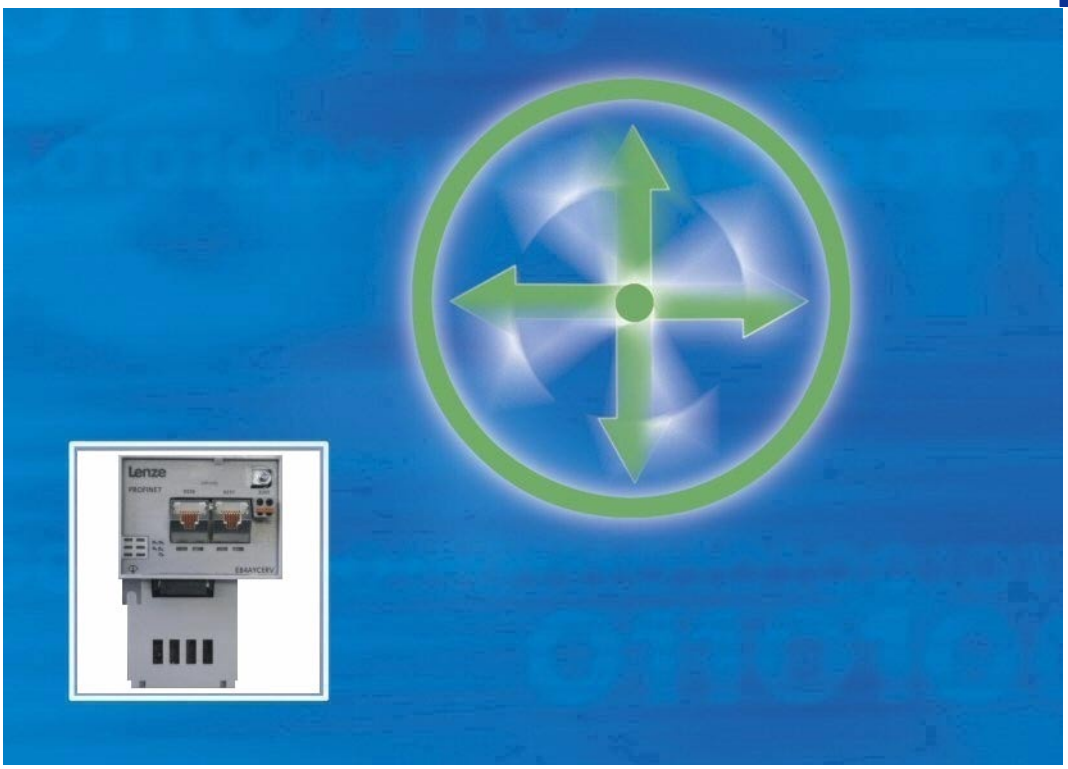
EDS84AYCER
13358692

L-force Communication

Communication Manual

8400



E84AYCER

PROFINET communication module

Lenze

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1 About this documentation

Contents

The descriptions in this documentation only refer to the E84AYCER communication module (PROFINET).

Note!

This documentation supplements the **mounting instructions** supplied with the communication module and the **"Inverter Drives 8400" hardware manual**.

The features and functions of the communication module are described in detail.

Examples illustrate typical applications.

This documentation also contains...

- Safety instructions that must be observed
- Key technical data relating to the communication module
- Information about the versions of the Lenze standard devices to be used
- Notes on troubleshooting and fault elimination

The theoretical concepts are only explained to the level of detail required to understand the function of the communication module.

Depending on the software version of the controller and the version of the »Engineer« software installed, the screenshots in this documentation may deviate from the »Engineer« representation.

This documentation does not describe any software provided by other manufacturers. No liability can be accepted for corresponding data provided in this documentation. For information on how to use the software, please refer to the host system (master) documents.

All brand names mentioned in this documentation are trademarks of their respective owners.

Tip!

Detailed information on PROFINET is provided on the homepage of the PROFIBUS user organisation which also develops PROFINET communication technology:

www.profibus.com

Target group

This documentation addresses to persons who configure, install, commission, and maintain the networking and remote maintenance of a machine.

Tip!

Documentation and software updates of Lenze products can be found on the Internet in the "Services & Downloads" area at:

www.Lenze.com

Validity information

The information in this documentation is valid for the following devices:

Extension module	Type designation	From hardware version	From software version
PROFINET communication module	E84AYCER	VA	02.00

1.1 Document history

Material number	Version			Description
13313969	1.0	04/2010	TD17	First edition
13358692	2.0	11/2010	TD17	• General revision • Update for SW version 02.00

Your opinion is important to us!

These instructions were created to the best of our knowledge and belief to give you the best possible support for handling our product.

Perhaps we have not succeeded in achieving this objective in every respect. If you notice this, please send your suggestions and points of criticism in a short e-mail to:

feedback-docu@Lenze.de

Thank you very much for your support.

Your Lenze documentation team

1.2 Conventions used

This documentation uses the following conventions to distinguish between different types of information:

Type of information	Identification	Examples/notes
Spelling of numbers		
Decimal	Standard spelling	Example: 1234
Hexadecimal	0x[0 ... 9, A ... F]	Example: 0x60F4
Binary • Nibble	In inverted commas Point	Example: '100' Example: '0110.0100'
Decimal separator	Point	The decimal point is always used. For example: 1234.56
Text		
Program name	» «	PC software Example: Lenze »Engineer«
Control element	**Bold**	The **OK** button... / The **Copy** command... / The **Properties** tab... / The **Name** input field...
Hyperlink	Underlined	Optically highlighted reference to another topic. In this documentation it is activated via mouse-click.
Symbols		
Page reference	(📖 9)	Optically highlighted reference to another page. In this documentation it is activated via mouse-click.
Step-by-step instructions		Step-by-step instructions are indicated by a pictograph.

1.3 Terminology used

Term	Meaning
Controller	Lenze frequency inverter of the "Inverter Drives 8400" product series which the communication module can be used with. ▸ Application as directed (📖 14)
Standard device	
»Engineer«	Lenze software which supports you throughout the whole machine life cycle - from planning to maintenance.
Code	"Container" for one or several parameters used to parameterise or monitor the device.
Subcode	If a code contains several parameters they are stored in so-called "subcodes". This manual uses a slash "/" as a separator between code and subcode (e.g. "C00118/3").
HW	Hardware
SW	Software
I/O controller	PROFINET master The I/O controller takes over the master function for data communication of the decentralised field devices. The I/O controller usually is the communication interface of a PLC.
I/O device	PROFINET slave
IO supervisor	Engineering and diagnostics tools The IO supervisor can access process data, diagnostic data, and alarm data.

1.4 Notes used

The following pictographs and signal words are used in this documentation to indicate dangers and important information:

Safety instructions

Structure of safety instructions:

Pictograph and signal word!

(characterise the type and severity of danger)

Note

(describes the danger and gives information about how to prevent dangerous situations)

Pictograph	Signal word	Meaning
	Danger!	**Danger of personal injury through dangerous electrical voltage** Reference to an imminent danger that may result in death or serious personal injury if the corresponding measures are not taken.
	Danger!	**Danger of personal injury through a general source of danger** Reference to an imminent danger that may result in death or serious personal injury if the corresponding measures are not taken.
	Stop!	**Danger of property damage** Reference to a possible danger that may result in damage to material assets if the corresponding measures are not taken.

Application notes

Pictograph	Signal word	Meaning
	Note!	Important note for trouble-free operation
	Tip!	Useful tip for easy handling
		Reference to other documentation

2 Safety instructions

Note!

It is absolutely vital that the stated safety measures are implemented in order to prevent serious injury to persons and damage to material assets.

Always keep this documentation to hand in the vicinity of the product during operation.

2.1 General safety instructions and application notes

- Lenze drive components ...
  - must only be used as directed.
    - Application as directed (📖 14)
  - must never be commissioned if they display signs of damage.
  - must never be modified technically.
  - must never be commissioned if they are not fully mounted.
  - must never be operated without the required covers.
  - can have live, moving and rotating parts during operation, depending on their degree of protection. Surfaces can be hot.
- The following applies to Lenze drive components ...
  - Only use permissible accessories.
  - Only use genuine spare parts supplied by the manufacturer of the product.
- Observe all regulations for the prevention of accidents, directives and laws that apply to the location of use.
- Observe all the specifications contained in the enclosed and related documentation.
  - This is a precondition for ensuring safe, trouble-free operation and for making use of the stated product features.
    - Properties (📖 15)
  - The specifications, processes, and circuitry described in this document are for guidance only and must be adapted to your own specific application. Lenze does not take responsibility for the suitability of the process and circuit proposals.
- All works on and with Lenze drive components may only be carried out by qualified personnel. In accordance with IEC 60364 and CENELEC HD 384 these are persons who ...
  - are familiar with installing, mounting, commissioning, and operating the product.
  - have the qualifications necessary for their occupation.
  - know and are able to apply all regulations for the prevention of accidents, directives and laws that apply to the location of use.

2.2 Device- and application-specific safety instructions

- During operation, the communication module must be securely connected to the standard device.
- Use a safely separated power supply unit in accordance with EN 61800-5-1 ("SELV"/ "PELV").
- Only use cables that meet the listed specifications.
  - Specification of the Ethernet cable (📖 30)

Documentation for the standard device, control system, plant/machine

All the other measures prescribed in this documentation must also be implemented. Observe the safety instructions and application notes contained in this manual.

2.3 Residual hazards

Protection of persons

- If the Inverter Drives 8400 are used on a phase earthed mains with a rated mains voltage ≥ 400 V, external measures need to be implemented in order to provide reliable protection against accidental contact.
  - Protective insulation (📖 17)

Device protection

- The communication module contains electronic components that can be damaged or destroyed by electrostatic discharge.
  - Installation (📖 22)

3 Product description

3.1 Application as directed

The communication module ...

- is an accessory module that can be used in conjunction with the following standard devices:

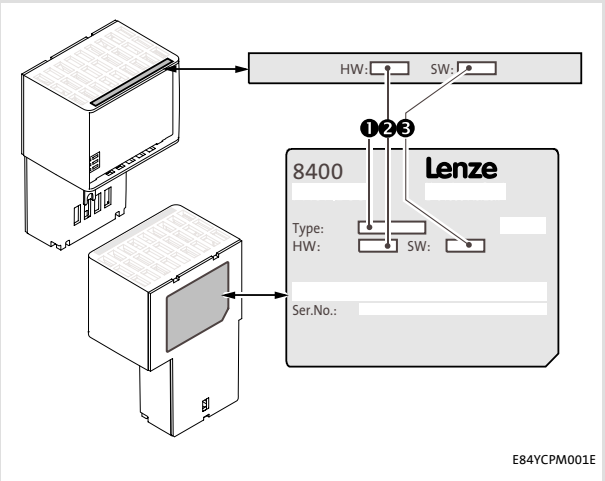
Product series	Type designation	From software version
Inverter Drives 8400 StateLine	E84AVSCxxxxx	05.00
Inverter Drives 8400 HighLine	E84AVHCxxxxx	05.00
Inverter Drives 8400 TopLine	E84AVTCxxxxx	01.00

- is an item of equipment intended for use in industrial power systems.
- should only be used under the operating conditions prescribed in this documentation.
- should only be used in PROFINET networks.

Any other use shall be deemed inappropriate!

3.2 Identification

The type designation and the hardware and software versions of the communication module are indicated on the nameplate:



[3-1] Identification data

1 Type designation (type)

E84	Product series
A	Version
Y	Module identification: Extension module
C	Module type: Communication module
ER	PROFINET
V/S	V: Coated design S: Standard design

2 Hardware version (HW)

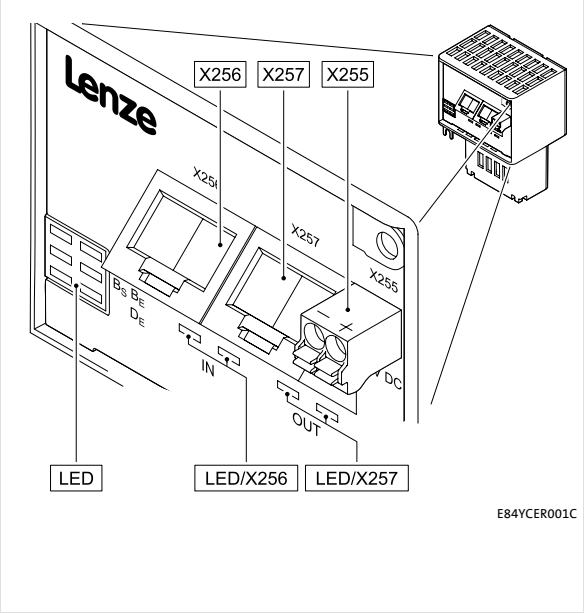
3 Software version (SW)

3.3 Properties

- Interface module for the PROFINET communication system to be secured to the expansion slots of the Inverter Drives 8400
- The communication module can either be supplied internally by the standard device or externally by a separate voltage source.
- Support of the I&M0...4 functionality for the identification of the standard device
- Automatic detection of the baud rate 100 Mbps
- A line topology is enabled by the integrated 2-port switch.
- Support of the LLDP protocol for the topology recognition
- Support of the SNMP protocol for diagnostic purposes
- Access to all Lenze parameters

3.4 Terminals and interfaces

- 2 RJ45 sockets for the PROFINET connection
- 2-pole plug connector for the external voltage supply of the communication module.
- Front LEDs for diagnosing the ...
  - Voltage supply of the communication module;
  - Connection to the standard device;
  - PROFINET connection;
  - PROFINET activity.



