A
⇧	»Trip IB«	Signal: Trip due to a fault in phase B
⇧	»Trip IC«	Signal: Trip due to a fault in phase C
⇧	»Alarm IA«	Signal: Alarm due to a fault in phase A
⇧	»Alarm IB«	Signal: Alarm due to a fault in phase B
⇧	»Alarm IC«	Signal: Alarm due to a fault in phase C
⇧	»Pickup IA«	Signal: Pickup in phase A
⇧	»Pickup IB«	Signal: Pickup in phase B
⇧	»Pickup IC«	Signal: Pickup in phase C
⇧	»IH2 Blo«	Signal: Blocking the trip command by an inrush
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.9 Operation / Status Display / I>>>

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»Trip IA«	Signal: Trip due to a fault in phase A
⇧	»Trip IB«	Signal: Trip due to a fault in phase B
⇧	»Trip IC«	Signal: Trip due to a fault in phase C
⇧	»Alarm IA«	Signal: Alarm due to a fault in phase A
⇧	»Alarm IB«	Signal: Alarm due to a fault in phase B
⇧	»Alarm IC«	Signal: Alarm due to a fault in phase C
⇧	»Pickup IA«	Signal: Pickup in phase A
⇧	»Pickup IB«	Signal: Pickup in phase B
⇧	»Pickup IC«	Signal: Pickup in phase C
⇧	»IH2 Blo«	Signal: Blocking the trip command by an inrush
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.10 Operation / Status Display / IG>

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»IH2 Blo«	Signal: Blocking the trip command by an inrush
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.11 Operation / Status Display / IG>>

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»IH2 Blo«	Signal: Blocking the trip command by an inrush
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.12 Operation / Status Display / I2/I1>

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»IH2 Blo«	Signal: Blocking the trip command by an inrush
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.13 Operation / Status Display / I2>

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»IH2 Blo«	Signal: Blocking the trip command by an inrush
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.14 Operation / Status Display / ThR

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»Pre-Alarm«	Signal: The set value for the Θ Threshold has been exceeded.
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.15 Operation / Status Display / Ipeak>

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»Trip IA«	Signal: Trip due to a fault in phase A
⇧	»Trip IB«	Signal: Trip due to a fault in phase B
⇧	»Trip IC«	Signal: Trip due to a fault in phase C
⇧	»Alarm IA«	Signal: Alarm due to a fault in phase A
⇧	»Alarm IB«	Signal: Alarm due to a fault in phase B
⇧	»Alarm IC«	Signal: Alarm due to a fault in phase C
⇧	»Pickup IA«	Signal: Pickup in phase A
⇧	»Pickup IB«	Signal: Pickup in phase B
⇧	»Pickup IC«	Signal: Pickup in phase C
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.16 Operation / Status Display / SOTF

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇩	»ExBlo-I«	Module input state: External blocking
⇩	»Trigger-I«	State of the module input: Assign the type of pickup signal that triggers the SOTF module. If the assigned pickup signal is issued, the SOTF module itself picks up.

3.1.3.17 Operation / Status Display / ExP[1]

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Alarm
⇧	»Pickup«	Signal: Pickup
⇩	»ExBlo-I«	Module input state: External blocking
⇩	»Trigger Signal-I«	State of the module input: External trigger signal

3.1.3.18 Operation / Status Display / ExP[2]

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Alarm
⇧	»Pickup«	Signal: Pickup
⇩	»ExBlo-I«	Module input state: External blocking
⇩	»Trigger Signal-I«	State of the module input: External trigger signal
⇩	»Condition-I«	State of the module input: Condition for External Protection

3.1.3.19 Operation / Status Display / TCM

⇧	»Active«	Signal: active
⇧	»Alarm«	Signal: Alarm
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.20 Operation / Status Display / CBF

⇧	»Active«	Signal: active
⇧	»Alarm«	Signal: Alarm
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.21 Operation / Status Display / CLPU

⇧	»Active«	Signal: active
⇧	»detected«	Signal: The CLPU stabilization has been triggered.
⇧	»stab.«	Signal: The CLPU stabilization is active.
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.22 Operation / Status Display / Life Load

⇧	»Active«	Signal: active
⇧	»Alarm«	Signal: Alarm

3.1.3.23 Operation / Status Display / BkrWear

⇧	»Active«	Signal: active
⇧	»Alarm«	Signal: Alarm: The maximum number of open commands or the maximum value for the sum of ruptured currents has been exceeded.
⇧	»Alm(mx.Sum.Tr)«	Signal: Alarm: The maximum number of open commands has been exceeded.
⇧	»Alm(mx.Sum.Itrip)«	Signal: Alarm: The maximum value for the sum of ruptured currents has been exceeded.
⇧	»Alm (CB Wear Lev.)«	Signal: Alarm: The maximum wear level of the circuit breaker has been exceeded.

3.1.3.24 Operation / Status Display / SBM

⇧	»Active«	Signal: active
⇧	»Trip«	Signal: Trip
⇧	»Alarm«	Signal: Alarm
⇧	»Pickup«	Signal: Pickup
⇧	»Trip VBatt<<«	Signal: Trip because the station battery voltage has dropped below VBatt<<
⇧	»Alarm VBatt>«	Signal: Alarm because the station battery voltage has exceeded VBatt>
⇧	»Alarm VBatt<«	Signal: Alarm because the station battery voltage has dropped below VBatt<
⇧	»Alarm VBatt<<«	Signal: Alarm because the station battery voltage has dropped below VBatt<<
⇧	»Pickup VBatt>«	Signal: Pickup because the station battery voltage has exceeded VBatt>
⇧	»Pickup VBatt<«	Signal: Pickup because the station battery voltage has dropped below VBatt<
⇧	»Pickup VBatt<<«	Signal: Pickup because the station battery voltage has dropped below VBatt<<
⇩	»ExBlo-I«	Module input state: External blocking

3.1.3.25 Operation / Status Display / Sys

⇧	»New error/warning«	Signal: A new Self-Supervision message (error or warning) has been issued.
⇧	»Prot. Ready«	Signal: The device has completely booted, all protection functions are running and there is enough electrical energy for a trip pulse.
⇧	»Intern.Volt. not OK«	Signal: The self-supervision of the device has determined a problem with the internal voltage level or energy supply. This might impair the overall protection functionality, including the possibility to output a trip pulse. (If the supply via the connected CTs is sufficient you might want to check for a potential energy drain through the devices connected to the output(s).)

3.1.3.26 Operation / Status Display / Sgen

⇧	»Started«	Fault Simulation has been started
⇧	»Running«	Signal: Measuring value simulation is running
⇧	»Stopped«	Fault Simulation has been stopped
⇧	»Not Running«	Signal: Measuring value simulation is not running
⇩	»Ex Start Simulation-I«	State of the module input:External Start of Fault Simulation (Using the test parameters)
⇩	»ExBlo-I«	Module input state: External blocking
⇩	»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 / WIC1

⇗	»Op. Hours«	Device operation hours counter, that shows for how long the device has been operating since the last restart.

3.1.4.2 Operation / Count and RevData / Prot

⇗	»Fault No.«	Fault number
⇗	»Alarm No.«	Alarm number

3.1.4.3 Operation / Count and RevData / Modbus

3.1.4.3.1 Operation / Count and RevData / Modbus / RTU

⇗	»Comm.err.«	Grand total number of communication errors
⇗	»RX msg.«	Number of received messages / telegrams (since the last reset)
⇗	»Req.for me«	Total Number of requests for this slave.
⇗	»TX msg.«	Number of transmitted messages / telegrams (since the last reset)
⇗	»RX chars«	RX chars
⇗	»TX chars«	Number of transmitted characters (since the last reset)

3.1.4.3.2 Operation / Count and RevData / Modbus / TCP

	»NoOf All Req.«	Total number of requests, including requests for other Modbus slaves/servers.
	»NoOfRqForMe«	Total Number of requests for this Modbus slave/server.
	»NoOfResp.«	Total number of requests having been responded.
	»NoOfQ.Inval.«	Total number of Request errors. Request could not be interpreted
	»NoOf Cmd.OF«	If there are more incoming Modbus commands than the device can execute at a time the internal command stack overflows. Then the device counts the last/ exceeding commands that need to be ignored.
	»Cache Upd.«	Counter for the updates of the internal cache, that holds and prepares the measurement data for SCADA transmission. The cached data get updated (with the values actually measured by the WIC1) approx. every second. (Note that because of this, it is useless to query measurement values more often than once a second, you would simply receive the same cached values again.)
	»NoOfIntErr 1«	Total Number of Internal errors while interpreting the request.
	»NoOfIntErr 2«	Total Number of Internal errors while interpreting the request.

3.1.5 Operation / Recorders

	»Fault/Alarm Rec.«	The values measured at the time of a trip / an alarm are saved by the Fault/Alarm Recorder.

3.1.6 Operation / Time

	»Uptime«	Display the operation time of the device

3.1.7 Operation / Self-Supervision

	»Messages«	Internal messages

3.1.8 Operation / Reset

◉	»Prot . Rst. LEDs, FIs«	Direct Command to immediately reset all latched LEDs, all DiggiMEC Flag Indicators, and the Fault Info Screen that might be visible on the DiggiMEC display.
◉	»Prot . Rst. Alm/Flt Rec.«	Direct Command to immediately delete all entries from the Alarm/Fault Recorder.
◉	»Prot . Rst. Alarm/Flt. No.«	Direct Command to Reset the Alarm/Fault number
◉	»ThR . Rst. Thermal Lev.«	Reset the thermal level
◉	»Sys . Rst. Err. LED«	Direct Command to acknowledge a (device-internal) error. This also resets the System (Ready/Error) LED.
◉	»BkrWear . Reset«	Direct Command to reset the counters and the wear level of the circuit breaker.
◉	»Peak Current Ptr . Clear«	Direct Command to reset the drag indicator for »Imax«
◉	»Life Load . Rst. Alarm«	Direct Command to reset the Alarm signal. This also resets the countdown timer »Time to Alarm« back to the setting value »Threshold t«.
◉	»Modbus . Rst. Counters«	Direct Command to reset all Modbus Diagnosis Counters
◉	»SBM . Rst. Statistics«	Direct Command to reset the statistical data (min./max. values)

3.2 Device planning

3.2.1 Device planning / WIC1 + DiggiMEC

🔧	»DiggiMEC . Mode«	DiggiMEC, general operation mode
🔧	»Prot . Settings valid«	Select which settings shall be valid: the settings made via Smart view/DiggiMEC or the switches on the housing. (If set to “Switches”, then the respective default values are always used for all settings that are not associated with any switch.) Note that getting back from “Software” to “Switches” is not possible with this parameter, you have to execute a Reset to Factory Defaults instead!

3.2.2 Device planning / Projected Elements

	»IH2 . Mode«	Module Inrush, general operation mode
	»I> . Mode«	Phase Overcurrent Stage, general operation mode
	»I>> . Mode«	Phase Overcurrent Stage, general operation mode
	»I>>> . Mode«	Phase Overcurrent Stage, general operation mode
	»IG> . Mode«	Earth current protection stage, general operation mode
	»IG>> . Mode«	Earth current protection stage, general operation mode
	»I2/I1> . Mode«	Unbalanced Load-Stage, general operation mode
	»I2> . Mode«	Unbalanced Load-Stage, general operation mode
	»ThR . Mode«	Thermal replica module, general operation mode
	»Ipeak> . Mode«	Peak-Value Overcurrent, general operation mode
	»SOTF . Mode«	Switch Onto Fault - Module, general operation mode
	»ExP[1] . Mode«	External Protection - Module, general operation mode
	»ExP[2] . Mode«	External Protection - Module, general operation mode
	»TCM . Mode«	Trip Circuit Supervision, general operation mode
	»CBF . Mode«	Module Circuit Breaker Failure protection, general operation mode
	»BkrWear . Mode«	Circuit Breaker Monitoring, general operation mode
	»CLPU . Mode«	Cold Load Pickup Module, general operation mode
	»SBM . Mode«	Station Battery Monitoring, general operation mode
	»Life Load . Mode«	Load Current Histogram, general operation mode
	»Modbus . Mode«	Modbus Protocol, general operation mode
	»Sgen . Mode«	Sine wave generator, general operation mode

3.2.3 Device planning / Definition

	»I> . Definition«	Phase Overcurrent Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»I>> . Definition«	Phase Overcurrent Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»I>>> . Definition«	Phase Overcurrent Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»IG> . Definition«	Earth current protection stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»IG>> . Definition«	Earth current protection stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»I2/I1> . Definition«	Unbalanced Load-Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»I2> . Definition«	Unbalanced Load-Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»ThR . Definition«	Thermal replica module: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»Ipeak> . Definition«	Peak-Value Overcurrent: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»SOTF . Definition«	Switch Onto Fault - Module: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»ExP[1] . Definition«	External Protection - Module: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»ExP[2] . Definition«	External Protection - Module: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.
	»SBM . Definition«	Station Battery Monitoring: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.

3.3 Device Para

3.3.1 Device Para / WIC1

3.3.1.1 Device Para / WIC1 / Digital Inputs

	»Nom voltage«	Nominal voltage of the digital inputs

3.3.1.2 Device Para / WIC1 / Output

	»Out. Mode«	Select whether the output shall operate as an impulse output (for connecting a flag indicator with full compatibility to the 1st generation WIC1), or as a relay output (with a fixed, pre-defined usage as a self-supervision contact). (The usage as a self-supervision contact is only possible with an externally supplied WIC1-4, and connecting a flag indicator is not permissible with this setting.)
	»Out. assign.«	Assign the signal that shall activate the output. (If the output is set as impulse output the signal triggers the impulses for the connected Flag Indicator. If it is set as relay output the signal sets it to the “active” state.)
	»Out. Inverting«	Inverting of the signal that has been assigned to the output.
	»TCM«	Trip Circuit Monitoring alam can be linked additionally to FI-Output (only possible with Device option with Selfsupervision)

3.3.2 Device Para / DiggiMEC

3.3.2.1 Device Para / DiggiMEC / General Settings

	»Menu language«	Selection of the language
	»Operation Preference«	If set to “Early wake-up”, the DiggiMEC is fully available at smaller primary currents, but at the cost of more inaccurate WIC1 measurement values. If set to “Precise meas.”, the DiggiMEC gets fully available only with higher primary currents, but the WIC1 measurement values will be more precise. In general, it is recommended to keep the default “Precise meas.”.

3.3.2.2 Device Para / DiggiMEC / FI / BO

	»FI / BO 1 assign.«	Assignment of the Flag Indicator / bistable output relay
	»FI / BO 2 assign.«	Assignment of the Flag Indicator / bistable output relay
	»FI / BO 3 assign.«	Assignment of the Flag Indicator / bistable output relay
	»FI / BO 1 latching«	Defines whether the Flag Indicator/output relay will be latched when it is set. In case it is set as latched then you also have a choice between several automatical reset modes.
	»FI / BO 2 latching«	Defines whether the Flag Indicator/output relay will be latched when it is set. In case it is set as latched then you also have a choice between several automatical reset modes.
	»FI / BO 3 latching«	Defines whether the Flag Indicator/output relay will be latched when it is set. In case it is set as latched then you also have a choice between several automatical reset modes.

3.3.2.3 Device Para / DiggiMEC / LEDs

	»LED2 assign.«	Assignment of the LED 2
	»LED3 assign.«	Assignment of the LED 3
	»LED2 Color«	Select the “active” color (if the assigned signal is active) and the “inactive” color (if the assigned signal is inactive)
	»LED3 Color«	Select the “active” color (if the assigned signal is active) and the “inactive” color (if the assigned signal is inactive)
	»LED2 latching«	Defines whether the LED will be latched when it is set. In case it is set as latched then you also have a choice between several automatical reset modes.
	»LED3 latching«	Defines whether the LED will be latched when it is set. In case it is set as latched then you also have a choice between several automatical reset modes.

3.3.3 Device Para / Reset

	»Assign Ext. Reset«	Assign an digital input signal that, when it becomes true, will reset all latched LEDs, all DiggiMEC Flag Indicators, and a fault/trip info that might be visible on the DiggiMEC display.
	»Def. Autom. Reset«	The automatic reset will reset all latched LEDs, all DiggiMEC Flag Indicators, and a fault/trip info that might be visible on the DiggiMEC display. This is done depending on this setting, when a new protection pickup occurs or after a particular time has elapsed.
	»Reset via »RESET« key«	Select whether a reset via »RESET« key shall be password-protected.

3.3.4 Device Para / Security

	»Password«	Changing the password

3.3.5 Device Para / TCP/IP

3.3.5.1 Device Para / TCP/IP / TCP/IP config

◉	»Function«	Activation or deactivation of the TCP/IP communication.
◉	»IP address, part 1«	IP address (IPv4, part 1)
◉	»IP address, part 2«	IP address (IPv4, part 2)
◉	»IP address, part 3«	IP address (IPv4, part 3)
◉	»IP address, part 4«	IP address (IPv4, part 4)
◉	»Subnet mask, part 1«	Subnet mask (IPv4, part 1)
◉	»Subnet mask, part 2«	Subnet mask (IPv4, part 2)
◉	»Subnet mask, part 3«	Subnet mask (IPv4, part 3)
◉	»Subnet mask, part 4«	Subnet mask (IPv4, part 4)
◉	»Gateway, part 1«	Default gateway (IPv4, part 1)
◉	»Gateway, part 2«	Default gateway (IPv4, part 2)
◉	»Gateway, part 3«	Default gateway (IPv4, part 3)
◉	»Gateway, part 4«	Default gateway (IPv4, part 4)

3.3.6 Device Para / Modbus

3.3.6.1 Device Para / Modbus / General Settings

🔧	»Allow invalid addr.«	Select the rule how the device shall handle the query for an invalid start address (or an address range with internal “gaps”).

