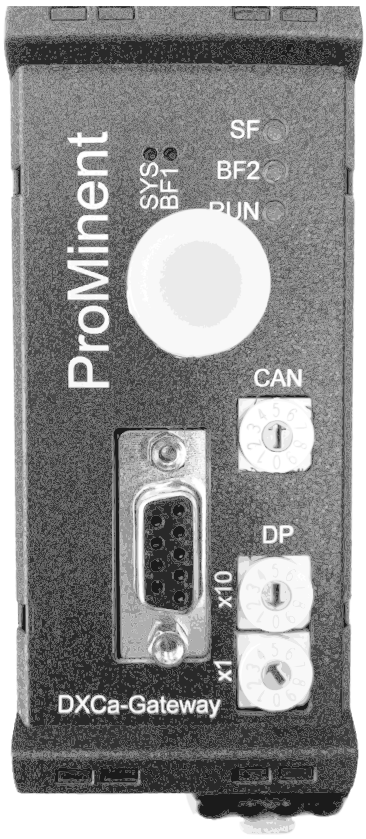
Installation and configuration manual

DXCa CANopen – PROFIBUS-DP-Gateway V1.2



A1241

Target group: Programmers and trained users

Please carefully read these operating instructions before use! · Do not discard!
The operator shall be liable for any damage caused by installation or operating errors!
Technical changes reserved.

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General non-discriminatory approach

In order to make it easier to read, this document uses the male form in grammatical structures but with an implied neutral sense. It is aimed equally at both men and women. We kindly ask female readers for their understanding in this simplification of the text.

Supplementary information

Please read the supplementary information in its entirety.

The following are highlighted separately in the document:

- Enumerated lists

→ Instructions

⇨ Outcome of the instructions

Information

This provides important information relating to the correct operation of the device or is intended to make your work easier.

Safety information

The safety information includes detailed descriptions of the hazardous situation.

Table of contents

1 Introduction

The document is aimed at programmers and personnel who are involved with planning and commissioning.

This document contains a description of the DXCa-PROFIBUS-CAN gateway for communication with the DULCOMARIN® II. The document should also assist in commissioning the DXCa-PROFIBUS gateway. Alongside the description of the hardware and software components, this document also contains a typical project created using the development environment *[Step 7]* from Siemens. The document is aimed at programmers and personnel who are involved with planning and commissioning.

This software manual is only valid in combination with the DXCa gateway described in this document. The DXCa-Gateway may only be used with DULCOMARIN® II. The content of this document has been checked for agreement with the described hardware and software. Nevertheless deviations cannot be excluded. Complete agreement cannot therefore be guaranteed.

Revision history

Revision	Date	Name	Chapter	Revision
1	12/01/2012	FR	All	Document created.
1.1	09/05/2012	FR	7	*[ECO!Mode]* and *[Pause active]* were extended.
1.2	25/05/2012	FR	6	Actual and control values matched to GSD revision 2. Table *‘ Addressing of acyclic values ’* has been expanded.

Reference to hardware, software and firmware

Hardware

Device	Revision
DXCa-PROFIBUS-CAN-Gateway	1
DULCOMARIN® II	001

Software

Software	Version
HERMES flasher	1

Firmware

Firmware	Firmware version	For the hardware
PROFIBUS protocol	2.3.x.x	DXCa-PROFIBUS-Gateway
Gateway firmware	1	DXCa-PROFIBUS-Gateway
Firmware DULCOMARIN® II	From 3022	DULCOMARIN® II

GSD file

Firmware	Firmware version	For the hardware
GSD file	2.0.0	DXCa-PROFIBUS-Gateway

1.1 Technical data

Properties PROFIBUS-DP interface

Description	Parameter
Maximum input data	244 Byte
Maximum output data	244 Byte
Baud rate	9.6 kBit/s
	19.2 kBit/s
	31.25 kBit/s
	45.45 kBit/s
	93.75 kBit/s
	187.5 kBit/s
	500 kBit/s
	1.5 MBit/s
	3 MBit/s
	6 MBit/s
	12 MBit/s

Description	Parameter
Interface type	Potential-free RS-485 interface
Connector	D-sub port, 9 pin
Auto-detection	yes

Characteristic data DXCa-Gateway

Description	Parameter
Power supply	24V DC
Typical power consumption	approx. 500mA
Max. number of measured values	116
Weight	250g
Dimensions (L x W x H)	117.2 x 45 x 113.5 (mm)
ROHS	yes
CE mark	yes
IP rating	IP20

2 Security

This document plus all accompanying texts were written for use by briefed and trained specialist personnel. When using this product, all safety instructions plus the applicable regulations must be observed. The user must ensure adherence to the legal conditions.

Intended use

The DXCa-Gateway described in this document represents a PROFIBUS based interface to the DULCOMARIN® II made by ProMinent®. The DXCa-Gateway may only be operated in conjunction with the named device and as described in this document. The DXCa gateway was designed solely to create a connection between the PROFIBUS master and the DULCOMARIN® II.

Incorrect use

It is strictly forbidden to use the DXCa gateway in the following areas:

- for military purposes or in weapons systems
- for the design, construction, maintenance or operation of nuclear plants
- in flight safety systems, air traffic or flight communications systems
- in life support systems
- in systems in which incorrect functioning of the gateway could result in physical injuries or fatal injuries.

You are advised that the DXCa gateway was not created for use in dangerous environments, that require fail-safe control mechanisms. The use of the DXCa gateway in such an environment is at your own risk, any liability for damage or losses arising from impermissible use is excluded.

2.1 Duty to read the user manual

Before the installation and use of the DXCa gateway described in this document, you must read and understand all instructions to avoid damage.

2.2 Exclusion of plausibility checking of the setpoints

At this point it is expressly pointed out that the DXCa PROFIBUS CAN gateway does not carry out any plausibility testing of the fed-through parameters and setpoints.

Checking, alarming or correction of these setpoints does not take place and is also technically not provided for. In systems, in which incorrect operation or incorrect setpoint specifications may under certain circumstances cause damage, the responsibility is that of the operator, this applies particularly where there is a risk of impairment to health.

The user/operator must therefore ensure that they personally are adhering to critical parameters by carrying out regular, manual control measurements.

2.3 Explanation of the safety information

Introduction

These operating instructions provide information on the technical data and functions of the product. These operating instructions provide detailed safety information and are provided as clear step-by-step instructions.

The safety information and notes are categorised according to the following scheme. A number of different symbols are used to denote different situations. The symbols shown here serve only as examples.

DANGER!
Nature and source of the danger
Consequence: Fatal or very serious injuries.

Measure to be taken to avoid this danger

Danger!

– Denotes an immediate threatening danger. If this is disregarded, it will result in fatal or very serious injuries.

WARNING!
Nature and source of the danger
Possible consequence: Fatal or very serious injuries.

Measure to be taken to avoid this danger

Warning!

– Denotes a possibly hazardous situation. If this is disregarded, it could result in fatal or very serious injuries.

CAUTION!
Nature and source of the danger
Possible consequence: Slight or minor injuries, material damage.

Measure to be taken to avoid this danger

Caution!

– Denotes a possibly hazardous situation. If this is disregarded, it could result in slight or minor injuries. May also be used as a warning about material damage.

NOTICE!
Nature and source of the danger
Damage to the product or its surroundings

Measure to be taken to avoid this danger

Note!

– Denotes a possibly damaging situation. If this is disregarded, the product or an object in its vicinity could be damaged.

Type of information

Hints on use and additional information

Source of the information, additional measures

Information!

– *Denotes hints on use and other useful information. It does not indicate a hazardous or damaging situation.*

2.4 Users' Qualifications

WARNING!

Danger of injury with inadequately qualified personnel!

If inadequately qualified personnel work on the unit or loiter in the hazard zone of the unit, this could result in dangers that could cause serious injuries and material damage.

– All work on the unit should therefore only be conducted by qualified personnel.
– Unqualified personnel should be kept away from the hazard zone.

Training	Definition
instructed personnel	An instructed person is deemed to be a person who has been instructed and, if required, trained in the tasks assigned to him/her and possible dangers that could result from improper behaviour, as well as having been instructed in the required protective equipment and protective measures.
Trained user	A trained user is a person who fulfills the requirements made of an instructed person and who has also received additional training specific to the system from ProMinent or another authorised distribution partner.
Technical experts	A technical expert is deemed to be a person who is able to assess the tasks assigned to him and recognize possible hazards based on his/her technical training and experience, as well as knowledge of pertinent regulations.

Training	Definition
Trained qualified personnel	A qualified employee is deemed to be a person who is able to assess the tasks assigned to him and recognize possible hazards based on his/her training, knowledge and experience, as well as knowledge of pertinent regulations. The assessment of a person's technical training can also be based on several years of work in the relevant field.
Electrician	Electricians are deemed to be people, who are able to complete work on electrical systems and recognize and avoid possible hazards independently based on their technical training and experience, as well as knowledge of pertinent standards and regulations. Electricians should be specifically trained for the working environment in which they are employed and know the relevant standards and regulations. Electricians must comply with the provisions of the applicable statutory directives on accident prevention.
Customer service department	Customer Service department refers to service technicians, who have received proven training and have been authorised by ProMinent to work on the system.

Note for the system operator

The pertinent accident prevention regulations, as well as all other generally acknowledged safety regulations, must be adhered to!

3 Commissioning

During commissioning of the DXCa gateway, please proceed as follows:

1. Fit the DXCa gateway on a standard top hat rail
2. Provide the 24V DC power supply
3. Connect the DXCa gateway to the DULCOMARIN® II using a CAN M12 connection cable.
4. Connect the DXCa gateway to the PLC using a PROFIBUS cable and corresponding D-sub 9 pin plug
5. Set the desired addresses for the CAN bus and PROFIBUS.
6. Create a configuration and load the program in the PLC memory.

