



**MRA4 – Profibus DP  
HighPROTEC**

Data point list

**Manual DOK-TD-MRA4PDE**

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This manual applies to devices (version):

Version 2.2.c

Build: 19706

## 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 field contain the Commands and the Input field contain the States of the device.

### 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.

<i>Direction</i>	<i>Length</i>	<i>Configuration</i>
Input	96	0x1F 0x1F 0x1F 0x1F 0x1F 0x1F
Output	8	0x27

## Data Point Lists

### Signals

These Data can be taken from the Input Field of the Profibus. The Input Field is sent from the Slave to the Master and it contains device states.

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition /BitPosition)</b>	<b>Self Latching</b>	<b>Description</b>
SG[1]	Pos	0/0		Signal: Circuit Breaker Position (0 = Indeterminate, 1 = OFF, 2 = ON, 3 = Disturbed)
Sys	PS 1	2/0		Signal: Parameter Set 1
Sys	PS 2	2/1		Signal: Parameter Set 2
Sys	PS 3	2/2		Signal: Parameter Set 3
Sys	PS 4	2/3		Signal: Parameter Set 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
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

## Data Point Lists

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition /BitPosition)</b>	<b>Self Latching</b>	<b>Description</b>
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 rev dir	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
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

## Data Point Lists

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition /BitPosition)</b>	<b>Self Latching</b>	<b>Description</b>
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
I[1]	Alarm	10/0		Signal: Alarm
I[1]	TripCmd	10/1	*	Signal: Trip Command
I[2]	Alarm	10/2		Signal: Alarm
I[2]	TripCmd	10/3	*	Signal: Trip Command
I[3]	Alarm	10/4		Signal: Alarm
I[3]	TripCmd	10/5	*	Signal: Trip Command
I[4]	Alarm	10/6		Signal: Alarm
I[4]	TripCmd	10/7	*	Signal: Trip Command
IG[1]	Alarm	11/0		Signal: Alarm IG
IG[1]	TripCmd	11/1	*	Signal: Trip Command
IG[2]	Alarm	11/2		Signal: Alarm IG

## Data Point Lists

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition /BitPosition)</b>	<b>Self Latching</b>	<b>Description</b>
IG[2]	TripCmd	11/3	*	Signal: Trip Command
ThR	Alarm	11/4		Signal: Alarm Thermal Overload
ThR	TripCmd	11/5	*	Signal: Trip Command
I2>[1]	Alarm	11/6		Signal: Alarm Negative Sequence
I2>[1]	TripCmd	11/7	*	Signal: Trip Command
I2>[2]	Alarm	12/0		Signal: Alarm Negative Sequence
I2>[2]	TripCmd	12/1	*	Signal: Trip Command
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]	Alarm	12/7		Signal: Alarm voltage stage
V[1]	TripCmd	13/0	*	Signal: Trip Command
V[2]	Alarm	13/1		Signal: Alarm voltage stage
V[2]	TripCmd	13/2	*	Signal: Trip Command
V[3]	Alarm	13/3		Signal: Alarm voltage stage
V[3]	TripCmd	13/4	*	Signal: Trip Command
V[4]	Alarm	13/5		Signal: Alarm voltage stage
V[4]	TripCmd	13/6	*	Signal: Trip Command
VG[1]	Alarm	13/7		Signal: Alarm Residual Voltage Supervision-stage
VG[1]	TripCmd	14/0	*	Signal: Trip Command
VG[2]	Alarm	14/1		Signal: Alarm Residual Voltage Supervision-stage

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition /BitPosition)</b>	<b>Self Latching</b>	<b>Description</b>
VG[2]	TripCmd	14/2	*	Signal: Trip Command
f[1]	TripCmd	14/3	*	Signal: Trip Command
f[1]	Alarm	14/4		Signal: Alarm Frequency Protection (collective signal)
f[2]	TripCmd	14/5	*	Signal: Trip Command
f[2]	Alarm	14/6		Signal: Alarm Frequency Protection (collective signal)
f[3]	TripCmd	14/7	*	Signal: Trip Command
f[3]	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	Alarm	16/1		Signal: Circuit Breaker Failure
TCS	Alarm	16/2		Signal: Alarm Trip Circuit Supervision
CTS	Alarm	16/3		Signal: Alarm Current Transformer Measuring Circuit Supervision
V012[1]	Alarm	16/4		Signal: Alarm voltage asymmetry
V012[1]	TripCmd	16/5	*	Signal: Trip Command
V012[2]	Alarm	16/6		Signal: Alarm voltage asymmetry
V012[2]	TripCmd	16/7	*	Signal: Trip Command
V012[3]	Alarm	17/0		Signal: Alarm voltage asymmetry
V012[3]	TripCmd	17/1	*	Signal: Trip Command



