

## **MCA4**

### **Directional Feeder Protection**

#### **Profibus - Data Point List**

**Version: 3.7**

**Original document · English**

**Revision: - 47543 · © 2020**

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# 1 Profibus

The Slave is a so-called “Modular Slave”. Within the GSD-File the optional available Configuration Modules are described only. The precise configuration for a device can be inquired by means of the Profibus-Command “GetConfig”. The configuration consists of so-called “Modules”. The description of the modules can be taken from the Profibus specification. Please contact the Technical Support in case of questions regarding the configuration.

The meaning of the Input and Output fields can be taken from the following tables. The Input fields are sent from the Slave to the Master. The Output fields are sent from the Master to the Slave. The Output fields contain the Commands and the Input fields contain the States of the device.

## 1.1 Configuration

The configuration telegram follows right after the parameter telegram and declares the number of input and output bytes. The Master sends to all Slaves how many bytes for each input and output message cycle are required. The following table defines the required size of a single input and output frame.

| Direction | Length | Configuration                      |
|-----------|--------|------------------------------------|
| Input     | 98     | 0x1F 0x1F 0x1F 0x1F 0x1F 0x1F 0x11 |
| Output    | 8      | 0x27                               |

## 2 Data Point Lists

### 2.1 Signals

These Data can be taken from the Input Field of the Profibus. The Input Field is sent from the Slave to the Master.

| Module<br>(ANSI / IEEE) | Name<br>Function | Offset<br>(Byte pos. / Bit<br>position) | Latched | Description  |
|-------------------------|------------------|---|---------|--|
| SG[1]                   | Pos              | 0/0                                     |         | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |
| SG[2]                   | Pos              | 0/2                                     |         | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |
| SG[3]                   | Pos              | 0/4                                     |         | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |
| SG[4]                   | Pos              | 0/6                                     |         | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |
| SG[5]                   | Pos              | 1/0                                     |         | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |
| SG[6]                   | Pos              | 1/2                                     |         | Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed) |
| Sys                     | PS 1             | 2/0                                     |         | Signal: The currently active Parameter Set is PS 1                                   |
| Sys                     | PS 2             | 2/1                                     |         | Signal: The currently active Parameter Set is PS 2                                   |
| Sys                     | PS 3             | 2/2                                     |         | Signal: The currently active Parameter Set is PS 3                                   |
| Sys                     | PS 4             | 2/3                                     |         | Signal: The currently active Parameter Set is PS 4                                   |
| Profibus                | Data OK          | 2/4                                     |         | Data within the Input field are OK (Yes=1)   |
| Prot                    | active           | 2/5                                     |         | Signal: active   |
| Prot                    | Alarm L1         | 2/6                                     |         | Signal: General-Alarm L1   |
| Prot                    | Alarm L2         | 2/7                                     |         | Signal: General-Alarm L2   |
| Prot                    | Alarm L3         | 3/0                                     |         | Signal: General-Alarm L3   |

| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Latched</b> | <b>Description</b>   |
|---------------------------------|--------------------------|--|----------------|--|
| Prot                            | Alarm G                  | 3/1  |                | Signal: General-Alarm - Earth fault                              |
| Prot                            | Alarm                    | 3/2  |                | Signal: General Alarm  |
| Prot                            | Trip L1                  | 3/3  | *              | Signal: General Trip L1  |
| Prot                            | Trip L2                  | 3/4  | *              | Signal: General Trip L2  |
| Prot                            | Trip L3                  | 3/5  | *              | Signal: General Trip L3  |
| Prot                            | Trip G                   | 3/6  | *              | Signal: General Trip Ground fault                                |
| Prot                            | Trip                     | 3/7  | *              | Signal: General Trip   |
| Prot                            | I dir fwd                | 4/0  |                | Signal: Phase current failure forward direction                  |
| Prot                            | I dir rev                | 4/1  |                | Signal: Phase current failure reverse direction                  |
| Prot                            | I dir n poss             | 4/2  |                | Signal: Phase fault - missing reference voltage                  |
| Prot                            | IG meas dir fwd          | 4/3  |                | Signal: Ground fault (measured) forward                          |
| Prot                            | IG meas dir rev          | 4/4  |                | Signal: Ground fault (measured) reverse direction                |
| Prot                            | IG meas dir n poss       | 4/5  |                | Signal: Ground fault (measured) direction detection not possible |
| Profibus                        | Assignment 1-I           | 5/0  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 2-I           | 5/1  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 3-I           | 5/2  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 4-I           | 5/3  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 5-I           | 5/4  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 6-I           | 5/5  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 7-I           | 5/6  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 8-I           | 5/7  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 9-I           | 6/0  |                | Module input state: Scada Assignment                             |
| Profibus                        | Assignment 10-I          | 6/1  |                | Module input state: Scada Assignment                             |