3.1 Connectors/fitting

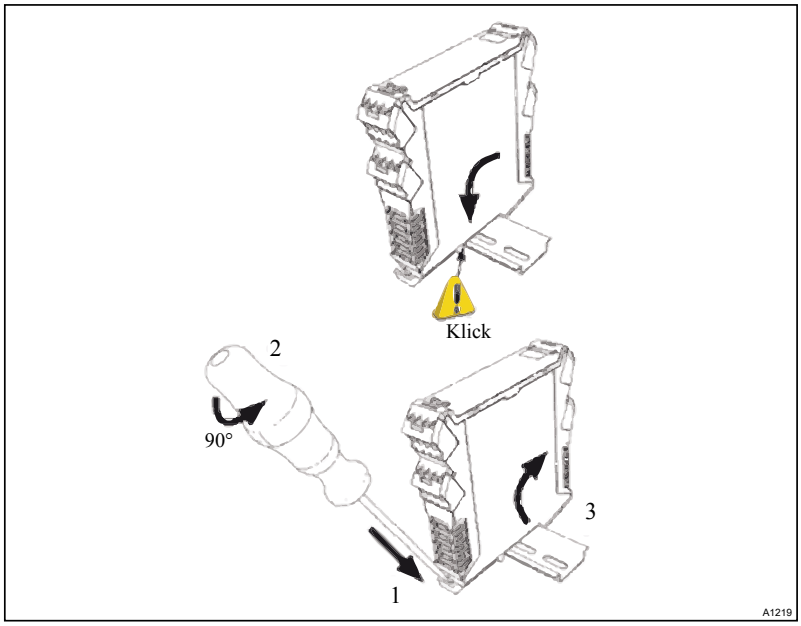

Fig. 1: The DXCa gateway is designed for assembly on standard top hat rail configurations (e.g. DIN EN 60715, steel, 2000 mm, galvanized)

Fig. 2: Fitting / removal of the connector plug (detailed view)

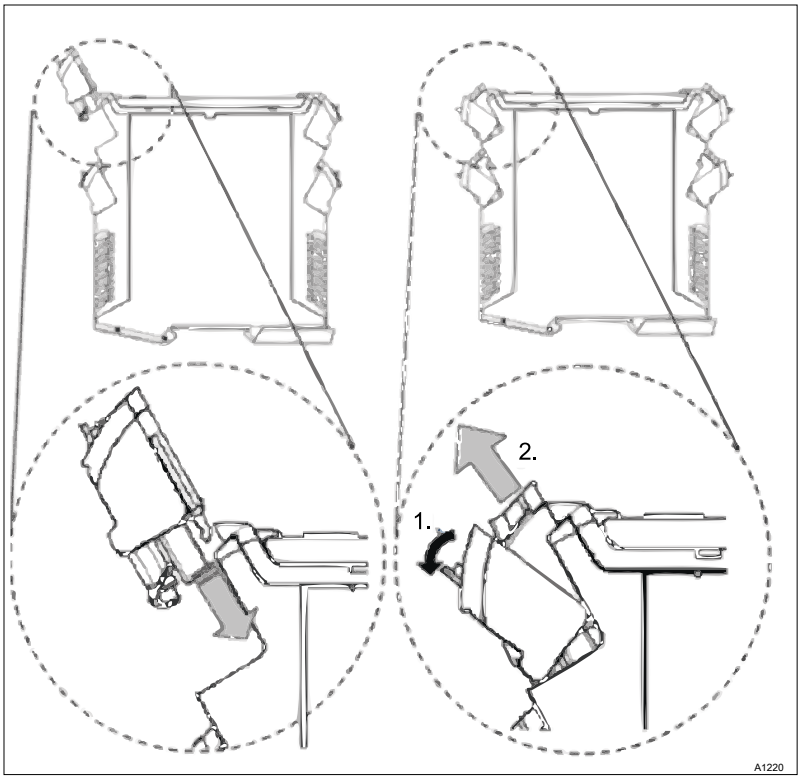

Fig. 3: Fitting / removal of the connector plug

Power supply

The DXCa gateway has two connection terminals for+24 V and 0 V (jumpered on the circuit board).

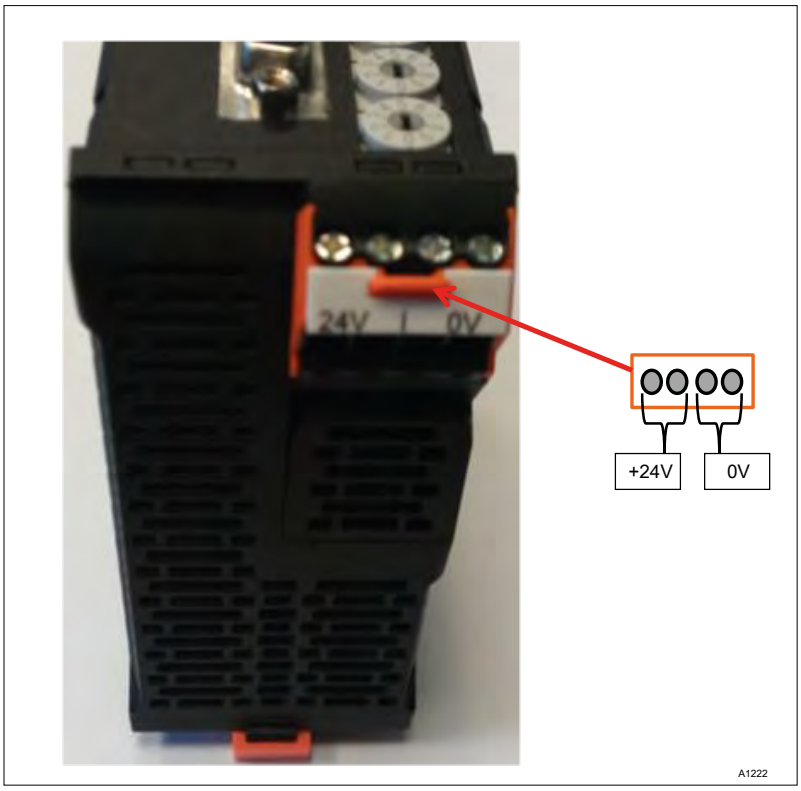

Fig. 4: Front view of DXCa gateway (power supply)

3.2 Commissioning example, using Step 7

In the selection menu that appears, navigate to the storage location of the GSD file and select it (see figure 6: Step 7 Installing a GSD file (selection menu)).

GSD file

You can find the GSD file on the enclosed data medium or in the download area under http://www.prominent.de/Service/Download-Service.aspx

The commissioning example shown in this chapter takes place under Siemens' Step 7 development environment. The incorporation or planning of the DXCa gateway via the GSD file takes place under the development environments of other manufacturers analogously to the procedure described here. A pre-configured project including a PLC and fully functional PROFIBUS are prerequisites for this part of the document.

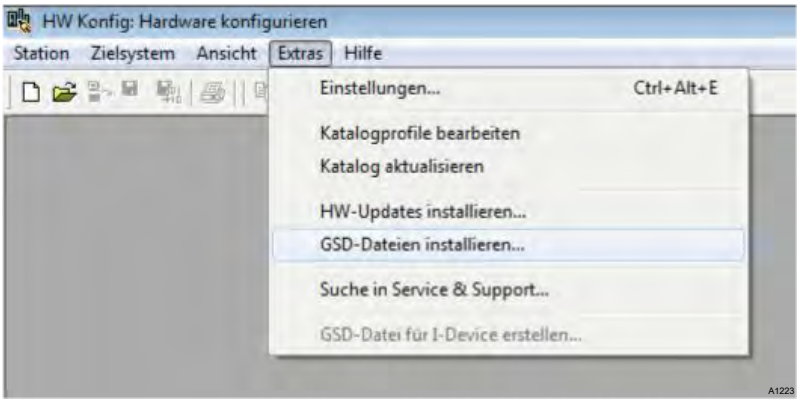

Fig. 5: Step 7 Installing a GSD file

1. The properties as well as all of the necessary information of the DXCa gateway are described in the GSD file. The GSD file must be installed in the engineering system for planning of the DXCa gateway. In the Step 7 hardware manager this takes place under the menu option:
[Extras -> Install GSD file]

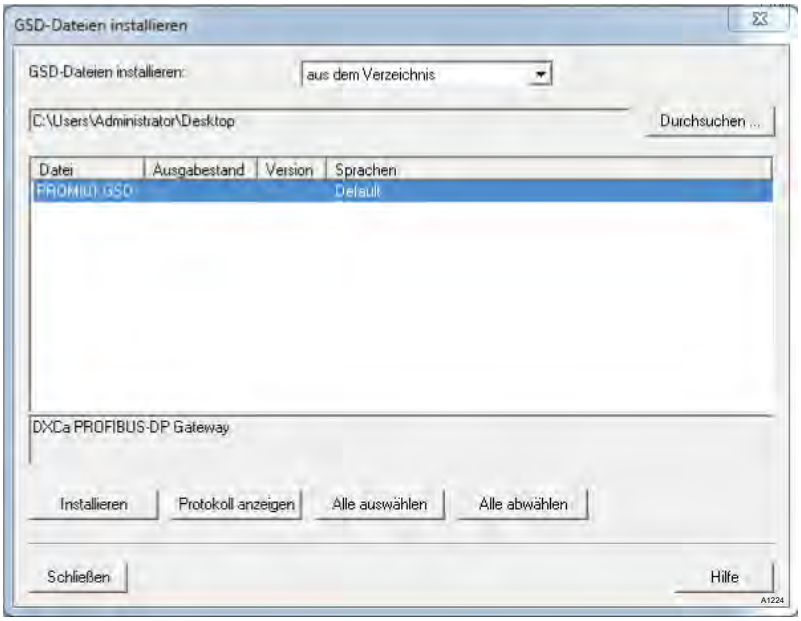

Fig. 6: Step 7 Installing a GSD file (selection menu)