X255 External voltage supply of the communication module
- 2-pole plug connector with spring connection

External voltage supply (📖 32)

X256 PROFINET input (IN)

X257 PROFINET output (OUT)
- RJ45 sockets
- Each with 2 LED status displays for diagnostics

Network topology (📖 26)
PROFINET connection (📖 28)
Status displays at X256 and X257 (📖 69)

MS 5 LED status displays for diagnostics
ME Module status displays (📖 67)
BS Fieldbus status displays (📖 68)
BE
DE

[3-2] E84AYCER communication module (PROFINET)

4 Technical data

4.1 General data and operating conditions

Field	Values
Order designation	E84AYCER
Communication profile	PROFINET
Communication medium	S/FTP (Screened Foiled Twisted Pair, ISO/IEC 11801 or EN 50173), CAT 5e
Interface	RJ45: Standard Ethernet (in accordance with IEEE 802.3), 100Base-TX (Fast Ethernet)
Network topology	Tree, star, and line
Type of node	IO device with real time (RT) communication properties
Number of device nodes	Max. 255 in the subnetwork
Max. cable length	100 m
PUO ID number	0x0106
Device identification (Device ID)	0x8400
Baud rate	100 Mbps
Switching method	"Store and forward"
Switch latency	Approx. 125 µs at max. telegram length
Voltage supply	External supply via separate power supply unit • "+": V = 24 V DC (20.4 V - 0 % ... 28.8 V + 0 %), I = 140 mA • "-": Reference potential for external voltage supply
Conformities, approvals	• CE • UL

"Inverter Drives 8400" hardware manual

This manual contains data on **ambient conditions** and the **electromagnetic compatibility (EMC)** that also apply to the communication module.

4.2 Protective insulation

Danger!

Dangerous electrical voltage

If the Inverter Drives 8400 are used on a phase earthed mains with a rated mains voltage ≥ 400 V, external measures need to be implemented in order to provide reliable protection against accidental contact.

Possible consequences:

- Death or serious injury

Protective measures:

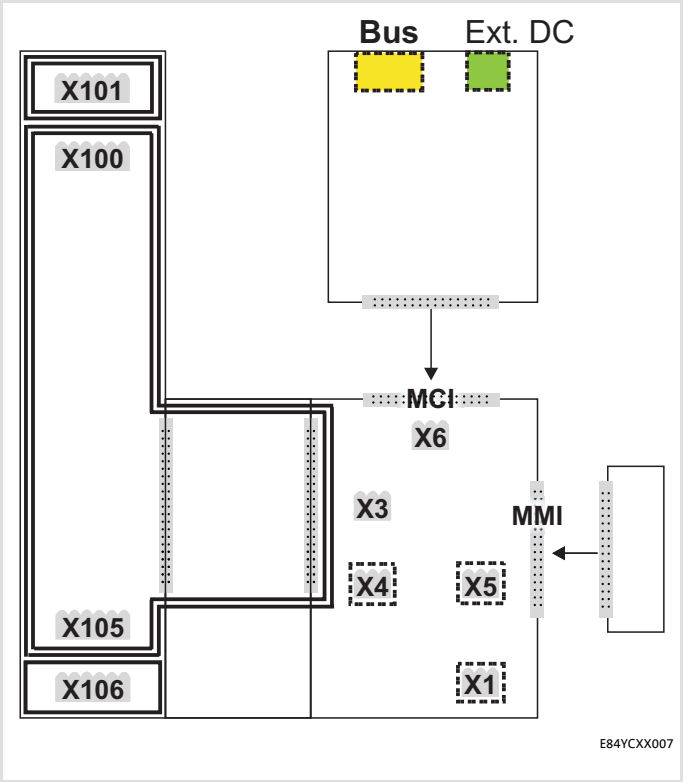
- If protection against accidental contact needs to be provided for the control terminals of the controller and for the connections of the plugged-in device modules, ...
  - a double isolating distance must exist.
  - the components to be connected must be provided with the second isolating distance.

Note!

The protective insulation provided in the Inverter Drives 8400 is implemented in accordance with EN 61800-5-1.

The illustration below ...

- shows the arrangement of the terminal strips and the separate potential areas of the Inverter Drive 8400.
- serves to determine the decisive protective insulation between two terminals located in differently insulated separate potential areas.



[4-1] Protective insulation in accordance with EN61800-5-1

Terminal strip	Connection
X100	Mains / DC-bus connection
X101	Relay contact
X105	Motor / brake resistor
X106	Motor PTC
X1	System bus (CANopen)
X3	Analog inputs / outputs
X4	Digital outputs
X5	Digital inputs
X6	Diagnostics
MCI	Slot for communication module
MMI	Slot for memory module

Example

Which type of protective insulation is implemented between the bus terminal of the device module in slot MCI and mains terminal X100?

- The separate potential area with the better protective insulation is decisive.
  - The separate potential area of the device module bus terminal is "functionally insulated".
  - The separate potential area of the mains terminal has a "reinforced insulation".
- Result: The insulation between mains terminal X100 and the bus terminal is of the "reinforced insulation" type.

4.3 Protocol data

Field	Values
Process data words (PCD)	Max. 16 process data words (max. 32 bytes)
Acyclic parameter data channel	Limited by the PROFINET frame size

4.4 Communication time

The communication time is the time between the start of a request and the arrival of the corresponding response.

The communication times in the PROFINET network depend on the ...

- Processing time inside the controller;
- Telegram runtime (baud rate / telegram length);
- Nesting depth of the network.

Processing time inside the controller

Data	Processing time
Process data	Approx. 2 ms Update cycle + 0 ... 1 ms Processing time in the module + 1 ... x ms Runtime of the application task of the technology application used (tolerance)
Parameter data	Approx. 30 ms + a tolerance of 20 ms (typically) • Some codes may require a longer processing time (see software manual/ »Engineer« online help for Inverter Drive 8400).

There are no interdependencies between parameter data and process data.

4.5 Internal switch latency

The integrated 2 port switch causes runtime delays which can be calculated as follows:

Runtime delay = ((36 permanent bytes + process data in bytes) x 8 x 10 nsec) + 4 µsec

Example:

20 process data words + 4 PROFIsafe words => 48 bytes

- ((36 permanent bytes + 48 bytes) x 8 x 10 nsec) + 4 µsec
- (84 bytes x 8 x 10 nsec) + 4 µsec
- 6.72 µsec + 4 µsec = **10.72 µsec**

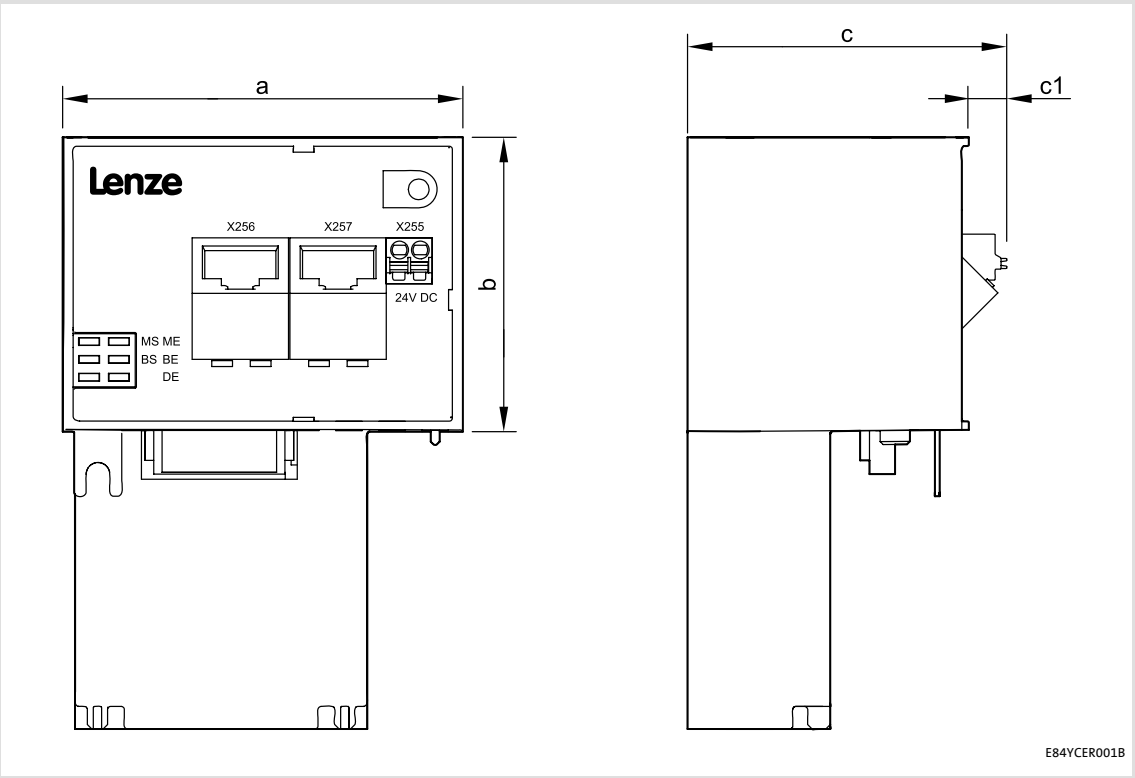
According to the PROFINET specification, the shortest PROFINET IO telegram must have a data length of 72 bytes. If the 36 permanent bytes are subtracted from the 72 bytes, 36 bytes are available for process data. If now less than 36 bytes of process data are used, the PROFINET IO telegram is filled with "zero bytes" until it can be transmitted. As a consequence for the calculation formula, the shortest PROFINET IO telegram with 18 process data words (36 bytes) has always the same length and thus the runtime delay is the same, too.

Note!

The use of external switches can also lead to runtime delays. Depending on the system constellation, it may be useful to create a star topology or a line/mix topology.

▸ Network topology (📖 26)

4.6 Dimensions



[4-2] Dimensions

Type	Dimensions [mm]			
	a	b	c	c1
E84AYCER	67	50	57	8

5 Installation

Stop!

Electrostatic discharge

Electronic components within the communication module can be damaged or destroyed by electrostatic discharge.

Possible consequences:

- The communication module is damaged.
- Fieldbus communication is not possible or is defective.

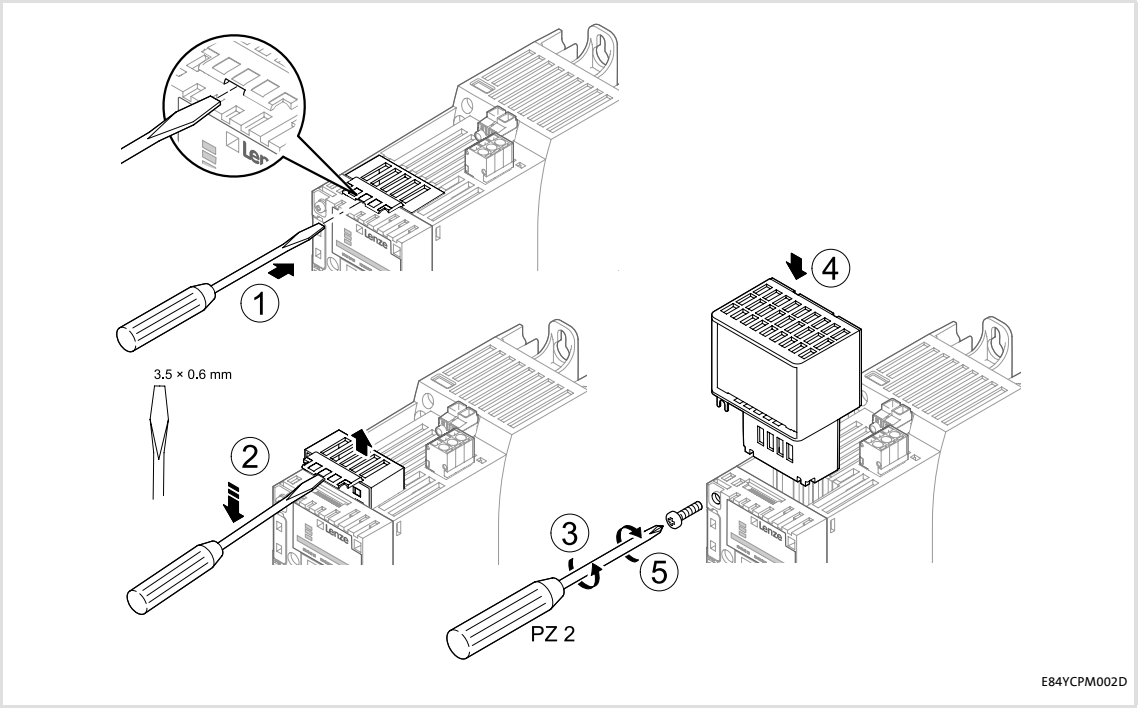
Protective measures:

- Release any electrostatic charge from your person before you touch the module.