## 2 Data Point Lists

### 2.1 Signals

| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Latched</b> | <b>Description</b>                   |
|---------------------------------|--------------------------|--|----------------|--------------------------------------|
| Profibus                        | Assignment 11-I          | 6/2  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 12-I          | 6/3  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 13-I          | 6/4  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 14-I          | 6/5  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 15-I          | 6/6  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 16-I          | 6/7  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 17-I          | 7/0  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 18-I          | 7/1  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 19-I          | 7/2  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 20-I          | 7/3  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 21-I          | 7/4  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 22-I          | 7/5  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 23-I          | 7/6  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 24-I          | 7/7  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 25-I          | 8/0  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 26-I          | 8/1  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 27-I          | 8/2  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 28-I          | 8/3  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 29-I          | 8/4  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 30-I          | 8/5  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 31-I          | 8/6  |                | Module input state: Scada Assignment |
| Profibus                        | Assignment 32-I          | 8/7  |                | Module input state: Scada Assignment |
| SG[1]                           | TripCmd                  | 9/0  | *              | Signal: Trip Command                 |



| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Latched</b> | <b>Description</b>                             |
|---------------------------------|--------------------------|--|----------------|--|
| SG[2]                           | TripCmd                  | 9/1  | *              | Signal: Trip Command                           |
| SG[3]                           | TripCmd                  | 9/2  | *              | Signal: Trip Command                           |
| SG[4]                           | TripCmd                  | 9/3  | *              | Signal: Trip Command                           |
| SG[5]                           | TripCmd                  | 9/4  | *              | Signal: Trip Command                           |
| SG[6]                           | TripCmd                  | 9/5  | *              | Signal: Trip Command                           |
| I[1] - 50, 51                   | Alarm                    | 10/0   |                | Signal: Alarm                                  |
| I[1] - 50, 51                   | TripCmd                  | 10/1   | *              | Signal: Trip Command                           |
| I[2] - 50, 51                   | Alarm                    | 10/2   |                | Signal: Alarm                                  |
| I[2] - 50, 51                   | TripCmd                  | 10/3   | *              | Signal: Trip Command                           |
| I[3] - 50, 51                   | Alarm                    | 10/4   |                | Signal: Alarm                                  |
| I[3] - 50, 51                   | TripCmd                  | 10/5   | *              | Signal: Trip Command                           |
| I[4] - 50, 51                   | Alarm                    | 10/6   |                | Signal: Alarm                                  |
| I[4] - 50, 51                   | TripCmd                  | 10/7   | *              | Signal: Trip Command                           |
| IG[1] - 50N, 51N                | Alarm                    | 11/0   |                | Signal: The alarm threshold has been exceeded. |
| IG[1] - 50N, 51N                | TripCmd                  | 11/1   | *              | Signal: Trip Command                           |
| IG[2] - 50N, 51N                | Alarm                    | 11/2   |                | Signal: The alarm threshold has been exceeded. |
| IG[2] - 50N, 51N                | TripCmd                  | 11/3   | *              | Signal: Trip Command                           |
| ThR - 49                        | Alarm                    | 11/4   |                | Signal: Alarm Thermal Overload                 |
| ThR - 49                        | TripCmd                  | 11/5   | *              | Signal: Trip Command                           |
| I2>[1] - 46                     | Alarm                    | 11/6   |                | Signal: Alarm Negative Sequence                |
| I2>[1] - 46                     | TripCmd                  | 11/7   | *              | Signal: Trip Command                           |
| I2>[2] - 46                     | Alarm                    | 12/0   |                | Signal: Alarm Negative Sequence                |
| I2>[2] - 46                     | TripCmd                  | 12/1   | *              | Signal: Trip Command                           |

