



User Manual
KUNBUS-PRS

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1 Working with PRS

1.1 Validity

This document describes the application of the KUNBUS-PRS with the product number:

- 100149

1.2 User

The Art may only be assembled, installed and put into operation by trained, qualified personnel. Before assembly, it is absolutely essential that this documentation has been read carefully and understood. Expertise in the following fields is assumed:

- Electronic circuits,
- Basic knowledge of PROFIBUS,
- work in electrostatic protected areas,
- Locally applicable rules and regulations for occupational safety.

1.3 Symbols

The symbols used have the following meaning:

DANGER

Hazard

Observe this information without fail!

There is a safety hazard that can lead to serious injuries and death.

WARNING

Caution

There is a safety hazard that can result in minor injuries and material damage.

NOTICE

Note

There is a safety hazard that can result in material damage.

1.4 Safe use

WARNING

Power supply

PRS is designed exclusively for PELV operation according to (PELV) EN 60950 / EN 60204 / VDE 0805-1.

- Only protective extra-low voltages according to the defined standards may be used to supply and connect the alarm contact.

NOTICE

Electrostatic discharge

The device contains components that can be damaged or destroyed by electrostatic discharge.

- When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD), in accordance with EN 61340-5-1 and EN 61340-5-2, as well as IEC 61340-5-1 and IEC 61340-5-2.

NOTICE

Shielding

The shielding ground of the connected PROFIBUS RS485 and twisted pair cables is electrically connected to the female connectors

- When connecting network segments, avoid ground loops, potential transfers, and voltage equalization currents via the braided

NOTICE

Damage due to subsequent processing

Avoid subsequent processing of the PRS.

- Soldering can cause components to become detached and thus damage or destroy the module.
- Please note that the warranty shall become invalid if the products are changed technically.
- Speak to your contact person at the KUNBUS GmbH about customised solutions.

1.5 Limitation of Liability

Warranty and liability claims will lapse if:

- the product has been used incorrectly,
- damage is due to non-observance of the operating manual,
- damage is caused by inadequately qualified personnel,
- damage is caused by technical modification to the product (e.g. soldering).

1.6 Accessories

You need the following accessories:

- Serial Cable (Art. Nr.:100151)
- Twisted Pair cable(Art. Nr.:100126)
- Supply Voltage 24V / 1,3A with 100-240V wide range and power boost for up to 2 SNL2-E/FNL/PRS (Art. Nr.:100161) or
- Supply Voltage 24V / 1,3A mit 100-240V wide range and power boost for up to 5 SNL2-E/FNL/PRS (Art. Nr.:100160)

It is not included in the scope of delivery and has to be ordered separately.

1.7 Customer Service

If you have any questions or suggestions concerning this product, please do not hesitate to contact us:

KUNBUS GmbH

Heerweg 15 C

73770 Denkendorf

Germany

+49 (0)711 3409 7077

support@kunbus.com

www.kunbus.com

2 Introduction

PRS – PROFIBUS DP Redundancy Switch is an intelligent top-hat rail based switch for the implementation of redundant PROFIBUS DP Master systems. PRS allows the connection of two identical DP Masters as well as the DP Slaves. In case of failure of the operational DP Master PRS physically switches over to the stand-by DP Master which seamlessly takes over the DP Slaves.



Illustration 1: Overview

1 PROFIBUS DP-Master	2 Ethernet
3 connection A and B	4 Switch position DP
5 Switch "Operation mode"	6 Connection for power
7 Status LEDs	8 Connection for PROFIBUS DP
9 Display slave address	

3 Install

3.1 Assembly on top-hat rail

The PRS module is designed for top-hat rail assembly according to DIN 50022. Please put the top edge of the cut-out for the top-hat rail on the top-hat rail edge and press the device down until it snaps in. For the disassembly remove the two notches at the bottom edge and, lift up the module.

3.2 Connect Ethernet

PRS implements two Ethernet interfaces 10/100baseTX via RJ45 plugs. For connection to an existing network, connect PRS to the corresponding hub or switch via patch cable. For direct connection without use of a hub or switch, you need a cross-wired Ethernet cable.

3.3 Connect PROFIBUS DP

Both DP Masters and the DP Slaves are connected to the 9 pin D-SUB plugs in the front panel of PRS as shown in Figure 5:

Connection of DP Master/DP Slaves. **NOTICE! The termination in the PROFIBUS plugs must be deactivated if connected to the PRS.**