5.1 Mechanical installation

When the controller is switched-on, the communication module can be plugged into the MCI slot or removed from there. During the process of being plugged in, the module is automatically detected and its functions and version are checked for plausibility.

5.1.1 Mounting for standard devices 0.25 kW and 0.37 kW

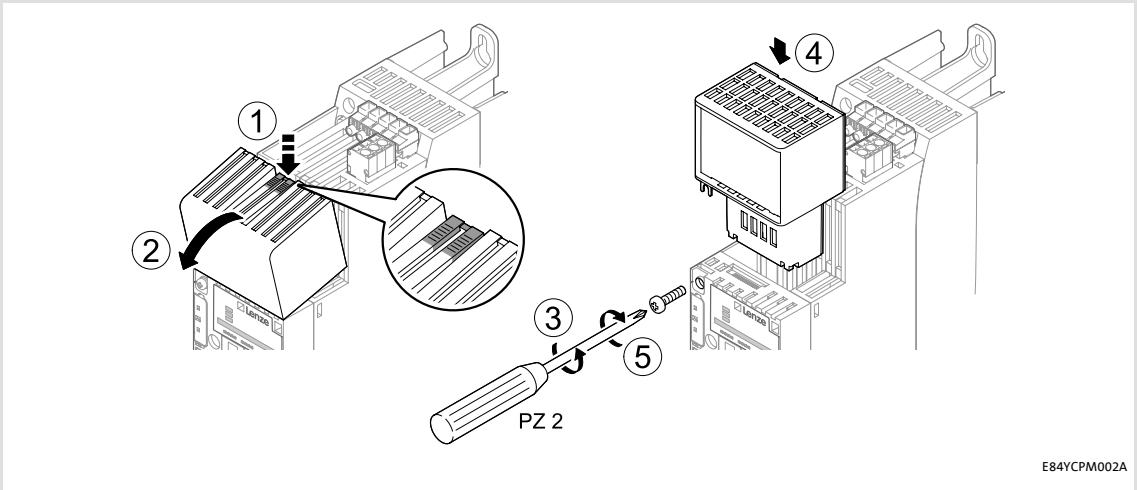


[5-1] Mounting for standard devices 0.25 kW and 0.37 kW

Mounting steps

1. Use a screwdriver to open the cover of the MCI slot of the standard device and remove it (1, 2).
2. Loosen the securing screw for the communication module on the standard device (3).
3. Insert the communication module into the MCI slot of the standard device (4).
4. Tighten the securing screw again (5).

5.1.2 Mounting for standard devices from 0.55 kW

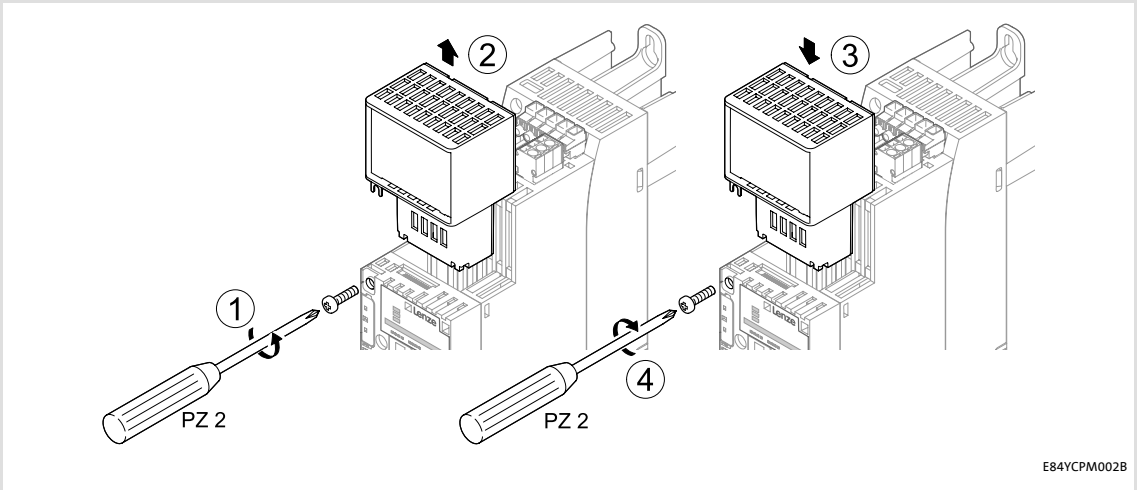


[5-2] Mounting for standard devices from 0.55 kW

Mounting steps

1. Apply a little pressure on the surface of the top side of the standard device MCI slot cover to leave an indentation (1).
2. Tilt the cover forwards and remove it from the standard device (2).
3. Loosen the securing screw for the communication module on the standard device (3).
4. Insert the communication module into the MCI slot of the standard device (4).
5. Tighten the securing screw again (5).

5.1.3 Replacing the communication module



[5-3] Replacing the communication module

Mounting steps

1. Loosen the securing screw for the communication module on the standard device (1).
2. Unplug the communication module from the MCI slot of the standard device (2).
3. Insert the new communication module into the MCI slot of the standard device (3).
4. Tighten the securing screw again (4).

5.2 Electrical installation

Documentation for the standard device, control system, plant/machine

Observe the notes and wiring instructions contained in this documentation.

5.2.1 EMC-compliant wiring

In typical systems, standard shielding is sufficient for Ethernet cables.

However, in environments with a very high level of interference, EMC resistance can be improved by earthing the cable shield as well.

For this observe the following notes:

1. Remove the plastic sheath of the cable on a length of 2 cm.
2. Secure the cable shield to the shield connection of the standard device.

5.2.2 Network topology

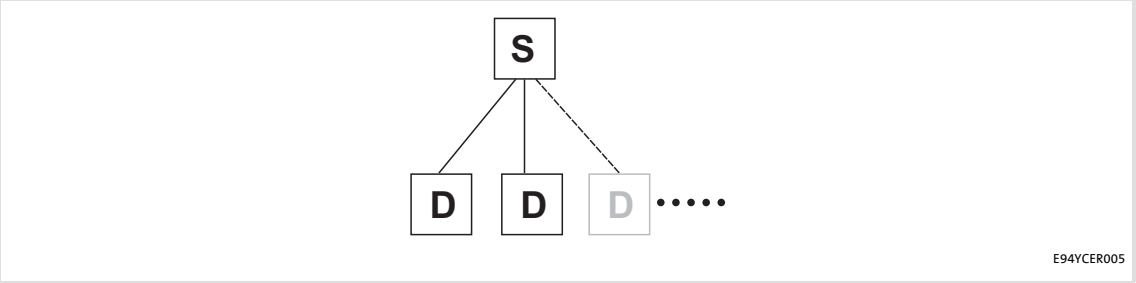
It is typical for PROFINET to have a rather free topology the limiting factor of which is large message latencies due to e.g. switches connected in series.

▸ Internal switch latency (📖 20)

The combination of a line and a stub is useful for system wiring.

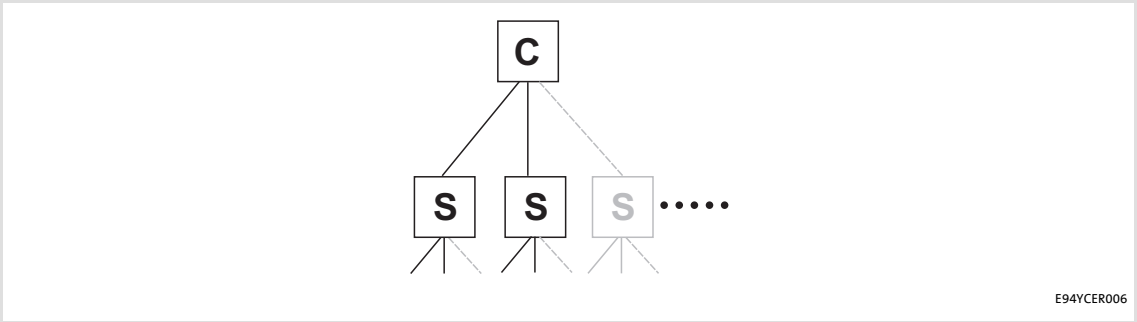
PROFINET supports the following topologies:

▶ Switch / star



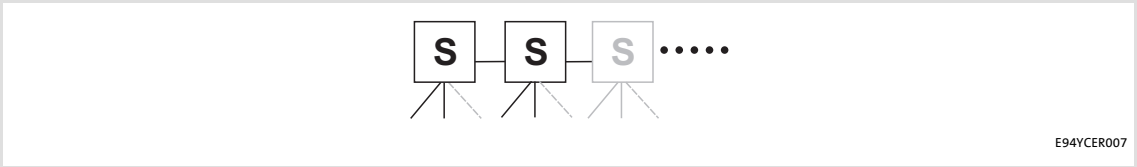
[5-4] Switch / star topology (S = switch, D = IO device)

▶ Tree via switches



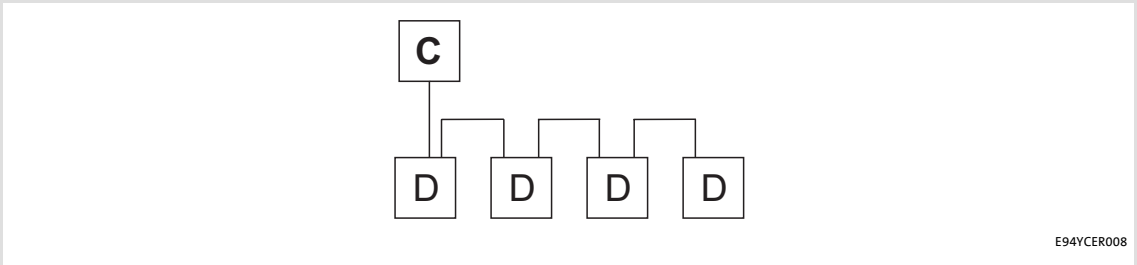
[5-5] Tree topology (C =IO controller, S = switch)

▶ Switch / switch



[5-6] Switch/switch topology (S = switch)

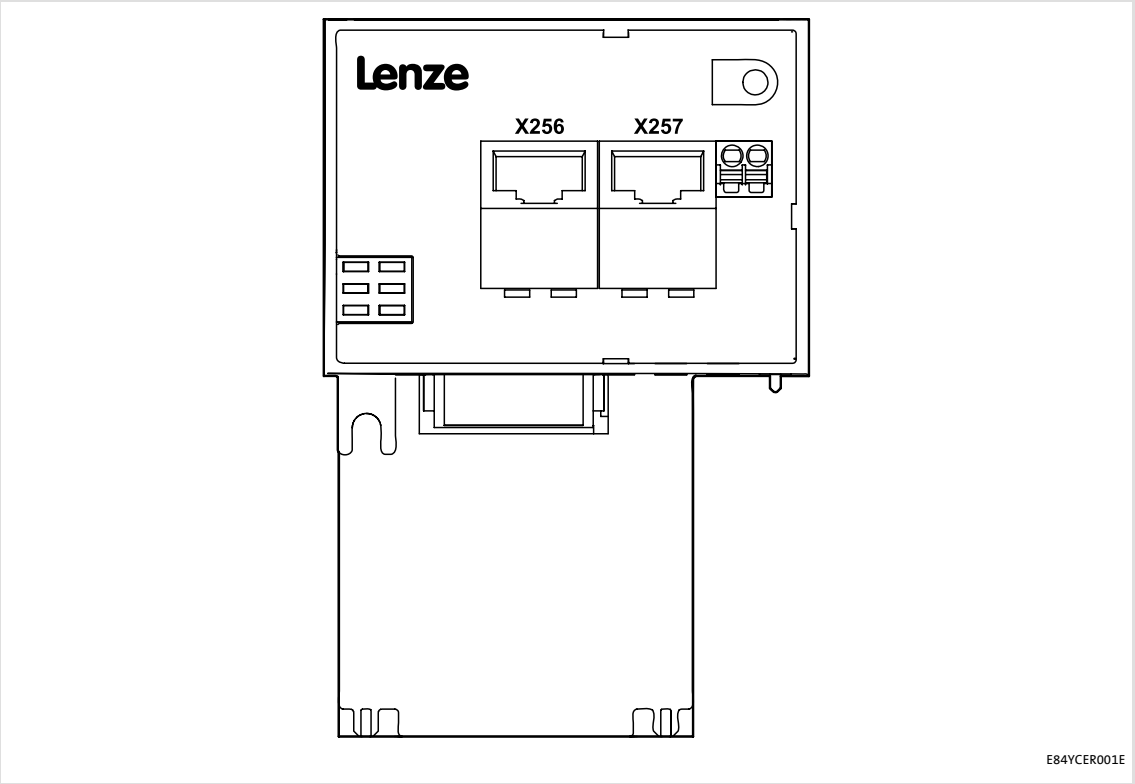
▶ IO controller / IO device



[5-7] Line topology (C = IO controller, D = IO device)

5.2.3 PROFINET connection

PROFINET is connected via RJ45 sockets X256 (input) and X257 (output).