3.3.6.2 Device Para / Modbus / RTU

◉	»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.

3.3.6.3 Device Para / Modbus / TCP

	»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.
	»Modbus TCP Port Number«	TCP port number to be used for Modbus TCP. 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.

3.3.7 Device Para / Version

3.3.7.1 Device Para / Version / WIC1

	»Build«	Build Number
	»DM version«	Version of the device model
	»SW version«	Version of the device firmware
	»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.

3.3.7.2 Device Para / Version / DiggiMEC

	»Build«	Build Number
	»DM version«	Version of the device model
	»SW version«	Version of the device firmware
	»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.

3.3.7.3 Device Para / Version / Eth version

	»Build«	Build Number
	»SW version«	Version of the device firmware
	»Interf. Type«	Specification of the (built-in) hardware module for the communication interface

3.4 Field Para

3.4.1 Field Para / General Settings

	»Phase Sequence«	Phase Sequence
	»f«	Nominal frequency
	»Measuring method«	Measuring method for the protection stages I>, I>>, I>>>, IG>, IG>>: Fundamental or RMS
	»IG Source«	Selection if measured or calculated ground current should be used.

3.4.2 Field Para / CT

	»Display of Meas. Values«	Select the preferred scaling/unit for the display of measurement values.
	»Display of Meas. Values«	Display of Meas. Values
	»CT Type«	Select the connected CT Type
	»CT Type«	Select the connected CT Type
	»In,relative«	Relative primary rated current. (This is the rated current divided by the CT ratio, i.e. a value that has been made independent of the CT type.)
	»CT pri«	Nominal current of the primary side of the current transformers.
	»CT pri«	Nominal current of the primary side of the current transformers.
	»ECT pri«	This parameter defines the primary nominal current of the connected earth current transformer. If the earth current is measured via the Holmgreen connection, the primary value of the phase current transformer must be entered here.
	»ECT pri«	This parameter defines the primary nominal current of the connected earth current transformer. If the earth current is measured via the Holmgreen connection, the primary value of the phase current transformer must be entered here.
	»CT Shift by 0°/180°«	If this is set to 180° the phase current vectors are shifted by 180 degrees (change of sign), by device-internal calculation, i.e. without modification of the wiring.
	»ECT Shift by 0°/180°«	If this is set to 180° the ground current vector is shifted by 180 degrees (change of sign), by device-internal calculation, i.e. without modification of the wiring.

3.5 Protection Para

3.5.1 Protection Para / Breaker & Trip

	»Meth.Detect.Bkr.Pos.«	Select the method to be used to determine the connected breaker position.
	»I ON«	The breaker is determined as ON (closed) based on current measurement if any phase current is greater than this value (for at least the settable duration »t ON/OFF«).
	»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).
	»SCmd ON«	Switching ON Command, e.g. the state of the digital input
	»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.

3.5.2 Protection Para / IH2

	»Function«	Permanent activation or deactivation of module/stage.
	»IH2 / IH1«	Maximum permissible percentage of the 2nd harmonic of the 1st harmonic.
	»Imax«	Inrush limit value: If the phase current is above this value the inrush blocking is cancelled.
	»tmax«	Maximum duration (phase-selective) of an inrush blocking
	»3-ph Blo«	Activation of 3-phase inrush blocking: If an inrush is detected in (at least) one phase all three phases get blocked. (If this is inactive then only the Inrush-affected phase gets blocked.)

3.5.3 Protection Para / I>

	»Function«	Permanent activation or deactivation of module/stage.
	»I«	If the pickup value is exceeded, the protection stage starts to time out to trip. WARNING: Check the Technical Data and ensure that the actual overcurrent settings for this pickup threshold and the trip delay comply with the technical limits of the phase current inputs! (The device allows for overcurrent settings that are out of the permitted range of current values.)
	»Char«	Characteristic
	»t«	Time delay for trip or alarm
	»tChar«	Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.
	»tMinimum«	Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.
	»Reset Mode«	Reset Mode
	»tReset«	Reset delay for intermittent phase failures (INV characteristics only)
	»IH2 Blo«	Blocking the trip command, if an inrush is detected.
	»Stab. by CLPU«	Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.4 Protection Para / I>>

	»Function«	Permanent activation or deactivation of module/stage.
	»I«	If the pickup value is exceeded, the protection stage starts to time out to trip. WARNING: Check the Technical Data and ensure that the actual overcurrent settings for this pickup threshold and the trip delay comply with the technical limits of the phase current inputs! (The device allows for overcurrent settings that are out of the permitted range of current values.)
	»Char«	Characteristic
	»t«	Time delay for trip or alarm
	»tChar«	Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.
	»tMinimum«	Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.
	»Reset Mode«	Reset Mode
	»tReset«	Reset delay for intermittent phase failures (INV characteristics only)
	»IH2 Blo«	Blocking the trip command, if an inrush is detected.
	»Stab. by CLPU«	Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.5 Protection Para / I>>>

	»Function«	Permanent activation or deactivation of module/stage.
	»I«	If the pickup value is exceeded, the protection stage starts to time out to trip. WARNING: Check the Technical Data and ensure that the actual overcurrent settings for this pickup threshold and the trip delay comply with the technical limits of the phase current inputs! (The device allows for overcurrent settings that are out of the permitted range of current values.)
	»Char«	Characteristic
	»t«	Time delay for trip or alarm
	»tChar«	Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.
	»tMinimum«	Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.
	»Reset Mode«	Reset Mode
	»tReset«	Reset delay for intermittent phase failures (INV characteristics only)
	»IH2 Blo«	Blocking the trip command, if an inrush is detected.
	»Stab. by CLPU«	Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.6 Protection Para / IG>

	»Function«	Permanent activation or deactivation of module/stage.
	»IG«	If the pickup value is exceeded, the protection stage starts to time out to trip.
	»Char«	Characteristic
	»t«	Time delay for trip or alarm
	»tChar«	Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.
	»tMinimum«	Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.
	»Reset Mode«	Reset Mode
	»tReset«	Reset delay for intermittent phase failures (INV characteristics only)
	»IH2 Blo«	Blocking the trip command, if an inrush is detected.
	»Stab. by CLPU«	Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.7 Protection Para / IG>>

	»Function«	Permanent activation or deactivation of module/stage.
	»IG«	If the pickup value is exceeded, the protection stage starts to time out to trip.
	»Char«	Characteristic
	»t«	Time delay for trip or alarm
	»tChar«	Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.
	»tMinimum«	Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.
	»Reset Mode«	Reset Mode
	»tReset«	Reset delay for intermittent phase failures (INV characteristics only)
	»IH2 Blo«	Blocking the trip command, if an inrush is detected.
	»Stab. by CLPU«	Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.8 Protection Para / I2/I1>

	»Function«	Permanent activation or deactivation of module/stage.
	»I2/I1«	I2/I1 unbalance trip pickup setting (in percent), i.e. the ratio of negative sequence current I2 to the positive sequence current I1.
	»t«	Time delay for trip or alarm
	»IH2 Blo«	Blocking the trip command, if an inrush is detected.
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.9 Protection Para / I2>

	»Function«	Permanent activation or deactivation of module/stage.
	»I2«	The Threshold setting defines a minimum operating current magnitude of I2 for the 46 function to operate, which ensures that the relay has a solid basis for initiating a current unbalance trip. This is a supervisory function and not a trip level.
	»Char«	Characteristic
	»t«	Time delay for trip or alarm
	»tChar«	Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.
	»tMinimum«	Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.
	»Reset Mode«	Reset Mode
	»tReset«	Reset delay for intermittent phase failures (INV characteristics only)
	»IH2 Blo«	Blocking the trip command, if an inrush is detected.
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.10 Protection Para / ThR

	»Function«	Permanent activation or deactivation of module/stage.
	»Ib«	Base current: Maximum permissible thermal continuous current.
	»K«	Overload Factor: The maximum thermal limit is defined as k*IB, the product of the overload factor and the base current.
	»Pre-Alarm Lev.«	Threshold value for the Thermal Level. If the thermal level exceeds this setting the signal »ThR . Pre-Alarm« is issued.
	»τ-warm«	Warming-up time constant
	»τ-cool«	Cooling time constant
	»Initial Thermal Level«	Select the criterion for setting the initial thermal level after a restart of the device.
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.11 Protection Para / Ipeak>

	»Function«	Permanent activation or deactivation of module/stage.
	»I«	Pickup threshold, defined as RMS value (i.e. peak current value divided by √2). If the pickup value is exceeded, the module/element starts to time out to trip.
	»t«	Time delay for trip or alarm
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.12 Protection Para / SOTF

	»Function«	Permanent activation or deactivation of module/stage.
	»Enabling«	Select the criterion for determining a manual CLOSE of the breaker. (After this, the »SOTF« module gets enabled for a particular settable time.)
	»t-enable«	While this timer is running, and while the module is not blocked, the Switch Onto Fault Module is effective (SOTF is armed).
	»t«	Time delay for trip or alarm. (For the »SOTF« module, an instantaneous tripping is typical, i.e. the setting value 0 s.)
	»Trigger«	Assign the type of pickup signal that triggers the SOTF module. If the assigned pickup signal is issued, the SOTF module itself picks up.
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.13 Protection Para / ExP[1]

	»Function«	Permanent activation or deactivation of module/stage.
	»t«	Time delay for trip or alarm
	»Trigger Signal«	Assign the trigger signal that will make the »ExP« module start (pickup).
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.14 Protection Para / ExP[2]

	»Function«	Permanent activation or deactivation of module/stage.
	»t«	Time delay for trip or alarm
	»Trigger Signal«	Assign the trigger signal that will make the »ExP« module start (pickup).
	»Condition«	Assign a signal that must be active in additon to the external signal for making the »ExP« module start (pickup). (If no signal has been assigned here then the »ExP« module always picks up as soon as the external signal becomes active.)
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.15 Protection Para / TCM

	»Function«	Permanent activation or deactivation of module/stage.
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.16 Protection Para / CBF

	»Function«	Permanent activation or deactivation of module/stage.
	»t-CBF«	If the delay time is expired, a CBF alarm is issued.
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.17 Protection Para / CLPU

	»Function«	Permanent activation or deactivation of module/stage.
	»50/51 Stab.«	Select whether the CLPU stabilization shall be effective for the Phase Overcurrent stages, and which operating mode shall be used.
	»50, 51 Factor«	If the operating mode has been set to increase the pickup threshold then this is the factor by which the pickup threshold of each the Phase Overcurrent stage is multiplied during the CLPU stabilization.
	»50 N/G, 51 N/G Stab.«	Select whether the CLPU stabilization shall be effective for the Ground (Earth) Overcurrent stages, and which operating mode shall be used.
	»50 N/G, 51 N/G Factor«	If the operating mode has been set to increase the pickup threshold then this is the factor by which the pickup threshold of each the Ground (Earth) Overcurrent stage is multiplied during the CLPU stabilization.
	»tOff«	Timer stage, that is started when the breaker position is detected as Off. (The next re-energization after this timer has expired will trigger the CLPU stabilization.)
	»tStab«	Duration of the CLPU stabilization. This timer stage is started when the CLPU stabilization is triggered.
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.

3.5.18 Protection Para / Condition Monitoring

3.5.18.1 Protection Para / Condition Monitoring / Peak Current Ptr

	»Time win. for calc. avg.«	Select the time-window for calculating average values

3.5.18.2 Protection Para / Condition Monitoring / Life Load

	»Function«	Permanent activation or deactivation of module/stage.
	»I«	The sum of operating times in current ranges above this value is monitored.
	»Threshold t«	An alarm is issued if the sum of operating times in current ranges above »I« exceeds this time threshold.

3.5.18.3 Protection Para / Condition Monitoring / BkrWear

	»Function«	Permanent activation or deactivation of the Breaker Wear function. Important: The activation is only possible after the primary rated current »CT pri« has been set in the Field Parameters.
	»Alarm Thresh. Sum Trips«	Maximum number of open commands, until the circuit breaker has to be maintained.
	»Alarm Thresh. Sum Itrip«	Maximum value for the sum of ruptured currents, until the circuit breaker has to be maintained.
	»Max. CB Wear Level«	Maximum wear level (as a percentage), until the circuit breaker has to be maintained.
	»Ir«	Rated current of the circuit breaker
	»N(Ir)«	Number of switching operations at the rated current of the circuit breaker
	»Isc«	Maximum short-circuit current of the circuit breaker
	»N(Isc)«	Number of switching operations at the maximum short-circuit current of the circuit breaker

3.5.18.4 Protection Para / Condition Monitoring / SBM

	»Function«	Permanent activation or deactivation of module/stage.
	»V Batt>«	Threshold (stage 1). If the station battery voltage exceeds this threshold values (for the settable time »t-VBatt>«), an alarm signal is issued.
	»V Batt<«	Threshold (stage 1). If the station battery voltage drops below this threshold value (for the settable time »t-VBatt<«), an alarm signal is issued.
	»V Batt<<«	Threshold (stage 2). If the station battery voltage drops below this threshold value (for the settable time »t-VBatt<<«), either an alarm signal is issued or the circuit breaker is tripped (depending on the setting of »Definition«).
	»t-VBatt>«	Time delay for the threshold (stage 1). If the station battery voltage exceeds this threshold values (for the time delay set here), an alarm signal is issued.
	»t-VBatt<«	Time delay for the threshold (stage 1). If the station battery voltage drops below this threshold values (for the time delay set here), an alarm signal is issued.
	»t-VBatt<<«	Time delay for the threshold (stage 2). If the station battery voltage drops below this threshold values (for the time delay set here), either an alarm signal or a trip signal is issued.
	»ExBlo«	External blocking of the module if the state of the assigned signal is true.
	»V Batt nom«	Nominal voltage of the station battery
	»Corr.factor Vbatt«	Correction factor, that manually shifts the displayed battery voltage up or down by the set percentage. (0% means that no such correction is made, i.e. the battery voltage is displayed as measured.)

3.6 Service

3.6.1 Service / General

◉	»User Restart«	Direct Command to manually initiate a warm restart of the device.
◉	»Factory Reset«	Direct Command to reset all settings of the device to their respective default.
◉	»Force Backup Prot.«	Direct Command to manually force the device into the Backup Protection mode. This disables all other protection, supervision and communication functions, so that it makes sense only for testing purposes (e.g. for testing Backup Protection during commissioning).

3.6.2 Service / Prot

◉	»Force Trip Cmd«	Direct Command to force the device to issue a trip command (for testing purposes). This has the following additional effects: - The signals »Prot . Pickup«, »Prot . Trip« and »Prot . TripCmd« are set. - A fault record is created. - The breaker failure protection is triggered. - An automatic reset is executed.
◉	»Force FI Pulse«	Direct Command to force an impulse at the FI output of the WIC1 (for testing purposes).

3.6.3 Service / Sgen

3.6.3.1 Service / Sgen / Process

◉	»Start Simulation«	Start Fault Simulation (Using the test parameters)
◉	»Stop Simulation«	Stopp Fault Simulation (Using the test parameters)
🔧	»Ex Start Simulation«	External Start of Fault Simulation (Using the test parameters)
🔧	»ExBlo«	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 ForcePost«	Force Post state. Abort simulation.

3.6.3.2 Service / Sgen / Configuration

3.6.3.2.1 Service / Sgen / Configuration / Times

🔧	»PreFault«	Pre Fault Duration
🔧	»FaultSimulation«	Duration of Fault Simulation
🔧	»PostFault«	Post Fault Duration

3.6.3.2.2 Service / Sgen / Configuration / PreFault

	»IA «	Current Fundamental Magnitude in Pre State: phase A
	»IB «	Current Fundamental Magnitude in Pre State: phase B
	»IC «	Current Fundamental Magnitude in Pre State: phase C
	»IG meas «	Current Fundamental Magnitude in Pre State: IG

3.6.3.2.3 Service / Sgen / Configuration / FaultSimulation

	»IA «	Current Fundamental Magnitude in Fault State: phase A
	»IB «	Current Fundamental Magnitude in Fault State: phase B
	»IC «	Current Fundamental Magnitude in Fault State: phase C
	»IG meas «	Current Fundamental Magnitude in Fault State: IG

3.6.3.2.4 Service / Sgen / Configuration / PostFault

	»IA «	Current Fundamental Magnitude during Post phase: phase A
	»IB «	Current Fundamental Magnitude during Post phase: phase B
	»IC «	Current Fundamental Magnitude during Post phase: phase C
	»IG meas «	Current Fundamental Magnitude during Post phase: IG

4 System

System

Messages	
	Internal messages This item represents a special dialog. (See the Technical Manual for details.)

4.1 Sys

System

Uptime	
	Display the operation time of the device This item represents a special dialog. (See the Technical Manual for details.)

Password	
	Changing the password This item represents a special dialog. (See the Technical Manual for details.)

4.1.1 Sys: Direct Controls

Rst. Err. LED	Operation / Reset	
False	False, True Table	*P.1*
	Direct Command to acknowledge a (device-internal) error. This also resets the System (Ready/Error) LED.	