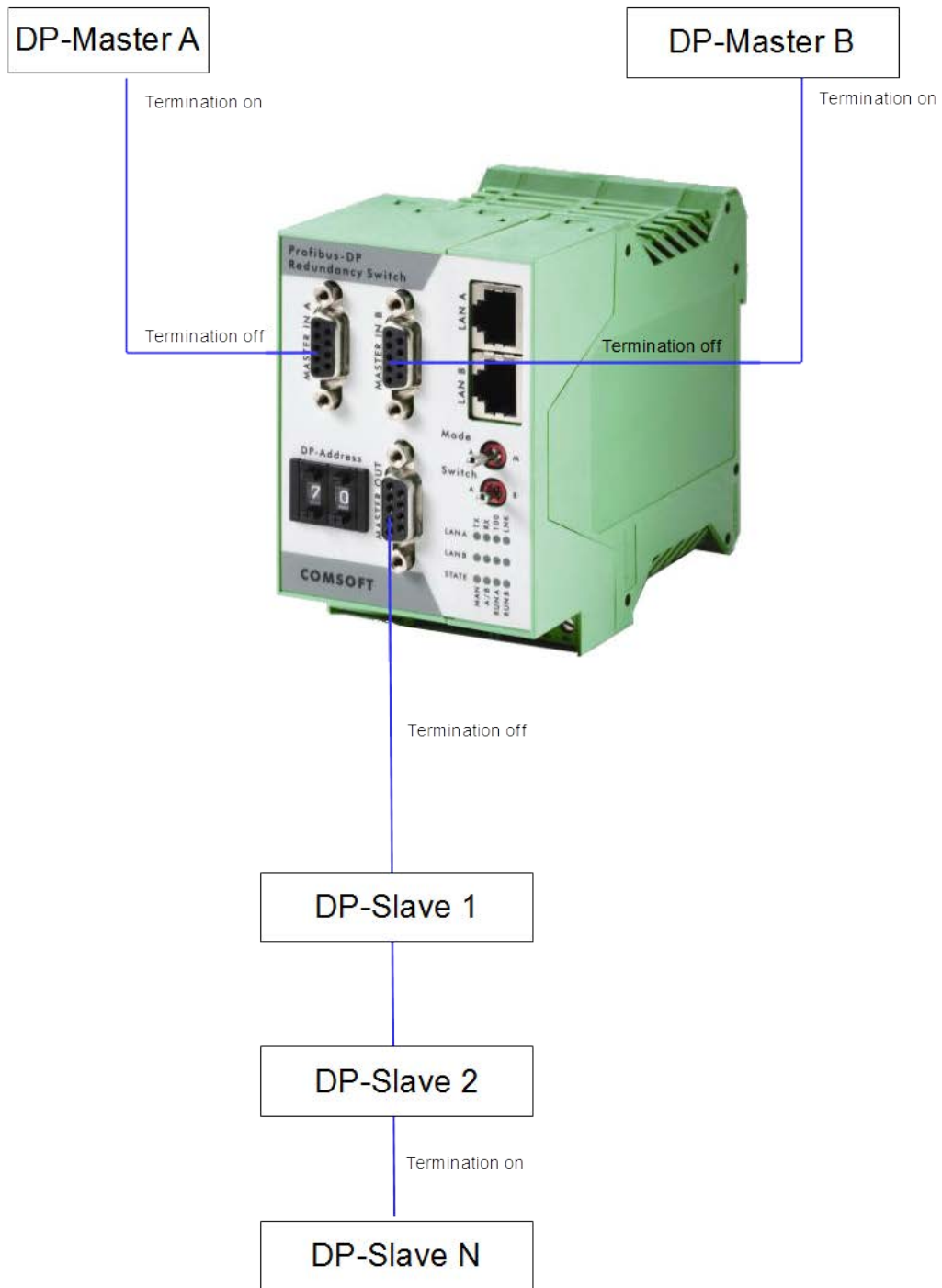


Illustration 2: Connection DP-Master/DP-Slave

Pin	Signal	Function	Direction
1	-	Shield	
3	RxD/TxD-P	Data+	Input/Output
8	RxD/TxD-N	Data-	Input/Output

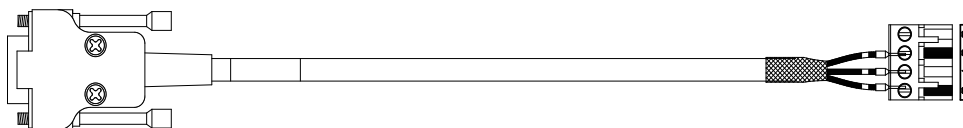
Table 1: Pin assignment

3.4 Connect RS232-Interface

To configure PRS, terminals can be connected via the RS232 service interface (RS232/V24). The terminal is usually a PC with corresponding terminal emulation. We recommend a hyper terminal under Windows. What you can control or observe via the terminal is described in the section „Operation of PRS“.

Clamps 5..8 serve as terminal connection and as 24 V output for the internal PA power supply.

- **Clamp 6:** 0 V for the RS232 interface.
- **Clamp 7:** outgoing data line of the RS232 interface from viewpoint of the PRS.
- **Clamp 8:** incoming data line of the RS232 interface from viewpoint of the PRS.



DSUB 9 female

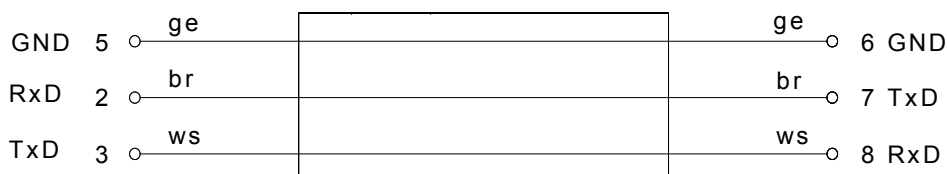


Illustration 3: RS232 serial interface cable

3.5 Connect Power supply

The power supply basis for the PRS module is 24 V DC. The following options exist:

- 0 V is connected either to clamp 9 or 10.
- +24 V is connected to clamp 11 or 12.
- The resulting free clamp can be used for distributing the power supply to other 24 V devices in the cabinet.
- The four clamps are combined in one coded plug. This makes it impossible to confuse the plug with other plugs. It can be inserted manually and removed again with a screwdriver.

4 Switches and Indicators

4.1 Indication LEDs

PRS implements status LEDs separated for DP Master A and B as well as for PROFIBUS DP and LAN.

LEDs in the LAN-section

The LEDs indicate the specific operating state of the Ethernet interfaces:

Side A RX	PRS receives data on LAN A
Side A TX	PRS transmits data on LAN A
Side B RX	PRS receives data on auf LAN B
Side B TX	PRS transmits data on LAN B
Side A Alive	PRS receives alive telegrams on LAN A
Side B Alive	PRS receives alive telegrams on LAN B

Table 2: PRS LAN LEDs

LEDs in der DP-Sektion und STATE LEDs

The LEDs indicate the status of PRS and PROFIBUS DP

MAN	OFF: PRS is in operation mode Automatic ON: PRS is in operation mode Manual
Side A	OFF: DP Slaves are connected to DP Master B ON: DP Slaves are connected to DP Master A
RUN A	OFF: PROFIBUS communication with DP Master A deactivated ON: PROFIBUS communication with DP Master A activated
RUN B	OFF: PROFIBUS communication with DP Master B deactivated ON: PROFIBUS communication with DP Master B activated
Side A Alive	OFF: DP Master A is not alive ON: DP Master A is alive
Side B Alive	OFF: DP Master B is not alive ON: DP Master B is alive

Table 3: PRS DP- und Status-LEDs

Note:

In trigger mode PROFIBUS DP Protocol level both LEDs RUN A/B and SIDE A/B Alive are switched on simultaneously, if the PROFIBUS communication with DP Master A is activated.

In trigger mode PROFIBUS DP Application level both LEDs RUN A/B and SIDE A/B Alive are switched separately. RUN A/B is switched on, if the PROFIBUS communication is activated. SIDE A/B Alive is switched on, if PRS receives alive telegrams from the DP Master A/B

4.2 Switches

The integrated switches are rough running to avoid any accidental switching.