[5-8] PROFINET connections X256 (IN) and X257 (OUT)

A standard Ethernet patch cable can be used for the connection to the communication module.

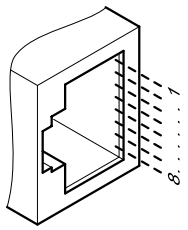
▸ Specification of the Ethernet cable (📖 30)

The installation and removal of the Ethernet cables is optimised for the use of connectors in accordance with the "Automation Initiative of German Domestic Automobile Manufacturers" (AIDA).

Note!

To prevent the RJ45 socket from being damaged, hold the Ethernet cable connector *vertically* when inserting it into or removing it from the socket.

Pin assignment of the RJ45 sockets

RJ45 socket	Pin	Signal
 E94AYCXX004C	1	Tx +
	2	Tx -
	3	Rx +
	4	-
	5	-
	6	Rx -
	7	-
	8	-

Tip!

The PROFINET interfaces feature an auto MDIX function. This function adjusts the polarity of the RJ45 interfaces so that a connection is established irrespective of the polarity of the opposite PROFINET interface, and irrespecive of the type of cable used (standard patch cable or crossover cable).

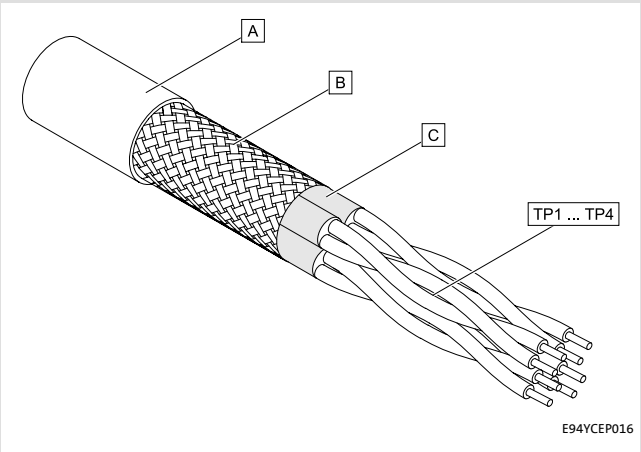
5.2.4 Specification of the Ethernet cable

Note!

Only use cables that meet the listed specifications.

Specification of the Ethernet cable	
Ethernet standard	Standard Ethernet (in accordance with IEEE 802.3), 100Base-TX (Fast Ethernet)
Cable type	S/FTP (Screened Foiled Twisted Pair, ISO/IEC 11801 or EN 50173), CAT 5e
Damping	23.2 dB (at 100 MHz and per 100 m)
Crosstalk damping	24 dB (at 100 MHz and per 100 m)
Return loss	10 dB (per 100 m)
Surface impedance	100 Ω

Structure of the Ethernet cable



A Cable insulation

B Braid

C Foil shield

TP1 ... TP4 Twisted core pairs 1 ... 4
▸ Colour code of the Ethernet cable (📖 31)

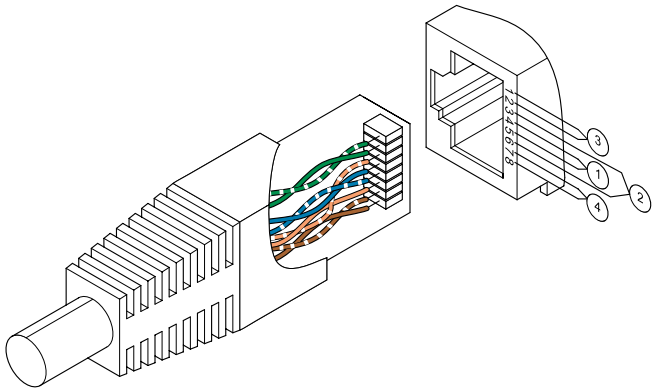
[5-9] Structure of the Ethernet cable (S/FTP, CAT 5e)

Colour code of the Ethernet cable

Note!

The wiring and colour code are standardised in EIA/TIA 568A/568B.

According to the industrial standard, the use of 4-pin Ethernet cables is permissible. The cable type only connects the assigned pins 1, 2, 3 and 6 to one another.



[5-10] Ethernet connector in accordance with EIA/TIA 568A/568B

Pair	Pin	Signal	EIA/TIA 568A	EIA/TIA 568B
3	1	Tx +	White / green	White / orange
	2	Tx -	Green	Orange
2	3	Rx +	White / orange	White / green
1	4		Blue	Blue
	5		White / blue	Blue / white
2	6	Rx -	Orange	Green
4	7		White / brown	White / brown
	8		Brown	Brown

5.2.5 External voltage supply

The communication module can be externally supplied with voltage via separate supply cables at the 2-pole plug connector (X255).

Note!

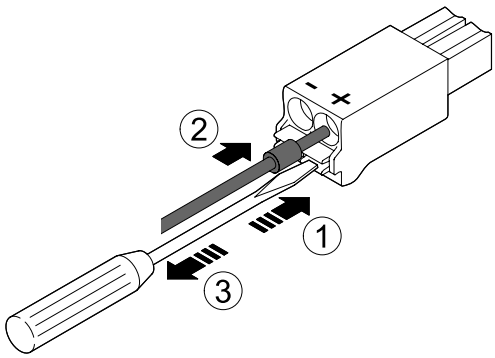
With external voltage supply, always use a separate power supply unit, safely separated in accordance with EN 61800-5-1 in every control cabinet ("SELV" / "PELV").

- External voltage supply of the communication module is necessary if the bus communication is to continue when the supply of the standard device fails.
- It is not possible to access parameters of a standard device disconnected from the mains.

Wiring the X255 plug connector

Stop!

Only wire the plug connector if the standard device is disconnected from the mains.



[5-11] Wiring of the 2-pole plug connector with spring connection

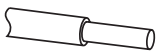
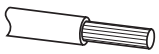
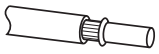
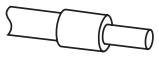
How to wire the plug connector with spring connection:

1. Press a screwdriver into the groove below the contact slot and keep it pressed.
2. Insert the supply cable into the contact slot.
3. Remove the screwdriver from the groove.

Assignment of the X255 plug connector

Designation	Description
+	V = 24 V DC (20.4 V - 0 % ... 28.8 V + 0 %) I = 140 mA
-	Reference potential for the external voltage supply

Terminal data

Field	Values	
Electrical connection	2-pole plug connector with spring connection	
Possible connections	Rigid:	
		0.2 ... 1.5 mm^2 (AWG 24 ... 16)
	Flexible:	
		Without wire end ferrule 0.2 ... 1.5 mm^2 (AWG 24 ... 16)
		With wire end ferrule, without plastic sleeve 0.2 ... 1.5 mm^2 (AWG 24 ... 16)
		With wire end ferrule, with plastic sleeve 0.2 ... 1.5 mm^2 (AWG 24 ... 16)
Stripping length	10 mm	

6 Commissioning

During commissioning, system-specific data such as motor paramters, operating parameters, responses, and parameters for fieldbus communication are specified for the controller. In the case of Lenze devices this is carried out via the so-called codes.

The controller and communication codes are saved non-volatilely as a data record in the memory module.

In addition there are diagnostic and monitoring codes for the nodes.

▸ Parameter reference (📖 78)

6.1 Before initial switch-on

Stop!

Before switching on the standard device and the communication module for the first time, check the entire wiring for completeness, short circuit and earth fault.

6.2 Configuring the PROFINET IO controller

The host system must be configured before communication with the communication module is possible.

Configuration for device control

For the configuration of PROFINET, the current PROFINET device description file (XML) of the E84AYCER communication module (PROFINET) has to be imported in the IO controller.

The device description file **GSDML-Vx.z-Lenze-8400PNabb-yyyymmdd.xml** can be found on the Lenze Internet pages further on in the "Services & Downloads" area under:

www.Lenze.com

Wildcards in the file name: "GSDML-Vx.z-Lenze-8400PN100-yyyymmdd.xml"	
x	Main version of the GSDML scheme used
z	Subversion of the GSDML scheme used
a	Major version of the software version
bb	Minor version of the software version
yyyy	Year
mm	Month
dd	Day

Definition of the user data length

The user data length is defined during the initialisation phase of the IO controller.

The Inverter Drives 8400 support the configuration of max. 16 process data words (max. 32 bytes).

Description of the device data base file

Selection text	Parameter data (with consistency)	Process data (with consistency)	Assigned I/O memory
PCD (**n**W) AR cons.	-	**n** words	**n** words
n = 1 ... 16 process data words			

Example of device data base file selection

▶ "PCD (8W) AR cons." = process data words (8 words)

Tip!

A detailed description of the consistency is provided in the chapter "Consistent parameter data (📖 64)".

6.3 Setting the station name

Note!

- The PROFINET function by means of which an accessible device can be identified is supported. During execution of the function the red LED "ME" blinks (Module status displays (📖 67).
- In the case of impermissible settings the red LED "BE" (Fieldbus status displays (📖 68)) blinks. The communication module then continues to operate with the deleted name. Operation on the PROFINET requires a valid station name.
- If the station name is assigned by the IO controller via PROFINET the change is activated immediately. The current station name is displayed in code C13864.

The station name ...

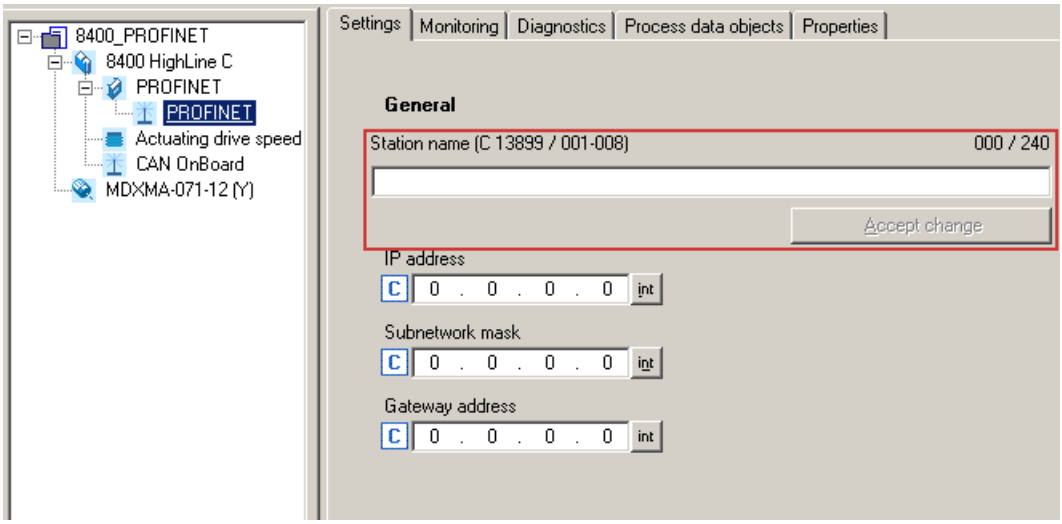
▶ is required for unambiguous addressing of the Inverter Drive 8400 by the IO controller.

▶ can either be assigned by the IO controller via PROFINET or set manually in the »Engineer«.

▶ has to be allocated in accordance with the PROFINET specification:
  – 1 or several labels separated by ".".
  – Max. length per label: 63 characters
  – Max. total length: 240 characters
  – Permissible characters: [a ... z], [0 ... 9], [.], [-]
  – Labels must not begin or end with [-].

▶ Prohibited syntax:
  – "n.n.n.n" (n = 0 ... 999)
  – "port-xyz" (x, y, z = 0 ... 9)
  – "port-xyz-abcde" (a, b, c, d, e, x, y, z = 0 ... 9)

In the »Engineer« the station name is set under the **Settings** tab.

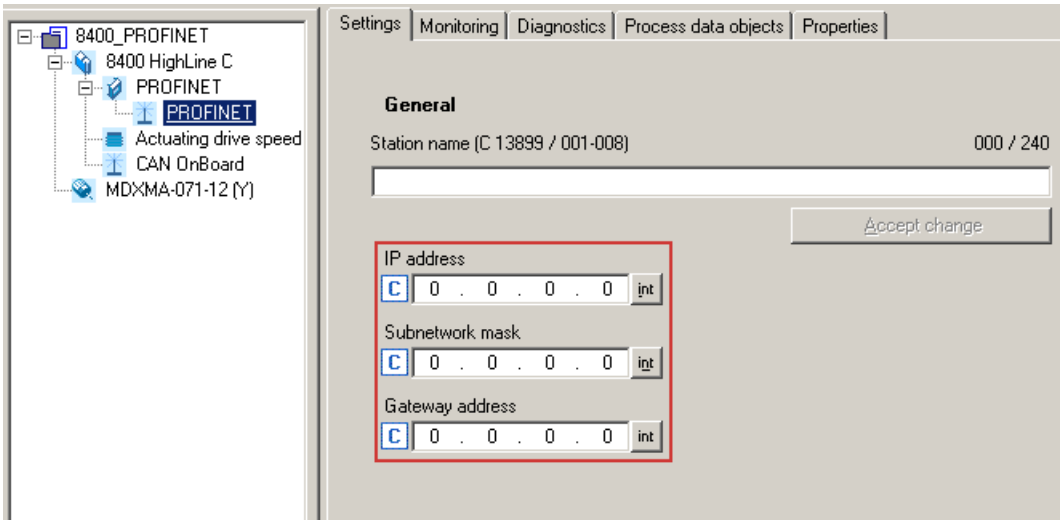


- Then click **Accept change**. The station name is saved and written to code C13899.
- In the Lenze setting a deleted name is displayed. The name is also deleted if the "Reset to factory defaults" command is executed by an IO supervisor or an IO controller.