Factory Reset	Service / General	
False	False, True Table	*P.1*
	Direct Command to reset all settings of the device to their respective default.	

User Restart	Service / General	
False	False, True Table	*P.1*
	Direct Command to manually initiate a warm restart of the device.	

Force Backup Prot.	Service / General	
False	False, True Table	*P.1*
	Direct Command to manually force the device into the Backup Protection mode. This disables all other protection, supervision and communication functions, so that it makes sense only for testing purposes (e.g. for testing Backup Protection during commissioning).	

4.1.2 Sys: Signals (Output States)

New error/warning	Operation / Status Display / Sys
⇧	*Signal: A new Self-Supervision message (error or warning) has been issued.*

Prot. Ready	Operation / Status Display / Sys
⇧	*Signal: The device has completely booted, all protection functions are running and there is enough electrical energy for a trip pulse.*

Intern.Volt. not OK	Operation / Status Display / Sys
⇧	*Signal: The self-supervision of the device has determined a problem with the internal voltage level or energy supply. This might impair the overall protection functionality, including the possibility to output a trip pulse. (If the supply via the connected CTs is sufficient you might want to check for a potential energy drain through the devices connected to the output(s).)*

4.1.3 Sys: Values

Op. Hours	Operation / Count and RevData / WIC1
⟍	*Device operation hours counter, that shows for how long the device has been operating since the last restart.*

Build **Build**	Device Para / Version / WIC1
⟍	*Build Number*

DM version	Device Para / Version / WIC1
⟍	*Version of the device model*

SW version	Device Para / Version / WIC1
⟍	*Version of the device firmware*

CAT No.	Device Para / Version / WIC1
⟍	*»CAT No.«, Order Code as printed on the nameplate of the device.*

REV.	Device Para / Version / WIC1
⟍	*Revision (as printed on the nameplate of the device).*

S/N	Device Para / Version / WIC1
⟍	*The serial number of the device.*

DM version	Device Para / Version / DiggiMEC
	Version of the device model

SW version	Device Para / Version / DiggiMEC
	Version of the device firmware

CAT No.	Device Para / Version / DiggiMEC
	»CAT No.«, Order Code as printed on the nameplate of the device.

REV.	Device Para / Version / DiggiMEC
	Revision (as printed on the nameplate of the device).

S/N	Device Para / Version / DiggiMEC
	The serial number of the device.

5 Field settings

5.1 CT

Current Transformer

5.1.1 CT: Settings

f	Field Para / General Settings	
Default: • 50Hz, If: Device Variant with DIP/HEX Switches = 50 Hz • 60Hz, If: Device Variant with DIP/HEX Switches = 60 Hz • Else: 50Hz	50Hz, 60Hz Table	*P.1*
Nominal frequency		

Phase Sequence	Field Para / General Settings	
ABC	ABC, ACB Table	*P.1*
Phase Sequence		

In,relative	Field Para / CT	
• Only available if: CT Type = Relative 1.000In.min	1.000In.min ... 3.500In.min	*P.1*
Relative primary rated current. (This is the rated current divided by the CT ratio, i.e. a value that has been made independent of the CT type.)		

CT Type	Field Para / CT	
• Only available if: Settings valid = Software Default: • Relative, If: CT Type, DIP/HEX Range = WIC-CTs • WC2, If: CT Type, DIP/HEX Range = WIC-ACT290 • Else: Relative	Adjustable range: • Relative ... WC1, If: CT Type, DIP/HEX Range = WIC-CTs • WC2, If: CT Type, DIP/HEX Range = WIC-ACT290 • Else: Relative ... WC2 Table	*P.1*
Select the connected CT Type		

CT pri	Field Para / CT	
• Only available if: Settings valid = Software Default: • 1A, If: CT Type, DIP/HEX Range = WIC-CTs • 600A, If: CT Type, DIP/HEX Range = WIC-ACT290 • Else: 1A	Adjustable range: • 1A ... 1A, If: CT Type = Relative • 16.0A ... 56.0A, If: CT Type = WE2 : 16 A ... 56 A • 16.0A ... 56.0A, If: CT Type = W2 : 16 A ... 56 A • 32.0A ... 112.0A, If: CT Type = W3 : 32 A ... 112 A • 64.0A ... 224.0A, If: CT Type = W4 : 64 A ... 224 A • 128.0A ... 448.0A, If: CT Type = W5 : 128 A ... 448 A • 256.0A ... 896.0A, If: CT Type = W6 : 256 A ... 896 A • 1A ... 10000.0A, If: CT Type = WC1 • 1A ... 10000.0A, If: CT Type = WC2 • Else: 1A ... 10000.0A	*P.1*
Nominal current of the primary side of the current transformers.		

CT Shift by 0°/180°	Field Para / CT	
0°	0°, 180° Table	*P.1*
If this is set to 180° the phase current vectors are shifted by 180 degrees (change of sign), by device-internal calculation, i.e. without modification of the wiring.		

ECT pri	Field Para / CT	
• Only available if: Settings valid = Software 60A	1A ... 10000.0A	*P.1*
This parameter defines the primary nominal current of the connected earth current transformer. If the earth current is measured via the Holmgreen connection, the primary value of the phase current transformer must be entered here.		

ECT Shift by 0°/180°	Field Para / CT	
Only available if: • Device Variant with Ground Current Inputs = Configurable (Meas. Ground Current default) • Device Variant with Ground Current Inputs = Configurable (Calc. Ground Current default) 0°	0°, 180° Table	*P.1*
If this is set to 180° the ground current vector is shifted by 180 degrees (change of sign), by device-internal calculation, i.e. without modification of the wiring.		

Measuring method	Field Para / General Settings	
Fundamental	Fundamental, True RMS Table	*P.1*
Measuring method for the protection stages I>, I>>, I>>>, IG>, IG>>: Fundamental or RMS		

IG Source	Field Para / General Settings	
Default: • calculated, If: Device Variant with Ground Current Inputs = Calculated Ground Current • measured, If: Device Variant with Ground Current Inputs = Configurable (Meas. Ground Current default) • calculated, If: Device Variant with Ground Current Inputs = Configurable (Calc. Ground Current default) • Else: measured	Adjustable range: • calculated, If: Device Variant with Ground Current Inputs = Calculated Ground Current • calculated, measured, If: Device Variant with Ground Current Inputs = Configurable (Meas. Ground Current default) • calculated, measured, If: Device Variant with Ground Current Inputs = Configurable (Calc. Ground Current default) • Else: calculated, measured Table	*P.1*
Selection if measured or calculated ground current should be used.		

Display of Meas. Values	Field Para / CT	
• Only available if: Settings valid = Software Based on In,relative	Adjustable range: • Based on In,relative, If: CT Type = Relative • Based on In,relative, Primary current values, If: CT Type ≠ Relative Table	*P.1*
Select the preferred scaling/unit for the display of measurement values.		

5.1.2 CT: Direct Controls

Display of Meas. Values	Field Para / CT	
• Only available if: Settings valid = Switches Based on In,relative	Adjustable range: • Based on In,relative, If: CT Type = Relative • Based on In,relative, Primary current values, If: CT Type ≠ Relative Table	*P.1*
Display of Meas. Values		

CT Type	Field Para / CT	
• Only available if: Settings valid = Switches Default: • Relative, If: CT Type, DIP/HEX Range = WIC-CTs • WC2, If: CT Type, DIP/HEX Range = WIC-ACT290 • Else: Relative	Adjustable range: • Relative ... WC1, If: CT Type, DIP/HEX Range = WIC-CTs • Relative ... WC2, If: CT Type, DIP/HEX Range = WIC-ACT290 • Else: Relative ... WC2 Table	*P.1*
Select the connected CT Type		

CT pri	Field Para / CT	
• Only available if: Settings valid = Switches Default: • 1A, If: CT Type, DIP/HEX Range = WIC-CTs • 600A, If: CT Type, DIP/HEX Range = WIC-ACT290 • Else: 1A	1A ... 10000.0A	*P.1*
Nominal current of the primary side of the current transformers.		

ECT pri	Field Para / CT	
• Only available if: Settings valid = Switches 60A	1A ... 10000.0A	*P.1*
This parameter defines the primary nominal current of the connected earth current transformer. If the earth current is measured via the Holmgreen connection, the primary value of the phase current transformer must be entered here.		

5.1.3 CT: Values

IA	Operation / Measured Values / Current
Measured value: Phase current (fundamental)	

IB	Operation / Measured Values / Current
Measured value: Phase current (fundamental)	

IC	Operation / Measured Values / Current
Measured value: Phase current (fundamental)	

IG meas	Operation / Measured Values / Current
Only available if: • Device Variant with Ground Current Inputs = Configurable (Meas. Ground Current default) • Device Variant with Ground Current Inputs = Configurable (Calc. Ground Current default) *Measured value (measured): IG (fundamental)*	

IG calc	Operation / Measured Values / Current
Measured value (calculated): IG (fundamental) *Since the value might be unreliable or invalid for low phase currents it is displayed as “-0.0” in this case.*	

phi IA	Operation / Measured Values / Current
	Measured value (calculated): Angle of Phasor IA *Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.*

phi IB	Operation / Measured Values / Current
	Measured value (calculated): Angle of Phasor IB *Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.*

phi IC	Operation / Measured Values / Current
	Measured value (calculated): Angle of Phasor IC *Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.*

phi IG meas	Operation / Measured Values / Current
	Only available if: • Device Variant with Ground Current Inputs = Configurable (Meas. Ground Current default) • Device Variant with Ground Current Inputs = Configurable (Calc. Ground Current default) *Measured value (calculated): Angle of Phasor IG meas* *Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.*

phi IG calc	Operation / Measured Values / Current
	Measured value (calculated): Angle of Phasor IG calc *Since the angle might be unreliable or invalid for a too low amplitude it is displayed as 360°” in this case.*

IA H2	Operation / Measured Values / Current
	Measured Value: Ratio of 2nd harmonic over fundamental of IA

IB H2	Operation / Measured Values / Current
	Measured Value: Ratio of 2nd harmonic over fundamental of IB

IC H2	Operation / Measured Values / Current
	Measured Value: Ratio of 2nd harmonic over fundamental of IC

IA RMS	Operation / Measured Values / Current RMS
	Measured value: Phase current (RMS)

IB RMS	Operation / Measured Values / Current RMS
	Measured value: Phase current (RMS)

IC RMS	Operation / Measured Values / Current RMS
	Measured value: Phase current (RMS)

IG meas RMS	Operation / Measured Values / Current RMS
	Only available if: • Device Variant with Ground Current Inputs = Configurable (Meas. Ground Current default) • Device Variant with Ground Current Inputs = Configurable (Calc. Ground Current default) *Measured value (measured): IG (RMS)*

IG calc RMS	Operation / Measured Values / Current RMS
	Measured value (calculated): IG (RMS) *Since the value might be unreliable or invalid for low phase currents it is displayed as “-0.0” in this case.*

I0	Operation / Measured Values / Current
	Measured value (calculated): Zero current (fundamental)

I1	Operation / Measured Values / Current
	Measured value (calculated): Positive phase sequence current (fundamental)

I2	Operation / Measured Values / Current
	Measured value (calculated): Unbalanced load current (fundamental)

%(I2/I1)	Operation / Measured Values / Current
	Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.

%IA THD	Operation / Measured Values / Current RMS
	Measured value (calculated): IA Total Harmonic Distortion

%IB THD	Operation / Measured Values / Current RMS
	Measured value (calculated): IB Total Harmonic Distortion

%IC THD	Operation / Measured Values / Current RMS
	Measured value (calculated): IC Total Harmonic Distortion

6 Recorders

6.1 Fault/Alarm Rec.

The values measured at the time of a trip / an alarm are saved by the Fault/Alarm Recorder.

Fault/Alarm Rec.	
	The values measured at the time of a trip / an alarm are saved by the Fault/Alarm Recorder. This item represents a special dialog. (See the Technical Manual for details.)

7 Communication

7.1 Modbus

7.1.1 Modbus: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	Adjustable range: • -, RTU, If: Modbus = serial • -, TCP, If: Modbus = TCP • Else: -, RTU, -, TCP Table	*P.1*
Modbus Protocol, general operation mode		

7.1.2 Modbus: Settings

Allow invalid addr.	Device Para / Modbus / General Settings	
Send an exception	Send an exception, Inv. addr.are allowed Table	*P.1*
Select the rule how the device shall handle the query for an invalid start address (or an address range with internal “gaps”).		

Baud rate	Device Para / Modbus / RTU	
• Only available if: Modbus = serial 9600	1200 . . . 115200 Table	*P.1*
Baud rate		

Physical Settings	Device Para / Modbus / RTU	
• Only available if: Modbus = serial 8E1	8E1, 8O1, 8N1, 8N2 Table	*P.1*
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.		

Modbus TCP Port Number	Device Para / Modbus / TCP	
• Only available if: Modbus = TCP 502	502 ... 65535	*P.1*
TCP port number to be used for Modbus TCP. *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.*		

7.1.3 Modbus: Direct Controls

Rst. Counters	Operation / Reset	
Inactive	Inactive, Active Table	*P.1*
Direct Command to reset all Modbus Diagnosis Counters		

Slave ID	Device Para / Modbus / RTU	
• Only available if: Modbus = serial 1	1 ... 247	*P.1*
Device address (Slave ID) within the bus system. Each device address has to be unique within a bus system.		

Unit ID	Device Para / Modbus / TCP	
• Only available if: Modbus = TCP 1	1 ... 247	*P.1*
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.		

7.1.4 Modbus: Values

Comm.err.	Operation / Count and RevData / Modbus / RTU
• Only available if: Modbus = serial *Grand total number of communication errors*	

RX msg.	Operation / Count and RevData / Modbus / RTU
• Only available if: Modbus = serial *Number of received messages / telegrams (since the last reset)*	

Req.for me	Operation / Count and RevData / Modbus / RTU

- Only available if: Modbus = serial

Total Number of requests for this slave.

TX msg.	Operation / Count and RevData / Modbus / RTU

- Only available if: Modbus = serial

Number of transmitted messages / telegrams (since the last reset)

RX chars	Operation / Count and RevData / Modbus / RTU

- Only available if: Modbus = serial

RX chars

TX chars	Operation / Count and RevData / Modbus / RTU

- Only available if: Modbus = serial

Number of transmitted characters (since the last reset)

NoOf All Req.	Operation / Count and RevData / Modbus / TCP

- Only available if: Modbus = TCP

Total number of requests, including requests for other Modbus slaves/servers.

NoOfRqForMe	Operation / Count and RevData / Modbus / TCP

- Only available if: Modbus = TCP

Total Number of requests for this Modbus slave/server.

NoOfResp.	Operation / Count and RevData / Modbus / TCP

- Only available if: Modbus = TCP

Total number of requests having been responded.

NoOfQ.Inval.	Operation / Count and RevData / Modbus / TCP

- Only available if: Modbus = TCP

Total number of Request errors. Request could not be interpreted

NoOf Cmd.OF	Operation / Count and RevData / Modbus / TCP

- Only available if: Modbus = TCP

If there are more incoming Modbus commands than the device can execute at a time the internal command stack overflows. Then the device counts the last/exceeding commands that need to be ignored.

Cache Upd.	Operation / Count and RevData / Modbus / TCP

- Only available if: Modbus = TCP

Counter for the updates of the internal cache, that holds and prepares the measurement data for SCADA transmission. The cached data get updated (with the values actually measured by the WIC1) approx. every second.

(Note that because of this, it is useless to query measurement values more often than once a second, you would simply receive the same cached values again.)

NoOfIntErr 1 **NoOfIntErr 2**	Operation / Count and RevData / Modbus / TCP

- Only available if: Modbus = TCP

Total Number of Internal errors while interpreting the request.

8 Protection Parameter

Module General Protection

8.1 Prot: Device Planning Parameters

Settings valid	Device planning / WIC1 + DiggiMEC	
Default: • Software, If: Device Variant with DIP/HEX Switches = 50 Hz / 60 Hz • Switches, If: Device Variant with DIP/HEX Switches ≠ 50 Hz / 60 Hz	Adjustable range: • Software, If: Device Variant with DIP/HEX Switches = 50 Hz / 60 Hz • Switches, Software, If: Device Variant with DIP/HEX Switches ≠ 50 Hz / 60 Hz Table	*P.1*

Select which settings shall be valid: the settings made via Smart view/DiggiMEC or the switches on the housing.

(If set to “Switches”, then the respective default values are always used for all settings that are not associated with any switch.)

Note that getting back from “Software” to “Switches” is not possible with this parameter, you have to execute a Reset to Factory Defaults instead!

8.2 Prot: Settings

ExBlo TripCmd	Protection Para / Breaker & Trip	
-	- . . . - Table	*P.1*

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.

Out. Mode	Device Para / WIC1 / Output	
• Only available if: Device Variant/ Outputs = TC: TripCmd, FI: configurable Impulse Output	Adjustable range: • Impulse Output, Syst. O.K. & Ext.Suppl., If: Dual-Powered Device Variant = True • Impulse Output, If: Dual-Powered Device Variant = False Table	*P.1*

Select whether the output shall operate as an impulse output (for connecting a flag indicator with full compatibility to the 1st generation WIC1), or as a relay output (with a fixed, pre-defined usage as a self-supervision contact).