2. In the selection menu that appears, navigate to the storage location of the GSD file and select this GSD file.

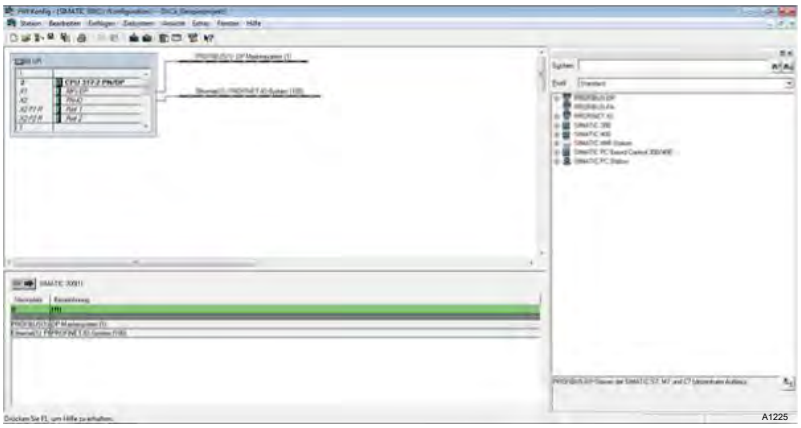

Fig. 7: : Step 7 overview of the hardware manager

3. After successful installation of the GSD file, start the hardware manager from your project. The DXCa gateway is located in the hardware catalogue on the right-hand side.

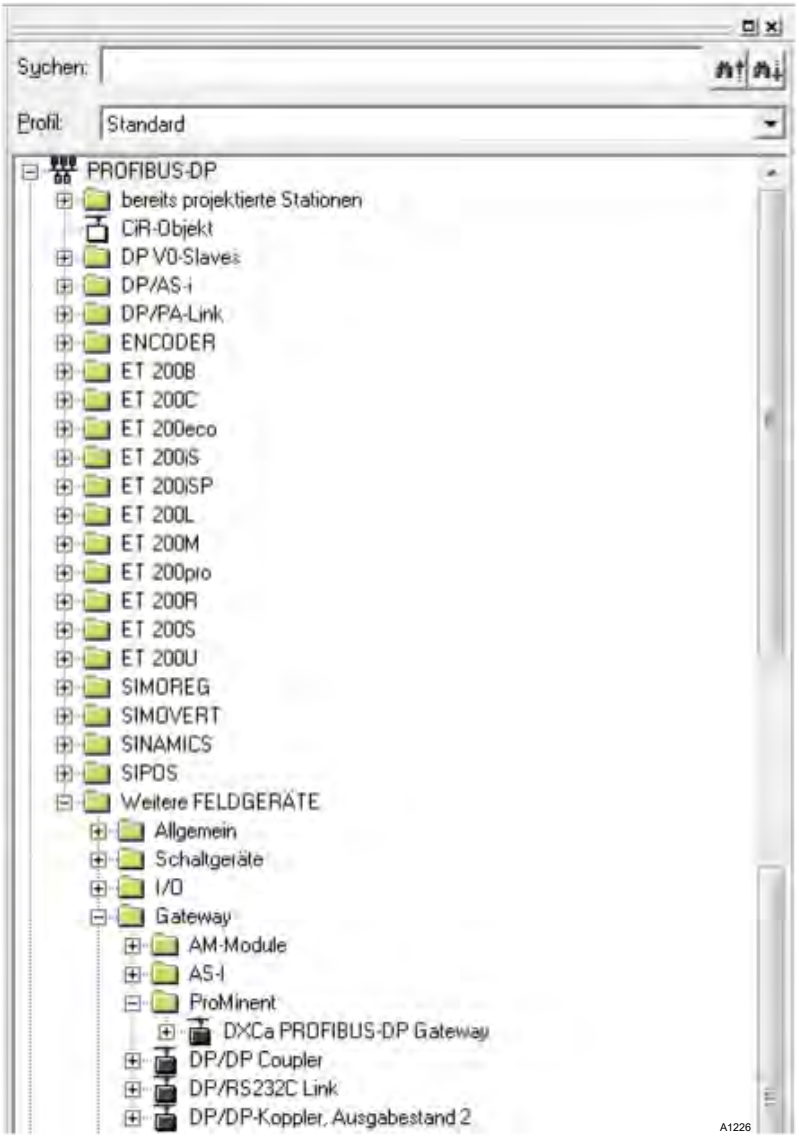

Fig. 8: Step 7 hardware catalogue

4. You can find the gateway in the hardware catalogue under the following directory path:
[PROFIBUS-DP > Other DEVICES > Gateway > ProMinent > DXCA PROFIBUS-DP Gateway]

5. With the mouse key pressed you can now drag the DXCa gateway to the PROFIBUS in the left window.

   ⇨ Once you have successfully positioned the DXCa gateway, the dialogue shown in Fig. 9 appears.

> *The number set in the field [Address] MUST correspond to the [Address] of the rotary encoding switch on the front of the DXCa gateway.*

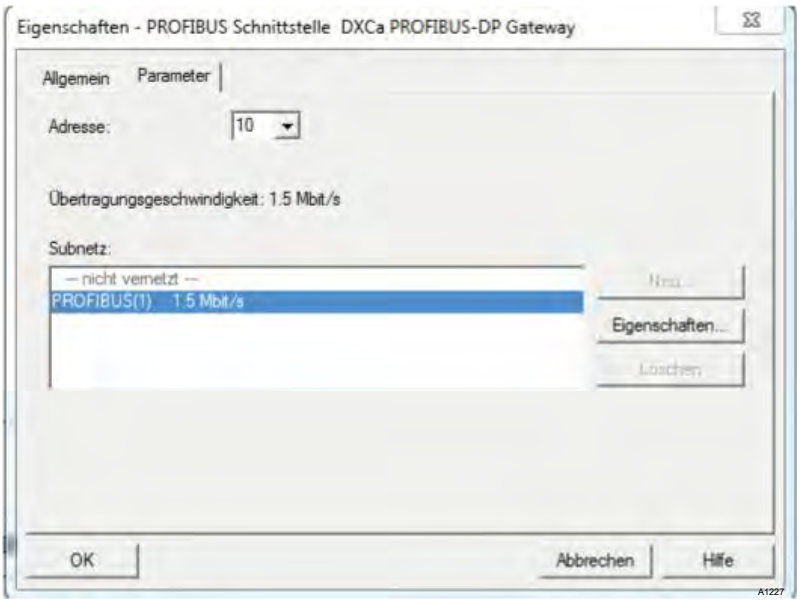

Fig. 9: Step 7 properties of the DXCa gateway PROFIBUS interface

6. Under the point *[Subnetwork]*, you must select the PROFIBUS network to be used, using the speed set in the PLC.

7. After successful selection, quit the dialogue by pressing the *[OK]* key

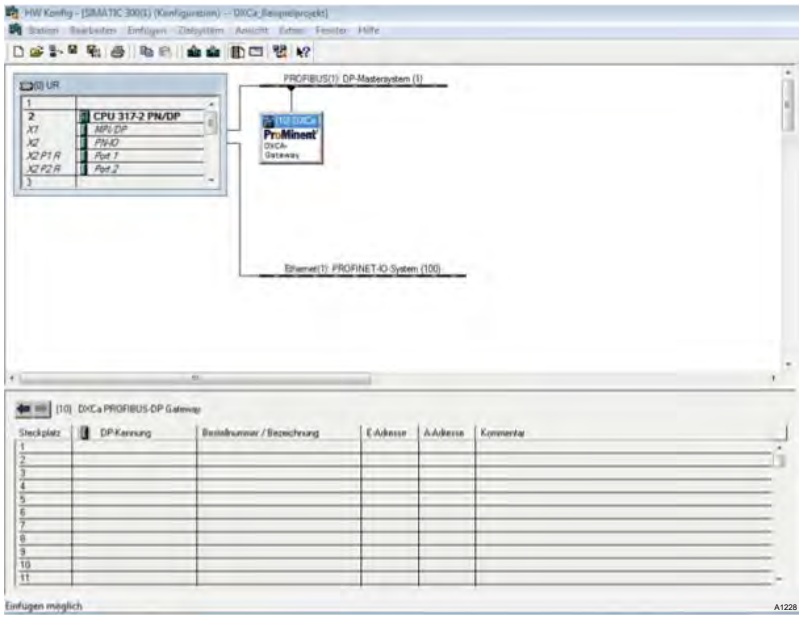

Fig. 10: The Step 7 DXCa gateway on the PROFIBUS

8. The Step 7 DXCa gateway is successfully connected to the PROFIBUS

   ⇨ Henceforth you can now configure the Step 7 DXCa gateway using measured values. The configuring of the Step 7 DXCa gateway using measured values is illustrated in the following figure.