6.4 Setting the IP configuration

If the communication module is to be made accessible via its IP parameters, the IP address, subnet mask, and gateway address must either be assigned by the IO controller via PROFINET or set manually in the »Engineer«.

In the »Engineer« the IP parameters are set under the **Settings** tab.



Note!

- The IP parameters are written to codes C13000 (IP address), C13001 (subnet mask), and C13002 (gateway address) as decimal values.
  Use the **[int]** buttons to the right of the input fields to change to the decimal code representation.
- The assignment of invalid combinations of IP address, subnet mask, and gateway address can have the consequence that no connection to the PROFINET can be established.
- In the case of impermissible settings the red LED "BE" (Fieldbus status displays (📖 68)) blinks.
- If the IP parameters are assigned by the IO controller via PROFINET the change is activated immediately. The current parameter values are displayed in the corresponding codes.

IP address (C13000)

- Valid IP addresses are defined in accordance with RFC 3330.
- C13010 displays the IP address that is currently used.

Example: IP address 192.168.0.1				
(Sub)code	C13010/1	C13010/2	C13010/3	C13010/4
Value	192	168	0	1

Subnet mask (C13001)

- These subnet masks are permissible:

Permissible subnet masks	Value in C13001 [dec]
0.0.0.240 ... 128.255.255.255	4026531840 ... 4294967168
192.255.255.255 ... 248.255.255.255	4294967232 ... 4294967288
252.255.255.255	4294967292

- C13012 displays the subnet mask that is currently used.

Example: Subnet mask 192.255.255.255				
(Sub)code	C13011/1	C13011/2	C13011/3	C13011/4
Value	192	255	255	255

Gateway address (C13002)

- The gateway address is valid if the network address of the IP address and the gateway address are identical.
- If the gateway address and the IP address are identical, gateway functionality is not used.
- DHCP is not supported.
- C13012 displays the gateway address that is currently used.

Example: IP address 192.168.0.1				
(Sub)code	C13012/1	C13012/2	C13012/3	C13012/4
Value	192	168	0	1

6.5 Initial switch-on

Documentation for the standard device

Observe the safety instructions and information on residual hazards.

Note!

Establishing communication

In order to establish communication via an externally supplied communication module, the standard device must be switched on as well.

After communication has been built up, the power on/off state of the standard device is irrelevant.

Activating altered settings

To activate altered settings ...

- via standard device code **C00002**, execute device command "11: Save start parameters", and ...
- then switch off the voltage supply of the communication module and switch it on again.

Protection against uncontrolled restart

After a fault (e.g. short-term mains failure), it is sometimes undesirable or even impermissible for the drive to restart.

In the Lenze setting of the Inverter Drives 8400, restart protection is activated.

The restart behaviour of the controller can be set via **C00142** ("Autostart option"):

- **C00142 = 9** (Lenze setting)
  - The controller remains inhibited (even when the fault is no longer active).
  - Bit 0 (inhibit when device On) and bit 3 (inhibit in the case of undervoltage) are set.
  - An explicit controller enable causes the drive to start in a controlled manner: LOW-HIGH edge at digital input X4/RFR.
- **C00142 = 8** (enabled)
  - In order to enable the device directly during switch-on, bit 0 must be set to zero (FALSE).
  - An uncontrolled restart of the drive is possible.

7 Data transfer

PROFINET transmits parameter data, configuration data, diagnostic data, alarm messages, and process data between the host system (IO controller) and the controllers that are part of the fieldbus (IO devices). Depending on their time-critical behaviour, the data are transmitted via corresponding communication channels.

Communication channels

- The process data channel transmits process data.
  - With the process data the controller is actuated.
  - The transmission of process data is time-critical.
  - Process data are transmitted cyclically between the IO controller and the IO devices that are part of the fieldbus according to the Provider/Consumer model (continuous exchange of current input and output data).
  - The IO controller can directly access the process data. In the PLC, for instance, the data are directly assigned to the IO area.
  - In the case of Inverter Drives 8400 protec maximally 16 process data words (16 bits/ word) can be exchanged for each direction.
  - Process data are not stored in the Inverter Drive 8400 protec.
  - Process data are e.g. setpoints, actual values, control and status words.

Note!

Please observe the direction of the flow of information!

- Process input data (Rx data):
  - Process data from the controller (IO device) to the IO controller
- Process output data (Tx data):
  - Process data from the IO controller to the controller (IO device)

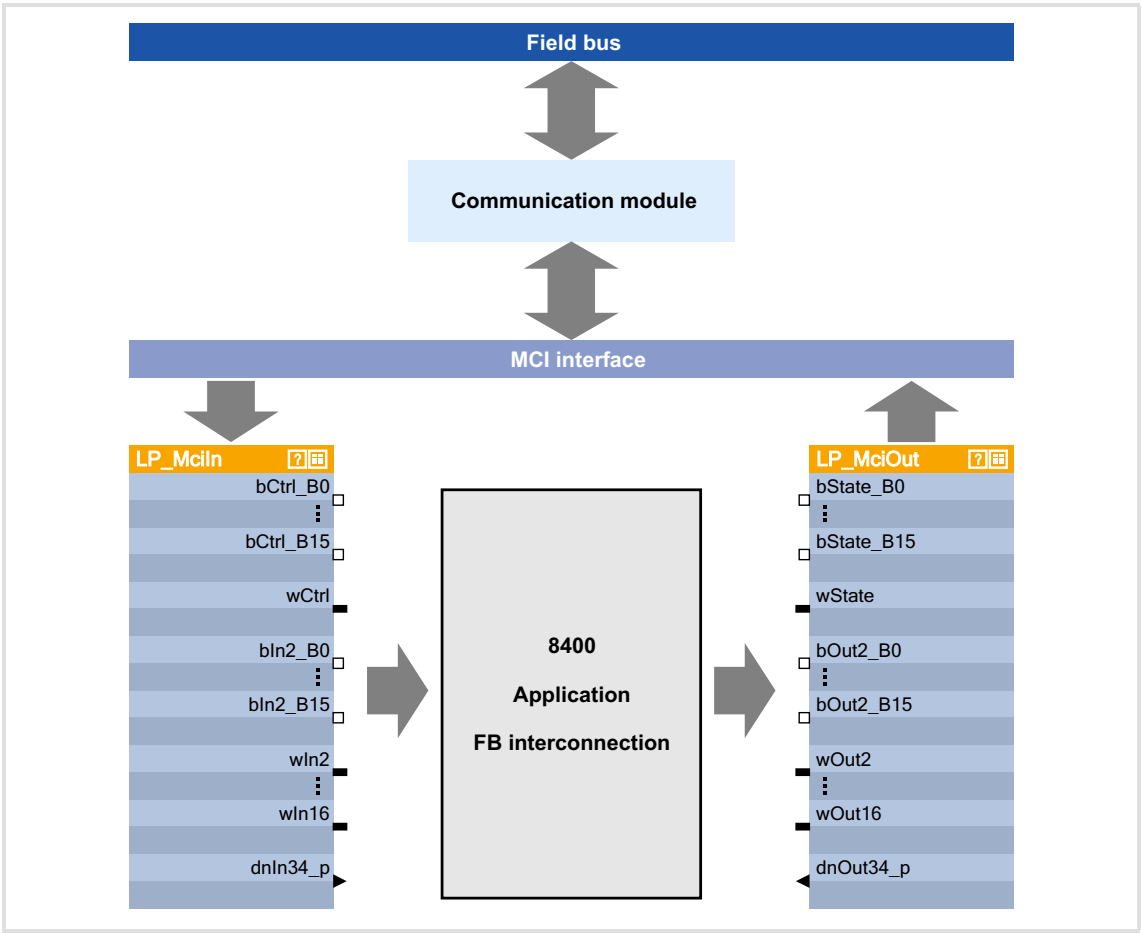
- Parameter data are transmitted via the acyclic channel.
  - Usually the transmission of parameter data is not time-critical.
  - The access to the parameter data depends on the PROFIdrive profile.
  - Examples of parameter data are operating parameters, motor data, and diagnostic information.
  - The acyclic channel provides access to all Lenze codes.
  - Parameter changes must be saved via code **C00002** of the Inverter Drives 8400 protec.

8 Process data transfer

8.1 Accessing process data / PDO mapping

The process data (MCI PDOs) are transferred via the MCI interface.

- Max. 16 words are exchanged for each direction.
- The process data are accessed via the port blocks **LP_MciIn** and **LP_MciOut**. The port blocks are also called process data channels.
- The **LP_MciIn** port block maps the MCI PDOs received.
- The **LP_MciOut** port block maps the MCI PDOs to be transmitted.
- The port/function block interconnection of the process data objects (PDO) is made via the Lenze »Engineer«.



[8-1] External and internal data transfer between the bus system, controller, and application

Software manual / »Engineer« online help for the Inverter Drive 8400

Here you will find detailed information on the port/function block interconnection in the »Engineer« and the port blocks.

Note!

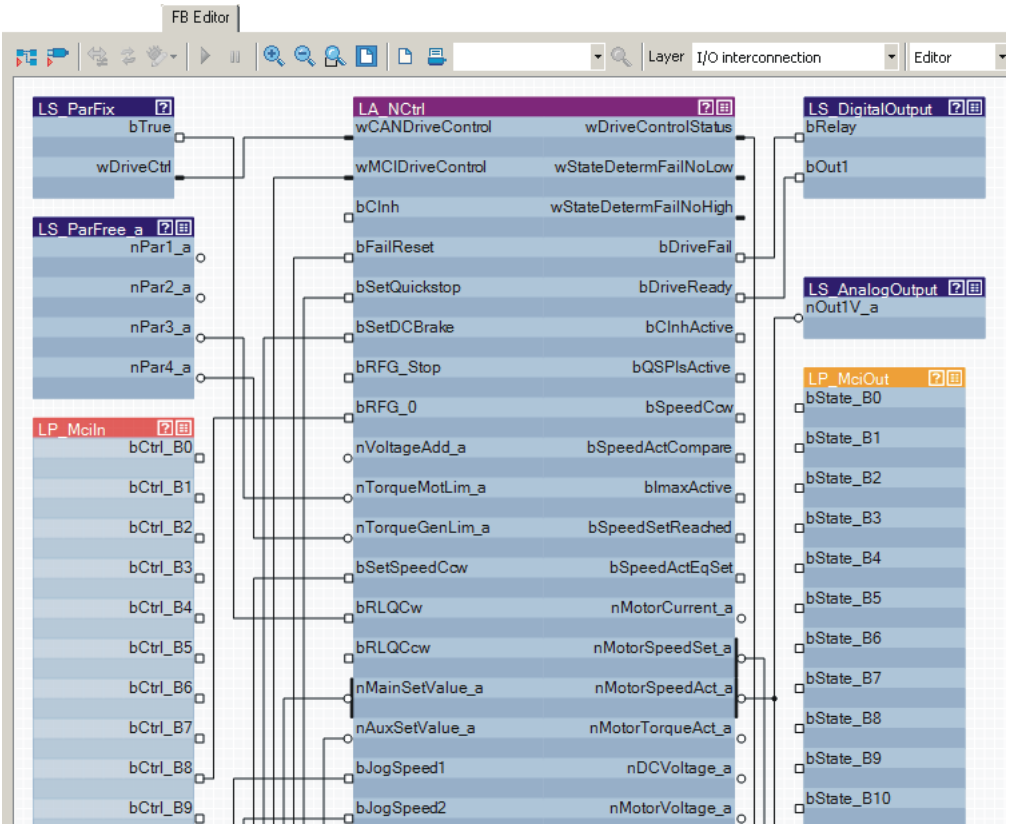
The »Engineer« screenshots shown in the following are only examples for the setting sequence and the resulting displays.

The data in the display fields may differ from the ones of your project.

8.2 Preconfigured port interconnection of the process data objects (PDO)

The preconfigured port interconnection of the process data objects can be activated by setting standard device code **C00007 = "40: MCI"**.