Switch 'Mode A/M' (Operation mode Automatic/Manual)

If PRS is switched from Automatic to Manual mode, the automatic switch-over detection is deactivated. The PROFIBUS can be switched manually by the button 'Switch A/B' between DP Master A and B. The selected operation mode is stored in PRS status information buffer that can be read by the connected DP Masters A and B

To activate the automatic switch-over detection the operation mode 'Automatic' must be activated. In operation mode 'Manual' no automatic switch-over is performed if the operational DP Master system fails.

'Switch A/B'

'Switch A/B' is a left/right button and returns automatically back to its neutral position if released.

In the operation mode Manual the PROFIBUS can be switched between DP Master A (left) and B (right) by this button.

In the operation mode Automatic the PROFIBUS is also switched if the button is pushed but returns to its original state if the button is released.

The selected switch position is stored in the PRS status information buffer that can be read by the connected DP Masters A and B.

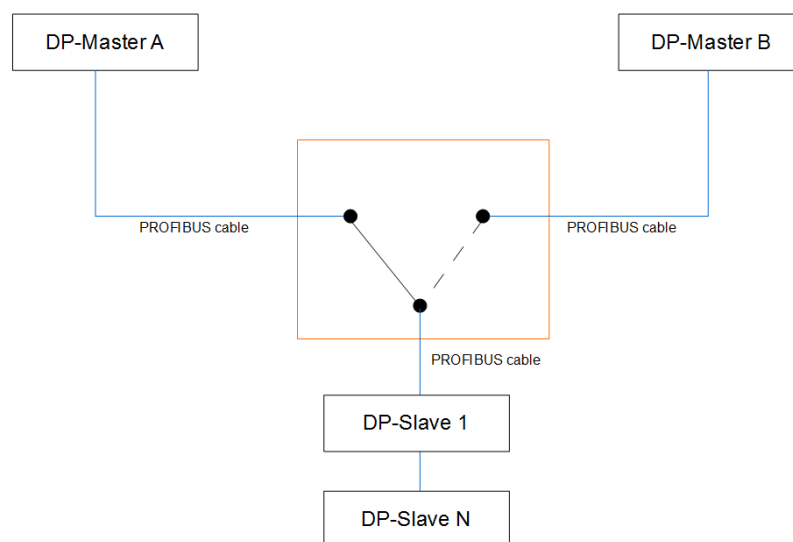
5 Put into operation

5.1 Redundancy with DP Masters

The implementation of redundant DP Master systems is difficult because the connected DP Slaves only communicate properly with that DP Master that also parameterized and configured the DP Slaves. The take over of the DP Slaves by a second DP Master with a different PROFIBUS address causes a reconfiguration of the DP Slaves. This results in a communication break and re-initialization of the complete PROFIBUS network.

One possibility to implement a seamless take over of the DP Slaves is the dynamic address change of the redundant DP Master (Flying Master principle). This function is partially implemented on different PLC systems. Disadvantages of such a system are the necessary multi master operation as well as the risk of a complete crash of the plant caused by a double station address conflict if the failed DP Master does not reset completely its PROFIBUS communication.

PRS avoids all these disadvantages by switching over electrically the PROFIBUS cable:



PRS principle function

The PROFIBUS cable is switched electrically between the two DP Masters which has advantages as follows:

- No multi master operation necessary
- 100% prevention of double station address conflict
- Both DP Masters can be identically configured
- Operation with every standard DP Master system possible

The switch-over only takes place if the redundant DP Master is "Alive"

If both DP Masters are gone, no switch-over will take place.

Different behaviour of DP Masters during switch-over

If a seamless switch-over of the DP Slaves without reconfiguration is required, the redundant DP Master system must implement the following functionality:

The redundant DP Master system continues directly the data exchange with operational DP Slaves without any reconfiguration. Otherwise the DP Slaves perform a reset what will again reset all DP Slave outputs.

If necessary please contact the DP Master system manufacturer for further information.

Balancing of the PROFIBUS DP Output Data

PRS does not support any balancing of the DP output data between the two DP Master systems:

The subordinate control system (e.g. the PLCs) must guarantee the continuous update of the redundant DP Master system with the actual DP output data (e.g. by an additional Ethernet connection). Otherwise no seamless switch over would be possible.

Single point of failure

There is no single point of failure with the PRS. If PRS is disconnected from the power supply or if the device does develop a fault the Master to Slave communication would continue without interrupted. Only a switch-over is no longer possible.

5.2 Connect DP Master and DP Slaves

Both DP Masters and the DP Slaves are connected to the 9 pin D-SUB plugs in the front panel of PRS as shown in Figure 5:

Connection of DP Master/DP Slaves. **NOTICE! The termination in the PROFIBUS plugs must be deactivated if connected to the PRS.**