## Data Point Lists

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition /BitPosition)</b>	<b>Self Latching</b>	<b>Description</b>
V012[4]	Alarm	17/2		Signal: Alarm voltage asymmetry
V012[4]	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.
DI Slot X1	DI 1	17/5		Signal: Digital Input
DI Slot X1	DI 2	17/6		Signal: Digital Input
DI Slot X1	DI 3	17/7		Signal: Digital Input
DI Slot X1	DI 4	18/0		Signal: Digital Input
DI Slot X1	DI 5	18/1		Signal: Digital Input
DI Slot X1	DI 6	18/2		Signal: Digital Input
DI Slot X1	DI 7	18/3		Signal: Digital Input
DI Slot X1	DI 8	18/4		Signal: Digital Input
DI Slot X6	DI 1	18/5		Signal: Digital Input
DI Slot X6	DI 2	18/6		Signal: Digital Input
DI Slot X6	DI 3	18/7		Signal: Digital Input
DI Slot X6	DI 4	19/0		Signal: Digital Input
DI Slot X6	DI 5	19/1		Signal: Digital Input
DI Slot X6	DI 6	19/2		Signal: Digital Input
DI Slot X6	DI 7	19/3		Signal: Digital Input
DI Slot X6	DI 8	19/4		Signal: Digital Input
BO Slot X2	BO 1	19/5		Signal: Binary Output Relay
BO Slot X2	BO 2	19/6		Signal: Binary Output Relay
BO Slot X2	BO 3	19/7		Signal: Binary Output Relay
BO Slot X2	BO 4	20/0		Signal: Binary Output Relay

## Data Point Lists

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition /BitPosition)</b>	<b>Self Latching</b>	<b>Description</b>
BO Slot X2	BO 5	20/1		Signal: Binary Output Relay
BO Slot X2	BO 6	20/2		Signal: Binary Output Relay
BO Slot X5	BO 1	20/3		Signal: Binary Output Relay
BO Slot X5	BO 2	20/4		Signal: Binary Output Relay
BO Slot X5	BO 3	20/5		Signal: Binary Output Relay
BO Slot X5	BO 4	20/6		Signal: Binary Output Relay
BO Slot X5	BO 5	20/7		Signal: Binary Output Relay
BO Slot X5	BO 6	21/0		Signal: Binary Output Relay
PQS[1]	Alarm	21/1		Signal: Alarm Power Protection
PQS[1]	TripCmd	21/2	*	Signal: Trip Command
PQS[2]	Alarm	21/3		Signal: Alarm Power Protection
PQS[2]	TripCmd	21/4	*	Signal: Trip Command
PQS[3]	Alarm	21/5		Signal: Alarm Power Protection
PQS[3]	TripCmd	21/6	*	Signal: Trip Command
PQS[4]	Alarm	21/7		Signal: Alarm Power Protection
PQS[4]	TripCmd	22/0	*	Signal: Trip Command
PQS[5]	Alarm	22/1		Signal: Alarm Power Protection
PQS[5]	TripCmd	22/2	*	Signal: Trip Command
PQS[6]	Alarm	22/3		Signal: Alarm Power Protection
PQS[6]	TripCmd	22/4	*	Signal: Trip Command
PF[1]	Alarm	22/5		Signal: Alarm Power Factor
PF[1]	TripCmd	22/6	*	Signal: Trip Command
PF[2]	Alarm	22/7		Signal: Alarm Power Factor
PF[2]	TripCmd	23/0	*	Signal: Trip Command

Data Point Lists

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition /BitPosition)</b>	<b>Self Latching</b>	<b>Description</b>
CLPU	detected	23/1		Signal: Cold Load detected
LOP	Alarm	23/2		Signal: Alarm Loss of Potential
Q->&V<	Alarm	23/3		Signal: Alarm Reactive Power Undervoltage Protection
SOTF	active	23/4		Signal: active
SOTF	I<	23/5		Signal: No Load Current.
SOTF	enabled	23/6		Signal: Switch Onto Fault enabled. This Signal can be used to modify Overcurrent Protection Settings.