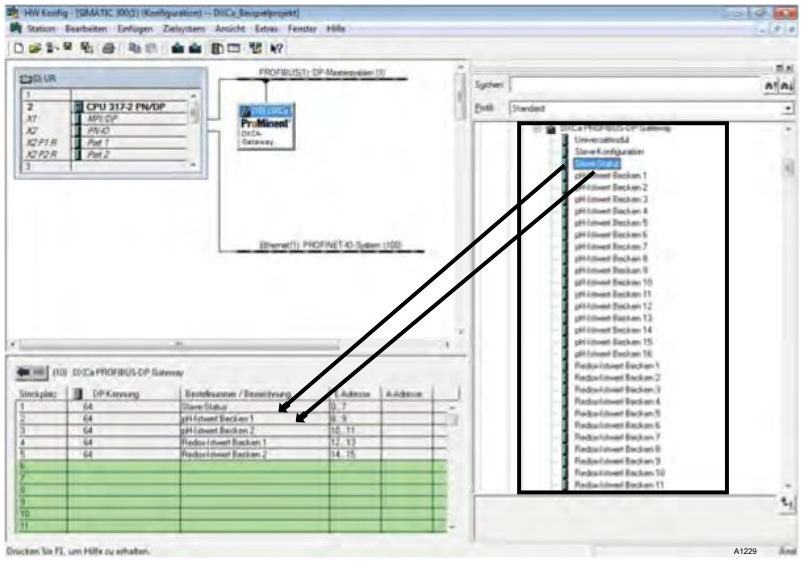

Fig. 11: Step 7 DXCa gateway, configuring measured values

9. Under the already described hardware catalogue, you can now select the desired measured values. To do this, you must simply drag the desired measured value to the slots of the DXCa gateway.

You can change or adapt the addressing (input addresses) and the sequence of the measured values according to your own needs.

You must however ensure that at least one measured value is present at the slots of the DXCa gateway, as otherwise the PLC program cannot be compiled.

10. After you have populated the DXCa gateway with the desired measured values, you can compile the program and load it in the PLC memory.

4 Description of the data objects

4.1 Actual values

Remarks

After starting DULCOMARIN® II all actual values are only available on the PROFIBUS after 130 seconds.

Non-available or incorrect measured values are shown as [0x7FFF = 32767].

Variables pH measured value, Pool 1... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Variables pH measured value, Pool 1... 16 (pH actual value)	0 ... 1400	Range: 0 ... 14.00 Example: 720 = 7.20 pH	--

Variables redox measured value, Pool 1... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Variables redox measured value, Pool 1 ... 16 (Redox actual value)	-1200 ... +1200	-1200 ... 1200 mV	mV

Variables temperature measured value, Pool 1... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Variables temperature measured value, Pool 1... 16 (Temperature actual value)	0 ... 1200	Range: 0 ... 120°C Example: 130 = 13.0 °C	°C

The interpretation of the data changes dependent on the identity code. The following data are consecutively numbered starting with number 4 and thus do not have the actual names of their user data.

Channel 4 measured value variables, Pool 1 ... 16

Measured value	Sensor type	DXCa identity code	PROFIBUS input value (range)	Converted measured value	Unit
Channel 4 measured value variables, Pool 1 ... 16					
(Channel 4 actual value)					
Chlorine	CLE 3	S, C, D	0 to 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
			0 ... 20000	Range 0 ... 200 ppm	ppm
				Example: 10000 = 100 ppm	
	CGE	S, D	0 - 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
	CLE 3.1		0 to 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
Free chlorine			0 to 1000	Range 0 .. 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
Bromine			0 to 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
ClO2	CDR	S, D	0 to 200	Range 0 ... 2.00 ppm	ppm
				Example: 50 = 0.50 ppm	

Channel 5 measured value variables, Pool 1 ... 16

Measured value	Sensor type	DXCa identity code "Use"	PROFIBUS input value (range)	Converted measured value	Unit
Channel 5 measured value variables, Pool 1 ... 16					
(Channel 5 actual value)					
Cl	CLE 3	C	0 ... 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
			0 ... 20000	Range 0 ... 200 ppm	ppm
				Example: 10000 = 100 ppm	
Total chlorine	CTE	D	0 ... 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
Combined chlorine	CTE	S	0 ... 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
ClO2-	CLT	S, D	0 ... 200	Range 0 ... 2.00 ppm	ppm
				Example: 50 = 0.50 ppm	

Channel 6 measured value variables, Pool 1 ... 16

Measured value	Sensor type	DXCa identity code "Use"	PROFIBUS input value (range)	Converted measured value	Unit
Channel 6 measured value variables, Pool 1 ... 16					
(Channel 6 actual value)					
Total chlorine	CTE	S	0 ... 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	
Combined chlorine	CTE	D	0 ... 1000	Range 0 ... 10.00 ppm	ppm
				Example: 200 = 2.00 ppm	

Channel 7 measured value variables, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 7 measured value variables, Pool 1 ... 16			
(Channel 7 actual value)			
Ht. above sea level			

Channel 8 measured value variables, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 8 measured value variables, Pool 1 ... 16			
(Channel 8 actual value)			
CANopen turbidity sensor			

Channel 9 measured value variables, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 9 measured value variables, Pool 1 ... 16			
(Channel 9 actual value)			
I1 (edit mode)	0 ... 9999	Dependent on the edited value in the I module	
Q	0 ... 9999	see device formatting	m³/h, l/h

Channel 10 measured value variables, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 10 measured value variables, Pool 1 ... 16			
(Channel 10 actual value)			
I2 (edit mode)	0 ... 9999		mA
Ammonia (NH3)	0 ... 9999		ppm, mg/l
Hydrogen peroxide (H2O2)	0 ... 9999		ppm, mg/l
Peracetic acid (PES)	0 ... 9999		ppm, mg/l
Conductive conductivity	0 ... 9999		µS/cm, mS/cm, S/cm
ClO2	0 ... 9999		ppm, mg/l
O2	0 ... 9999		ppm, mg/l

Channel 11 measured value variables, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 11 measured value variables, Pool 1 ... 16			
(Channel 11 actual value)			
I3 (edit mode)			mA
PES	0 ... 9999		ppm/mg/l
Temperature	0 ... 9999		°C
ClO2-	0 ... 9999		ppm/mg/l
UV intensity (UV)	0 ... 9999		W/m², mW/cm²
Turbidity	0 ... 9999		FNU, NTU, FTU, FAU, EBC

4.2 Control values

Remarks

After starting DULCOMARIN® II all control values are only available on the PROFIBUS after 130 seconds.

Non-available or incorrect measured values are shown as [0x7FFF = 32767].

The interpretation of the data changes dependent on the identity code. The following data are consecutively numbered starting with number 4 and thus do not have the actual names of their user data.

pH control output, Pool 1... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
pH control output, Pool 1... 16	-1000 ... 0 ... +1000	Range: 0 ... 14.00	%
(pH control value)		Example: 720 = 7.20 pH	

Redox control output, Pool 1... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Redox control output, Pool 1... 16	-1000 ... 0 ... +1000	-1200 to 1200 mV	%
(redox control value)			

Temperature control output, Pool 1... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Temperature control output, Pool 1... 16	0 ... 1000	Range: 0 ...120°C	°C
(Temperature control value)		Example: 130 = 13.0 °	

Channel 4 control output, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 4 control output, Pool 1 ... 16			
Chlorine Bromine ClO2	0 ... 1000		%

Channel 5 control output, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 5 control output, Pool 1 ... 16			
Combined chlorine	-1000 ... 0		%
ClO2	-1000 ... 0		%

Channel 6 control output, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 6 control output, Pool 1 ... 16			
Ht. above sea level	0 ... 1000		%

Channel 7 control output, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 7 control output, Pool 1 ... 16			
Flocculation	0 ... 1000		%

Channel 8 control output, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 8 control output, Pool 1 ... 16			
Ht. above sea level	0 ... 1000		%

Channel 9 control output, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 9 control output, Pool 1 ... 16			
Ht. above sea level			%

Channel 10 control output, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 10 control output, Pool 1 ... 16			
(Channel 10 control value)			
I2 (edit mode)	0 ... 1000		%
Ammonia (NH3)	0 ... 1000		%
Hydrogen peroxide (H2O2)	0 ... 1000		%
Peracetic acid (PES)	0 ... 1000		%
Conductive conductivity	0 ... 1000		%
ClO2	0 ... 1000		%
O2	0 ... 1000		%

Channel 11 control output, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit
Channel 11 control output, Pool 1 ... 16			
Ht. above sea level			%

4.3 Status slave

Status slave

No.	Description	Address / byte offset
1	Status CAN-bus connection	0
	0 = OK	
	1 = no CAN connection / error	
2	SW revision controller	1
	Example: 123 = V1.23	

No.	Description	Address / byte offset
3	HW revision DXCa-Gateway	2
	Example: 100 = V1.00	
4	Source of the CAN-ID	3
	1 = front rotary encoding switch	
	2 = specification by DULCOMARIN® II	
5	CAN bus ID (identification number)	4
6	Error code	5
	0 = OK	
	1 = internal error	
7	Ht. above sea level	6
8	Ht. above sea level	7

4.4 Error messages

Error messages

No.	Description
1	Error in Pool 1 (32 Bit)
…	
16	Error in Pool 16 (32 Bit)

Decoding of the error messages

pH actual value channel 1 bit: 0	= 0x00000001 pH measured value invalid
pH actual value channel 1 bit: 1	= 0x00000002 pH measured value min.
pH actual value channel 1 bit: 2	= 0x00000004 pH measured value max.
Channel 2 bit: 3	= 0x00000008 measured value invalid
Channel 2 bit: 4	= 0x00000010 measured value min.
Channel 2 bit: 5	= 0x00000020 measured value max.
Channel 3 bit: 6	= 0x00000040 measured value invalid
Channel 3 bit: 7	= 0x00000080 measured value min.
Channel 3 bit: 8	= 0x00000100 measured value max.
Channel 4 bit: 9	= 0x00000200 measured value invalid
Channel 4 bit: 10	= 0x00000400 measured value min.
Channel 4 bit: 11	= 0x00000800 measured value max.