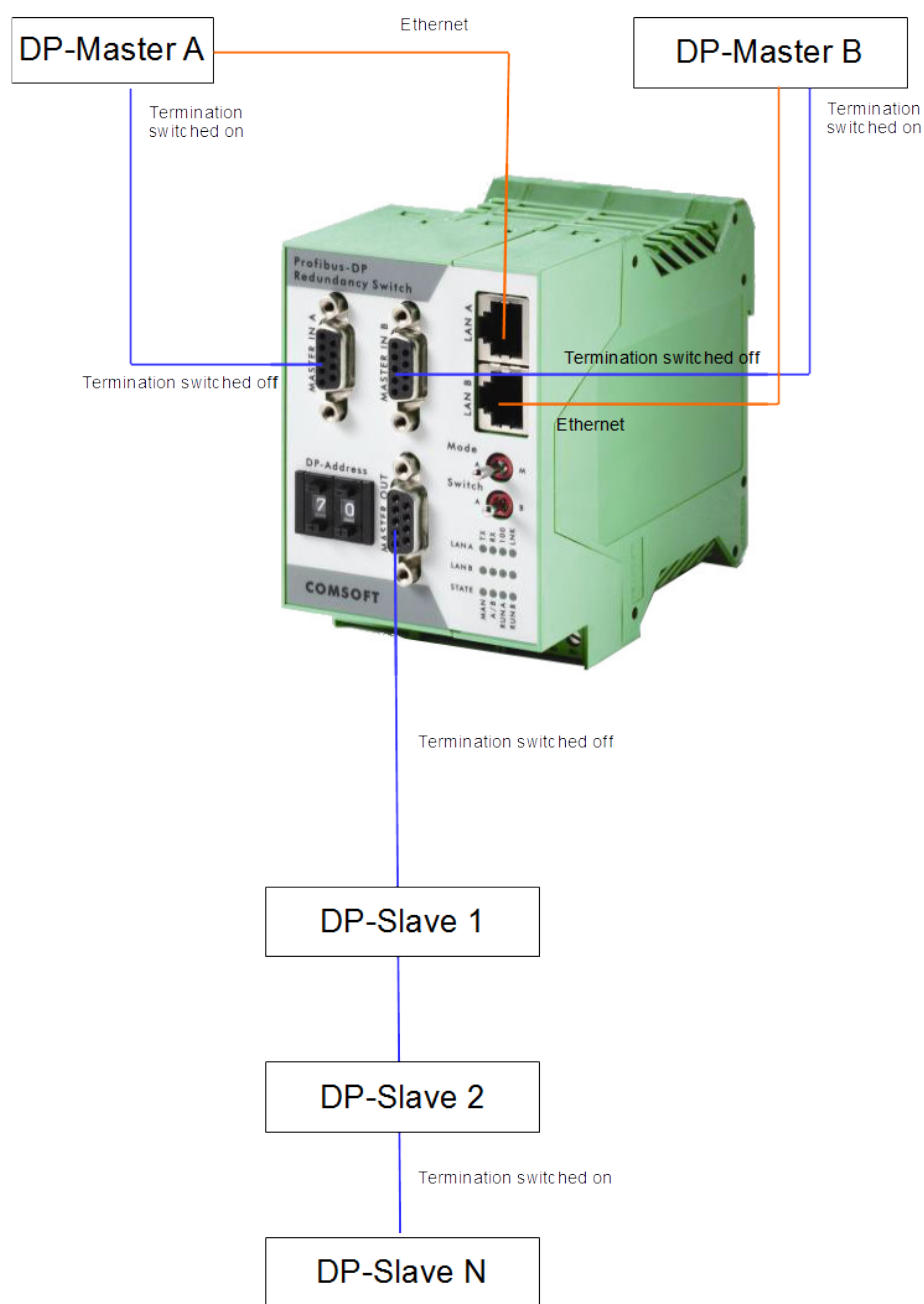


Illustration 4: Connection DP-Master/DP-Slave

Pin	Signal	Function	Direction
1	-	Shield	
3	RxD/TxD-P	Data+	Input/Output
8	RxD/TxD-N	Data-	Input/Output

Table 4: Pin assignment

5.3 Basic configuration via RS232 service interface

If no Ethernet will be used with PRS, the adjustment of the PRS basic parameters can be skipped completely because PRS is adjusted by default to PROFIBUS operation mode.

For configuration of the PRS a serial interface cable and a PC with terminal emulation is required. Connect the serial cable to one of the COM interfaces of your PC and to clamps 6-8 of the PRS. Configure the terminal for the corresponding COM interface with the interface parameters 9600 Baud, 8 Bit, No parity, 1 Stop-Bit. Now, activate or reset the PRS.

After approx. 20 seconds a configuration dialogue will open at the terminal indicating the currently set parameters.

Press any key within five seconds otherwise PRS will continue to start up with the displayed parameters.

```

#####
##  STARTUP OF PRS  ##
#####

NET+WORKS Version 5.00
Copyright (c) 2000, NETsilicon, Inc.

APPLICATION : Comsoft-PRS
FW-VERSION  : V00.01.07 built on May 30 2006 at 19:42:29
PLD-VERSION  : 1.0
HW-REVISION  : 2

-----
Network interface parameters:
-----
The device generates its MAC address from its serial hardware number

IP address on LAN is -----> 172.16.149.190
LAN interface's subnet mask is ----> 255.255.0.0
IP address of default gateway is -> 199.92.187.218

-----
Device specific Parameters:
-----
CPU enables the NETARM HW-Watchdog while working = No
Timeout for HW-Watchdog is 00005 seconds

Use Terminal Port for debug outputs = Yes
Serial channels will use a baud rate of 9600

SwitchOverTriggerMode Source : 0 (DP only)
SwitchOverWatchdogTime of LAN x100ms = 10

After board is reset, start-up code will wait 5 seconds

-----
Board Serial Numbers:
-----
The device's serial hardware number is 00000002

-----
Press any key in 5 seconds to change these settings.

[Alt]accept or modify parameters for [N]etwork, [D]evice or [S]erial Number :

```

Illustration 5: PRS Configuration dialogue

Network parameter

The following parameters can be modified:

- DHCP Yes/No
- TCP/IP address
- Subnet-mask

If DHCP is activated PRS gets the TCP/IP address from an available DHCP server.

The necessary Mac address to configure the DHCP server is located on the bottom of the PRS.

Please note that network addresses must not contain leading zeros.

Example:

172.16.1.114, instead of 172.016.001.114.

Each entry is to be concluded with a return. After entry and confirmation of the last parameter (waiting period for the configuration) the PRS stores the entered parameters, performs a reset and displays the configuration dialogue with the modified parameters and a new change option. Entry of parameters may be repeated as often as required.