## 2 Data Point Lists

### 2.1 Signals

| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Latched</b> | <b>Description</b>   |
|---------------------------------|--------------------------|--|----------------|--|
| IH2                             | Blo L1                   | 12/2   |                | Signal: Blocked L1   |
| IH2                             | Blo L2                   | 12/3   |                | Signal: Blocked L2   |
| IH2                             | Blo L3                   | 12/4   |                | Signal: Blocked L3   |
| IH2                             | Blo IG meas              | 12/5   |                | Signal: Blocking of the ground (earth) protection module (measured ground current) |
| IH2                             | 3-ph Blo                 | 12/6   |                | Signal: Inrush was detected in at least one phase - trip command blocked.          |
| V[1] - 27, 59                   | Alarm                    | 12/7   |                | Signal: Alarm voltage stage  |
| V[1] - 27, 59                   | TripCmd                  | 13/0   | *              | Signal: Trip Command   |
| V[2] - 27, 59                   | Alarm                    | 13/1   |                | Signal: Alarm voltage stage  |
| V[2] - 27, 59                   | TripCmd                  | 13/2   | *              | Signal: Trip Command   |
| V[3] - 27, 59                   | Alarm                    | 13/3   |                | Signal: Alarm voltage stage  |
| V[3] - 27, 59                   | TripCmd                  | 13/4   | *              | Signal: Trip Command   |
| V[4] - 27, 59                   | Alarm                    | 13/5   |                | Signal: Alarm voltage stage  |
| V[4] - 27, 59                   | TripCmd                  | 13/6   | *              | Signal: Trip Command   |
| VG[1] - 27A, 59N,A              | Alarm                    | 13/7   |                | Signal: Alarm Residual Voltage Supervision-stage                                   |
| VG[1] - 27A, 59N,A              | TripCmd                  | 14/0   | *              | Signal: Trip Command   |
| VG[2] - 27A, 59N,A              | Alarm                    | 14/1   |                | Signal: Alarm Residual Voltage Supervision-stage                                   |
| VG[2] - 27A, 59N,A              | TripCmd                  | 14/2   | *              | Signal: Trip Command   |
| f[1] - 81                       | TripCmd                  | 14/3   | *              | Signal: Trip Command   |
| f[1] - 81                       | Alarm                    | 14/4   |                | Signal: Alarm Frequency Protection (collective signal)                             |
| f[2] - 81                       | TripCmd                  | 14/5   | *              | Signal: Trip Command   |
| f[2] - 81                       | Alarm                    | 14/6   |                | Signal: Alarm Frequency Protection (collective signal)                             |
| f[3] - 81                       | TripCmd                  | 14/7   | *              | Signal: Trip Command   |

| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Latched</b> | <b>Description</b>  |
|---------------------------------|--------------------------|--|----------------|---|
| f[3] - 81                       | Alarm                    | 15/0   |                | Signal: Alarm Frequency Protection (collective signal)  |
| Exp[1]                          | Alarm                    | 15/1   |                | Signal: Alarm   |
| Exp[1]                          | TripCmd                  | 15/2   | *              | Signal: Trip Command  |
| Exp[2]                          | Alarm                    | 15/3   |                | Signal: Alarm   |
| Exp[2]                          | TripCmd                  | 15/4   | *              | Signal: Trip Command  |
| Exp[3]                          | Alarm                    | 15/5   |                | Signal: Alarm   |
| Exp[3]                          | TripCmd                  | 15/6   | *              | Signal: Trip Command  |
| Exp[4]                          | Alarm                    | 15/7   |                | Signal: Alarm   |
| Exp[4]                          | TripCmd                  | 16/0   | *              | Signal: Trip Command  |
| CBF - 50BF, 62BF                | Alarm                    | 16/1   |                | Signal: Circuit Breaker Failure   |
| TCS - 74TC                      | Alarm                    | 16/2   |                | Signal: Alarm Trip Circuit Supervision  |
| CTS - 60L                       | Alarm                    | 16/3   |                | Signal: Alarm Current Transformer Measuring Circuit Supervision   |
| V012[1] - 47                    | Alarm                    | 16/4   |                | Signal: Alarm voltage asymmetry   |
| V012[1] - 47                    | TripCmd                  | 16/5   | *              | Signal: Trip Command  |
| V012[2] - 47                    | Alarm                    | 16/6   |                | Signal: Alarm voltage asymmetry   |
| V012[2] - 47                    | TripCmd                  | 16/7   | *              | Signal: Trip Command  |
| V012[3] - 47                    | Alarm                    | 17/0   |                | Signal: Alarm voltage asymmetry   |
| V012[3] - 47                    | TripCmd                  | 17/1   | *              | Signal: Trip Command  |
| V012[4] - 47                    | Alarm                    | 17/2   |                | Signal: Alarm voltage asymmetry   |
| V012[4] - 47                    | TripCmd                  | 17/3   | *              | Signal: Trip Command  |
| SG[1]                           | Isum Intr trip           | 17/4   | *              | Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase. |
| SG[2]                           | Isum Intr trip           | 17/5   | *              | Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase. |