(The usage as a self-supervision contact is only possible with an externally supplied WIC1-4, and connecting a flag indicator is not permissible with this setting.)

Out. assign.	Device Para / WIC1 / Output	
• Only available if: Out. Mode ≠ Syst. O.K. & Ext.Suppl. Default: • -, If: Device Variant/Outputs = TC: TripCmd, FI: Without / Self-Supervision • TripCmd, If: Device Variant/Outputs = TC: TripCmd, FI: TripCmd • TripCmd, If: Device Variant/Outputs = TC: TripCmd, FI: configurable • Else: -	Adjustable range: • -, If: Device Variant/Outputs = TC: TripCmd, FI: Without / Self-Supervision • TripCmd, If: Device Variant/Outputs = TC: TripCmd, FI: TripCmd • - . . . -, If: Device Variant/Outputs = TC: TripCmd, FI: configurable • Else: - . . . - ↳ Table	*P.1*
Assign the signal that shall activate the output. *(If the output is set as impulse output the signal triggers the impulses for the connected Flag Indicator. If it is set as relay output the signal sets it to the “active” state.)*		

TCM	Device Para / WIC1 / Output	
Default: • Active, If: Backup Protection / Self-Supervision = Self-Supervision operates "FI"-Output • Inactive, If: Backup Protection / Self-Supervision ≠ Self-Supervision operates "FI"-Output		*P.1*
Trip Circuit Monitoring alam can be linked additionally to FI-Output (only possible with Device option with Selfsupervision)		

Out. Inverting	Device Para / WIC1 / Output	
• Only available if: Out. Mode ≠ Syst. O.K. & Ext.Suppl. Inactive	Adjustable range: • Inactive, If: Device Variant/Outputs = TC: TripCmd, FI: Without / Self-Supervision • Inactive, If: Device Variant/Outputs = TC: TripCmd, FI: TripCmd • Inactive, Active, If: Device Variant/Outputs = TC: TripCmd, FI: configurable • Else: Inactive, Active ↳ Table	*P.1*
Inverting of the signal that has been assigned to the output.		

Nom voltage	Device Para / WIC1 / Digital Inputs	
Default: • 24 VDC, If: Dual-Powered Device Variant = True • 115 VAC / 230 VAC, If: Dual-Powered Device Variant = False	Adjustable range: • 24 VDC, 48 VDC ... 60 VDC, 110 VDC, 230 VDC, 110 VAC, 230 VAC, If: Dual-Powered Device Variant = True • 115 VAC / 230 VAC, If: Dual-Powered Device Variant = False ↳ Table	*P.1*
Nominal voltage of the digital inputs		

Meth.Detect.Bkr.Pos.	Protection Para / Breaker & Trip	
Current-Based	Adjustable range: • Current-Based, If: Device Variant/Inputs = Without Inputs • Current-Based, If: Device Variant/Inputs = Without Inputs • Current-Based, If: Device Variant/Inputs = Ext. Trip • Current-Based, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • Current-Based, If: Device Variant/Inputs = Configurable • Current-Based, Aux-Based, Current and Aux, If: Device Variant/Inputs = Configurable Inputs • Else: Current-Based, Aux-Based, Current and Aux Table	*P.1*
Select the method to be used to determine the connected breaker position.		

I ON	Protection Para / Breaker & Trip	
Only available if: • Meth.Detect.Bkr.Pos. = Current-Based • Meth.Detect.Bkr.Pos. = Current and Aux 0.10In	0.05In . . . 0.20In	*P.1*
The breaker is determined as ON (closed) based on current measurement if any phase current is greater than this value (for at least the settable duration »t ON/OFF«).		

Aux ON	Protection Para / Breaker & Trip	
Only available if: • Meth.Detect.Bkr.Pos. = Aux-Based • Meth.Detect.Bkr.Pos. = Current and Aux -	Adjustable range: • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Ext. Trip • -, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • -, If: Device Variant/Inputs = Configurable • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable Inputs • Else: -, DI 1, DI 2, - Table	*P.1*
The CB is in ON-position if the state of the assigned signal is true (52a).		

Aux OFF	Protection Para / Breaker & Trip	
Only available if: • Meth.Detect.Bkr.Pos. = Aux-Based • Meth.Detect.Bkr.Pos. = Current and Aux - *The CB is in OFF-position if the state of the assigned signal is true (52b).*	Adjustable range: • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Ext. Trip • -, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • -, If: Device Variant/Inputs = Configurable • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable Inputs • Else: -, DI 1, DI 2, - Table	*P.1*

SCmd ON	Protection Para / Breaker & Trip	
- *Switching ON Command, e.g. the state of the digital input*	Adjustable range: • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Ext. Trip • -, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable Inputs • Else: -, DI 1, DI 2, - Table	*P.1*

Assign Ext. Reset	Device Para / Reset	
Default: • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Ext. Trip • DI 1, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • -, If: Device Variant/Inputs = Configurable • Else: - *Assign an digital input signal that, when it becomes true, will reset all latched LEDs, all DiggiMEC Flag Indicators, and a fault/trip info that might be visible on the DiggiMEC display.*	Adjustable range: • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Ext. Trip • DI 1, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable Inputs • Else: -, DI 1, DI 2, - Table	*P.1*

Def. Autom. Reset	Device Para / Reset	
New Pickup or After 8 h	OFF (No Autom. Reset) . . . New Pickup or After 10 s Table	*P.1*

The automatic reset will reset all latched LEDs, all DiggiMEC Flag Indicators, and a fault/trip info that might be visible on the DiggiMEC display. This is done depending on this setting, when a new protection pickup occurs or after a particular time has elapsed.

8.3 Prot: Direct Controls

Force Trip Cmd	Service / Prot	
Inactive	Inactive, Active Table	*P.1*

Direct Command to force the device to issue a trip command (for testing purposes). This has the following additional effects:

- The signals »Prot . Pickup«, »Prot . Trip« and »Prot . TripCmd« are set.

- A fault record is created.

- The breaker failure protection is triggered.

- An automatic reset is executed.

Force FI Pulse	Service / Prot	
Only available if: • Device Variant/Outputs = TC: TripCmd, FI: TripCmd • Device Variant/Outputs = TC: TripCmd, FI: configurable Inactive	Inactive, Active Table	*P.1*

Direct Command to force an impulse at the FI output of the WIC1 (for testing purposes).

Rst. LEDs, FIs	Operation / Reset	
False	False, True Table	*P.1*

Direct Command to immediately reset all latched LEDs, all DiggiMEC Flag Indicators, and the Fault Info Screen that might be visible on the DiggiMEC display.

Rst. Alm/Flt Rec.	Operation / Reset	
False	False, True Table	*P.1*

Direct Command to immediately delete all entries from the Alarm/Fault Recorder.

Rst. Alarm/Flt. No.	Operation / Reset	
False	False, True Table	*P.1*
Direct Command to Reset the Alarm/Fault number		

8.4 Prot: Input States

ExBlo TripCmd-I (Prot . ExBlo TripCmd)	Operation / Status Display / Prot
Module input state: External Blocking of the Trip Command	

8.5 Prot: Signals (Output States)

TripCmd	Operation / Status Display / Trips Operation / Status Display / Prot
Signal: Trip Command	

Trip	Operation / Status Display / Trips Operation / Status Display / Prot
Signal: General Trip	

Alarm	Operation / Status Display / Alarms Operation / Status Display / Prot
Signal: General Alarm	

Pickup	Operation / Status Display / Pickups Operation / Status Display / Prot
Signal: General Pickup	

Active	Operation / Status Display / All Actives Operation / Status Display / Prot
Signal: active	

Trip IPh	Operation / Status Display / Prot
Signal: General Trip due to a phase current fault	

Trip IG	Operation / Status Display / Prot
Signal: General Trip due to a ground current fault	

Trip Ext.	Operation / Status Display / Prot

Only available if:

- Device Variant/Inputs = Ext. Trip
- Device Variant/Inputs = Configurable
- Device Variant/Inputs = Ext. Trip, Ext. Reset
- Device Variant/Inputs = Configurable Inputs

Signal: General Trip due to an external signal

Trip IA	Operation / Status Display / Prot

Signal: General Trip due to a fault in phase A

Trip IB	Operation / Status Display / Prot

Signal: General Trip due to a fault in phase B

Trip IC	Operation / Status Display / Prot

Signal: General Trip due to a fault in phase C

Pickup I Ph	Operation / Status Display / Prot

Signal: General Pickup due to a phase current fault

Pickup IG	Operation / Status Display / Prot

Signal: General Pickup due to a ground current fault

Pickup Ext.	Operation / Status Display / Prot

Only available if:

- Device Variant/Inputs = Ext. Trip
- Device Variant/Inputs = Configurable
- Device Variant/Inputs = Ext. Trip, Ext. Reset
- Device Variant/Inputs = Configurable Inputs

Signal: General Pickup due to an external signal

Pickup IA	Operation / Status Display / Prot

Signal: General Pickup due to a fault in phase A

Pickup IB	Operation / Status Display / Prot

Signal: General Pickup due to a fault in phase B

Pickup IC	Operation / Status Display / Prot

Signal: General Pickup due to a fault in phase C

DI 1 **DI 2**	Operation / Status Display / Prot

Only available if:

- Device Variant/Inputs = Ext. Trip, Ext. Reset
- Device Variant/Inputs = Configurable Inputs

Signal: Digital Input

Pos ON	Operation / Status Display / Prot

Signal: Circuit Breaker is in ON-Position

Pos OFF	Operation / Status Display / Prot

Signal: Circuit Breaker is in OFF-Position

ON Cmd	Operation / Status Display / Prot

Signal: ON command issued to the breaker

Syst. OK. & Ext.Suppl.	Operation / Status Display / Prot

- Only available if: Dual-Powered Device Variant = True

Signal: The WIC1 is running and is supplied by external auxiliary power and has loaded sufficient electrical energy for triggering the trip impulse output.

8.6 Prot: Values

Fault No.	Operation / Count and RevData / Prot

Fault number

Alarm No.	Operation / Count and RevData / Prot

Alarm number

8.7 IH2

Module Inrush

8.7.1 IH2: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
Module Inrush, general operation mode		

8.7.2 IH2: Settings

Function	Protection Para / IH2	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

IH2 / IH1	Protection Para / IH2	
20%	15% ... 40%	*P.1*
Maximum permissible percentage of the 2nd harmonic of the 1st harmonic.		

Imax	Protection Para / IH2	
6.00In	1.0In ... 20.0In	*P.1*
Inrush limit value: If the phase current is above this value the inrush blocking is cancelled.		

tmax	Protection Para / IH2	
0.3s	0.1s ... 999.99s	*P.1*
Maximum duration (phase-selective) of an inrush blocking		

3-ph Blo	Protection Para / IH2	
Inactive	Inactive, Active Table	*P.1*
Activation of 3-phase inrush blocking: If an inrush is detected in (at least) one phase all three phases get blocked. (If this is inactive then only the Inrush-affected phase gets blocked.)		

8.7.3 IH2: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / IH2
⇧	*Signal: active*

Block. A	Operation / Status Display / IH2
⇧	*Signal: Inrush blocking of phase A of the phase overcurrent protection*

Block. B	Operation / Status Display / IH2
⇧	*Signal: Inrush blocking of phase B of the phase overcurrent protection*

Block. C	Operation / Status Display / IH2
⇧	*Signal: Inrush blocking of phase C of the phase overcurrent protection*

Block. Ground	Operation / Status Display / IH2
⇧	*Signal: Inrush blocking of the ground (earth) overcurrent protection and min. 1 phase of the phase overcurrent protection.*

Block. 3-ph	Operation / Status Display / IH2
⇧	*Signal: 3-phase Inrush blocking: An inrush has been detected in (at least) one phase, so that all three phases are blocked.*

Imax exceeded	Operation / Status Display / IH2
⇧	*Signal: The Inrush limit value has been exceeded, so that the inrush blocking has been cancelled.*

tmax elapsed	Operation / Status Display / IH2
⇧	*Signal: The (phase-selective) maximum duration of an inrush blocking has been reached, so that the inrush blocking has been stopped.*

8.8 I> [50, 51]

Phase Overcurrent Stage

8.8.1 I>: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
Phase Overcurrent Stage, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Phase Overcurrent Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.8.2 I>: Settings

ExBlo	Protection Para / I>	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / I>	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

I	Protection Para / I>	
1.00In	Adjustable range: • 0.1In ... 20.00In, If: CT Type = WC2 • 0.35In ... 20.00In, If: CT Type ≠ WC2 • 0.1In ... 20.00In, If: Char = DEFT • 0.1In ... 2.50In, If: Char = IEC NINV • 0.1In ... 2.50In, If: Char = IEC VINV • 0.1In ... 2.50In, If: Char = IEC EINV • 0.1In ... 2.50In, If: Char = IEC LINV • 0.1In ... 2.50In, If: Char = RINV • 0.1In ... 2.50In, If: Char = HV Fuse • 0.1In ... 2.50In, If: Char = FR Fuse • 0.1In ... 2.50In, If: Char = IEEE MINV • 0.1In ... 2.50In, If: Char = IEEE VINV • 0.1In ... 2.50In, If: Char = IEEE EINV • 0.1In ... 2.50In, If: Char = EF Curve	*P.1*

If the pickup value is exceeded, the protection stage starts to time out to trip.

WARNING: Check the Technical Data and ensure that the actual overcurrent settings for this pickup threshold and the trip delay comply with the technical limits of the phase current inputs! (The device allows for overcurrent settings that are out of the permitted range of current values.)

Char	Protection Para / I>	
DEFT	DEFT ... EF Curve ↳ Table	*P.1*

Characteristic

t	Protection Para / I>	
• Only available if: Char = DEFT 0.1s	0.00s ... 300.00s	*P.1*

Time delay for trip or alarm

tChar	Protection Para / I>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve 0.1	0.05 ... 10.00	*P.1*
Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.		

tMinimum	Protection Para / I>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve 0.00s	0.00s ... 20.00s	*P.1*
Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.		

Reset Mode	Protection Para / I>	
instantaneous	Adjustable range: • instantaneous, definite time, If: Char = DEFT • instantaneous, definite time, inverse time, If: Char = IEC NINV • instantaneous, definite time, inverse time, If: Char = IEC VINV • instantaneous, definite time, inverse time, If: Char = IEC EINV • instantaneous, definite time, inverse time, If: Char = IEC LINV • instantaneous, definite time, inverse time, If: Char = RINV • instantaneous, definite time, If: Char = HV Fuse • instantaneous, definite time, If: Char = FR Fuse • instantaneous, definite time, inverse time, If: Char = IEEE MINV • instantaneous, definite time, inverse time, If: Char = IEEE VINV • instantaneous, definite time, inverse time, If: Char = IEEE EINV • instantaneous, definite time, If: Char = EF Curve • Else: instantaneous, definite time, inverse time Table	*P.1*
Reset Mode		

tReset	Protection Para / I>	
• Only available if: Reset Mode = definite time 0.1s	0.00s . . . 60.00s	*P.1*
Reset delay for intermittent phase failures (INV characteristics only)		

IH2 Blo	Protection Para / I>	
Active		*P.1*
Blocking the trip command, if an inrush is detected.		

Stab. by CLPU	Protection Para / I>	
Inactive	Inactive, Active Table	*P.1*
Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)		

8.8.3 I>: Input States

ExBlo-I **(I> . ExBlo)**	Operation / Status Display / I>
Module input state: External blocking	

8.8.4 I>: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / I>

Signal: active

Trip	Operation / Status Display / Trips Operation / Status Display / I>

- Only available if: Definition = Trip

Signal: Trip

Alarm	Operation / Status Display / Alarms Operation / Status Display / I>

- Only available if: Definition = Alarm

Signal: Alarm

Pickup	Operation / Status Display / Pickups Operation / Status Display / I>

Signal: Pickup

Trip IA	Operation / Status Display / I>

- Only available if: Definition = Trip

Signal: Trip due to a fault in phase A

Trip IB	Operation / Status Display / I>

- Only available if: Definition = Trip

Signal: Trip due to a fault in phase B

Trip IC	Operation / Status Display / I>

- Only available if: Definition = Trip

Signal: Trip due to a fault in phase C

Alarm IA	Operation / Status Display / I>

- Only available if: Definition = Alarm

Signal: Alarm due to a fault in phase A

Alarm IB	Operation / Status Display / I>
⇧	• Only available if: Definition = Alarm *Signal: Alarm due to a fault in phase B*

Alarm IC	Operation / Status Display / I>
⇧	• Only available if: Definition = Alarm *Signal: Alarm due to a fault in phase C*

Pickup IA	Operation / Status Display / I>
⇧	*Signal: Pickup in phase A*

Pickup IB	Operation / Status Display / I>
⇧	*Signal: Pickup in phase B*

Pickup IC	Operation / Status Display / I>
⇧	*Signal: Pickup in phase C*

IH2 Blo	Operation / Status Display / I>
⇧	*Signal: Blocking the trip command by an inrush*

8.9 I>> [50, 51]

Phase Overcurrent Stage

8.9.1 I>>: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
Phase Overcurrent Stage, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Phase Overcurrent Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.9.2 I>>: Settings

ExBlo	Protection Para / I>>	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / I>>	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

I	Protection Para / I>>	
1.00In	Adjustable range: • 0.1In ... 20.00In, If: CT Type = WC2 • 0.35In ... 20.00In, If: CT Type ≠ WC2 • 0.1In ... 20.00In, If: Char = DEFT • 0.1In ... 2.50In, If: Char = IEC NINV • 0.1In ... 2.50In, If: Char = IEC VINV • 0.1In ... 2.50In, If: Char = IEC EINV • 0.1In ... 2.50In, If: Char = IEC LINV • 0.1In ... 2.50In, If: Char = RINV • 0.1In ... 2.50In, If: Char = HV Fuse • 0.1In ... 2.50In, If: Char = FR Fuse • 0.1In ... 2.50In, If: Char = IEEE MINV • 0.1In ... 2.50In, If: Char = IEEE VINV • 0.1In ... 2.50In, If: Char = IEEE EINV • 0.1In ... 2.50In, If: Char = EF Curve	*P.1*
	If the pickup value is exceeded, the protection stage starts to time out to trip. *WARNING: Check the Technical Data and ensure that the actual overcurrent settings for this pickup threshold and the trip delay comply with the technical limits of the phase current inputs! (The device allows for overcurrent settings that are out of the permitted range of current values.)*	

Char	Protection Para / I>>	
DEFT	DEFT ... EF Curve ↳ Table	*P.1*
	Characteristic	

t	Protection Para / I>>	
• Only available if: Char = DEFT 0.1s	0.00s ... 300.00s	*P.1*
	Time delay for trip or alarm	

tChar	Protection Para / I>>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve 0.1	0.05 ... 10.00	*P.1*

Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.

tMinimum	Protection Para / I>>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve 0.00s	0.00s ... 20.00s	*P.1*

Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.