Device-Parameter

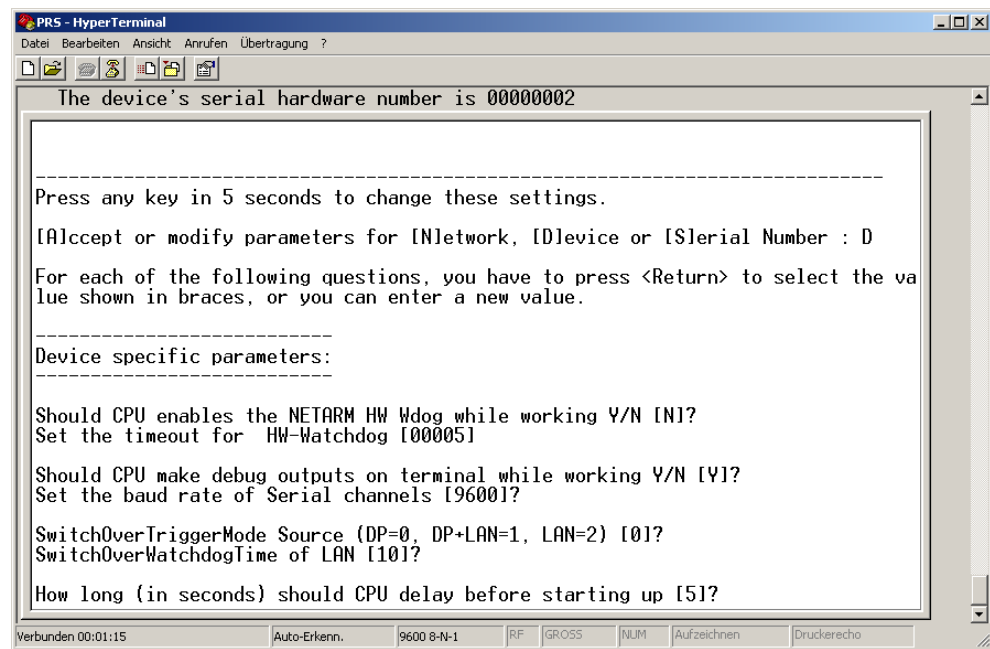


Illustration 6: Configuration device parameter

- PRS Hardware watchdog
PRS will be automatically reboot if the timeout expires, i.e. if a system crash occurs
- Hardware watchdog timeout value in seconds
- Debug messages on RS232 service interface
PRS transmits during operation debug messages in ASCII format on the RS232 service interface
- Baud rate RS232 service interface
The baud rate of the RS232 service interface can be changed in the range of 4800 Baud - 115 Kbaud (default is 9600 Baud).
- SwitchOverTriggermode
Determines the basic condition for the automatic switch-over
The value 1 is only for internal use and must not be configured
 - 0 = The switch-over is triggered by PROFIBUS DP, Ethernet is deactivated
 - 2 = The switch-over is triggered by Ethernet, PROFIBUS DP is deactivated
- Timeout value for Ethernet based alive telegram
(SwitchOverTriggermode = 2)
Determines the timeout value in multiples of 100 ms after that a switch-over is performed if no Ethernet based alive telegram was received.

5.4 PROFIBUS DP operation mode

Triggering of a switch-over

The switch-over from the operational DP Master to the redundant DP Master is triggered as follows:

- PROFIBUS failure of the operational DP Master = Trigger mode PROFIBUS DP protocol level
- PROFIBUS failure of the operational DP Master or of the overlying application program = Trigger mode application level
- Manual switch-over command via DP output data.

Determination of the operational and redundant DP Mastersystem

The determination which DP Master works as operational and accordingly as redundant system can be decided by the switch-on sequence of the two DP Masters. Additionally the configuration can be subsequently changed by performing a manual switch-over command. For details refer to chapters 7.4.2.1.1 and 7.4.2.2.1.

Setting of DP Master parameters for redundant operation

To ensure a seamless switch-over the DP Slave watchdog value must be increased in the DP Master parameters to avoid a DP Slave reset during the switch-over.

Rule: $T_{\text{Wdog Redundant}} = T_{\text{Wdog Original}} * 4$

Example for Siemens S7 HW-Konfig ($T_{\text{Wdog}} = \text{Watchdog}$):

To change the DP Slave Watchdog , the profile "User defined" must be adjusted.

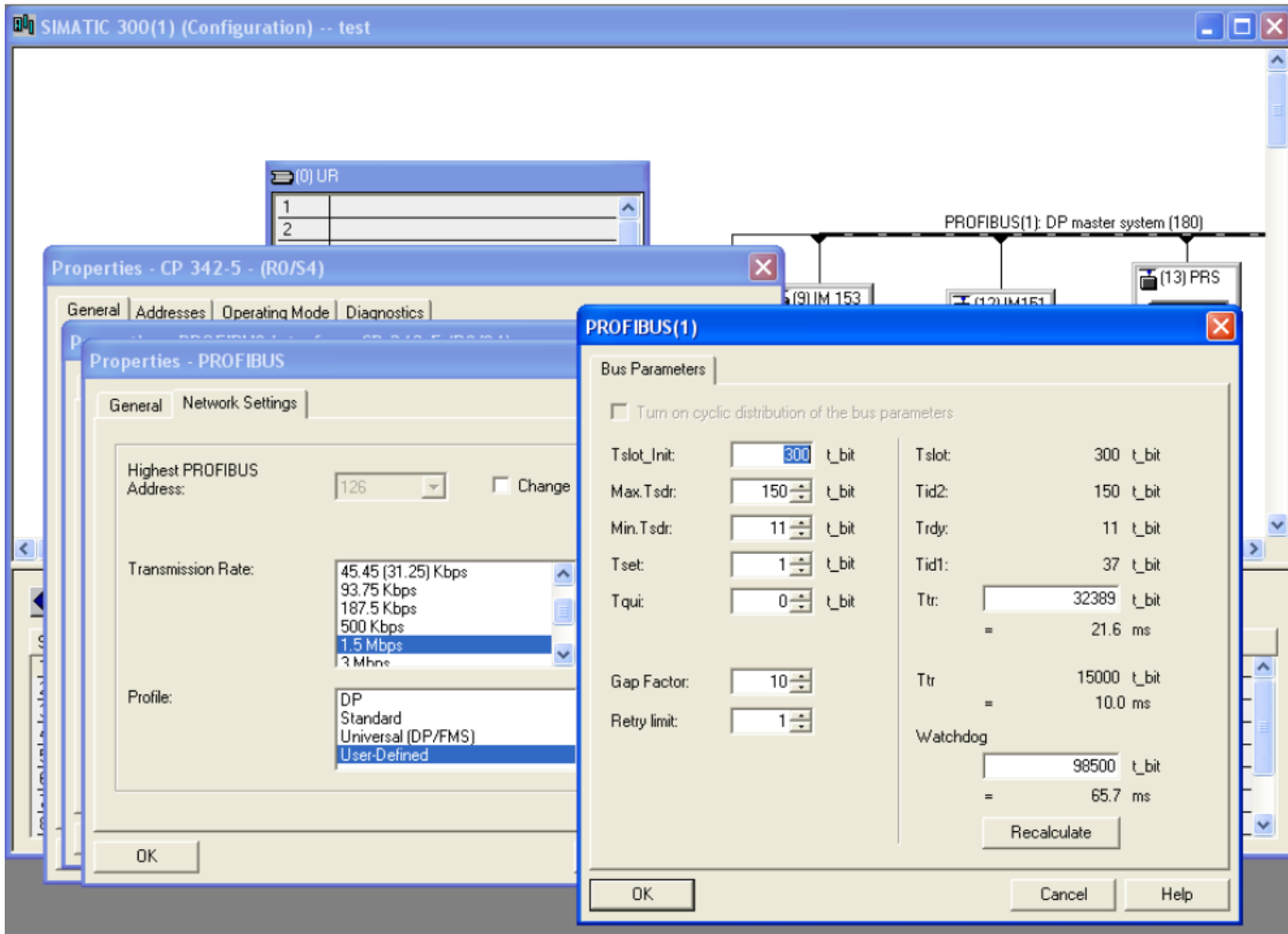


Illustration 7: Adjustment of the DP Master parameters

Trigger mode PROFIBUS DP protocol level

PRS checks the PROFIBUS traffic of the operational DP Master and switches over to the stand-by Master in case of failure.