Channel 5 bit: 12	= 0x00001000 measured value invalid
Channel 5 bit: 13	= 0x00002000 measured value min.
Channel 5 bit: 14	= 0x00004000 measured value max.
Channel 10 bit: 15	= 0x00008000 measured value invalid
Channel 10 bit: 16	= 0x00010000 measured value min.
Channel 10 bit: 17	= 0x00020000 measured value max.
Channel 11 bit: 18	= 0x00040000 measured value invalid
Channel 11 bit: 19	= 0x00080000 measured value min.
Channel 11 bit: 20	= 0x00100000 measured value max.
Bit 21	= 0x00200000 sample water error
Free bit: 22	= 0x00400000
Free bit: 23	= 0x00800000
Free bit: 24	= 0x01000000
Free bit: 25	= 0x02000000
DXMaA bit: 26	= 0x04000000 error
DXMaR bit: 27	= 0x08000000 control valve not ready
DP1 bit: 28	= 0x10000000 metering pump error active
DP2 bit: 29	= 0x20000000 metering pump error active
DP3 bit: 30	= 0x40000000 metering pump error active
DP4 bit: 31	= 0x80000000 metering pump error active
No fault or error	= 0x00000000

5 PROFIBUS – acyclic data traffic (control values and Pause/ECO!Mode active)

The following control values are only available to you via acyclic PROFIBUS traffic (DPV1).

5.1 Setpoints

The interpretation of the data changes dependent on the identity code. The following data are consecutively numbered starting with number 4 and thus do not have the actual names of their user data.

Remarks

After starting DULCOMARIN® II all control values are only available on the PROFIBUS after 130 seconds.

pH setpoint, pool 1 to 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit	Access
pH setpoint	0 ... 1400	Range: 0 ... 14.00	---	Read/write
Pool 1 to 16		Example: 720 = 7.20 pH		

Redox setpoint, pool 1 to 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit	Access
Redox setpoint	-1200 ... +1200	-1200 ... 1200 mV	mV	Read/write
Pool 1 to 16				

Temperature setpoint, pool 1 to 16

Measured value	PROFIBUS input value (range)	Converted measured value	Unit	Access
Temperature setpoint	0 ... 1200	Range: 0 ... 120°C	°C	Read/write
Pool 1 to 16		Example: 130 = 13.0 °C		

Channel 4 setpoint, Pool 1 ... 16

Measured value	Sensor type	DXCa identity code	PROFIBUS input value (range)	Converted measured value	Access
Channel 4 setpoint, Pool 1 ... 16					Read/ write
Chlorine	CLE 3	S, C, D	0 to 1000	Range 0 ... 10.00 ppm	
				Example: 200 = 2.00 ppm	
			0 ... 20000	Range 0 ... 200 ppm	
				Example: 10000 = 100 ppm	
	CGE	S, D	0 - 1000	Range 0 ... 10.00 ppm	
				Example: 200 = 2.00 ppm	
	CLE 3.1		0 to 1000	Range 0 ... 10.00 ppm	
				Example: 200 = 2.00 ppm	
Free chlorine			0 to 1000	Range 0 .. 10.00 ppm	
				Example: 200 = 2.00 ppm	
Bromine			0 to 1000	Range 0 ... 10.00 ppm	
				Example: 200 = 2.00 ppm	
ClO2	CDR	S, D	0 to 200	Range 0 ... 2.00 ppm	
				Example: 50 = 0.50 ppm	

Channel 5 setpoint, Pool 1 ... 16

Measured value	Sensor type	DXCa identity code "Use"	PROFIBUS input value (range)	Converted measured value	Access
Channel 5 setpoint, Pool 1 ... 16					Read/ write
Cl	CLE 3	C	0 ... 1000	Range 0 ... 10.00 ppm	
				Example: 200 = 2.00 ppm	
			0 ... 20000	Range 0 ... 200 ppm	
				Example: 10000 = 100 ppm	
Total chlorine	CTE	D	0 ... 1000	Range 0 ... 10.00 ppm	
				Example: 200 = 2.00 ppm	
Combined chlorine	CTE	S	0 ... 1000	Range 0 ... 10.00 ppm	
				Example: 200 = 2.00 ppm	
ClO2-	CLT	S, D	0 ... 200	Range 0 ... 2.00 ppm	
				Example: 50 = 0.50 ppm	

Channel 6 setpoint, Pool 1 ... 16

Measured value	Sensor type	DXCa identity code "Use"	PROFIBUS input value (range)	Converted measured value	Access
Channel 6 set-point, Pool 1 ... 16					Read/ write
Ht. above sea level					

Channel 7 setpoint, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Access
Channel 7 setpoint, Pool 1 ... 16			Read/write
Ht. above sea level			

Channel 8 setpoint, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Access
Channel 8 setpoint, Pool 1 ... 16			Read/write
Ht. above sea level			

Channel 9 setpoint, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Access
Channel 9 setpoint, Pool 1 ... 16			Read/write
Ht. above sea level			

Channel 10 setpoint, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Access
Channel 10 setpoint, Pool 1 ... 16			Read/ write
I2 (edit mode)	0 ... 9999		mA
Ammonia (NH3)	0 ... 9999		ppm, mg/l
Hydrogen peroxide (H2O2)	0 ... 9999		ppm, mg/l
Peracetic acid (PES)	0 ... 9999		ppm, mg/l
Conductive conductivity	0 ... 9999		µS/cm, mS/cm, S/ cm

Measured value	PROFIBUS input value (range)	Converted measured value	Access
ClO2	0 ... 9999		ppm, mg/l
O2	0 ... 9999		ppm, mg/l

Channel 11 setpoint, Pool 1 ... 16

Measured value	PROFIBUS input value (range)	Converted measured value	Access
Channel 11 setpoint, Pool 1 ... 16			Read/write
Ht. above sea level			

Pause, active

Measured value	PROFIBUS input value (range)	Converted measured value	Access
Pause, Pool 1 ... 16			Read/write
Pause, active = 1			
Pause, inactive = 0			
Under pause inactive, the corresponding field contains a *[0]*.			

ECO!Mode, active:

Measured value	PROFIBUS input value (range)	Converted measured value	Access
ECO!Mode, Pool 1 ... 16			Read/write
ECO!Mode, active = 1			
ECO!Mode, inactive = 0			
Under ECO!Mode inactive, the corresponding field contains a *[0]*.			

5.2 Addressing of acyclic values (read/write)

The values listed in chapter ↳ *Chapter 5.1 'Setpoints' on page 30* can only be achieved by acyclic data transfer. All acylic setpoints are addressed via slot and index. Each setpoint must be transferred in an independent telegram. The DXCa gateway does not check the setpoints to be written for plausibility. However the addressing (slot, index and data length) are checked. If the addressing does not agree with the addressing in the following table, the DXCa gateway reacts and sends a configuration error in the standard diagnosis.

Due to the high number of measured values, all setpoints can be addressed via slot *[0]* and the respective index.

Slot and indexes of the acylic data objects

No.	Slot	Index	Data object	Length	Type	Access
1	0	1	pH setpoint pool 1	2 Byte	INT16	Read / write
2	0	2	pH setpoint pool 2	2 Byte	INT16	Read / write
3	0	3	pH setpoint pool 3	2 Byte	INT16	Read / write
4	0	4	pH setpoint pool 4	2 Byte	INT16	Read / write
5	0	5	pH setpoint pool 5	2 Byte	INT16	Read / write
6	0	6	pH setpoint pool 6	2 Byte	INT16	Read / write
7	0	7	pH setpoint pool 7	2 Byte	INT16	Read / write
8	0	8	pH setpoint pool 8	2 Byte	INT16	Read / write
9	0	9	pH setpoint pool 9	2 Byte	INT16	Read / write
10	0	10	pH setpoint pool 10	2 Byte	INT16	Read / write
11	0	11	pH setpoint pool 11	2 Byte	INT16	Read / write
12	0	12	pH setpoint pool 12	2 Byte	INT16	Read / write
13	0	13	pH setpoint pool 13	2 Byte	INT16	Read / write
14	0	14	pH setpoint pool 14	2 Byte	INT16	Read / write
15	0	15	pH setpoint pool 15	2 Byte	INT16	Read / write
16	0	16	pH setpoint pool 16	2 Byte	INT16	Read / write
17	0	17	Redox setpoint pool 1	2 Byte	INT16	Read / write
18	0	18	Redox setpoint pool 2	2 Byte	INT16	Read / write
19	0	19	Redox setpoint pool 3	2 Byte	INT16	Read / write
20	0	20	Redox setpoint pool 4	2 Byte	INT16	Read / write
21	0	21	Redox setpoint pool 5	2 Byte	INT16	Read / write
22	0	22	Redox setpoint pool 6	2 Byte	INT16	Read / write
23	0	23	Redox setpoint pool 7	2 Byte	INT16	Read / write
24	0	24	Redox setpoint pool 8	2 Byte	INT16	Read / write
25	0	25	Redox setpoint pool 9	2 Byte	INT16	Read / write
26	0	26	Redox setpoint pool 10	2 Byte	INT16	Read / write
27	0	27	Redox setpoint pool 11	2 Byte	INT16	Read / write
28	0	28	Redox setpoint pool 12	2 Byte	INT16	Read / write
29	0	29	Redox setpoint pool 13	2 Byte	INT16	Read / write
30	0	30	Redox setpoint pool 14	2 Byte	INT16	Read / write
31	0	31	Redox setpoint pool 15	2 Byte	INT16	Read / write
32	0	32	Redox setpoint pool 16	2 Byte	INT16	Read / write
33	0	33	Temperature setpoint pool 1	2 Byte	INT16	Read / write
34	0	34	Temperature setpoint pool 2	2 Byte	INT16	Read / write