Reset Mode	Protection Para / I>>	
instantaneous	Adjustable range: • instantaneous, definite time, If: Char = DEFT • instantaneous, definite time, inverse time, If: Char = IEC NINV • instantaneous, definite time, inverse time, If: Char = IEC VINV • instantaneous, definite time, inverse time, If: Char = IEC EINV • instantaneous, definite time, inverse time, If: Char = IEC LINV • instantaneous, definite time, inverse time, If: Char = RINV • instantaneous, definite time, If: Char = HV Fuse • instantaneous, definite time, If: Char = FR Fuse • instantaneous, definite time, inverse time, If: Char = IEEE MINV • instantaneous, definite time, inverse time, If: Char = IEEE VINV • instantaneous, definite time, inverse time, If: Char = IEEE EINV • instantaneous, definite time, If: Char = EF Curve • Else: instantaneous, definite time, inverse time Table	*P.1*
Reset Mode		

tReset	Protection Para / I>>	
• Only available if: Reset Mode = definite time 0.1s	0.00s . . . 60.00s	*P.1*
Reset delay for intermittent phase failures (INV characteristics only)		

IH2 Blo	Protection Para / I>>	
Active		*P.1*
Blocking the trip command, if an inrush is detected.		

Stab. by CLPU	Protection Para / I>>	
Inactive	Inactive, Active Table	*P.1*
Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)		

8.9.3 I>>: Input States

ExBlo-I **(I>> . ExBlo)**	Operation / Status Display / I>>
Module input state: External blocking	

8.9.4 I>>: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / I>>

Signal: active

Trip	Operation / Status Display / Trips Operation / Status Display / I>>

- Only available if: Definition = Trip

Signal: Trip

Alarm	Operation / Status Display / Alarms Operation / Status Display / I>>

- Only available if: Definition = Alarm

Signal: Alarm

Pickup	Operation / Status Display / Pickups Operation / Status Display / I>>

Signal: Pickup

Trip IA	Operation / Status Display / I>>

- Only available if: Definition = Trip

Signal: Trip due to a fault in phase A

Trip IB	Operation / Status Display / I>>

- Only available if: Definition = Trip

Signal: Trip due to a fault in phase B

Trip IC	Operation / Status Display / I>>

- Only available if: Definition = Trip

Signal: Trip due to a fault in phase C

Alarm IA	Operation / Status Display / I>>

- Only available if: Definition = Alarm

Signal: Alarm due to a fault in phase A

Alarm IB	Operation / Status Display / I>>
⇧	• Only available if: Definition = Alarm *Signal: Alarm due to a fault in phase B*

Alarm IC	Operation / Status Display / I>>
⇧	• Only available if: Definition = Alarm *Signal: Alarm due to a fault in phase C*

Pickup IA	Operation / Status Display / I>>
⇧	*Signal: Pickup in phase A*

Pickup IB	Operation / Status Display / I>>
⇧	*Signal: Pickup in phase B*

Pickup IC	Operation / Status Display / I>>
⇧	*Signal: Pickup in phase C*

IH2 Blo	Operation / Status Display / I>>
⇧	*Signal: Blocking the trip command by an inrush*

8.10 I>>> [50, 51]

Phase Overcurrent Stage

8.10.1 I>>>: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Phase Overcurrent Stage, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Phase Overcurrent Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.10.2 I>>>: Settings

ExBlo	Protection Para / I>>>	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / I>>>	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

I	Protection Para / I>>>	
1.00In	Adjustable range: • 0.1In ... 20.00In, If: CT Type = WC2 • 0.35In ... 20.00In, If: CT Type ≠ WC2 • 0.1In ... 20.00In, If: Char = DEFT • 0.1In ... 2.50In, If: Char = IEC NINV • 0.1In ... 2.50In, If: Char = IEC VINV • 0.1In ... 2.50In, If: Char = IEC EINV • 0.1In ... 2.50In, If: Char = IEC LINV • 0.1In ... 2.50In, If: Char = RINV • 0.1In ... 2.50In, If: Char = HV Fuse • 0.1In ... 2.50In, If: Char = FR Fuse • 0.1In ... 2.50In, If: Char = IEEE MINV • 0.1In ... 2.50In, If: Char = IEEE VINV • 0.1In ... 2.50In, If: Char = IEEE EINV • 0.1In ... 2.50In, If: Char = EF Curve	*P.1*
If the pickup value is exceeded, the protection stage starts to time out to trip. *WARNING: Check the Technical Data and ensure that the actual overcurrent settings for this pickup threshold and the trip delay comply with the technical limits of the phase current inputs! (The device allows for overcurrent settings that are out of the permitted range of current values.)*		

Char	Protection Para / I>>>	
DEFT	DEFT ... EF Curve ↳ Table	*P.1*
Characteristic		

t	Protection Para / I>>>	
• Only available if: Char = DEFT 0.1s	0.00s ... 300.00s	*P.1*
Time delay for trip or alarm		

tChar	Protection Para / I>>>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve 0.1	0.05 ... 10.00	*P.1*

Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.

tMinimum	Protection Para / I>>>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve 0.00s	0.00s ... 20.00s	*P.1*

Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.

Reset Mode	Protection Para / I>>>	
instantaneous	Adjustable range: • instantaneous, definite time, If: Char = DEFT • instantaneous, definite time, inverse time, If: Char = IEC NINV • instantaneous, definite time, inverse time, If: Char = IEC VINV • instantaneous, definite time, inverse time, If: Char = IEC EINV • instantaneous, definite time, inverse time, If: Char = IEC LINV • instantaneous, definite time, inverse time, If: Char = RINV • instantaneous, definite time, If: Char = HV Fuse • instantaneous, definite time, If: Char = FR Fuse • instantaneous, definite time, inverse time, If: Char = IEEE MINV • instantaneous, definite time, inverse time, If: Char = IEEE VINV • instantaneous, definite time, inverse time, If: Char = IEEE EINV • instantaneous, definite time, If: Char = EF Curve • Else: instantaneous, definite time, inverse time Table	*P.1*
Reset Mode		

tReset	Protection Para / I>>>	
• Only available if: Reset Mode = definite time 0.1s	0.00s . . . 60.00s	*P.1*
Reset delay for intermittent phase failures (INV characteristics only)		

IH2 Blo	Protection Para / I>>>	
Active		*P.1*
Blocking the trip command, if an inrush is detected.		

Stab. by CLPU	Protection Para / I>>>	
Inactive	Inactive, Active Table	*P.1*
Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)		

8.10.3 I>>>: Input States

ExBlo-I **(I>>> . ExBlo)**	Operation / Status Display / I>>>
Module input state: External blocking	

8.10.4 I>>>: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / I>>>
Signal: active	

Trip	Operation / Status Display / Trips Operation / Status Display / I>>>
• Only available if: Definition = Trip *Signal: Trip*	

Alarm	Operation / Status Display / Alarms Operation / Status Display / I>>>
• Only available if: Definition = Alarm *Signal: Alarm*	

Pickup	Operation / Status Display / Pickups Operation / Status Display / I>>>
Signal: Pickup	

Trip IA	Operation / Status Display / I>>>
• Only available if: Definition = Trip *Signal: Trip due to a fault in phase A*	

Trip IB	Operation / Status Display / I>>>
• Only available if: Definition = Trip *Signal: Trip due to a fault in phase B*	

Trip IC	Operation / Status Display / I>>>
• Only available if: Definition = Trip *Signal: Trip due to a fault in phase C*	

Alarm IA	Operation / Status Display / I>>>
• Only available if: Definition = Alarm *Signal: Alarm due to a fault in phase A*	

Alarm IB	Operation / Status Display / I>>>
⇧	• Only available if: Definition = Alarm *Signal: Alarm due to a fault in phase B*

Alarm IC	Operation / Status Display / I>>>
⇧	• Only available if: Definition = Alarm *Signal: Alarm due to a fault in phase C*

Pickup IA	Operation / Status Display / I>>>
⇧	*Signal: Pickup in phase A*

Pickup IB	Operation / Status Display / I>>>
⇧	*Signal: Pickup in phase B*

Pickup IC	Operation / Status Display / I>>>
⇧	*Signal: Pickup in phase C*

IH2 Blo	Operation / Status Display / I>>>
⇧	*Signal: Blocking the trip command by an inrush*

8.11 IG> [50N/G, 51N/G]

Ground (earth) current protection stage

8.11.1 IG>: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
Earth current protection stage, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Earth current protection stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.11.2 IG>: Settings

ExBlo	Protection Para / IG>	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / IG>	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

IG	Protection Para / IG>	
1.00In	Adjustable range: • 0.20In ... 10.00In, If: IG Source = calculated • 0.02In ... 10.00In, If: IG Source = measured • 0.02In ... 10.00In, If: Char = DEFT • 0.02In ... 2.50In, If: Char = IEC NINV • 0.02In ... 2.50In, If: Char = IEC VINV • 0.02In ... 2.50In, If: Char = IEC EINV • 0.02In ... 2.50In, If: Char = IEC LINV • 0.02In ... 2.50In, If: Char = RINV • 0.02In ... 2.50In, If: Char = HV Fuse • 0.02In ... 2.50In, If: Char = FR Fuse • 0.02In ... 2.50In, If: Char = IEEE MINV • 0.02In ... 2.50In, If: Char = IEEE VINV • 0.02In ... 2.50In, If: Char = IEEE EINV • 0.02In ... 2.50In, If: Char = EF Curve • 0.02In ... 2.50In, If: Char = RXIDG • Else: 0.02In ... 10.00In	*P.1*
If the pickup value is exceeded, the protection stage starts to time out to trip.		

Char	Protection Para / IG>	
DEFT	DEFT ... RXIDG Table	*P.1*
Characteristic		

t	Protection Para / IG>	
• Only available if: Char = DEFT 0.1s	0.00s ... 300.00s	*P.1*
Time delay for trip or alarm		

tChar	Protection Para / IG>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve • Char = RXIDG 0.1	0.05 ... 10.00	*P.1*
Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.		

tMinimum	Protection Para / IG>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve • Char = RXIDG 0.00s	0.00s ... 20.00s	*P.1*
Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.		

Reset Mode	Protection Para / IG>	
instantaneous	Adjustable range: • instantaneous, definite time, If: Char = DEFT • instantaneous, definite time, inverse time, If: Char = IEC NINV • instantaneous, definite time, inverse time, If: Char = IEC VINV • instantaneous, definite time, inverse time, If: Char = IEC EINV • instantaneous, definite time, inverse time, If: Char = IEC LINV • instantaneous, definite time, inverse time, If: Char = RINV • instantaneous, definite time, If: Char = HV Fuse • instantaneous, definite time, If: Char = FR Fuse • instantaneous, definite time, inverse time, If: Char = IEEE MINV • instantaneous, definite time, inverse time, If: Char = IEEE VINV • instantaneous, definite time, inverse time, If: Char = IEEE EINV • instantaneous, definite time, If: Char = EF Curve • instantaneous, definite time, If: Char = RXIDG • Else: instantaneous, definite time, inverse time Table	*P.1*
Reset Mode		

tReset	Protection Para / IG>	
• Only available if: Reset Mode = definite time 0.1s	0.00s . . . 60.00s	*P.1*
Reset delay for intermittent phase failures (INV characteristics only)		

IH2 Blo	Protection Para / IG>	
Default: • Active, If: Device Variant with Ground Current Inputs = Calculated Ground Current • Inactive, If: Device Variant with Ground Current Inputs = Configurable (Meas. Ground Current default) • Inactive, If: Device Variant with Ground Current Inputs = Configurable (Calc. Ground Current default) • Else: Active		*P.1*
Blocking the trip command, if an inrush is detected.		

Stab. by CLPU	Protection Para / IG>	
Inactive	Inactive, Active Table	*P.1*
Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)		

8.11.3 IG>: Input States

ExBlo-I **(⇨ IG> . ExBlo)**	Operation / Status Display / IG>
⇩	*Module input state: External blocking*

8.11.4 IG>: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / IG>
⇧	*Signal: active*

Trip	Operation / Status Display / Trips Operation / Status Display / IG>
⇧	• Only available if: Definition = Trip *Signal: Trip*

Alarm	Operation / Status Display / Alarms Operation / Status Display / IG>
⇧	• Only available if: Definition = Alarm *Signal: Alarm*

Pickup	Operation / Status Display / Pickups Operation / Status Display / IG>
⇧	*Signal: Pickup*

IH2 Blo	Operation / Status Display / IG>
⇧	*Signal: Blocking the trip command by an inrush*

8.12 IG>> [50N/G, 51N/G]

Ground (earth) current protection stage

8.12.1 IG>>: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Earth current protection stage, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Earth current protection stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.12.2 IG>>: Settings

ExBlo	Protection Para / IG>>	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / IG>>	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

IG	Protection Para / IG>>	
1.00In	Adjustable range: • 0.20In ... 10.00In, If: IG Source = calculated • 0.02In ... 10.00In, If: IG Source = measured • 0.02In ... 10.00In, If: Char = DEFT • 0.02In ... 2.50In, If: Char = IEC NINV • 0.02In ... 2.50In, If: Char = IEC VINV • 0.02In ... 2.50In, If: Char = IEC EINV • 0.02In ... 2.50In, If: Char = IEC LINV • 0.02In ... 2.50In, If: Char = RINV • 0.02In ... 2.50In, If: Char = HV Fuse • 0.02In ... 2.50In, If: Char = FR Fuse • 0.02In ... 2.50In, If: Char = IEEE MINV • 0.02In ... 2.50In, If: Char = IEEE VINV • 0.02In ... 2.50In, If: Char = IEEE EINV • 0.02In ... 2.50In, If: Char = EF Curve • 0.02In ... 2.50In, If: Char = RXIDG • Else: 0.02In ... 10.00In	*P.1*
If the pickup value is exceeded, the protection stage starts to time out to trip.		

Char	Protection Para / IG>>	
DEFT	DEFT ... RXIDG Table	*P.1*
Characteristic		

t	Protection Para / IG>>	
• Only available if: Char = DEFT 0.1s	0.00s ... 300.00s	*P.1*
Time delay for trip or alarm		

tChar	Protection Para / IG>>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve • Char = RXIDG 0.1	0.05 ... 10.00	*P.1*
Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.		

tMinimum	Protection Para / IG>>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve • Char = RXIDG 0.00s	0.00s ... 20.00s	*P.1*
Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.		

Reset Mode	Protection Para / IG>>	
instantaneous	Adjustable range: • instantaneous, definite time, If: Char = DEFT • instantaneous, definite time, inverse time, If: Char = IEC NINV • instantaneous, definite time, inverse time, If: Char = IEC VINV • instantaneous, definite time, inverse time, If: Char = IEC EINV • instantaneous, definite time, inverse time, If: Char = IEC LINV • instantaneous, definite time, inverse time, If: Char = RINV • instantaneous, definite time, If: Char = HV Fuse • instantaneous, definite time, If: Char = FR Fuse • instantaneous, definite time, inverse time, If: Char = IEEE MINV • instantaneous, definite time, inverse time, If: Char = IEEE VINV • instantaneous, definite time, inverse time, If: Char = IEEE EINV • instantaneous, definite time, If: Char = EF Curve • instantaneous, definite time, If: Char = RXIDG • Else: instantaneous, definite time, inverse time Table	*P.1*
Reset Mode		

tReset	Protection Para / IG>>	
• Only available if: Reset Mode = definite time 0.1s	0.00s . . . 60.00s	*P.1*
Reset delay for intermittent phase failures (INV characteristics only)		

IH2 Blo	Protection Para / IG>>	
Default: • Active, If: Device Variant with Ground Current Inputs = Calculated Ground Current • Inactive, If: Device Variant with Ground Current Inputs = Configurable (Meas. Ground Current default) • Inactive, If: Device Variant with Ground Current Inputs = Configurable (Calc. Ground Current default) • Else: Active		*P.1*
Blocking the trip command, if an inrush is detected.		