Switch-over rules:

- The switch-over is only performed, if PRS is switched to operation mode 'Automatic'.
- The switch-over is only performed, if the redundant DP Master is 'alive'.
- The switch-over is performed after half the adjusted DP Slave watchdog value (minimum 10 ms).
- If both DP Master failed, no switch-over is performed.

Proceed with the following steps to setup a redundant DP Master system:

- Extend both DP Master configurations by PRS using the COM0A49.gsd file.
- Adjust the DP Masters to the trigger mode PROFIBUS DP Application Level on both DP Masters.
- Extend the DP Slave watchdog time in the DP Master parameters on both DP Masters.

Initial switch setting in trigger mode PROFIBUS DP protocol level

The initial switch setting of PRS (A or B) after restart depends on the state of the connected DP Masters.

Basic rule: PRS switches the PROFIBUS to that DP Master which connects at first to the PRS.

The following combinations are possible:

DP-Master A passive	DP-Master A aktive	DP-Master A aktive DP-Master B passive	DP-Master A passive
DP-Master B passive	DP-Master B aktive		DP-Master B aktive
switch setting not changed	PRS switches to A	PRS switches to A	PRS switches to B

Table 5: Initiale Umschaltstellungen

DP-Master configuration

The DP Master configuration must be extended by the PRS using the appropriate GSD file COM0A49.gsd. The PROFIBUS address is adjusted with the integrated address switch:



Illustration 8: PROFIBUS address switch

The address range is 0-99. The adjusted address is valid for DP Master A and B.

Adjust the PROFIBUS configuration tool for the PRS to the trigger mode PROFIBUS DP protocol level. (This is shown using S7 HW-Konfig as an example):

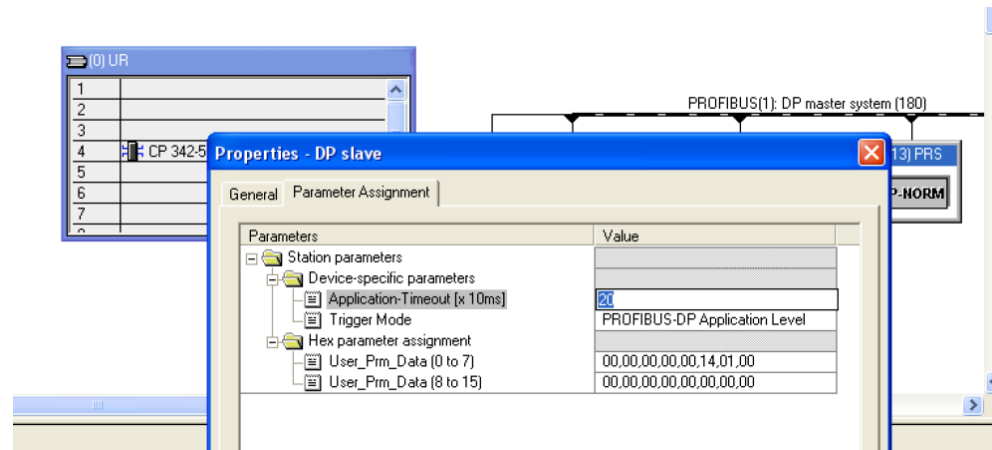


Illustration 9: Adjustment of PRS DP parameters

PRS checks the PROFIBUS traffic of the operational DP Master as well as an alive counter contained in the PROFIBUS DP output data. The alive counter must be cyclically changed by the application program within the adjusted application timeout. PRS switches over to the stand-by DP Master system in case of failure of the PROFIBUS or expiration of the application timeout.

Switch over rules:

- A switch-over is only performed, if PRS is switched to operation mode Automatic.
- A switch-over is only performed, if the redundant DP Master is alive.
- If the PROFIBUS fails, a switch-over is performed after half the adjusted DP Slave watchdog value (minimum 10 ms).
- If the alive counter in the alive telegram is no longer changed by the application, a switch-over is performed after the expiration of the application timeout.

If both DP Master failed, no switch-over is performed.

Proceed with the following steps to setup a redundant DP Master system:

- Extend both DP Master configurations by PRS using the COM0A49.gsd file.
- Adjust the DP Masters to the trigger mode PROFIBUS DP application level.
- Adjust the application timeout value (default: 200 ms) for the alive counter.
- Extend the DP Slave watchdog time in the DP Master parameters on both DP Masters.
- Implement the alive counter in the superordinate application.

Initial switch setting in trigger mode PROFIBUS DP application level

The initial switch setting of PRS (A or B) after restart depends on the status of the connected DP Masters.

Basic rule: PRS switches the PROFIBUS to that DP Master which at first becomes alive / changes its alive counter.

The following combinations are possible:

DP-Master A not alive	DP-Master A alive	DP-Master A alive	DP-Master A not alive
DP-Master B not alive	DP-Master B alive	DP-Master B not alive	DP-Master B alive
Switch setting not changed	PRS switches to A	PRS switches to A	PRS switches to B