No.	Slot	Index	Data object	Length	Type	Access
35	0	35	Temperature setpoint pool 3	2 Byte	INT16	Read / write
36	0	36	Temperature setpoint pool 4	2 Byte	INT16	Read / write
37	0	37	Temperature setpoint pool 5	2 Byte	INT16	Read / write
38	0	38	Temperature setpoint pool 6	2 Byte	INT16	Read / write
39	0	39	Temperature setpoint pool 7	2 Byte	INT16	Read / write
40	0	40	Temperature setpoint pool 8	2 Byte	INT16	Read / write
41	0	41	Temperature setpoint pool 9	2 Byte	INT16	Read / write
42	0	42	Temperature setpoint pool 10	2 Byte	INT16	Read / write
43	0	43	Temperature setpoint pool 11	2 Byte	INT16	Read / write
44	0	44	Temperature setpoint pool 12	2 Byte	INT16	Read / write
45	0	45	Temperature setpoint pool 13	2 Byte	INT16	Read / write
46	0	46	Temperature setpoint pool 14	2 Byte	INT16	Read / write
47	0	47	Temperature setpoint pool 15	2 Byte	INT16	Read / write
48	0	48	Temperature setpoint pool 16	2 Byte	INT16	Read / write
49	0	49	Channel 4 setpoint pool 1	2 Byte	INT16	Read / write
50	0	50	Channel 4 setpoint pool 2	2 Byte	INT16	Read / write
51	0	51	Channel 4 setpoint pool 3	2 Byte	INT16	Read / write
52	0	52	Channel 4 setpoint pool 4	2 Byte	INT16	Read / write
53	0	53	Channel 4 setpoint pool 5	2 Byte	INT16	Read / write
54	0	54	Channel 4 setpoint pool 6	2 Byte	INT16	Read / write
55	0	55	Channel 4 setpoint pool 7	2 Byte	INT16	Read / write
56	0	56	Channel 4 setpoint pool 8	2 Byte	INT16	Read / write
57	0	57	Channel 4 setpoint pool 9	2 Byte	INT16	Read / write
58	0	58	Channel 4 setpoint pool 10	2 Byte	INT16	Read / write
59	0	59	Channel 4 setpoint pool 11	2 Byte	INT16	Read / write
60	0	60	Channel 4 setpoint pool 12	2 Byte	INT16	Read / write
61	0	61	Channel 4 setpoint pool 13	2 Byte	INT16	Read / write
62	0	62	Channel 4 setpoint pool 14	2 Byte	INT16	Read / write
63	0	63	Channel 4 setpoint pool 15	2 Byte	INT16	Read / write
64	0	64	Channel 4 setpoint pool 16	2 Byte	INT16	Read / write
65	0	65	Channel 5 setpoint pool 1	2 Byte	INT16	Read / write
66	0	66	Channel 5 setpoint pool 2	2 Byte	INT16	Read / write
67	0	67	Channel 5 setpoint pool 3	2 Byte	INT16	Read / write
68	0	68	Channel 5 setpoint pool 4	2 Byte	INT16	Read / write
69	0	69	Channel 5 setpoint pool 5	2 Byte	INT16	Read / write
70	0	70	Channel 5 setpoint pool 6	2 Byte	INT16	Read / write
71	0	71	Channel 5 setpoint pool 7	2 Byte	INT16	Read / write
72	0	72	Channel 5 setpoint pool 8	2 Byte	INT16	Read / write

No.	Slot	Index	Data object	Length	Type	Access
73	0	73	Channel 5 setpoint pool 9	2 Byte	INT16	Read / write
74	0	74	Channel 5 setpoint pool 10	2 Byte	INT16	Read / write
75	0	75	Channel 5 setpoint pool 11	2 Byte	INT16	Read / write
76	0	76	Channel 5 setpoint pool 12	2 Byte	INT16	Read / write
77	0	77	Channel 5 setpoint pool 13	2 Byte	INT16	Read / write
78	0	78	Channel 5 setpoint pool 14	2 Byte	INT16	Read / write
79	0	79	Channel 5 setpoint pool 15	2 Byte	INT16	Read / write
80	0	80	Channel 5 setpoint pool 16	2 Byte	INT16	Read / write
81	0	81	Channel 6 setpoint pool 1	2 Byte	INT16	Read / write
82	0	82	Channel 6 setpoint pool 2	2 Byte	INT16	Read / write
83	0	83	Channel 6 setpoint pool 3	2 Byte	INT16	Read / write
84	0	84	Channel 6 setpoint pool 4	2 Byte	INT16	Read / write
85	0	85	Channel 6 setpoint pool 5	2 Byte	INT16	Read / write
86	0	86	Channel 6 setpoint pool 6	2 Byte	INT16	Read / write
87	0	87	Channel 6 setpoint pool 7	2 Byte	INT16	Read / write
88	0	88	Channel 6 setpoint pool 8	2 Byte	INT16	Read / write
89	0	89	Channel 6 setpoint pool 9	2 Byte	INT16	Read / write
90	0	90	Channel 6 setpoint pool 10	2 Byte	INT16	Read / write
91	0	91	Channel 6 setpoint pool 11	2 Byte	INT16	Read / write
92	0	92	Channel 6 setpoint pool 12	2 Byte	INT16	Read / write
93	0	93	Channel 6 setpoint pool 13	2 Byte	INT16	Read / write
94	0	94	Channel 6 setpoint pool 14	2 Byte	INT16	Read / write
95	0	95	Channel 6 setpoint pool 15	2 Byte	INT16	Read / write
96	0	96	Channel 6 setpoint pool 16	2 Byte	INT16	Read / write
97	0	97	Channel 7 setpoint pool 1	2 Byte	INT16	Read / write
98	0	98	Channel 7 setpoint pool 2	2 Byte	INT16	Read / write
99	0	99	Channel 7 setpoint pool 3	2 Byte	INT16	Read / write
100	0	100	Channel 7 setpoint pool 4	2 Byte	INT16	Read / write
101	0	101	Channel 7 setpoint pool 5	2 Byte	INT16	Read / write
102	0	102	Channel 7 setpoint pool 6	2 Byte	INT16	Read / write
103	0	103	Channel 7 setpoint pool 7	2 Byte	INT16	Read / write
104	0	104	Channel 7 setpoint pool 8	2 Byte	INT16	Read / write
105	0	105	Channel 7 setpoint pool 9	2 Byte	INT16	Read / write
106	0	106	Channel 7 setpoint pool 10	2 Byte	INT16	Read / write
107	0	107	Channel 7 setpoint pool 11	2 Byte	INT16	Read / write
108	0	108	Channel 7 setpoint pool 12	2 Byte	INT16	Read / write
109	0	109	Channel 7 setpoint pool 13	2 Byte	INT16	Read / write
110	0	110	Channel 7 setpoint pool 14	2 Byte	INT16	Read / write

No.	Slot	Index	Data object	Length	Type	Access
111	0	111	Channel 7 setpoint pool 15	2 Byte	INT16	Read / write
112	0	112	Channel 7 setpoint pool 16	2 Byte	INT16	Read / write
113	0	113	Channel 8 setpoint pool 1	2 Byte	INT16	Read / write
114	0	114	Channel 8 setpoint pool 2	2 Byte	INT16	Read / write
115	0	115	Channel 8 setpoint pool 3	2 Byte	INT16	Read / write
116	0	116	Channel 8 setpoint pool 4	2 Byte	INT16	Read / write
117	0	117	Channel 8 setpoint pool 5	2 Byte	INT16	Read / write
118	0	118	Channel 8 setpoint pool 6	2 Byte	INT16	Read / write
119	0	119	Channel 8 setpoint pool 7	2 Byte	INT16	Read / write
120	0	120	Channel 8 setpoint pool 8	2 Byte	INT16	Read / write
121	0	121	Channel 8 setpoint pool 9	2 Byte	INT16	Read / write
122	0	122	Channel 8 setpoint pool 10	2 Byte	INT16	Read / write
123	0	123	Channel 8 setpoint pool 11	2 Byte	INT16	Read / write
124	0	124	Channel 8 setpoint pool 12	2 Byte	INT16	Read / write
125	0	125	Channel 8 setpoint pool 13	2 Byte	INT16	Read / write
126	0	126	Channel 8 setpoint pool 14	2 Byte	INT16	Read / write
127	0	127	Channel 8 setpoint pool 15	2 Byte	INT16	Read / write
128	0	128	Channel 8 setpoint pool 16	2 Byte	INT16	Read / write
129	0	129	Channel 9 setpoint pool 1	2 Byte	INT16	Read / write
130	0	130	Channel 9 setpoint pool 2	2 Byte	INT16	Read / write
131	0	131	Channel 9 setpoint pool 3	2 Byte	INT16	Read / write
132	0	132	Channel 9 setpoint pool 4	2 Byte	INT16	Read / write
133	0	133	Channel 9 setpoint pool 5	2 Byte	INT16	Read / write
134	0	134	Channel 9 setpoint pool 6	2 Byte	INT16	Read / write
135	0	135	Channel 9 setpoint pool 7	2 Byte	INT16	Read / write
136	0	136	Channel 9 setpoint pool 8	2 Byte	INT16	Read / write
137	0	137	Channel 9 setpoint pool 9	2 Byte	INT16	Read / write
138	0	138	Channel 9 setpoint pool 10	2 Byte	INT16	Read / write
139	0	139	Channel 9 setpoint pool 11	2 Byte	INT16	Read / write
140	0	140	Channel 9 setpoint pool 12	2 Byte	INT16	Read / write
141	0	141	Channel 9 setpoint pool 13	2 Byte	INT16	Read / write
142	0	142	Channel 9 setpoint pool 14	2 Byte	INT16	Read / write
143	0	143	Channel 9 setpoint pool 15	2 Byte	INT16	Read / write
144	0	144	Channel 9 setpoint pool 16	2 Byte	INT16	Read / write
145	0	145	Channel 10 setpoint pool 1	2 Byte	INT16	Read / write
146	0	146	Channel 10 setpoint pool 2	2 Byte	INT16	Read / write
147	0	147	Channel 10 setpoint pool 3	2 Byte	INT16	Read / write
148	0	148	Channel 10 setpoint pool 4	2 Byte	INT16	Read / write