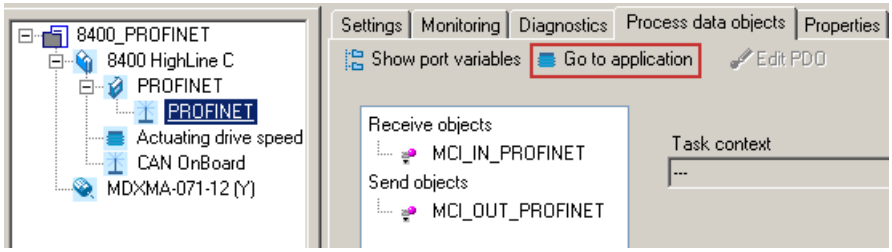
The function block editor (FB Editor) serves to display the port blocks "LP_MciIn" and "LP_MciOut" with the preconfigured interconnections:



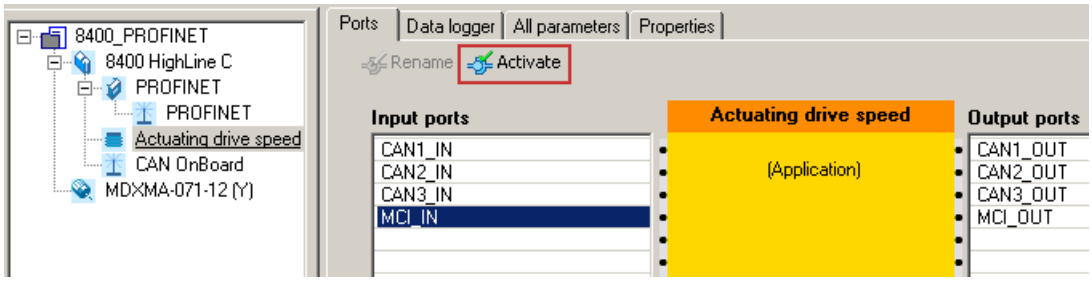
8.3 Configuring the port interconnection of the process data objects (PDO) freely

How to freely configure the port interconnection in the »Engineer«:

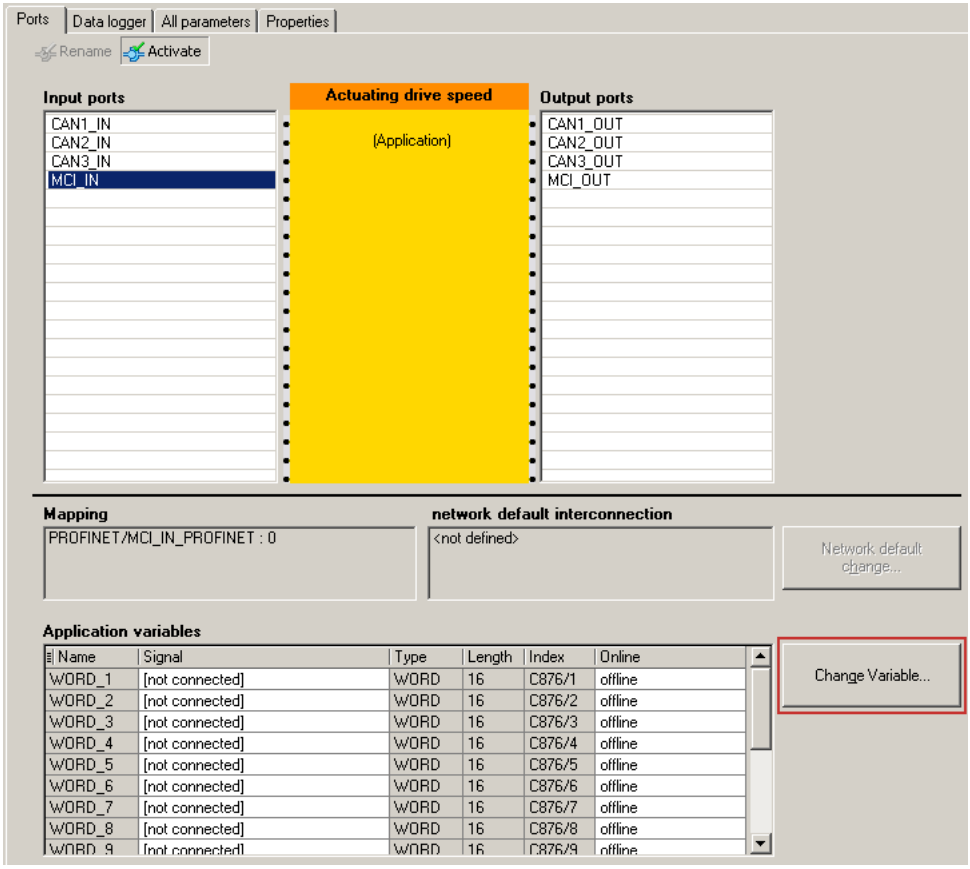
1. Go to the **Process data objects** tab and click **Go to application**.



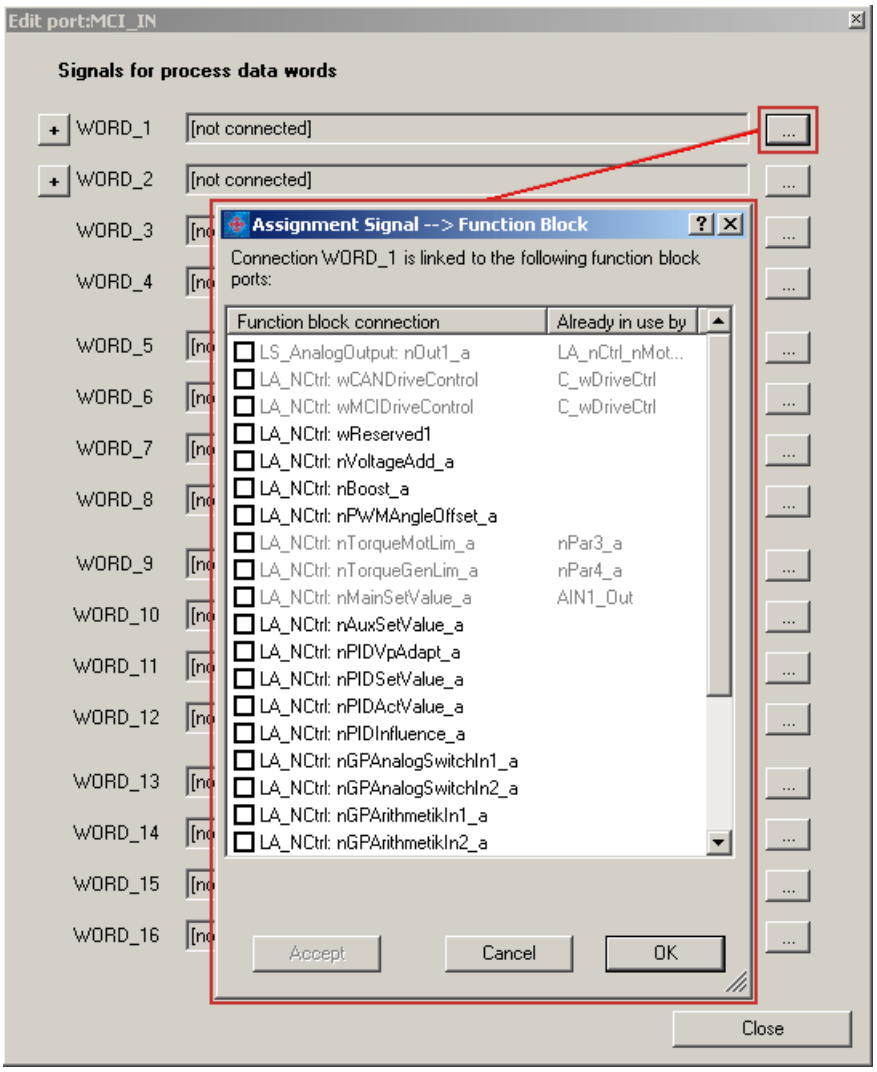
2. Go to the **Ports** tab, select the port blocks "MCI_IN" or "MCI_OUT" and click **Activate** to activate them.



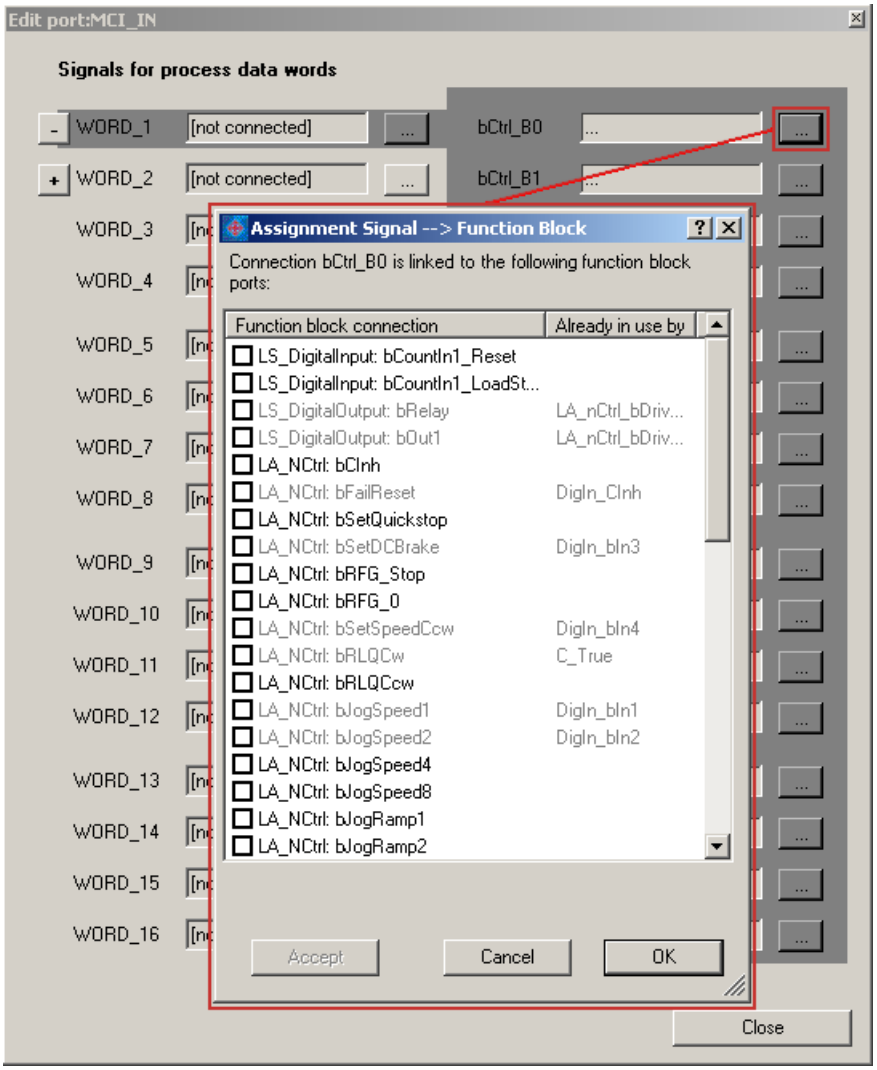
3. Click the **Change variable ...** button.



4. The [...] button serves to assign signals to the process data words in the *Assignment signal --> function block* dialog box.
   ➞ Select signals and then click the **OK** button.

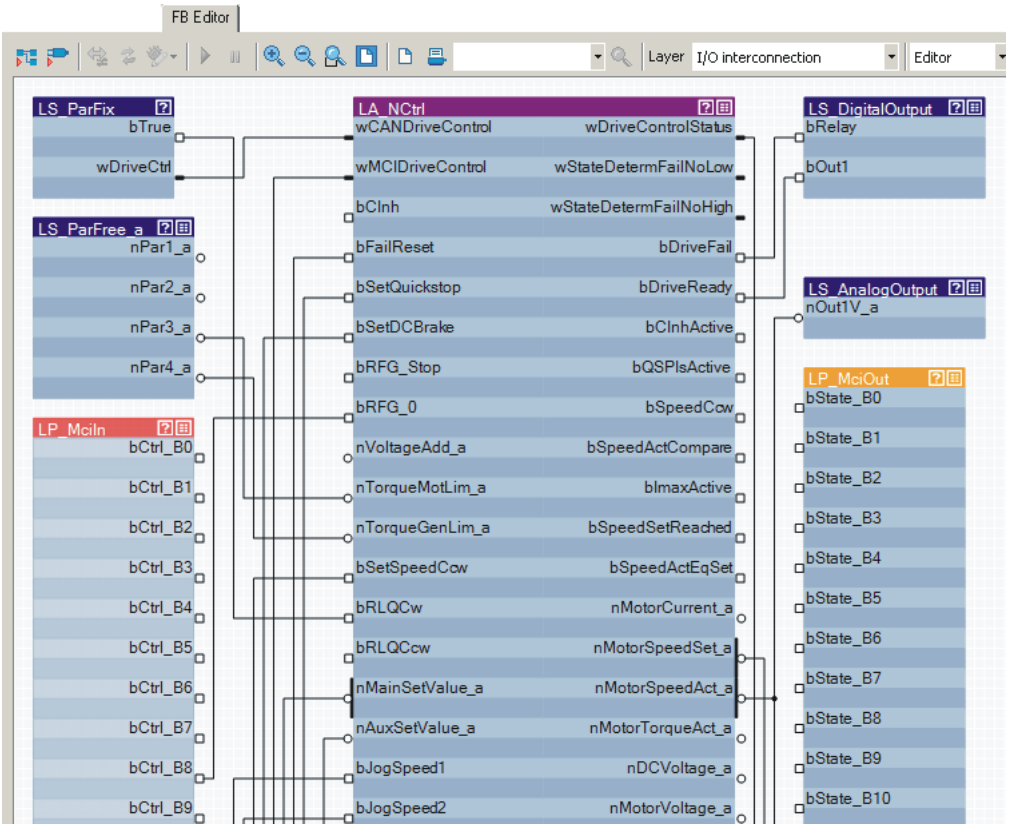


Moreover you can assign signals to the individual control and status bits at the WORD_1 and WORD_2 process data words via the [+] and [...] buttons.
➞ Select the signals and then click **OK**.