Stab. by CLPU	Protection Para / IG>>	
Inactive	Inactive, Active Table	*P.1*
Select whether the CLPU stabilization shall be effective for this protection stage. (If set to “active” then further settings are available within the CLPU menu.)		

8.12.3 IG>>: Input States

ExBlo-I **(↳ IG>> . ExBlo)**	Operation / Status Display / IG>>
⇩	*Module input state: External blocking*

8.12.4 IG>>: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / IG>>
⇧	*Signal: active*

Trip	Operation / Status Display / Trips Operation / Status Display / IG>>
⇧	• Only available if: Definition = Trip *Signal: Trip*

Alarm	Operation / Status Display / Alarms Operation / Status Display / IG>>
⇧	• Only available if: Definition = Alarm *Signal: Alarm*

Pickup	Operation / Status Display / Pickups Operation / Status Display / IG>>
⇧	*Signal: Pickup*

IH2 Blo	Operation / Status Display / IG>>
⇧	*Signal: Blocking the trip command by an inrush*

8.13 I2/I1> [46]

Unbalanced Load Protection

8.13.1 I2/I1>: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Unbalanced Load-Stage, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Unbalanced Load-Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.13.2 I2/I1>: Settings

ExBlo	Protection Para / I2/I1>	
-	- ... - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / I2/I1>	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

I2/I1	Protection Para / I2/I1>	
20%	10% ... 40%	*P.1*
I2/I1 unbalance trip pickup setting (in percent), i.e. the ratio of negative sequence current I2 to the positive sequence current I1.		

t	Protection Para / I2/I1>	
0.1s	0.00s ... 300.00s	*P.1*
Time delay for trip or alarm		

IH2 Blo	Protection Para / I2/I1>	
Active		*P.1*
Blocking the trip command, if an inrush is detected.		

8.13.3 I2/I1>: Input States

ExBlo-I (↳ I2/I1> . ExBlo)	Operation / Status Display / I2/I1>
Module input state: External blocking	

8.13.4 I2/I1>: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / I2/I1>
Signal: active	

Trip	Operation / Status Display / Trips Operation / Status Display / I2/I1>
• Only available if: Definition = Trip *Signal: Trip*	

Alarm	Operation / Status Display / Alarms Operation / Status Display / I2/I1>
• Only available if: Definition = Alarm *Signal: Alarm*	

Pickup	Operation / Status Display / Pickups Operation / Status Display / I2/I1>
Signal: Pickup	

IH2 Blo	Operation / Status Display / I2/I1>
Signal: Blocking the trip command by an inrush	

8.14 I2> [51Q]

Negative-Sequence Current Protection

8.14.1 I2>: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Unbalanced Load-Stage, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Unbalanced Load-Stage: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.14.2 I2>: Settings

ExBlo	Protection Para / I2>	
-	- ... - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / I2>	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

I2	Protection Para / I2>	
0.2In	0.2In ... 2.5In	*P.1*
The Threshold setting defines a minimum operating current magnitude of I2 for the 46 function to operate, which ensures that the relay has a solid basis for initiating a current unbalance trip. This is a supervisory function and not a trip level.		

Char	Protection Para / I2>	
DEFT	DEFT ... EF Curve Table	*P.1*
Characteristic		

t	Protection Para / I2>	
• Only available if: Char = DEFT 0.1s	0.00s ... 300.00s	*P.1*
Time delay for trip or alarm		

tChar	Protection Para / I2>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve 0.1	0.05 ... 10.00	*P.1*
Time multiplier/tripping characteristic factor. The setting range depends on the selected tripping curve.		

tMinimum	Protection Para / I2>	
Only available if: • Char = IEC NINV • Char = IEC VINV • Char = IEC EINV • Char = IEC LINV • Char = RINV • Char = HV Fuse • Char = FR Fuse • Char = IEEE MINV • Char = IEEE VINV • Char = IEEE EINV • Char = EF Curve 0.00s	0.00s ... 20.00s	*P.1*
Minimum trip delay time. Independent of the measured current values, the trip delay time does never fall below the minimum that is set here.		

Reset Mode	Protection Para / I2>	
instantaneous	Adjustable range: • instantaneous, definite time, If: Char = DEFT • instantaneous, definite time, inverse time, If: Char = IEC NINV • instantaneous, definite time, inverse time, If: Char = IEC VINV • instantaneous, definite time, inverse time, If: Char = IEC EINV • instantaneous, definite time, inverse time, If: Char = IEC LINV • instantaneous, definite time, inverse time, If: Char = RINV • instantaneous, definite time, If: Char = HV Fuse • instantaneous, definite time, If: Char = FR Fuse • instantaneous, definite time, inverse time, If: Char = IEEE MINV • instantaneous, definite time, inverse time, If: Char = IEEE VINV • instantaneous, definite time, inverse time, If: Char = IEEE EINV • instantaneous, definite time, If: Char = EF Curve • Else: instantaneous, definite time, inverse time Table	*P.1*
Reset Mode		

tReset	Protection Para / I2>	
• Only available if: Reset Mode = definite time 0.1s	0.00s . . . 60.00s	*P.1*
Reset delay for intermittent phase failures (INV characteristics only)		

IH2 Blo	Protection Para / I2>	
Active		*P.1*
Blocking the trip command, if an inrush is detected.		

8.14.3 I2>: Input States

ExBlo-I **(I2> . ExBlo)**	Operation / Status Display / I2>
Module input state: External blocking	

8.14.4 I2>: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / I2>
Signal: active	

Trip	Operation / Status Display / Trips Operation / Status Display / I2>
⇧	• Only available if: Definition = Trip *Signal: Trip*

Alarm	Operation / Status Display / Alarms Operation / Status Display / I2>
⇧	• Only available if: Definition = Alarm *Signal: Alarm*

Pickup	Operation / Status Display / Pickups Operation / Status Display / I2>
⇧	*Signal: Pickup*

IH2 Blo	Operation / Status Display / I2>
⇧	*Signal: Blocking the trip command by an inrush*

8.15 ThR [49]

Thermal replica module

8.15.1 ThR: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Thermal replica module, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Thermal replica module: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.15.2 ThR: Settings

ExBlo	Protection Para / ThR	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / ThR	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

Ib	Protection Para / ThR	
1.00In	0.5In . . . 2.00In	*P.1*
Base current: Maximum permissible thermal continuous current.		

K	Protection Para / ThR	
1.00	0.80 . . . 1.50	*P.1*
*Overload Factor: The maximum thermal limit is defined as k*IB, the product of the overload factor and the base current.*		

Pre-Alarm Lev.	Protection Para / ThR	
80%	50% ... 100%	*P.1*
Threshold value for the Thermal Level. If the thermal level exceeds this setting the signal »ThR . Pre-Alarm« is issued.		

τ-warm	Protection Para / ThR	
300s	10s ... 30000s	*P.1*
Warming-up time constant		

τ-cool	Protection Para / ThR	
300s	10s ... 30000s	*P.1*
Cooling time constant		

Initial Thermal Level	Protection Para / ThR	
Zero	Zero, Last Stored Value Table	*P.1*
Select the criterion for setting the initial thermal level after a restart of the device.		

8.15.3 ThR: Direct Controls

Rst. Thermal Lev.	Operation / Reset	
Inactive	Inactive, Active Table	*P.1*
Reset the thermal level		

8.15.4 ThR: Input States

ExBlo-I **(ThR . ExBlo)**	Operation / Status Display / ThR
Module input state: External blocking	

8.15.5 ThR: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / ThR
Signal: active	

Trip	Operation / Status Display / Trips Operation / Status Display / ThR
⇧	• Only available if: Definition = Trip *Signal: Trip*

Alarm	Operation / Status Display / Alarms Operation / Status Display / ThR
⇧	• Only available if: Definition = Alarm *Signal: Alarm*

Pickup	Operation / Status Display / Pickups Operation / Status Display / ThR
⇧	*Signal: Pickup*

Pre-Alarm	Operation / Status Display / ThR
⇧	*Signal: The set value for the Θ Threshold has been exceeded.*

8.15.6 ThR: Values

Therm. Lev.	Operation / Measured Values / ThR
⟍	*Measured value: Ongoing thermal level*

8.16 Ipeak>

Peak-Value Overcurrent

8.16.1 Ipeak>: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
Peak-Value Overcurrent, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Peak-Value Overcurrent: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.16.2 Ipeak>: Settings

ExBlo	Protection Para / Ipeak>	
-	- ... - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / Ipeak>	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

I	Protection Para / Ipeak>	
8.0In	4.0In ... 20.00In	*P.1*
Pickup threshold, defined as RMS value (i.e. peak current value divided by √2). If the pickup value is exceeded, the module/element starts to time out to trip.		

t	Protection Para / Ipeak>	
0.0s	0.00s ... 5.00s	*P.1*
Time delay for trip or alarm		

8.16.3 Ipeak>: Input States

ExBlo-I **(⮡ Ipeak> . ExBlo)**	Operation / Status Display / Ipeak>
⇩	*Module input state: External blocking*

8.16.4 Ipeak>: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / Ipeak>
⇧	*Signal: active*

Trip	Operation / Status Display / Trips Operation / Status Display / Ipeak>
⇧	• Only available if: Definition = Trip *Signal: Trip*

Alarm	Operation / Status Display / Alarms Operation / Status Display / Ipeak>
⇧	• Only available if: Definition = Alarm *Signal: Alarm*

Pickup	Operation / Status Display / Pickups Operation / Status Display / Ipeak>
⇧	*Signal: Pickup*

Trip IA	Operation / Status Display / Ipeak>
⇧	• Only available if: Definition = Trip *Signal: Trip due to a fault in phase A*

Trip IB	Operation / Status Display / Ipeak>
⇧	• Only available if: Definition = Trip *Signal: Trip due to a fault in phase B*

Trip IC	Operation / Status Display / Ipeak>
⇧	• Only available if: Definition = Trip *Signal: Trip due to a fault in phase C*

Alarm IA	Operation / Status Display / Ipeak>

- Only available if: Definition = Alarm

Signal: Alarm due to a fault in phase A

Alarm IB	Operation / Status Display / Ipeak>

- Only available if: Definition = Alarm

Signal: Alarm due to a fault in phase B

Alarm IC	Operation / Status Display / Ipeak>

- Only available if: Definition = Alarm

Signal: Alarm due to a fault in phase C

Pickup IA	Operation / Status Display / Ipeak>

Signal: Pickup in phase A

Pickup IB	Operation / Status Display / Ipeak>

Signal: Pickup in phase B

Pickup IC	Operation / Status Display / Ipeak>

Signal: Pickup in phase C

8.17 SOTF

Switch Onto Fault - Module

8.17.1 SOTF: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
Switch Onto Fault - Module, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
Switch Onto Fault - Module: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.17.2 SOTF: Settings

Trigger	Protection Para / SOTF	
Pickup	-, Pickup, Pickup, Pickup, Pickup, Pickup Table	*P.1*
Assign the type of pickup signal that triggers the SOTF module. If the assigned pickup signal is issued, the SOTF module itself picks up.		

ExBlo	Protection Para / SOTF	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / SOTF	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

Enabling	Protection Para / SOTF	
Breaker Pos.	Breaker Pos., Close Command Table	*P.1*

Select the criterion for determining a manual CLOSE of the breaker. (After this, the »SOTF« module gets enabled for a particular settable time.)

t-enable	Protection Para / SOTF	
0.2s	0.10s ... 10.00s	*P.1*

While this timer is running, and while the module is not blocked, the Switch Onto Fault Module is effective (SOTF is armed).

t	Protection Para / SOTF	
0.0s	0.00s ... 10.00s	*P.1*

Time delay for trip or alarm. (For the »SOTF« module, an instantaneous tripping is typical, i.e. the setting value 0 s.)

8.17.3 SOTF: Input States

ExBlo-I **(SOTF . ExBlo)**	Operation / Status Display / SOTF

Module input state: External blocking

Trigger-I **(SOTF . Trigger)**	Operation / Status Display / SOTF

State of the module input: Assign the type of pickup signal that triggers the SOTF module. If the assigned pickup signal is issued, the SOTF module itself picks up.

8.17.4 SOTF: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / SOTF

Signal: active

Trip	Operation / Status Display / Trips Operation / Status Display / SOTF

- Only available if: Definition = Trip

Signal: Trip

Alarm	Operation / Status Display / Alarms Operation / Status Display / SOTF
⇧	• Only available if: Definition = Alarm *Signal: Alarm*

Pickup	Operation / Status Display / Pickups Operation / Status Display / SOTF
⇧	*Signal: Pickup*

8.18 ExP[1]

External Protection - Module

8.18.1 ExP[1]: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
External Protection - Module, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
External Protection - Module: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.18.2 ExP[1]: Settings

Trigger Signal	Protection Para / ExP[1]	
Default: • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Without Inputs • DI 2, If: Device Variant/Inputs = Ext. Trip • DI 2, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • DI 2, If: Device Variant/Inputs = Configurable • DI 2, If: Device Variant/Inputs = Configurable Inputs • Else: -	Adjustable range: • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Without Inputs • DI 2, If: Device Variant/Inputs = Ext. Trip • DI 2, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable Inputs • Else: -, DI 1, DI 2, - Table	*P.1*
Assign the trigger signal that will make the »ExP« module start (pickup).		

ExBlo	Protection Para / ExP[1]	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / ExP[1]	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

t	Protection Para / ExP[1]	
0.00s	0.00s ... 60.00s	*P.1*
Time delay for trip or alarm		

8.18.3 ExP[1]: Input States

ExBlo-I (ExP[1] . ExBlo)	Operation / Status Display / ExP[1]
Module input state: External blocking	

Trigger Signal-I (ExP[1] . Trigger Signal)	Operation / Status Display / ExP[1]
State of the module input: External trigger signal	

8.18.4 ExP[1]: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / ExP[1]
Signal: active	

Trip	Operation / Status Display / Trips Operation / Status Display / ExP[1]
• Only available if: Definition = Trip *Signal: Trip*	

Alarm	Operation / Status Display / Alarms Operation / Status Display / ExP[1]
• Only available if: Definition = Alarm *Alarm*	

Pickup	Operation / Status Display / Pickups Operation / Status Display / ExP[1]
Signal: Pickup	

8.19 ExP[2]

External Protection - Module

8.19.1 ExP[2]: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
External Protection - Module, general operation mode		

Definition	Device planning / Definition	
Trip	Trip, Alarm Table	*P.1*
External Protection - Module: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.19.2 ExP[2]: Settings

Trigger Signal	Protection Para / ExP[2]	
-	Adjustable range: • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Without Inputs • -, If: Device Variant/Inputs = Ext. Trip • -, If: Device Variant/Inputs = Ext. Trip, Ext. Reset • -, If: Device Variant/Inputs = Configurable • -, DI 1, DI 2, -, If: Device Variant/Inputs = Configurable Inputs • Else: -, DI 1, DI 2, - Table	*P.1*
Assign the trigger signal that will make the »ExP« module start (pickup).		

Condition	Protection Para / ExP[2]	
-	-, Pickup, Pickup, Pickup, Pickup, Pickup Table	*P.1*
Assign a signal that must be active in additon to the external signal for making the »ExP« module start (pickup). (If no signal has been assigned here then the »ExP« module always picks up as soon as the external signal becomes active.)		

ExBlo	Protection Para / ExP[2]	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / ExP[2]	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

t	Protection Para / ExP[2]	
0.00s	0.00s . . . 60.00s	*P.1*
Time delay for trip or alarm		

8.19.3 ExP[2]: Input States

ExBlo-I (ExP[2] . ExBlo)	Operation / Status Display / ExP[2]
Module input state: External blocking	

Trigger Signal-I (ExP[2] . Trigger Signal)	Operation / Status Display / ExP[2]
State of the module input: External trigger signal	

Condition-I (ExP[2] . Condition)	Operation / Status Display / ExP[2]
State of the module input: Condition for External Protection	

8.19.4 ExP[2]: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / ExP[2]
Signal: active	

Trip	Operation / Status Display / Trips Operation / Status Display / ExP[2]
⇧	• Only available if: Definition = Trip *Signal: Trip*

Alarm	Operation / Status Display / Alarms Operation / Status Display / ExP[2]
⇧	• Only available if: Definition = Alarm *Alarm*

Pickup	Operation / Status Display / Pickups Operation / Status Display / ExP[2]
⇧	*Signal: Pickup*

8.20 CBF

Circuit breaker failure protection module

8.20.1 CBF: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Module Circuit Breaker Failure protection, general operation mode		

8.20.2 CBF: Settings

ExBlo	Protection Para / CBF	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / CBF	
Active	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

t-CBF	Protection Para / CBF	
0.20s	0.00s . . . 1.00s	*P.1*
If the delay time is expired, a CBF alarm is issued.		