No.	Slot	Index	Data object	Length	Type	Access
149	0	149	Channel 10 setpoint pool 5	2 Byte	INT16	Read / write
150	0	150	Channel 10 setpoint pool 6	2 Byte	INT16	Read / write
151	0	151	Channel 10 setpoint pool 7	2 Byte	INT16	Read / write
152	0	152	Channel 10 setpoint pool 8	2 Byte	INT16	Read / write
153	0	153	Channel 10 setpoint pool 9	2 Byte	INT16	Read / write
154	0	154	Channel 10 setpoint pool 10	2 Byte	INT16	Read / write
155	0	155	Channel 10 setpoint pool 11	2 Byte	INT16	Read / write
156	0	156	Channel 10 setpoint pool 12	2 Byte	INT16	Read / write
157	0	157	Channel 10 setpoint pool 13	2 Byte	INT16	Read / write
158	0	158	Channel 10 setpoint pool 14	2 Byte	INT16	Read / write
159	0	159	Channel 10 setpoint pool 15	2 Byte	INT16	Read / write
160	0	160	Channel 10 setpoint pool 16	2 Byte	INT16	Read / write
161	0	161	Channel 11 setpoint pool 1	2 Byte	INT16	Read / write
162	0	162	Channel 11 setpoint pool 2	2 Byte	INT16	Read / write
163	0	163	Channel 11 setpoint pool 3	2 Byte	INT16	Read / write
164	0	164	Channel 11 setpoint pool 4	2 Byte	INT16	Read / write
165	0	165	Channel 11 setpoint pool 5	2 Byte	INT16	Read / write
166	0	166	Channel 11 setpoint pool 6	2 Byte	INT16	Read / write
167	0	167	Channel 11 setpoint pool 7	2 Byte	INT16	Read / write
168	0	168	Channel 11 setpoint pool 8	2 Byte	INT16	Read / write
169	0	169	Channel 11 setpoint pool 9	2 Byte	INT16	Read / write
170	0	170	Channel 11 setpoint pool 10	2 Byte	INT16	Read / write
171	0	171	Channel 11 setpoint pool 11	2 Byte	INT16	Read / write
172	0	172	Channel 11 setpoint pool 12	2 Byte	INT16	Read / write
173	0	173	Channel 11 setpoint pool 13	2 Byte	INT16	Read / write
174	0	174	Channel 11 setpoint pool 14	2 Byte	INT16	Read / write
175	0	175	Channel 11 setpoint pool 15	2 Byte	INT16	Read / write
176	0	176	Channel 11 setpoint pool 16	2 Byte	INT16	Read / write
177	0	177	ECO!Mode active pool 1	1 Byte	UINT8	Read / write
178	0	178	ECO!Mode active pool 2	1 Byte	UINT8	Read / write
179	0	179	ECO!Mode active pool 3	1 Byte	UINT8	Read / write
180	0	180	ECO!Mode active pool 4	1 Byte	UINT8	Read / write
181	0	181	ECO!Mode active pool 5	1 Byte	UINT8	Read / write
182	0	182	ECO!Mode active pool 6	1 Byte	UINT8	Read / write
183	0	183	ECO!Mode active pool 7	1 Byte	UINT8	Read / write
184	0	184	ECO!Mode active pool 8	1 Byte	UINT8	Read / write
185	0	185	ECO!Mode active pool 9	1 Byte	UINT8	Read / write
186	0	186	ECO!Mode active pool 10	1 Byte	UINT8	Read / write

No.	Slot	Index	Data object	Length	Type	Access
187	0	187	ECO!Mode active pool 11	1 Byte	UINT8	Read / write
188	0	188	ECO!Mode active pool 12	1 Byte	UINT8	Read / write
189	0	189	ECO!Mode active pool 13	1 Byte	UINT8	Read / write
190	0	190	ECO!Mode active pool 14	1 Byte	UINT8	Read / write
191	0	191	ECO!Mode active pool 15	1 Byte	UINT8	Read / write
192	0	192	ECO!Mode active pool 16	1 Byte	UINT8	Read / write
193	0	193	Pause active pool 1	1 Byte	UINT8	Read / write
194	0	194	Pause active pool 2	1 Byte	UINT8	Read / write
195	0	195	Pause active pool 3	1 Byte	UINT8	Read / write
196	0	196	Pause active pool 4	1 Byte	UINT8	Read / write
197	0	197	Pause active pool 5	1 Byte	UINT8	Read / write
198	0	198	Pause active pool 6	1 Byte	UINT8	Read / write
199	0	199	Pause active pool 7	1 Byte	UINT8	Read / write
200	0	200	Pause active pool 8	1 Byte	UINT8	Read / write
201	0	201	Pause active pool 9	1 Byte	UINT8	Read / write
202	0	202	Pause active pool 10	1 Byte	UINT8	Read / write
203	0	203	Pause active pool 11	1 Byte	UINT8	Read / write
204	0	204	Pause active pool 12	1 Byte	UINT8	Read / write
205	0	205	Pause active pool 13	1 Byte	UINT8	Read / write
206	0	206	Pause active pool 14	1 Byte	UINT8	Read / write
207	0	207	Pause active pool 15	1 Byte	UINT8	Read / write
208	0	208	Pause active pool 16	1 Byte	UINT8	Read / write

Example: Siemens Step 7 (acylic writing):

CALL "GEO_LOG"	//SFC 70
MASTER :=1	//PROFIBUS-Address Master
STATION:=4	//PROFIBUS Address Slave (Dip-switch)
SLOT :=0	//Slot indication (always ZERO)
SUBSLOT:=0	//Slot indication (not evaluated, always ZERO)
RET_VAL:=DB70.DBW0	
LADDR :=DB70.DBW2	
L DB70.DBW 2	//Conversion
ITD	
T MD 20	
U E 17.1	//Write data record trigger
UN M 31.1	// Auxiliary flag
= M 31.2	//Flank indicator
U E 17.1	
= M 31.1	
CALL "WRREC" , "Instanz_DB_SFB53"	//SFB 53
REQ :=M31.2	
ID :=MD20	
INDEX :=1	//Index indicator
LEN :=2	//Length of the data
DONE :=M14.0	
BUSY :=M8.1	
ERROR :=M14.2	
STATUS:=MD10	
RECORD:=P#DB1.DBX0.0 BYTE 2	//Data record

Acyclic reading

CALL "GEO_LOG"	//SFC 70
MASTER :=1	//Address Master
STATION:=4	//Address Slave (Dip-switch)
SLOT :=0	//Slot indication (always ZERO)
SUBSLOT:=0	//Slot indication (not evaluated)
RET_VAL:=DB70.DBW0	
LADDR :=DB70.DBW2	
L DB70.DBW 2	//Conversion
ITD	
T MD 20	
U E 17.1	//Read data record trigger
UN M 31.1	//Auxiliary flag
= M 31.2	//Flank indicator
U E 17.1	
= M 31.1	
CALL "RDREC" , "Instanz_DB_SFB52"	//SFB 52
REQ :=M31.2	
ID :=MD20	
INDEX :=1	//Index indicator
MLEN :=2	//Length of the data
VALID :=M16.0	
BUSY :=M8.1	
ERROR :=M14.2	
STATUS:=MD18	
LEN :=MW22	
RECORD:=P#DB1.DBX0.0 BYTE 2	//Data record

Example: Siemens Step 7, (Example DB):

Address	Name	Type	Starting value	Actual value	Comment
0.0	pH_setpoint_high	BYTE	B#16#2	B#16#2	High part of the set-point
1.0	pH_setpoint_low	BYTE	B#16#DA	B#16#DA	Low part of the set-point
2.0	Redox_set-point_high	BYTE	B#16#0	B#16#0	
3.0	Redox_set-point_low	BYTE	B#16#0	B#16#0	