Tip!

When the port blocks "LP_MciIn" and "LP_MciOut" are activated (see 1.) they will be visible in the FB Editor. Here you can also assign signals to the process data words.



9 Parameter data transfer

9.1 The acyclic channel (PROFIdrive profile)

An optional service extension is the acyclic parameter data transfer.

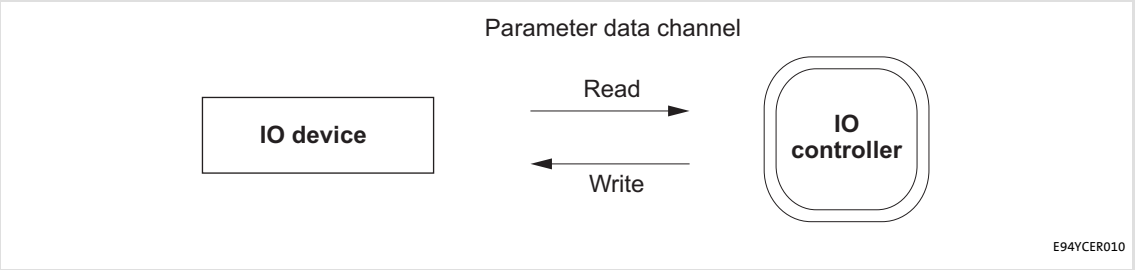
Cyclic and acyclic PROFINET services can be operated simultaneously in the network.

Properties

- Only one parameter request is processed at a time (no pipelining).
- Spontaneous messages are not transmitted.
- There are only acyclic parameter requests.
- Profile-specific parameters can be read independently of the IO device state.

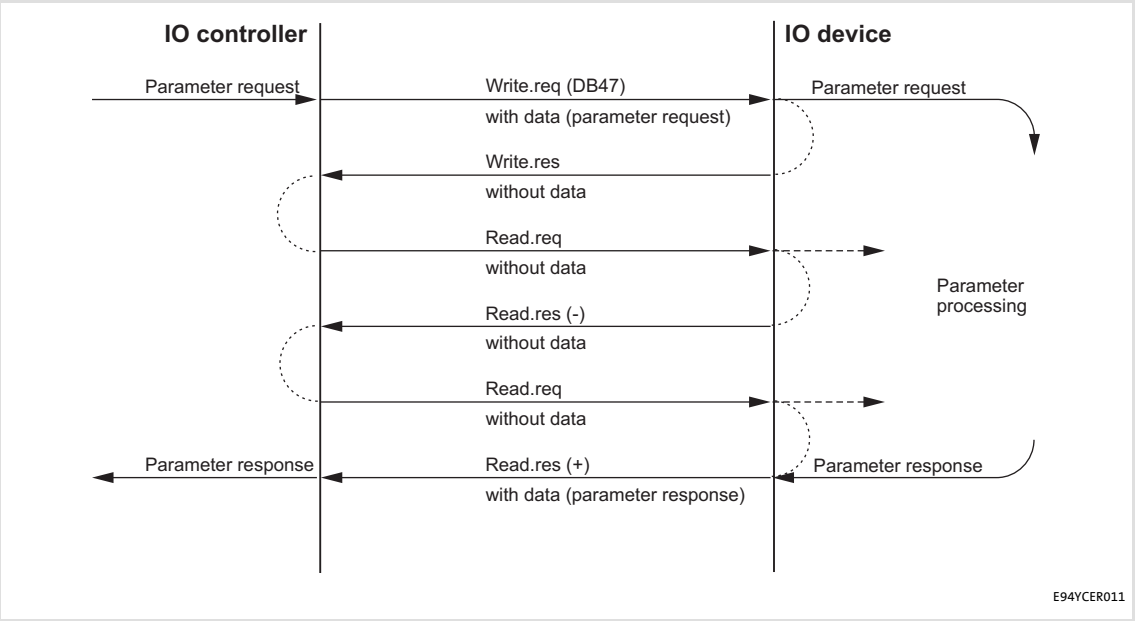
9.1.1 Connection establishment of an IO controller to an IO device

An IO controller can always be used to request parameters from an IO device if the IO device is in the "DATA_EXCHANGE" state.



[9-1] Data communication via the acyclic channel

9.1.2 Acyclic data transmission process



[9-2] Data communication via the acyclic channel

- A "Write.req" is used to transmit the data set (DB47) in the form of a parameter request to the IO device.
- "Write.res" confirms the receipt of the message by the IO controller.
- The IO controller requests the response of the IO device with "Read.req".
- The IO device responds with a "Read.res (-)" if processing is not yet completed.
- After parameter processing, the parameter request is completed by transmitting the parameter response in the form of a "Read.res (+)" to the IO controller.

9.1.3 Structure of the PROFINET data telegram

Dest Addr	Scr Addr	VLAN Day	Type 0800H	RPC	NDR	Read/Write Block	Data	FSC
6 bytes	6 bytes	4 bytes	4 bytes	80 bytes	64 bytes	64 bytes	0 ... 240 bytes	4 bytes

[9-3] PROFINET data telegram

In the "Read/Write Block", the initiator specifies the access to data set "DB47". The data which are written to this index or read by it contain a header and the parameter request or the parameter response. The read data or the data to be written are contained in the "Data" field.

The following subchapters describe the parameter request and the parameter response in detail.

PROFINET specification

Here you will find detailed information on the PROFINET data telegram.

Assignment of the user data depending on the data type

Depending on the data type, the user data are assigned as follows:

Data type	Length	User data assignment				
		Byte 1	Byte 2	Byte 3	Byte 4	Byte ...
String	x bytes					
U8	1 Byte		00			
U16	2 bytes	High byte	Low byte			
U32	4 bytes	High word		Low word		
		High byte	Low byte	High byte	Low byte	

9.2 Reading parameters from the controller

Note!

- When a read request is processed, no parameter value is written to the IO device.
- In the case of a multi-parameter read request, parameter attribute, index, and subindex are repeated "n" times, "n" being the number of parameters requested.

Request header

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Job identification	Axis	Number of indices

Field	Data type	Values
Request reference	U8	This value is specified by the IO controller.
Job identification	U8	0x01: Request parameter for reading
Axis	U8	0x00 or 0x01
Number of indices	U8	0x"n" (n = number of parameters requested)

Parameter attribute

Byte 5	Byte 6
Attribute	Number of subindices

Field	Data type	Values
Attribute	U8	0x10: Value
Number of subindices	U8	0x00 or 0x01

Index and subindex

Byte 7	Byte 8	Byte 9	Byte 10
Index		Subindex	
High byte	Low byte	High byte	Low byte

Field	Data type	Values
Index	U16	0x0001 ... 0xFFFF (1 ... 65535)
Subindex	U16	0x0001 ... 0xFFFF (1 ... 65535)

9.2.1 Response after a correct read request

Note!

- Responses to read requests do not contain parameter attributes and indexes/ subindexes.
- When a multi-parameter read request is transmitted, the parameter format and the parameter value are repeated "n" times, "n" being the number of parameters requested.

Response header

Byte 1	Byte 2	Byte 3	Byte 4
Request reference (mirrored)	Response identifier	Axis (mirrored)	Number of indices

Field	Data type	Values
Request reference	U8	Mirrored value of parameter request
Response identifier	U8	0x01: Parameter read
Axis	U8	0x00 or 0x01
Number of indices	U8	0x"n" (n = number of parameters requested)

Parameter format

Byte 5	Byte 6
Format	Number of values

Field	Data type	Values
Format	U8	0x02: Integer8 0x03: Integer16 0x04: Integer32 0x05: Unsigned8 0x06: Unsigned16 0x07: Unsigned32 0x09: Visible string 0x0A: Octet string 0x40: Zero 0x41: Byte 0x42: Word 0x43: Double word
Number of values	U8	• 0x01 • Number of requested subindices. (If there is more than one subindex, only the parameter value is repeated.) • In the case of string codes, the number of characters is entered here.

Parameter value

Byte 7	Byte 8	Byte 9	Byte 10
Value			

Field	Data type	Values
Value	String	Any
	U8	0x00 .... 0xFF
	U16	0x0000 .... 0xFFFF
	U32	0x0000 0000 .... 0xFFFF FFFF

9.2.2 Response after a read error

Response header

Byte 1	Byte 2	Byte 3	Byte 4
Request reference (mirrored)	Response identifier	Axis (mirrored)	Number of indices

Field	Data type	Values
Request reference	U8	Mirrored value of parameter request
Response identifier	U8	0x81: Parameter not read • The data in bytes 7 + 8 are to be interpreted as error code.
Axis	U8	0x00 or 0x01
Number of indices	U8	0x"n" (n = number of parameters requested)

Parameter format

Byte 5	Byte 6
Format	Number of values

Field	Data type	Values
Format	U8	0x44: Error
Number of values	U8	0x01: Error code without additional information 0x02: Error code with additional information

Error code

Byte 7	Byte 8	Byte 9	Byte 10
Error code		Additional information (if available)	
High byte	Low byte	High byte	Low byte

Field	Data type	Values
Error code	U16	0x0000 .... 0xFFFF ▸ Error information (error) (📖 62)
Additional information (if available)	U16	

9.2.3 Telegram example: Read request

The heatsink temperature of the controller is to be read.

- ▶ Code to be read: C00061
- ▶ Heatsink temperature: 43 °C

Parameter request

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Job identification	Axis	Number of indices
0xXX	0x01	0x00	0x01
	Request parameter for reading		

Byte 5	Byte 6
Attribute	Number of subindices
0x10	0x00
Value	No subindex

Byte 7	Byte 8	Byte 9	Byte 10
Index		Subindex	
High byte	Low byte	High byte	Low byte
0x5F	0xC2	0x00	0x00
Index = 24575 - code no. = 24575 - 61 = 24514 = 0x5F C2		No subindex	

Parameter response after a correct read request

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Response identifier	Axis	Number of indices
0xXX	0x01	0x00	0x01
(mirrored)	Parameter read	(mirrored)	

Byte 5	Byte 6
Format	Number of values
0x43	0x01
Double word	1 value

Byte 7	Byte 8	Byte 9	Byte 10
Value			
High word: high byte	High word: low byte	Low word: high byte	Low word: low byte
0x00	0x00	0x00	0x2B
Read value = 0x00 00 00 2B = 43 x 1 (internal factor) = 43 [°C]			

Parameter response to a read error

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Response identifier	Axis	Number of indices
0xXX	0x81	0x00	0x01
(mirrored)	Parameter not read	(mirrored)	

Byte 5	Byte 6
Format	Number of values
0x44	0x01
Error	Error code without additional information

Byte 7	Byte 8
Error code	
High byte	Low byte
For meaning see chapter "Error information (error)" (📖 62)	

9.3 Writing parameters to the controller

Note!

- When a multi-parameter write request is processed, the parameter attribute, index, subindex, and then the parameter format and parameter value are repeated "n" times, "n" being the number of parameters requested.
- A parameter request must not exceed the maximum data length of 240 bytes.

Request header

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Job identification	Axis	Number of indices

Field	Data type	Values
Request reference	U8	This value is specified by the IO controller.
Job identification	U8	0x02: Write parameter
Axis	U8	0x00 or 0x01
Number of indices	U8	0x"n" (n = number of parameters requested)

Parameter attribute

Byte 5	Byte 6
Attribute	Number of subindices

Field	Data type	Values
Attribute	U8	0x10: Value
Number of subindices	U8	0x00 or 0x01

Index and subindex

Byte 7	Byte 8	Byte 9	Byte 10
Index		Subindex	
High byte	Low byte	High byte	Low byte

Field	Data type	Values
Index	U16	0x0001 ... 0xFFFF (1 ... 65535)
Subindex	U16	0x0001 ... 0xFFFF (1 ... 65535)

Parameter format

Byte 11	Byte 12
Format	Number of values

Field	Data type	Values
Format	U8	0x02: Integer8 0x03: Integer16 0x04: Integer32 0x05: Unsigned8 0x06: Unsigned16 0x07: Unsigned32 0x09: Visible string 0x0A: Octet string 0x40: Zero 0x41: Byte 0x42: Word 0x43: Double word
Number of values	U8	• 0x01 • Number of requested subindices. (If there is more than one subindex, only the parameter value is repeated.) • In the case of string codes, the number of characters is entered here.