## 2 Data Point Lists

### 2.1 Signals

| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Latched</b> | <b>Description</b>  |
|---------------------------------|--------------------------|--|----------------|---|
| SG[3]                           | Isum Intr trip           | 17/6   | *              | Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase. |
| SG[4]                           | Isum Intr trip           | 17/7   | *              | Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase. |
| SG[5]                           | Isum Intr trip           | 18/0   | *              | Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase. |
| SG[6]                           | Isum Intr trip           | 18/1   | *              | Signal: Maximum permissible Summation of the interrupting (tripping) currents exceeded in at least one phase. |
| DI Slot X1                      | DI 1                     | 18/2   |                | Signal: Digital Input   |
| DI Slot X1                      | DI 2                     | 18/3   |                | Signal: Digital Input   |
| DI Slot X1                      | DI 3                     | 18/4   |                | Signal: Digital Input   |
| DI Slot X1                      | DI 4                     | 18/5   |                | Signal: Digital Input   |
| DI Slot X1                      | DI 5                     | 18/6   |                | Signal: Digital Input   |
| DI Slot X1                      | DI 6                     | 18/7   |                | Signal: Digital Input   |
| DI Slot X1                      | DI 7                     | 19/0   |                | Signal: Digital Input   |
| DI Slot X1                      | DI 8                     | 19/1   |                | Signal: Digital Input   |
| DI Slot X6                      | DI 1                     | 19/2   |                | Signal: Digital Input   |
| DI Slot X6                      | DI 2                     | 19/3   |                | Signal: Digital Input   |
| DI Slot X6                      | DI 3                     | 19/4   |                | Signal: Digital Input   |
| DI Slot X6                      | DI 4                     | 19/5   |                | Signal: Digital Input   |
| DI Slot X6                      | DI 5                     | 19/6   |                | Signal: Digital Input   |
| DI Slot X6                      | DI 6                     | 19/7   |                | Signal: Digital Input   |
| DI Slot X6                      | DI 7                     | 20/0   |                | Signal: Digital Input   |
| DI Slot X6                      | DI 8                     | 20/1   |                | Signal: Digital Input   |
| BO Slot X2                      | BO 1                     | 20/2   |                | Signal: Binary Output Relay   |

| Module<br>(ANSI / IEEE) | Name<br>Function | Offset<br>(Byte pos. / Bit<br>position) | Latched | Description                    |
|-------------------------|------------------|---|---------|--------------------------------|
| BO Slot X2              | BO 2             | 20/3                                    |         | Signal: Binary Output Relay    |
| BO Slot X2              | BO 3             | 20/4                                    |         | Signal: Binary Output Relay    |
| BO Slot X2              | BO 4             | 20/5                                    |         | Signal: Binary Output Relay    |
| BO Slot X2              | BO 5             | 20/6                                    |         | Signal: Binary Output Relay    |
| BO Slot X2              | BO 6             | 20/7                                    |         | Signal: Binary Output Relay    |
| BO Slot X5              | BO 1             | 21/0                                    |         | Signal: Binary Output Relay    |
| BO Slot X5              | BO 2             | 21/1                                    |         | Signal: Binary Output Relay    |
| BO Slot X5              | BO 3             | 21/2                                    |         | Signal: Binary Output Relay    |
| BO Slot X5              | BO 4             | 21/3                                    |         | Signal: Binary Output Relay    |
| BO Slot X5              | BO 5             | 21/4                                    |         | Signal: Binary Output Relay    |
| BO Slot X5              | BO 6             | 21/5                                    |         | Signal: Binary Output Relay    |
| PQS[1] - 32, 37         | Alarm            | 21/6                                    |         | Signal: Alarm Power Protection |
| PQS[1] - 32, 37         | TripCmd          | 21/7                                    | *       | Signal: Trip Command           |
| PQS[2] - 32, 37         | Alarm            | 22/0                                    |         | Signal: Alarm Power Protection |
| PQS[2] - 32, 37         | TripCmd          | 22/1                                    | *       | Signal: Trip Command           |
| PQS[3] - 32, 37         | Alarm            | 22/2                                    |         | Signal: Alarm Power Protection |
| PQS[3] - 32, 37         | TripCmd          | 22/3                                    | *       | Signal: Trip Command           |
| PQS[4] - 32, 37         | Alarm            | 22/4                                    |         | Signal: Alarm Power Protection |
| PQS[4] - 32, 37         | TripCmd          | 22/5                                    | *       | Signal: Trip Command           |
| PQS[5] - 32, 37         | Alarm            | 22/6                                    |         | Signal: Alarm Power Protection |
| PQS[5] - 32, 37         | TripCmd          | 22/7                                    | *       | Signal: Trip Command           |
| PQS[6] - 32, 37         | Alarm            | 23/0                                    |         | Signal: Alarm Power Protection |
| PQS[6] - 32, 37         | TripCmd          | 23/1                                    | *       | Signal: Trip Command           |