6 LEDs and addressing

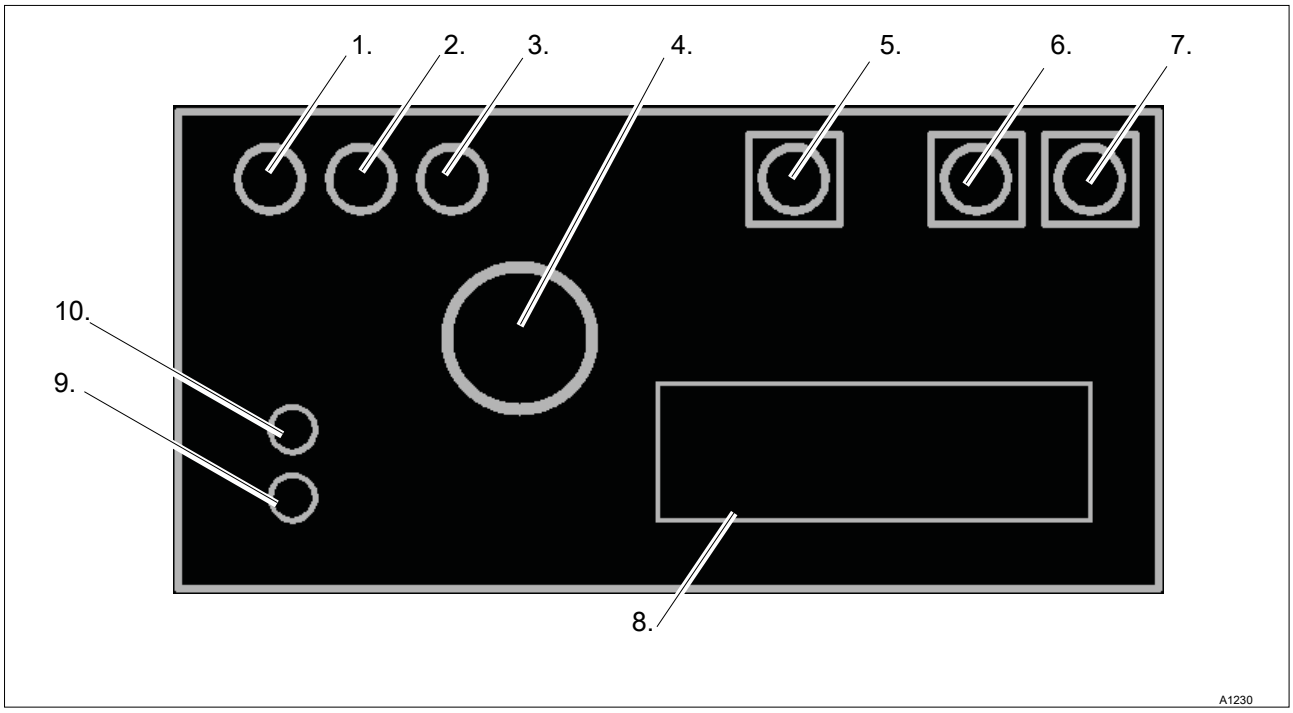

Fig. 12: Front view of the DXCa gateway

1. SF (collective fault)-LED (red)
2. BF (bus error)-LED (red)
3. RUN-LED (green)
4. CAN bus connector M12
5. Address CAN bus (possible addresses = 5, 6, 7 and 8
6. Address PROFIBUS bus (possible addresses = – 99)
7. Address PROFIBUS bus (possible addresses = – 99)
8. PROFIBUS bus connector D-sub 9 pin
9. SYS-LED (green)
10. BF1-LED (red

6.1 SYS-LED

System LED. This LED describes the condition of the system.

LED	Colour	Status	Meaning
SYS	Duo LED (yellow/green)		
	Green	ON	system is OK.
	Green/yellow	Flashing	Bootloader mode
		Green/yellow	(Wait for firmware)
	Yellow	ON	Bootloader mode
			(Wait for software)
	-	OFF	Error.
			No voltage or device defective

6.2 BF1-LED

Communication LED (bus error 1). This LED describes the condition of the primary communication protocol.

BF1-LED

LED	Colour	Status	Meaning
BF1	Duo LED (red/green)		
	Green	ON	Protocol OK, cyclic communication
	Red	Cyclical flashing	STOP, no communication, connection to the control interrupted
	Red	Acyclic flashing	DXCa gateway is not configured
	-	OFF	Error. No voltage or device defective

6.3 SF LED

Collective error LED This LED describes errors of the DXCa gateway

SF LED

LED	Colour	Status	Meaning
SF	LED (red)		
	Red	ON	General error:
			Error of the primary or secondary communications system.
			The DXCa gateway was not planned.
	-	OFF	No error.

6.4 BF2-LED

Communication LED (bus error 2). This LED describes the condition of the secondary (CAN) communication protocol.

BF2-LED

LED	Colour	Status	Meaning
BF2	LED (red)		
	Red	Cyclical flashing	Error CAN bus.
			No DULCOMARIN® II connected or connection faulty.
	-	OFF	No error.

6.5 RUN-LED

The RUN-LED informs about the error-free state of the DXCa gateway.

RUN-LED

LED	Colour	Status	Meaning
BF2	LED (green)		
	green	ON	No error.
			DXCa gateway communicates successfully.
	-	OFF	Error.
			See error LEDs SF, BF1 or BF2.

7 Troubleshooting

Fault description	Cause	Remedy
None of the LEDs illuminates or flashes	No 24V power supply, device defective	Ensure that the DXCa gateway is supplied with 24V Check the polarity of the input voltage
BF1 illuminates (PROFIBUS error)	No or faulty physical connection to the PLC. Incorrect transmission rate Incorrect planning (e.g. incorrect address set by Step 7)	Check the bus cable for short circuits or breaks Check whether the terminating resistances are in place at the first and last PROFIBUS members. Check and change the transmission rate (e.g. in the Step 7) Change the address using the rotary coding switch or via your development environment
BF2 does not illuminate or flashes (CAN bus error)	No or faulty physical connection to the DULCOMARIN® II.	Check the CAN bus cable for short circuits and breaks Check whether the terminating resistances are in place at the first and last CAN members.
SF illuminates	No PROFIBUS or CAN bus connection. Internal error	Check the CAN bus cable for short circuits and breaks Check whether the terminating resistances are in place at the first and last CAN members.
One or more measured values indicate the value `0x7FFF` or `32767`	This value means that the measured value does not exist	You have selected a measured value that is not available in the DULCOMARIN® II. Adjust your configuration (e.g. in the Step 7)

8 Appendix

8.1 PROFIBUS DP interface

The PROFIBUS DP DXCa gateway is implemented as a potential-free RS485 interface.

Ensure that terminating resistances are fitted at each end of the cable. If you use special PROFIBUS connectors, these resistances are often inside the connection and must be switched on. For baud rates above 1.5 MBaud use only special PROFIBUS connectors which contain additional inductances.

At these high PROFIBUS baud rates no branch connection lines must be used. Please only use a cable specifically approved for PROFIBUS DP. For each device, ensure there is a large surface-area connection between the cable shielding and the ground potential and ensure that there is no potential difference between these points.

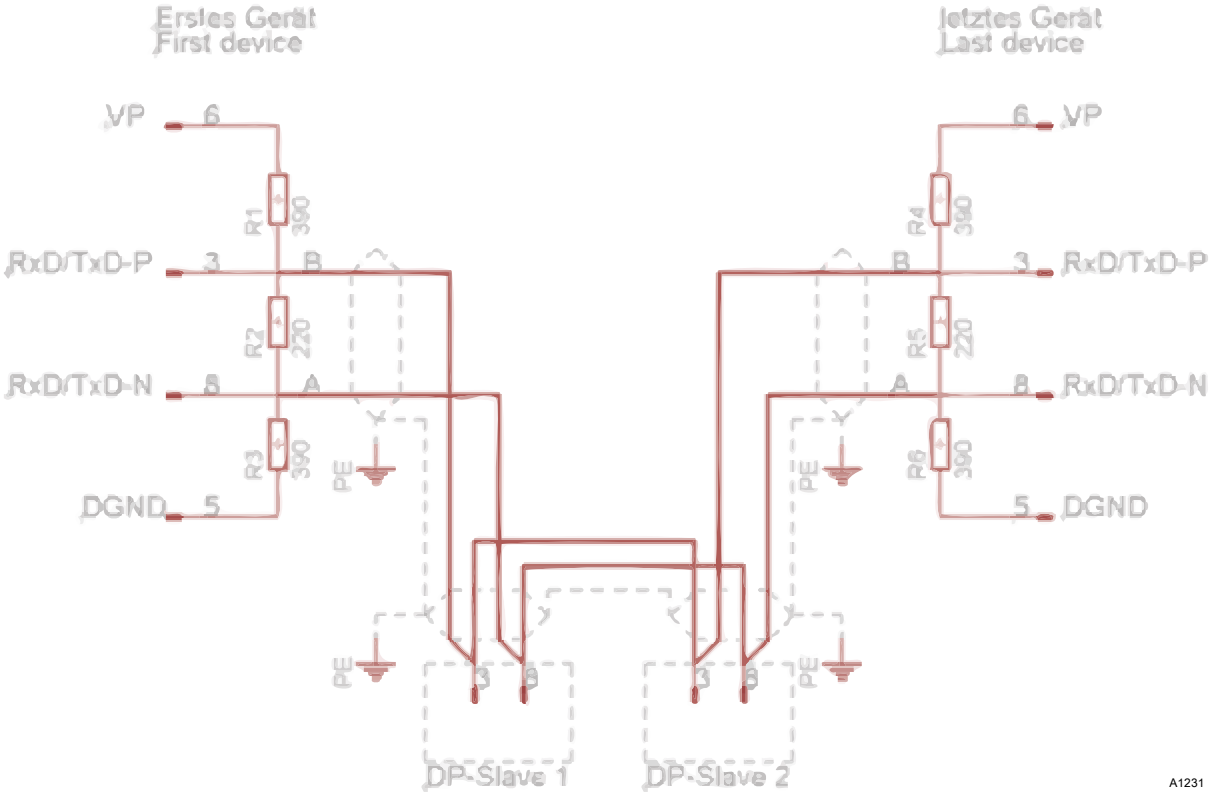

Fig. 13: PROFIBUS DP network

You can connect up to 32 PROFIBUS devices together in a BUS segment. If you join several BUS segments together with a repeater, you can connect up to a maximum 127 devices.

The maximum length of a BUS segment is dependent on the baud rate used. Please use only cable specially approved for PROFIBUS, preferably of type A.

Segment length dependent on the baud rate:

Baud rate in kBit/s	Max. length
9.6	1200m
19.2	1200m
93.75	1200m
187.5	1000m
500	400m
1500	200m
3000	100m
6000	100m
12000	100m

Properties for cabling approved for PROFIBUS DP:

Parameter	Value
Characteristic impedance	135…165 ohm
Capacity per unit length	< 30 pF/m
Loop resistance	110 ohm / km
Conductor wire diameter	0.64 mm

9 Index