## 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 and contains device states.

<b>Modul</b>	<b>Names Functions</b>	<b>Offset (BytePosition)</b>	<b>Format</b>	<b>Description</b>
Current	IL1	24/0	Float IEEE754	Measured value: Phase current (fundamental)
Current	IL2	28/0	Float IEEE754	Measured value: Phase current (fundamental)
Current	IL3	32/0	Float IEEE754	Measured value: Phase current (fundamental)
Current	IG meas	36/0	Float IEEE754	Measured value (measured): IG (fundamental)
Voltage	VL12	40/0	Float IEEE754	Measured value: Phase-to-phase voltage (fundamental)
Voltage	VL23	44/0	Float IEEE754	Measured value: Phase-to-phase voltage (fundamental)
Voltage	VL31	48/0	Float IEEE754	Measured value: Phase-to-phase voltage (fundamental)
Voltage	VX meas	52/0	Float IEEE754	Measured value (measured): VX measured (fundamental)
PQSCr	P	56/0	Float IEEE754	Measured value (calculated): Active power (P- = Fed Active Power, P+ = Consumpted Active Power) (fundamental)
PQSCr	Q	60/0	Float IEEE754	Measured value (calculated): Reactive power (Q- = Fed Reactive Power, Q+ = Consumpted Reactive Power) (fundamental)
Voltage	f	64/0	Float IEEE754	Measured value: Frequency

## Data Point Lists

<b>Modul</b>	<b>Names Functions</b>	<b>Offset (BytePosition)</b>	<b>Format</b>	<b>Description</b>
PQSCr	cos phi	68/0	Float IEEE754	Measured value (calculated): Power factor
PQSCr	Wp+	72/0	Float IEEE754	Positive Active Power is consumed active energy
PQSCr	Wp-	76/0	Float IEEE754	Negative Active Power (Fed Energy)
PQSCr	Wq+	80/0	Float IEEE754	Positive Reactive Power is consumed Reactive Energy
PQSCr	Wq-	84/0	Float IEEE754	Negative Reactive Power (Fed Energy)
Current	%(I2/I1)	88/0	Float IEEE754	Measured value (calculated): I2/I1, phase sequence will be taken into account automatically.
Values	Operating hours Cr	92/0	Float IEEE754	Operating hours counter of the protective device

## Commands

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

<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition/BitPosition) in Output field</b>	<b>Description</b>
SG[1]	Control/Position of circuit breaker	0/0	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 will be acknowledged.
Sys	Ack Scada	2/4	SCADA will be acknowledged.
PSS via Scada	PSS via Scada	3/0	Signal: Parameter Set Switch via Scada
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
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

## Data Point Lists

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<b>Modul</b>	<b>Names Function</b>	<b>Offset (BytePosition/BitPosition) in Output field</b>	<b>Description</b>
Commands	Scada Cmd 15	7/4	Scada Command
Commands	Scada Cmd 16	7/6	Scada Command





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**Woodward Kempen GmbH**

Krefelder Weg 47 · D – 47906 Kempen (Germany)  
Postfach 10 07 55 (P.O.Box) · D – 47884 Kempen (Germany)  
Phone: +49 (0) 21 52 145 1

**Internet**

[www.woodward.com](http://www.woodward.com)

**Sales**

Phone: +49 (0) 21 52 145 216 or 342  
Fax: +49 (0) 21 52 145 354  
e-mail: [salesEMEA\\_PGD@woodward.com](mailto:salesEMEA_PGD@woodward.com)

**Service**

Phone: +49 (0) 21 52 145 614  
Fax: +49 (0) 21 52 145 455  
e-mail: [supportEMEA\\_PGD@woodward.com](mailto:supportEMEA_PGD@woodward.com)