## 2 Data Point Lists

### 2.1 Signals

| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Latched</b> | <b>Description</b>  |
|---------------------------------|--------------------------|--|----------------|---|
| PF[1] - 55                      | Alarm                    | 23/2   |                | Signal: Alarm Power Factor  |
| PF[1] - 55                      | TripCmd                  | 23/3   | *              | Signal: Trip Command  |
| PF[2] - 55                      | Alarm                    | 23/4   |                | Signal: Alarm Power Factor  |
| PF[2] - 55                      | TripCmd                  | 23/5   | *              | Signal: Trip Command  |
| CLPU                            | detected                 | 23/6   |                | Signal: Cold Load detected  |
| LOP                             | Alarm                    | 23/7   |                | Signal: Alarm Loss of Potential   |
| Q->&V<                          | Alarm                    | 24/0   |                | Signal: Alarm Reactive Power Undervoltage Protection  |
| ReCon[1]                        | V Ext Release PCC-I      | 24/1   |                | Module input state: Release signal is being generated by the PCC (External Release)                   |
| SOTF                            | active                   | 24/2   |                | Signal: active  |
| SOTF                            | I<                       | 24/3   |                | Signal: No Load Current.  |
| SOTF                            | enabled                  | 24/4   |                | Signal: Switch Onto Fault enabled. This Signal can be used to modify Overcurrent Protection Settings. |

## 2.2 Measuring Values

These Data can be taken from the Input Field of the Profibus. The Input Field is sent from the Slave to the Master.

| Module<br>(ANSI / IEEE) | Name<br>Function | Offset<br>(Byte pos. / Bit<br>position) | Format        | Description  |
|-------------------------|------------------|---|---------------|--|
| CT                      | IL1              | 26/0                                    | Float IEEE754 | Measured value: Phase current (fundamental)  |
| CT                      | IL2              | 30/0                                    | Float IEEE754 | Measured value: Phase current (fundamental)  |
| CT                      | IL3              | 34/0                                    | Float IEEE754 | Measured value: Phase current (fundamental)  |
| CT                      | IG meas          | 38/0                                    | Float IEEE754 | Measured value (measured): IG (fundamental)  |
| VT                      | VL12             | 42/0                                    | Float IEEE754 | Measured value: Phase-to-phase voltage (fundamental)   |
| VT                      | VL23             | 46/0                                    | Float IEEE754 | Measured value: Phase-to-phase voltage (fundamental)   |
| VT                      | VL31             | 50/0                                    | Float IEEE754 | Measured value: Phase-to-phase voltage (fundamental)   |
| VT                      | VX meas          | 54/0                                    | Float IEEE754 | Measured value (measured): VX measured (fundamental)   |
| PQSCr                   | P                | 58/0                                    | Float IEEE754 | Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumted Active Power) (fundamental)       |
| PQSCr                   | Q                | 62/0                                    | Float IEEE754 | Measured value (calculated): Reactive power (Q- = Fed Reactive Power, Q+ = Consumted Reactive Power) (fundamental) |
| VT                      | f                | 66/0                                    | Float IEEE754 | Measured value: Frequency  |
| PQSCr                   | cos phi          | 70/0                                    | Float IEEE754 | Measured value (calculated): Power factor: Sign Convention: sign(PF) = sign(P )                                    |
| PQSCr                   | Wp+              | 74/0                                    | Float IEEE754 | Positive Active Power is consumed active energy  |
| PQSCr                   | Wp-              | 78/0                                    | Float IEEE754 | Negative Active Power (Fed Energy)   |
| PQSCr                   | Wq+              | 82/0                                    | Float IEEE754 | Positive Reactive Power is consumed Reactive Energy  |
| PQSCr                   | Wq-              | 86/0                                    | Float IEEE754 | Negative Reactive Power (Fed Energy)   |
| CT                      | %(I2/I1)         | 90/0                                    | Float IEEE754 | Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.                       |