Table 6: Initial switch setting

DP-Master configuration

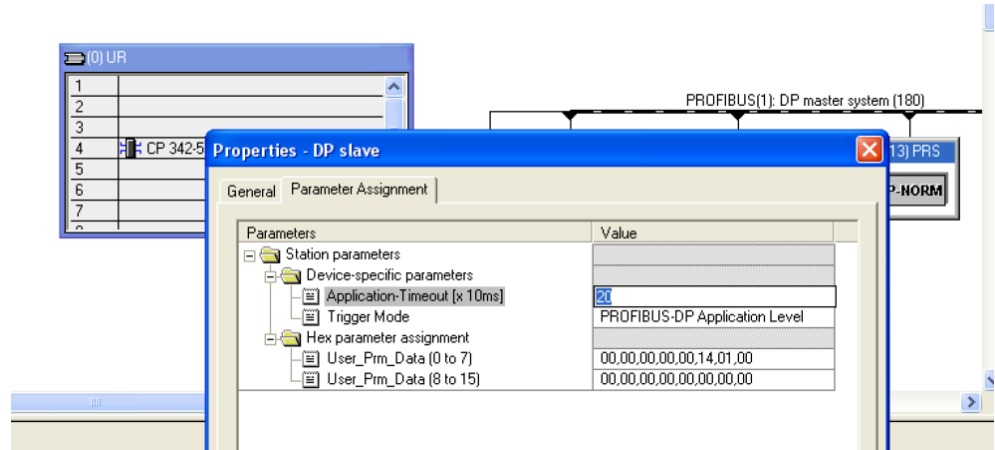
The DP Master configuration must be extended by the PRS using the appropriate GSD file COM0A49.gsd. The PROFIBUS address is adjusted at the integrated address switch.



Illustration 10: PROFIBUS address switch

The address range is 0-99. The adjusted address is valid for DP Master A and B.

Adjust the DP Master PROFIBUS configuration tool to the Application-Timeout value (resolution 10 ms) and to the trigger mode PROFIBUS DP Application Level. (This is shown using S7 HW-Konfig as an example):



Adjustment of PRS DP parameters

6 PRS Commands

6.1 PRS PROFIBUS DP output data

The length of the output data is 16 Bytes. Only the first two Bytes are in use, the remaining 14 Bytes are reserved.

Byte 0	Byte 1	Byte 15
Switch-over command	Alive counter	Reserved

Manual switch-over command

Via Byte 0 a manual switch-over command can be performed:

- Bit 0: A change from 0 to 1 performs a switch-over to DP Master A
- Bit 1: A change from 0 to 1 performs a switch-over to DP Master B

The switch-over is only performed if the bit changes from 0 to 1. After the bit was set it has to be reset by the application, otherwise no more switch-overs are possible.

Switch-over rules:

The manual switch-over is always performed and does not depend on the 'alive' state of the DP Masters.

Alive counter

The alive counter is used in the trigger mode PROFIBUS DP Application Level. The superordinate application has to change the alive counter cyclically within the adjusted application timeout otherwise the PRS switches over to the stand-by DP Master.

The alive mechanism stays inactive after restart of PRS until the alive counter has been changed by the superordinate application. This allows a dedicated start of the alive mechanism by the superordinate application.

6.2 PRS PROFIBUS DP input data

The length of the input data is 16 Bytes. Only the first two Bytes are in use, the remaining 14 Bytes are reserved.

Byte 0	Byte 1	Byte 15
PRS state bits	Echo alive counter	Reserved

PRS state bits

Bit 7-4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved	0 = DP-Master B is not alive	0 = DP-Master A is not alive	0 = PRS is switched to DP Master A	0 = PRS is in operation mode Automatic
	1 = DP-Master B is alive	1 = DP-Master A is alive	1 = PRS is switched to DP Master B	1 = PRS is in operation mode Manual

Table 7: PRS state bits

Echo alive counter

PRS echoes the actual value of the alive counter

7 Ethernet based operation

7.1 Initial switch setting in Ethernet based operation mode

Initial switch setting in Ethernet based operation mode

The initial switch setting of PRS (A or B) after restart depends on the state of the connected DP Masters.

Basic rule: PRS switches the PROFIBUS to that DP Master which at first transmits an alive telegram.

The following combinations are possible:

DP-Master A not alive	DP-Master A alive	DP-Master A alive	DP-Master A not alive
DP-Master B not alive	DP-Master B alive	DP-Master B not alive	DP-Master B alive
Switch setting not changed	PRS switches to A	PRS switches to A	PRS switches to B