8.20.3 CBF: Input States

ExBlo-I **(CBF . ExBlo)**	Operation / Status Display / CBF
Module input state: External blocking	

8.20.4 CBF: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / CBF
Signal: active	

Alarm	Operation / Status Display / Alarms Operation / Status Display / CBF
⇧	*Signal: Alarm*

8.21 CLPU

Cold Load Pickup Module

8.21.1 CLPU: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Cold Load Pickup Module, general operation mode		

8.21.2 CLPU: Settings

ExBlo	Protection Para / CLPU	
-	- ... - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / CLPU	
Inactive	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

50/51 Stab.	Protection Para / CLPU	
Factor	inactive, Factor, Block. Table	*P.1*
Select whether the CLPU stabilization shall be effective for the Phase Overcurrent stages, and which operating mode shall be used.		

50, 51 Factor	Protection Para / CLPU	
• Only available if: 50/51 Stab. = Factor 150%	100% ... 500%	*P.1*
If the operating mode has been set to increase the pickup threshold then this is the factor by which the pickup threshold of each the Phase Overcurrent stage is multiplied during the CLPU stabilization.		

50 N/G, 51 N/G Stab.	Protection Para / CLPU	
inactive	inactive, Factor, Block. Table	*P.1*
Select whether the CLPU stabilization shall be effective for the Ground (Earth) Overcurrent stages, and which operating mode shall be used.		

50 N/G, 51 N/G Factor	Protection Para / CLPU	
• Only available if: 50 N/G, 51 N/G Stab. = Factor 150%	100% ... 500%	*P.1*
If the operating mode has been set to increase the pickup threshold then this is the factor by which the pickup threshold of each the Ground (Earth) Overcurrent stage is multiplied during the CLPU stabilization.		

tOff	Protection Para / CLPU	
120.0min	0.1min ... 240.0min	*P.1*
Timer stage, that is started when the breaker position is detected as Off. (The next re-energization after this timer has expired will trigger the CLPU stabilization.)		

tStab	Protection Para / CLPU	
5.0s	0.1s ... 1000.0s	*P.1*
Duration of the CLPU stabilization. This timer stage is started when the CLPU stabilization is triggered.		

8.21.3 CLPU: Input States

ExBlo-I (CLPU . ExBlo)	Operation / Status Display / CLPU
Module input state: External blocking	

8.21.4 CLPU: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / CLPU
Signal: active	

detected	Operation / Status Display / CLPU
Signal: The CLPU stabilization has been triggered.	

stab.	Operation / Status Display / CLPU
⇧	*Signal: The CLPU stabilization is active.*

8.22 Supervision

8.22.1 TCM

Trip Circuit Monitoring

8.22.1.1 TCM: Device Planning Parameters

Mode	Device planning / Projected Elements	
use	-, use Table	*P.1*
Trip Circuit Supervision, general operation mode		

8.22.1.2 TCM: Settings

ExBlo	Protection Para / TCM	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

Function	Protection Para / TCM	
Default: • Active, If: Device Variant with DIP/HEX Switches = 50 Hz / 60 Hz • Inactive, If: Device Variant with DIP/HEX Switches ≠ 50 Hz / 60 Hz	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

8.22.1.3 TCM: Input States

ExBlo-I (**TCM . ExBlo**)	Operation / Status Display / TCM
Module input state: External blocking	

8.22.1.4 TCM: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / TCM
Signal: active	

Alarm	Operation / Status Display / Alarms Operation / Status Display / TCM
⇧	*Signal: Alarm*

8.22.2 BkrWear

Breaker Wear

8.22.2.1 BkrWear: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, Counters only, Counters, Wear Lev. Table	*P.1*
Circuit Breaker Monitoring, general operation mode		

8.22.2.2 BkrWear: Settings

Function	Protection Para / Condition Monitoring / BkrWear	
Inactive	Adjustable range: • Inactive, If: CT Type = Relative • Inactive, Active, If: CT Type ≠ Relative Table	*P.1*
Permanent activation or deactivation of the Breaker Wear function. *Important: The activation is only possible after the primary rated current »CT pri« has been set in the Field Parameters.*		

Alarm Thresh. Sum Trips	Protection Para / Condition Monitoring / BkrWear	
10000	1 ... 100000	*P.1*
Maximum number of open commands, until the circuit breaker has to be maintained.		

Alarm Thresh. Sum Itrip	Protection Para / Condition Monitoring / BkrWear	
10.00kA	0.01kA ... 2000.00kA	*P.1*
Maximum value for the sum of ruptured currents, until the circuit breaker has to be maintained.		

Max. CB Wear Level	Protection Para / Condition Monitoring / BkrWear	
100%	50% ... 100%	*P.1*
Maximum wear level (as a percentage), until the circuit breaker has to be maintained.		

Ir	Protection Para / Condition Monitoring / BkrWear	
16.0A	5.6A ... 10000.0A	*P.1*
Rated current of the circuit breaker		

N(Ir)	Protection Para / Condition Monitoring / BkrWear	
100	2 ... 100000	*P.1*
Number of switching operations at the rated current of the circuit breaker		

Isc	Protection Para / Condition Monitoring / BkrWear	
1120.0A	16.0A ... 100000.0A	*P.1*
Maximum short-circuit current of the circuit breaker		

N(Isc)	Protection Para / Condition Monitoring / BkrWear	
10	1 ... 50000	*P.1*
Number of switching operations at the maximum short-circuit current of the circuit breaker		

8.22.2.3 BkrWear: Direct Controls

Reset	Operation / Reset	
False	False, True Table	*P.1*
Direct Command to reset the counters and the wear level of the circuit breaker.		

8.22.2.4 BkrWear: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / BkrWear
Signal: active	

Alarm	Operation / Status Display / Alarms Operation / Status Display / BkrWear
Signal: Alarm: The maximum number of open commands or the maximum value for the sum of ruptured currents has been exceeded.	

Alm(mx.Sum.Tr)	Operation / Status Display / BkrWear
Signal: Alarm: The maximum number of open commands has been exceeded.	

Alm(mx.Sum.Itrip)	Operation / Status Display / BkrWear
Signal: Alarm: The maximum value for the sum of ruptured currents has been exceeded.	

Alm (CB Wear Lev.)	Operation / Status Display / BkrWear
⇧	*Signal: Alarm: The maximum wear level of the circuit breaker has been exceeded.*

8.22.2.5 BkrWear: Values, Counters

Sum Trips	Operation / Condition Monitoring / BkrWear
#	*Sum of the previously executed open commands*

Sum Itrip	Operation / Condition Monitoring / BkrWear
⟍	*Sum of the ruptured fault currents*

Bkr Wear Level	Operation / Condition Monitoring / BkrWear
⟍	*Wear level of the circuit breaker. (100% means that the circuit breaker has to be maintained.)*

8.22.3 SBM

Station Battery Monitoring

8.22.3.1 SBM: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Station Battery Monitoring, general operation mode		

Definition	Device planning / Definition	
Alarm	Trip, Alarm Table	*P.1*
Station Battery Monitoring: If set to “Alarm”: The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead. If set to “Trip”: The function operates as a protection function, i.e. trips the breaker in case of a fault.		

8.22.3.2 SBM: Settings

ExBlo	Protection Para / Condition Monitoring / SBM	
-	- . . . - Table	*P.1*
External blocking of the module if the state of the assigned signal is true.		

V Batt nom	Protection Para / Condition Monitoring / SBM	
24 VDC	24 VDC, 48 VDC, 60 VDC Table	*P.1*
Nominal voltage of the station battery		

Function	Protection Para / Condition Monitoring / SBM	
Inactive	Inactive, Active Table	*P.1*
Permanent activation or deactivation of module/stage.		

V Batt>	Protection Para / Condition Monitoring / SBM	
110%	Adjustable range: • 100% ... 150%, If: V Batt nom = 24 VDC • 100% ... 150%, If: V Batt nom = 48 VDC • 100% ... 150%, If: V Batt nom = 60 VDC • Else: 100% ... 150%	*P.1*
Threshold (stage 1). If the station battery voltage exceeds this threshold values (for the settable time »t-VBatt>«), an alarm signal is issued.		

V Batt<	Protection Para / Condition Monitoring / SBM	
90%	Adjustable range: • 75% ... 100%, If: V Batt nom = 24 VDC • 50% ... 100%, If: V Batt nom ≠ 24 VDC	*P.1*
Threshold (stage 1). If the station battery voltage drops below this threshold value (for the settable time »t-VBatt<«), an alarm signal is issued.		

V Batt<<	Protection Para / Condition Monitoring / SBM	
80%	Adjustable range: • 75% ... 100%, If: V Batt nom = 24 VDC • 50% ... 100%, If: V Batt nom ≠ 24 VDC	*P.1*
Threshold (stage 2). If the station battery voltage drops below this threshold value (for the settable time »t-VBatt<<«), either an alarm signal is issued or the circuit breaker is tripped (depending on the setting of »Definition«).		

t-VBatt>	Protection Para / Condition Monitoring / SBM	
1.0s	0.1s ... 300.0s	*P.1*
Time delay for the threshold (stage 1). If the station battery voltage exceeds this threshold values (for the time delay set here), an alarm signal is issued.		

t-VBatt<	Protection Para / Condition Monitoring / SBM	
1.0s	0.1s ... 300.0s	*P.1*
Time delay for the threshold (stage 1). If the station battery voltage drops below this threshold values (for the time delay set here), an alarm signal is issued.		

t-VBatt<<	Protection Para / Condition Monitoring / SBM	
1.0s	0.1s ... 300.0s	*P.1*
Time delay for the threshold (stage 2). If the station battery voltage drops below this threshold values (for the time delay set here), either an alarm signal or a trip signal is issued.		

8.22.3.3 SBM: Direct Controls

Rst. Statistics	Operation / Reset	
Inactive	Inactive, Active Table	*P.1*

Direct Command to reset the statistical data (min./max. values)

Corr.factor Vbatt	Protection Para / Condition Monitoring / SBM	
0.0%	-15.0% ... 15.0%	*P.1*

Correction factor, that manually shifts the displayed battery voltage up or down by the set percentage. (0% means that no such correction is made, i.e. the battery voltage is displayed as measured.)

8.22.3.4 SBM: Input States

ExBlo-I (SBM . ExBlo)	Operation / Status Display / SBM

Module input state: External blocking

8.22.3.5 SBM: Signals (Output States)

Active	Operation / Status Display / All Actives Operation / Status Display / SBM

Signal: active

Trip	Operation / Status Display / Trips Operation / Status Display / SBM

- Only available if: Definition = Trip

Signal: Trip

Alarm	Operation / Status Display / Alarms Operation / Status Display / SBM

Signal: Alarm

Pickup	Operation / Status Display / Pickups Operation / Status Display / SBM

Signal: Pickup

Trip VBatt<<	Operation / Status Display / SBM
⇧	• Only available if: Definition = Trip *Signal: Trip because the station battery voltage has dropped below VBatt<<*

Alarm VBatt>	Operation / Status Display / SBM
⇧	*Signal: Alarm because the station battery voltage has exceeded VBatt>*

Alarm VBatt<	Operation / Status Display / SBM
⇧	*Signal: Alarm because the station battery voltage has dropped below VBatt<*

Alarm VBatt<<	Operation / Status Display / SBM
⇧	• Only available if: Definition = Alarm *Signal: Alarm because the station battery voltage has dropped below VBatt<<*

Pickup VBatt>	Operation / Status Display / SBM
⇧	*Signal: Pickup because the station battery voltage has exceeded VBatt>*

Pickup VBatt<	Operation / Status Display / SBM
⇧	*Signal: Pickup because the station battery voltage has dropped below VBatt<*

Pickup VBatt<<	Operation / Status Display / SBM
⇧	*Signal: Pickup because the station battery voltage has dropped below VBatt<<*

8.22.3.6 SBM: Values

V Batt	Operation / Condition Monitoring / SBM
⟍	*Voltage of the station battery (measured at the aux. voltage input terminals L+, L-)*

V Batt max	Operation / Condition Monitoring / SBM
⟍	*Maximum measured station battery voltage*

V Batt min	Operation / Condition Monitoring / SBM
⟍	*Minimum measured station battery voltage*

9 Service

9.1 Sgen

Sine wave generator

9.1.1 Sgen: Device Planning Parameters

Mode	Device planning / Projected Elements	
-	-, use Table	*P.1*
Sine wave generator, general operation mode		

9.1.2 Sgen: Settings

PreFault	Service / Sgen / Configuration / Times	
10.000s	0.000s ... 120.000s	*P.1*
Pre Fault Duration		

FaultSimulation	Service / Sgen / Configuration / Times	
1.000s	0.000s ... 120.000s	*P.1*
Duration of Fault Simulation		

PostFault	Service / Sgen / Configuration / Times	
5.000s	0.000s ... 120.000s	*P.1*
Post Fault Duration		

Ex Start Simulation	Service / Sgen / Process	
-	- ... - Table	*P.1*
External Start of Fault Simulation (Using the test parameters)		

ExBlo	Service / Sgen / Process	
-	- ... - Table	*P.1*
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 ForcePost	Service / Sgen / Process	
-	- . . . - Table	*P.1*
Force Post state. Abort simulation.		

IA	Service / Sgen / Configuration / PreFault	
0.500In	-30.000In . . . 30.000In	*P.1*
Current Fundamental Magnitude in Pre State: phase A		

IB	Service / Sgen / Configuration / PreFault	
0.500In	-30.000In . . . 30.000In	*P.1*
Current Fundamental Magnitude in Pre State: phase B		

IC	Service / Sgen / Configuration / PreFault	
0.500In	-30.000In . . . 30.000In	*P.1*
Current Fundamental Magnitude in Pre State: phase C		

IG meas	Service / Sgen / Configuration / PreFault	
0.500In	-30.000In . . . 30.000In	*P.1*
Current Fundamental Magnitude in Pre State: IG		

IA	Service / Sgen / Configuration / FaultSimulation	
1.500In	-30.000In . . . 30.000In	*P.1*
Current Fundamental Magnitude in Fault State: phase A		

IB	Service / Sgen / Configuration / FaultSimulation	
0.900In	-30.000In . . . 30.000In	*P.1*
Current Fundamental Magnitude in Fault State: phase B		

IC	Service / Sgen / Configuration / FaultSimulation	
0.900In	-30.000In . . . 30.000In	*P.1*
Current Fundamental Magnitude in Fault State: phase C		

IG meas	Service / Sgen / Configuration / FaultSimulation	
0.600In	-30.000In . . . 30.000In	*P.1*
Current Fundamental Magnitude in Fault State: IG		

IA	Service / Sgen / Configuration / PostFault	
0.100In	-30.000In ... 30.000In	*P.1*
Current Fundamental Magnitude during Post phase: phase A		

IB	Service / Sgen / Configuration / PostFault	
0.100In	-30.000In ... 30.000In	*P.1*
Current Fundamental Magnitude during Post phase: phase B		

IC	Service / Sgen / Configuration / PostFault	
0.100In	-30.000In ... 30.000In	*P.1*
Current Fundamental Magnitude during Post phase: phase C		

IG meas	Service / Sgen / Configuration / PostFault	
0In	-30.000In ... 30.000In	*P.1*
Current Fundamental Magnitude during Post phase: IG		

9.1.3 Sgen: Direct Controls

Start Simulation	Service / Sgen / Process	
Inactive	Inactive, Active Table	*P.1*
Start Fault Simulation (Using the test parameters)		

Stop Simulation	Service / Sgen / Process	
Inactive	Inactive, Active Table	*P.1*
Stopp Fault Simulation (Using the test parameters)		

9.1.4 Sgen: Input States

Ex Start Simulation-I **(Sgen . Ex Start Simulation)**	Operation / Status Display / Sgen
State of the module input:External Start of Fault Simulation (Using the test parameters)	

ExBlo-I **(Sgen . ExBlo)**	Operation / Status Display / Sgen
Module input state: External blocking	

Ex ForcePost-I **(↳ Sgen . Ex ForcePost)**	Operation / Status Display / Sgen
⇩	*State of the module input:Force Post state. Abort simulation.*

9.1.5 Sgen: Signals (Output States)

Started	Operation / Status Display / Sgen
⇧	*Fault Simulation has been started*

Running	Operation / Status Display / Sgen
⇧	*Signal: Measuring value simulation is running*

Stopped	Operation / Status Display / Sgen
⇧	*Fault Simulation has been stopped*

Not Running	Operation / Status Display / Sgen
⇧	*Signal: Measuring value simulation is not running*

10 Selection Lists

10.1 Mode

Selection list referenced by the following parameters:

- IH2 . Function
- IH2 . 3-ph Blo
- I> . Function
- I> . IH2 Blo
- I> . Stab. by CLPU
- I>> . Function
- *[. . .]*

Mode	Description
Inactive	Inactive
Active	Active

10.2 Definition

Selection list referenced by the following parameters:

- I> . Definition
- I>> . Definition
- I>>> . Definition
- IG> . Definition
- IG>> . Definition
- I2/I1> . Definition
- *[. . .]*

Definition	Description
Trip	The function operates as a protection function, i.e. trips the breaker in case of a fault.
Alarm	The function operates as a supervision function, i.e. a fault generates neither alarm nor trip, but an »Alarm« signal gets issued instead.