## 2 Data Point Lists

### 2.2 Measuring Values

| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Format</b> | <b>Description</b>                               |
|---------------------------------|--------------------------|--|---------------|--|
| Values                          | Operating hours Cr       | 94/0   | Float IEEE754 | Operating hours counter of the protective device |



## 2.3 Commands

The commands are set within the Output Field. These data fields are sent from the master to the slave. The slave responds to data modifications only, for example if a 2 Bit state changes from Off (01) to On (2).

| Module<br>(ANSI / IEEE) | Name<br>Function                    | Offset<br>(Byte pos. / Bit<br>position) | Description   |
|-------------------------|-------------------------------------|---|---|
| SG[1]                   | Control/Position of circuit breaker | 0/0                                     | Control respectively Position of circuit breaker (1 = OFF, 2 = On).   |
| SG[2]                   | Control/Position of circuit breaker | 0/2                                     | Control respectively Position of circuit breaker (1 = OFF, 2 = On).   |
| SG[3]                   | Control/Position of circuit breaker | 0/4                                     | Control respectively Position of circuit breaker (1 = OFF, 2 = On).   |
| SG[4]                   | Control/Position of circuit breaker | 0/6                                     | Control respectively Position of circuit breaker (1 = OFF, 2 = On).   |
| SG[5]                   | Control/Position of circuit breaker | 1/0                                     | Control respectively Position of circuit breaker (1 = OFF, 2 = On).   |
| SG[6]                   | Control/Position of circuit breaker | 1/2                                     | Control respectively Position of circuit breaker (1 = OFF, 2 = On).   |
| Sys                     | Ack LED                             | 2/0                                     | All acknowledgeable LEDs will be acknowledged.  |
| Sys                     | Ack BO                              | 2/2                                     | All acknowledgeable binary output relays are acknowledged.  |
| Sys                     | Ack Scada                           | 2/4                                     | Latched SCADA signals are acknowledged.   |
| PSS via Scada           | PSS via Scada                       | 3/0                                     | Signal: Parameter Set Switch via Scada. Write into this output byte the integer of the parameter set that should become active (e.g. 4 => Switch onto parameter set 4). |
| Commands                | Scada Cmd 1                         | 4/0                                     | Scada Command   |
| Commands                | Scada Cmd 2                         | 4/2                                     | Scada Command   |
| Commands                | Scada Cmd 3                         | 4/4                                     | Scada Command   |
| Commands                | Scada Cmd 4                         | 4/6                                     | Scada Command   |
| Commands                | Scada Cmd 5                         | 5/0                                     | Scada Command   |
| Commands                | Scada Cmd 6                         | 5/2                                     | Scada Command   |
| Commands                | Scada Cmd 7                         | 5/4                                     | Scada Command   |
| Commands                | Scada Cmd 8                         | 5/6                                     | Scada Command   |
| Commands                | Scada Cmd 9                         | 6/0                                     | Scada Command   |

## 2 Data Point Lists

### 2.3 Commands

| <b>Module<br/>(ANSI / IEEE)</b> | <b>Name<br/>Function</b> | <b>Offset<br/>(Byte pos. / Bit<br/>position)</b> | <b>Description</b> |
|---------------------------------|--------------------------|--|--------------------|
| Commands                        | Scada Cmd 10             | 6/2  | Scada Command      |
| Commands                        | Scada Cmd 11             | 6/4  | Scada Command      |
| Commands                        | Scada Cmd 12             | 6/6  | Scada Command      |
| Commands                        | Scada Cmd 13             | 7/0  | Scada Command      |
| Commands                        | Scada Cmd 14             | 7/2  | Scada Command      |
| Commands                        | Scada Cmd 15             | 7/4  | Scada Command      |
| Commands                        | Scada Cmd 16             | 7/6  | Scada Command      |

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