Table 8: Initiale Umschaltstellungen

7.2 Typical Ethernet based PRS configuration

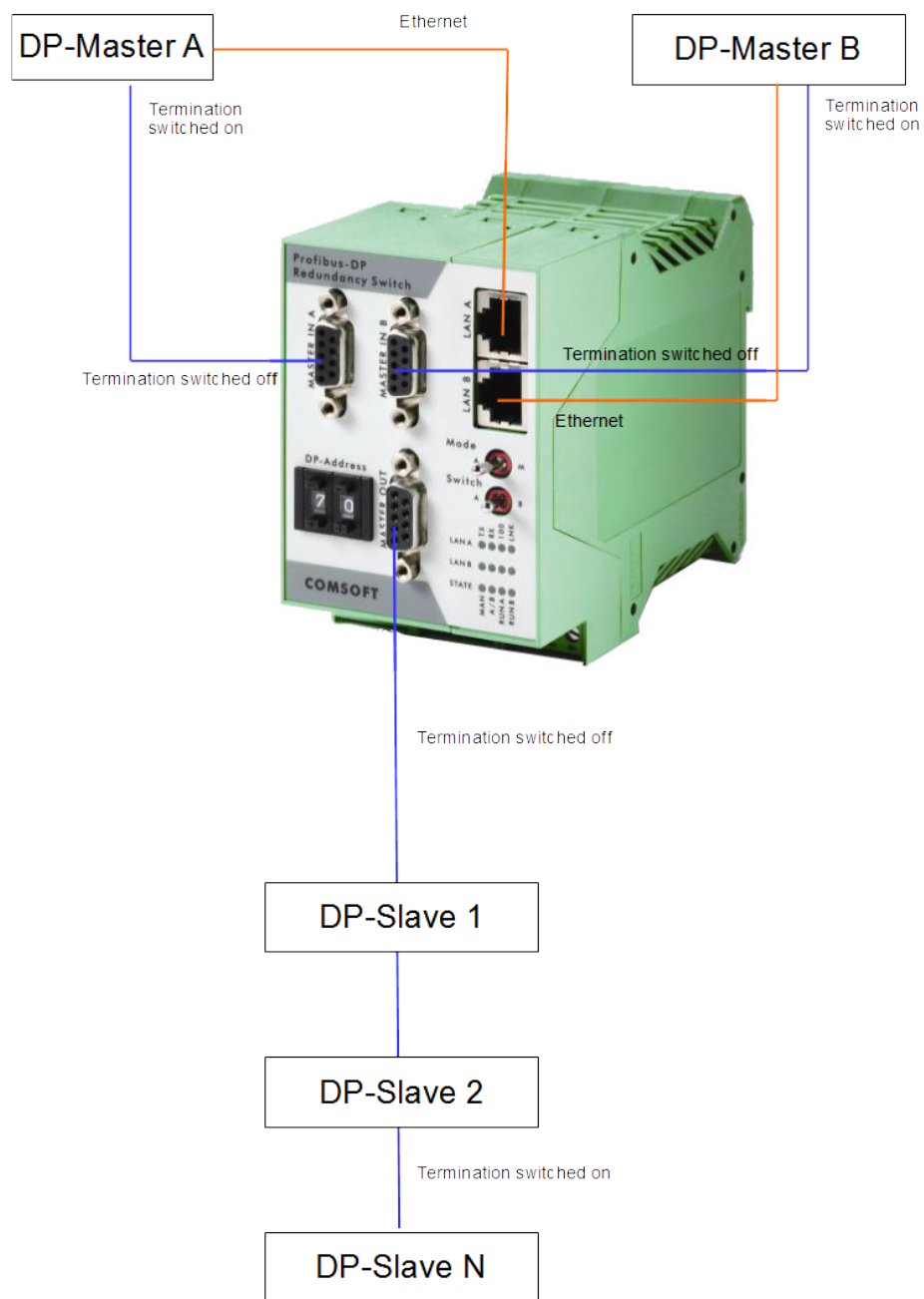


Illustration 11: PRS Ethernet based operation

7.3 Configuration of the Ethernet based communication

Configuration of the Ethernet based communication

PRS allows IP address configuration via DHCP server or alternatively a direct setting of the IP address.

The Ethernet interface is based on UDP. Both Ethernet interfaces can be reached via the same IP address and different ports for DP Master A and B:

- DP-Master A: Port **0xC000**
- DP-Master B: Port **0xC001**

7.4 Ethernet communication structure

UDP commands

Basic frame structure

Request

Command	Length	Optional Data
UINT_16	UINT_16	Array of UINT_8[]

Response

Command	Status code	Length of the following data	Optional Data
UINT_16	UINT_16	UINT_16	Array of UINT_8[]

Alive

With the first transmission of an alive telegram the alive watchdog for the appropriate DP Master is activated. PRS confirms the first alive telegram with the status code 0x0002. This is no error message, but a confirmation that the alive watchdog is started.

Afterwards the DP Master has to transmit cyclically alive telegrams within the adjusted timeout interval. PRS confirms every alive telegram with status code 0x0000. If the DP Master stops transmitting alive telegrams, the alive timer expires and a switch-over is performed.

Request

Command	Length	Optional Data
0200	0000	-

Response to the first alive request

Command	Status code	Length of the following data	Optional Data
0200	0200	0000	-

Response to all subsequent alive requests

Command	Status code	Length of the following data	Optional Data
0000	XXXX	0000	-

Deactivating the Alive-Watchdog-Timer

The command stops the activated Alive-Watchdog-Task or the appropriate DP Master A or B.

Request

Command	Length	Optional Data
0000	0000	-

Response

Command	Status code	Length of the following data	Optional Data
0300	XXXX	0000	-

Manual switch-over A/B

Switch-over PROFIBUS to the appropriate DP Master A or B.

Switch-over rules:

The manual switch-over is always performed and does not depend on the alive status of the DP Masters.

The DP Master which activated the last switch-over is stored in the status information buffer.

Request

Command	Length	Optional Data
0000	0000	-

Response

Command	Status code	Length of the following data	Optional Data
0000	XXXX	0000	-

Reading of the PRS status buffer

If this command is received, the PRS responds with the status buffer. The command could be send over both ports 0xC000 or 0xC001.

Request

Command	Length	Optional Data
0400	0000	-

Response

Command	Status code	Length of the following data	Optional Data
0400	XXXX	32	Statusblock

Format of the PRS status buffer

The status buffer consists of 32 Bytes. Byte 15-31 are reserved for internal use.

Byte	Status message	Format	State/Value
0	HW-Rev	UINT_8	Revision number hardware 0...255
1	SW-Rev 00.Hi.Lo.Sub	UINT_32	Software version in binary format
5	Hardware serial number	UINT_16	Hardware serial number 0...65535
7	DHCP configuration	UINT_8	0 DHCP = OFF 1 DHCP = ON
8	Hardware Watchdog	UINT_8	0 = OFF 1 = ON but not active 2 = ON and active
9	Trigger mode	UINT_8	0 = DP 1 = DP and LAN 2 = LAN
10	Operation mode	UINT_8	0 = Manual 1 = Automatic
11	Actual Switch position	UINT_8	0 = A, 1 = B
12	Status DP Master A	UINT_8	0 = Alive and time out not expired 3 = Not Alive, timeout expired and switch over performed
13	Status DP Master B	UINT_8	4 = Not Alive, time out expired and no switch over performed 7 = Alive not started
14	Switch-over cause DP Master A	UINT_8	0 = No switch over performed 1 = Time out 2 = Manual switch over command
15	Switch over cause DP Master B	UINT_8	
16	-	Reserved	

Table 9: PRS UDP status buffer

Status codes

Quittung	Bedeutung	
0x0000	Success	Command successful performed
0x0100	Error	No switch-over because complementary DP Master not functional
0x0200	Status	Alive watchdog task activated
0x0300	Error	Command does not exist

8 Technical data

PRS	G61740x
Dimensions	114,5 mm x 99 mm x 45 mm
Environmental temperature during operation	0..55 °C
Environmental temperature during storage	- 40...100 °C
Safety	EN60950
Electromagnetic compatibility (EMV)	EN50081-2 und EN50082-2

PRS	B617401
Processor	NET+ARM50
Clock pulse frequency	44 MHz
Storage	2 MB SDRAM, 1 MB Flash
Power supply	12..36 V, nom. 24 V DC
Current consumption	Bei 24 V: max. 120 mA
Ethernet	2 * 10/100baseTX
Dielectric strength Ethernet	1500 VAC

PRS DP Module	B617402
PROFIBUS chip	2 * SPC42
Bus interface	PROFIBUS DP in accordance to EN50170
Max. speed	12 MBit/s
Dielectric strength	500 VAC
Current consumption	At 24 V: max. 100 mA (is supplied by NET + ARM module)