10.3 True or not true

Selection list referenced by the following parameters:

- BkrWear . Reset
- Sys . Rst. Err. LED
- Sys . Factory Reset
- Sys . User Restart
- Sys . Force Backup Prot.
- *[. . .]*

True or not true	Description
False	False
True	True

10.4 CT Type

Selection list referenced by the following parameters:

- CT . CT Type
- CT . CT Type

CT Type	Description
Relative	Phase current values are displayed as relative values.
WE2 : 16 A ... 56 A	Phase current values are displayed as primary values, that are calculated based on the connected CT type with primary current range 16 A ... 56 A.
W2 : 16 A ... 56 A	Phase current values are displayed as primary values, that are calculated based on the connected CT type with primary current range 16 A ... 56 A.
W3 : 32 A ... 112 A	Phase current values are displayed as primary values, that are calculated based on the connected CT type with primary current range 32 A ... 112 A.
W4 : 64 A ... 224 A	Phase current values are displayed as primary values, that are calculated based on the connected CT type with primary current range 64 A ... 224 A.
W5 : 128 A ... 448 A	Phase current values are displayed as primary values, that are calculated based on the connected CT type with primary current range 128 A ... 448 A.
W6 : 256 A ... 896 A	Phase current values are displayed as primary values, that are calculated based on the connected CT type with primary current range 256 A ... 896 A.
WC1	Converter CT WC1 for standard CTs (1A/5A => 83mA)
WC2	Converter CT WC2 for standard CTs (1A/5A => 290mA)

10.5 Polarity

Selection list referenced by the following parameters:

- CT . CT Shift by 0°/180°
- CT . ECT Shift by 0°/180°

Polarity	Description
0	0
180	180 degree polarity correction (wiring faults)

10.6 fN

Referenced by:

- CT . f

fN	Description
50	Rated frequency
60	Rated frequency

10.7 Phase Sequence

Referenced by:

- CT . Phase Sequence

Phase Sequence	Description
ABC	Clockwise Rotating Field
ACB	Anti-Clockwise Rotating Field

10.8 Measuring method

Referenced by:

- CT . 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)

10.9 IG Source

Referenced by:

- CT . IG Source

IG Source	Description
calculated	calculated
measured	measured

10.10 Display of Meas. Values

Selection list referenced by the following parameters:

- CT . Display of Meas. Values
- CT . Display of Meas. Values

Display of Meas. Values	Description
Based on In,relative	All current measuring values are displayed based on In,relative.
Primary current values	All current measuring values are displayed as primary currents.

10.11 Device planning

Selection list referenced by the following parameters:

- IH2 . Mode
- I> . Mode
- I>> . Mode
- I>>> . Mode
- IG> . Mode
- IG>> . Mode
- I2/I1> . Mode
- I2> . Mode
- ThR . Mode
- Ipeak> . Mode
- SOTF . Mode
- ExP[1] . Mode
- ExP[2] . Mode
- TCM . Mode
- CBF . Mode
- CLPU . Mode
- SBM . Mode
- Sgen . Mode

Device planning	Description
-	Do not use
use	use

10.12 Char

Selection list referenced by the following parameters:

- I> . Char
- I>> . Char
- I>>> . Char
- I2> . Char

Char	Description
DEFT	DEFT
IEC NINV	IEC Normal Inverse
IEC VINV	IEC Very Inverse [VINV]
IEC EINV	IEC Extremely Inverse - Characteristic
IEC LINV	IEC Long Time Inverse - Characteristic [LINV]
RINV	R Inverse [RINV] - Characteristic
HV Fuse	Overcurrent characteristic “HV Fuse”
FR Fuse	Overcurrent characteristic “FR Fuse”
IEEE MINV	IEEE Moderately Inverse [MINV] - Characteristic
IEEE VINV	IEEE Very Inverse [VINV]
IEEE EINV	IEEE Extremely Inverse - Characteristic
EF Curve	Overcurrent characteristic “EF Response Curve”

10.13 Reset Mode

Selection list referenced by the following parameters:

- I> . Reset Mode
- I>> . Reset Mode
- I>>> . Reset Mode
- IG> . Reset Mode
- IG>> . Reset Mode
- I2> . Reset Mode

Reset Mode	Description
instantaneous	Instantaneous reset: when the current drops below the pickup setting, the TOC time resets to zero within 2 cycles.
definite time	Reset after a fixed time.\n(Remark: This delay is then defined by the parameter »t-reset delay«.)
inverse time	Calculated reset, based on the selected characteristic.

10.14 Char

Selection list referenced by the following parameters:

- IG> . Char
- IG>> . Char

Char	Description
DEFT	DEFT
IEC NINV	IEC Normal Inverse
IEC VINV	IEC Very Inverse [VINV]
IEC EINV	IEC Extremely Inverse - Characteristic
IEC LINV	IEC Long Time Inverse - Characteristic [LINV]
RINV	R Inverse [RINV] - Characteristic
HV Fuse	Overcurrent characteristic “HV Fuse”
FR Fuse	Overcurrent characteristic “FR Fuse”
IEEE MINV	IEEE Moderately Inverse [MINV] - Characteristic
IEEE VINV	IEEE Very Inverse [VINV]
IEEE EINV	IEEE Extremely Inverse - Characteristic
EF Curve	Overcurrent characteristic “EF Response Curve”
RXIDG	Overcurrent characteristic “RXIDG”

10.15 Initial Thermal Level

Referenced by:

- ThR . Initial Thermal Level

Initial Thermal Level	Description
Zero	After a restart of the device, always set the initial value to 0.
Last Stored Value	After a restart of the device, restore the initial value to the last known value, that had been valid before the restart of the device.

10.16 Enabling

Referenced by:

- SOTF . Enabling

Enabling	Description
Breaker Pos.	A (manual) CLOSE command is determined based on the breaker position. (Note that the determination of breaker positions needs to be configured separately.)
Close Command	A CLOSE command being executed enables the »SOTF« module.

10.17 Device planning

Referenced by:

- BkrWear . Mode

Device planning	Description
-	Do not use
Counters only	The CBM function monitors the counters for the number of trip commands and for the sum of ruptured currents. An alarm will be issued if their respective limit is exceeded.
Counters, Wear Lev.	The CBM function monitors the counters and the wear level of the circuit breaker. An alarm will be issued if any of the maximum values is exceeded.

10.18 Operating Mode

Selection list referenced by the following parameters:

- CLPU . 50/51 Stab.
- CLPU . 50 N/G, 51 N/G Stab.

Operating Mode	Description
inactive	The Cold Load Pickup stabilization is inactive.
Factor	The Cold Load Pickup stabilization (temporarily) increases the pickup threshold of the (phase and/or ground) overcurrent protection.
Block.	The Cold Load Pickup stabilization (temporarily) blocks the (phase and/or ground) overcurrent protection.

10.19 Nom voltage

Referenced by:

- SBM . V Batt nom

Nom voltage	Description
24 VDC	24 VDC
48 VDC	48 VDC
60 VDC	60 VDC

10.20 Time win. for calc. avg.

Referenced by:

Time win. for calc. avg.	Description
1 min	1 min
8 min	8 min
15 min	15 min
20 min	20 min

10.21 I

Referenced by:

I	Description
> 0.4 In	> 0.4 In
> 0.5 In	> 0.5 In
> 0.6 In	> 0.6 In
> 0.7 In	> 0.7 In
> 0.8 In	> 0.8 In
> 0.9 In	> 0.9 In
> 1.0 In	> 1.0 In
> 1.1 In	> 1.1 In
> 1.2 In	> 1.2 In

10.22 active/inactive

Referenced by:

active/inactive	Description
Inactive	Inactive
Active	Active

10.23 Mode

Referenced by:

- Modbus . Mode

Mode	Description
-	Do not use
RTU	RTU
-	Do not use
TCP	TCP

10.24 Allow invalid addr.

Referenced by:

- Modbus . Allow invalid addr.

Allow invalid addr.	Description
Send an exception	The device answers with an exception whenever the requested address range contains an invalid address.
Inv. addr.are allowed	The device accepts invalid addresses within the requested address range without sending an exception.

10.25 Baud rate

Referenced by:

- Modbus . Baud rate

Baud rate	Description
1200	1200
2400	2400
4800	4800
9600	9600
19200	19200
38400	38400
57600	57600
115200	115200

10.26 Physical Settings

Referenced by:

- Modbus . Physical Settings

Physical Settings	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.

10.27 Settings valid

Referenced by:

- Prot . Settings valid

Settings valid	Description
Switches	The settings made via the switches are used.
Software	The settings made via Smart view/DiggiMEC are used.

10.28 Nom voltage

Referenced by:

- Prot . Nom voltage

Nom voltage	Description
24 VDC	24 VDC
48 VDC ... 60 VDC	48 VDC ... 60 VDC
110 VDC	110 VDC
230 VDC	230 VDC
110 VAC	110 VAC
230 VAC	230 VAC
115 VAC / 230 VAC	115 VAC / 230 VAC (depending on the input)

10.29 Meth.Detect.Bkr.Pos.

Referenced by:

- Prot . Meth.Detect.Bkr.Pos.

Meth.Detect.Bkr.Pos.	Description
Current-Based	The breaker position is determined based on current measurement.
Aux-Based	The breaker position is dependent on a particular input signal (Aux contacts 52a/52b of the circuit breaker).
Current and Aux	The breaker position is determined based on current measurement AND input signal (Aux contacts 52a/52b of the circuit breaker).

10.30 Out. Mode

Referenced by:

- Prot . Out. Mode

Out. Mode	Description
Impulse Output	The output shall operate as an impulse output (for connecting a flag indicator with full compatibility to the 1st generation WIC1).
Syst. O.K. & Ext.Suppl.	The output shall operate as a self-supervision output, together with an external output relay. (See the User Manual chapter “Technical Data” for the specification of a compatible output relay). \nThe signal at this output indicates that the WIC1 is running and is supplied by external auxiliary power and has loaded sufficient electrical energy for triggering the trip impulse output.
Relay Output	The output shall operate as as a relay output (for connecting an output relay).

10.31 Def. Autom. Reset

Referenced by:

- Prot . Def. Autom. Reset

Def. Autom. Reset	Description
OFF (No Autom. Reset)	OFF (=No Autom. Reset)
With a New Pickup	Automatic Reset when a new protection trip occurs
New Pickup or After 1 h	Automatic Reset when a new protection trip occurs or after 1 hour
New Pickup or After 2 h	Automatic Reset when a new protection trip occurs or after 2 hours
New Pickup or After 4 h	Automatic Reset when a new protection trip occurs or after 4 hours
New Pickup or After 8 h	Automatic Reset when a new protection trip occurs or after 8 hours
New Pickup or After 12 h	Automatic Reset when a new protection trip occurs or after 12 hours
New Pickup or After 24 h	Automatic Reset when a new protection trip occurs or after 24 hours
New Pickup or After 10 s	Automatic Reset when a new protection trip occurs or after 10 seconds

10.32 Device planning

Referenced by:

Device planning	Description
-	Do not use
DiggiMEC-0x	DiggiMEC variant 0x (without any flag indicator/relay output)
DiggiMEC-Ax	DiggiMEC variant Ax (1 flag indicator/output relay)
DiggiMEC-Bx	DiggiMEC variant Bx (3 flag indicators/output relays)

10.33 Latching

Selection list referenced by the following parameters:

Latching	Description
No latching	No latching, the status always follows the status of the assigned signal.
With latching	With latching, i.e. the state remains active once the the assigned signal has become active. (After the assigned signal has dropped off the state can be reset by the device.)
Latch. w. Auto-Reset	With latching, i.e. the state remains active once the the assigned signal has become active. In addition to a reset via DiggiMEC-HMI or via Digital Input there is also the automatical reset permitted.

10.34 Color

Referenced by:

Color	Description
Red	Red = “active” color (if the assigned signal is active)
Green	Green = “active” color (if the assigned signal is active)
Green / Red	Green = “active” color (if the assigned signal is active), red = “inactive” color (if the assigned signal is inactive)

10.35 Operation Preference

Referenced by:

Operation Preference	Description
Precise meas.	With this setting, the DiggiMEC gets fully available only with higher primary currents, but the WIC1 measurement values will be more precise.
Early wake-up	With this setting, the DiggiMEC is fully available at smaller primary currents, but at the cost of more inaccurate WIC1 measurement values. If set to “Precise meas.”, the DiggiMEC gets fully available only with higher primary currents, but the WIC

10.36 Reset via »RESET« key

Referenced by:

Reset via »RESET« key	Description
Without Password	A reset via »RESET« key can be done without password query.
With Password	A reset via »RESET« key requires entering the password.

10.37 My Language

Referenced by:

My Language	Description
English	English

10.38 Options

Selection list referenced by the following parameters:

- I> . ExBlo
- I>> . ExBlo
- I>>> . ExBlo
- IG> . ExBlo
- IG>> . ExBlo
- I2/I1> . ExBlo
- *[. . .]*

	Description
-	
Block. A	Signal: Inrush blocking of phase A of the phase overcurrent protection
Block. B	Signal: Inrush blocking of phase B of the phase overcurrent protection
Block. C	Signal: Inrush blocking of phase C of the phase overcurrent protection
Block. Ground	Signal: Inrush blocking of the ground (earth) overcurrent protection and min. 1 phase of the phase overcurrent protection.
Block. 3-ph	Signal: 3-phase Inrush blocking: An inrush has been detected in (at least) one phase, so that all three phases are blocked.
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup

	Description
IH2 Blo	Signal: Blocking the trip command by an inrush
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
IH2 Blo	Signal: Blocking the trip command by an inrush
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
IH2 Blo	Signal: Blocking the trip command by an inrush
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
IH2 Blo	Signal: Blocking the trip command by an inrush
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
Pre-Alarm	Signal: The set value for the Θ Threshold has been exceeded.
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
Trip	Signal: Trip
Alarm	Alarm
Pickup	Signal: Pickup
Trip	Signal: Trip
Alarm	Alarm
Pickup	Signal: Pickup
Alarm	Signal: Alarm
Alarm	Signal: Alarm
Alarm	Signal: Alarm: The maximum number of open commands or the maximum value for the sum of ruptured currents has been exceeded.
Alm(mx.Sum.Tr)	Signal: Alarm: The maximum number of open commands has been exceeded.
Alm(mx.Sum.Itrip)	Signal: Alarm: The maximum value for the sum of ruptured currents has been exceeded.
Alm (CB Wear Lev.)	Signal: Alarm: The maximum wear level of the circuit breaker has been exceeded.
detected	Signal: The CLPU stabilization has been triggered.
stab.	Signal: The CLPU stabilization is active.

	Description
Trip	Signal: Trip
Alarm	Signal: Alarm
Pickup	Signal: Pickup
Trip VBatt<<	Signal: Trip because the station battery voltage has dropped below VBatt<<
Alarm VBatt>	Signal: Alarm because the station battery voltage has exceeded VBatt>
Alarm VBatt<	Signal: Alarm because the station battery voltage has dropped below VBatt<
Alarm VBatt<<	Signal: Alarm because the station battery voltage has dropped below VBatt<<
Pickup VBatt>	Signal: Pickup because the station battery voltage has exceeded VBatt>
Pickup VBatt<	Signal: Pickup because the station battery voltage has dropped below VBatt<
Pickup VBatt<<	Signal: Pickup because the station battery voltage has dropped below VBatt<<
Alarm	Signal: Alarm
New error/warning	Signal: A new Self-Supervision message (error or warning) has been issued.
Prot. Ready	Signal: The device has completely booted, all protection functions are running and there is enough electrical energy for a trip pulse.
Intern.Volt. not OK	Signal: The self-supervision of the device has determined a problem with the internal voltage level or energy supply. This might impair the overall protection functionality, including the possibility to output a trip pulse. (If the supply via the connected CTs is sufficient you might want to check for a potential energy drain through the devices connected to the output(s).)
Started	Fault Simulation has been started
Running	Signal: Measuring value simulation is running
Stopped	Fault Simulation has been stopped
Not Running	Signal: Measuring value simulation is not running
TripCmd	Signal: Trip Command
Trip	Signal: General Trip
Alarm	Signal: General Alarm
Pickup	Signal: General Pickup
Trip IPh	Signal: General Trip due to a phase current fault
Trip IG	Signal: General Trip due to a ground current fault
Trip Ext.	Signal: General Trip due to an external signal
Trip IA	Signal: General Trip due to a fault in phase A
Trip IB	Signal: General Trip due to a fault in phase B
Trip IC	Signal: General Trip due to a fault in phase C
Pickup I Ph	Signal: General Pickup due to a phase current fault
Pickup IG	Signal: General Pickup due to a ground current fault
Pickup Ext.	Signal: General Pickup due to an external signal
DI 1	Signal: Digital Input
DI 2	Signal: Digital Input
Pos ON	Signal: Circuit Breaker is in ON-Position
Pos OFF	Signal: Circuit Breaker is in OFF-Position

	Description
-	none
-	none

10.39 Options

Selection list referenced by the following parameters:

- ExP[1] . Trigger Signal
- ExP[2] . Trigger Signal
- Prot . Aux ON
- Prot . Aux OFF
- Prot . SCmd ON
- Prot . Assign Ext. Reset

	Description
-	
DI 1	Signal: Digital Input
DI 2	Signal: Digital Input
-	none

10.40 Options

Selection list referenced by the following parameters:

- SOTF . Trigger
- ExP[2] . Condition

	Description
-	
Pickup	Signal: Pickup
Pickup	Signal: Pickup
Pickup	Signal: Pickup
Pickup	Signal: Pickup
Pickup	Signal: General Pickup

PROTECTION MADE SIMPLE.

WI Line

WIC1

REFERENCE MANUAL

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