Parameter value

Byte 13	Byte 14	Byte 15	Byte 16
Value			

Field	Data type	Values
Value	String	Any
	U8	0x00 .... 0xFF
	U16	0x0000 .... 0xFFFF
	U32	0x0000 0000 .... 0xFFFF FFFF

9.3.1 Response after a correct write request

Response header

Byte 1	Byte 2	Byte 3	Byte 4
Request reference (mirrored)	Response identifier	Axis (mirrored)	Number of indices

Field	Data type	Values
Request reference	U8	Mirrored value of parameter request
Response identifier	U8	0x01: Parameter written
Axis	U8	0x00 or 0x01
Number of indices	U8	0x"n" (n = number of parameters requested)

9.3.2 Response after a write error

Note!

For a multi-parameter request, correct and faulty messages, if any, are combined in one telegram. The individual messages have the following data contents:

- Correct message
  - Format: 0x40
  - Number of values: 0x00
- Faulty message
  - Format: 0x44
  - Number of values: 0x01 or 0x02
  - Error code without additional information (number of values = 0x01) *or*
  - Error code with additional information (number of values = 0x02)

Faulty access to a parameter "n" will be reported in the response message of a multi-parameter request at position n.

Response header

Byte 1	Byte 2	Byte 3	Byte 4
Request reference (mirrored)	Response identifier	Axis (mirrored)	Number of indices

Field	Data type	Values
Request reference	U8	Mirrored value of parameter request
Response identifier	U8	0x82: Parameter not written • The data in bytes 7 + 8 are to be interpreted as error code.
Axis	U8	0x00 or 0x01
Number of indices	U8	0x"n" (n = number of parameters requested)

Parameter format

Byte 5	Byte 6
Format	Number of values

Field	Data type	Values
Format	U8	0x44: Error
Number of values	U8	0x01: Error code without additional information 0x02: Error code with additional information

Error code

Byte 7	Byte 8	Byte 9	Byte 10
Error code		Additional information (if available)	
High byte	Low byte	High byte	Low byte

Field	Data type	Values
Error code	U16	0x0000 .... 0xFFFF ▸ Error information (error) (📖 62)
Additional information (if available)	U16	

9.3.3 Telegram example: Write request

In the controller, the ramp time for quick stop is to be set to 50 ms.

▶ Code to be written to: C00105

Parameter request

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Job identification	Axis	Number of indices
0xXX	0x02	0x00	0x01
	Write parameter	Axis 0	1 index

Byte 5	Byte 6
Attribute	Number of subindices
0x10	0x00
Value	No subindex

Byte 7	Byte 8	Byte 9	Byte 10
Index		Subindex	
High byte	Low byte	High byte	Low byte
0x5F	0x96	0x00	0x00
Index = 24575 - code no. = 24575 - 105 = 24470 = 0x5F 96		No subindex	

Byte 11	Byte 12
Format	Number of values
0x43	0x01
Double word	1 value

Byte 13	Byte 14	Byte 15	Byte 16
Value			
High word: high byte	High word: low byte	Low word: high byte	Low word: low byte
0x00	0x00	0x00	0x32
Value to be written = 0.05 [s] x 1000 (internal factor) = 50 = 0x00 00 00 32			

Parameter response after a correct write request

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Response identifier	Axis	Number of indices
0xXX	0x02	0x00	0x01
(mirrored)	Parameter written	(mirrored)	1 index

Parameter response after write error

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Response identifier	Axis	Number of indices
0xXX	0x82	0x00	0x01
(mirrored)	Parameter not written	(mirrored)	1 index

Byte 5	Byte 6
Format	Number of values
0x44	0x01
Error	Error code without additional information

Byte 7	Byte 8
Error code	
High byte	Low byte
For meaning see chapter "Error information (error)" (📖 62)	

9.4 Error information (error)

Error code	Meaning	Description	Additional information
0x0000	Impermissible parameter number	Access to unavailable parameter	-
0x0001	Parameter value cannot be changed	Change access to a parameter value that cannot be changed	Subindex
0x0002	Lower or upper value limit exceeded	Change access with value outside the value limits	Subindex
0x0003	Faulty subindex	Access to unavailable subindex	Subindex
0x0004	No array	Access with subindex to non-indexed parameter	-
0x0005	Incorrect data type	Change access with value that does not match the data type of the parameter	-
0x0006	Setting not permitted (can only be reset)	Change access with non-zero value where this is not permitted	Subindex
0x0007	Description element cannot be changed	Change access to a description element that cannot be changed	Subindex
0x0008	Reserved	(PROFIdrive profile V2: PPO-Write requested in IR is not available)	-
0x0009	No description data available	Access to unavailable description (parameter value is available)	-
0x000A	Reserved	(PROFIdrive profile V2: Wrong access group)	-
0x000B	No parameter change rights	Change access without parameter change rights	-
0x000C	Reserved	(PROFIdrive profile V2: Wrong password)	-
0x000D	Reserved	(PROFIdrive profile V2: Text cannot be read in cyclic data transfer)	-
0x000E	Reserved	(PROFIdrive profile V2: Name cannot be read in cyclic data transfer)	-
0x000F	No text array available	Access to unavailable text array (parameter value is available)	-
0x0010	Reserved	(PROFIdrive profile V2: No PPO-Write)	-
0x0011	Request cannot be executed because of operating state	Access is not possible for temporary reasons that are not specified in detail	-
0x0012	Reserved	(PROFIdrive profile V2: Other error)	-
0x0013	Reserved	(PROFIdrive profile V2: Date cannot be read in cyclic data transfer)	-
0x0014	Impermissible value	Change access with a value that is within the value limits but is not permissible for other permanent reasons (parameter with defined single values)	Subindex
0x0015	Response too long	The length of the current response exceeds the maximum transmittable length	-
0x0016	Impermissible parameter address	Impermissible value or value which is not supported for the attribute, number of subindexes, parameter number, or subindex, or a combination	-
0x0017	Impermissible format	Write request: Impermissible parameter data format or parameter data format which is not supported	-
0x0018	Number of values not consistent	Write request: Number of parameter data values does not match the number of subindexes in the parameter address	-
0x0019	Reserved	-	-
...			
0x0064			

Error code	Meaning	Description	Additional information
0x0065	Manufacturer-specific	-	-
...			
0x00FF			

9.5 Consistent parameter data

In the PROFINET communication system, data are permanently exchanged between the host (CPU + IO controller) and the standard device via the plugged-on IO device interface module. The IO controller and the CPU (central processing unit) of the host access a joint memory: the dual port memory (DPM).

- The DPM allows data exchange in both directions (write/read):

It could happen that a slower IO controller writing would be overtaken by a faster CPU reading within a cycle time without any further data organisation.

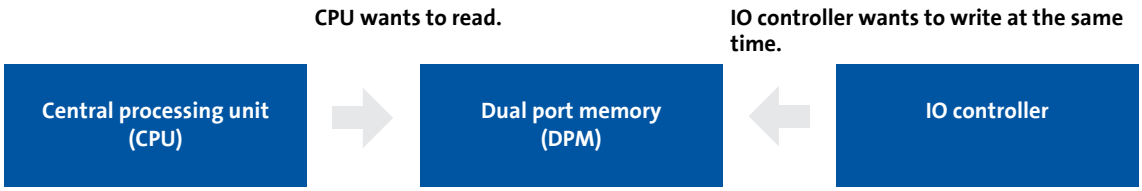
To avoid such an impermissible state, the parameter data to be transmitted must be marked as "consistent".

Data communication with consistency

With consistency, either "reading" or "writing" is possible when the IO controller and the CPU simultaneously access the memory:

- The IO controller transfers data only as a complete data set.
- The CPU can only access completely updated data sets.
- The IO controller cannot read or write data as long as the CPU accesses consistent data.

The result becomes clear from the example below:



1. As the IO controller can only write when the CPU does not read, the IO controller has to wait until the data are completely read by the CPU.
2. The IO controller only writes a complete data set into the DPM.

Configuring consistent data

Note!

Consistency is achieved by a suitable IO controller configuration.

Please refer to the corresponding documentation of your configuring software.

10 Monitoring

Interruption of PROFINET communication

An interruption of PROFINET communication in the DATA_EXCHANGE state, e.g. by cable break or failure of the IO controller is recognised by the IO device.

The response to the communication interruption is controlled via the following settings:

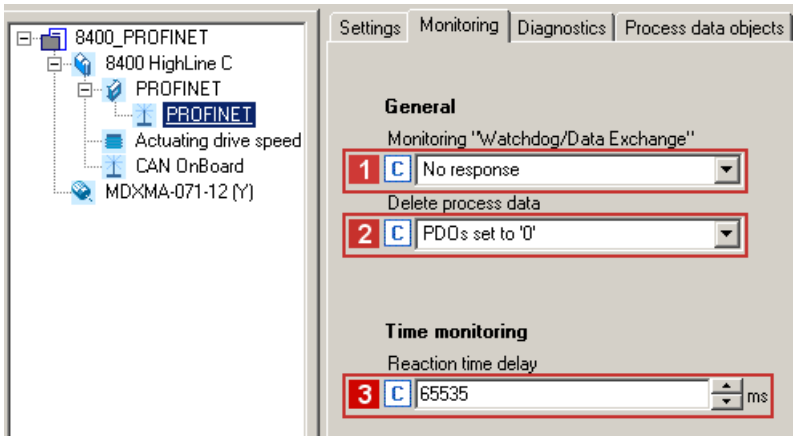
1. During the initialisation of PROFINET communication the watchdog monitoring time specified in the IO controller is transferred to the IO device.

   If the IO device does not receive any valid process data in the DATA_EXCHANGE state, the process data are treated according to the setting in 2 C13885. (Like this the data that were sent last by the IO controller can be used or set to zero.)

   After the watchdog monitoring time has elapsed, the IO device changes to the NO_DATA_EXCHANGE status (see C13861), and the red LED "BE" is activated (Fieldbus status displays (📖 68)).

   There is no reponse in the IO device.

2. To trigger a response in the IO device, you have to set a **Response of the Inverter Drive 8400** 1 (C13880) additionally in the »Engineer« under the **Monitoring** tab.



   By setting a **Reaction time delay** 3 (C13881) you can decelerate this response.

   The response delay elapses when the DATA_EXCHANGE status is exited.

   After this response delay has elapsed, the response set is executed with the error message "PROFINET: Data_Exchange status quit [0x01bc6531]" (📖 76).

11 Diagnostics

For purposes of fault diagnostics, the PROFINET module is provided with the LEDs on the front. Furthermore you can carry out the Diagnostics with the »Engineer« (📖 70).

11.1 LED status displays

Note!

During normal operation ...

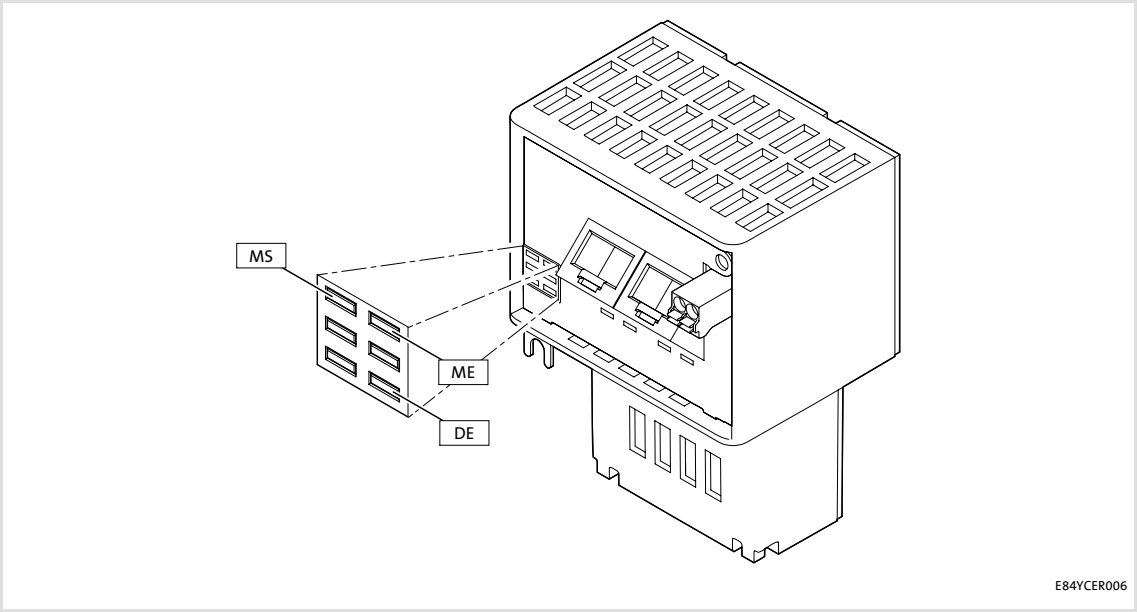
- only the LEDs **MS** (📖 67) and **BS** (📖 68) should be lit permanently.
- the green LED at the X256/X257 RJ45 sockets must be lit or blinking (📖 69).

The following status displays can be distinguished:

- Module status displays (📖 67)
- Fieldbus status displays (📖 68)
- Status displays at X256 and X257 (📖 69)

11.1.1 Module status displays

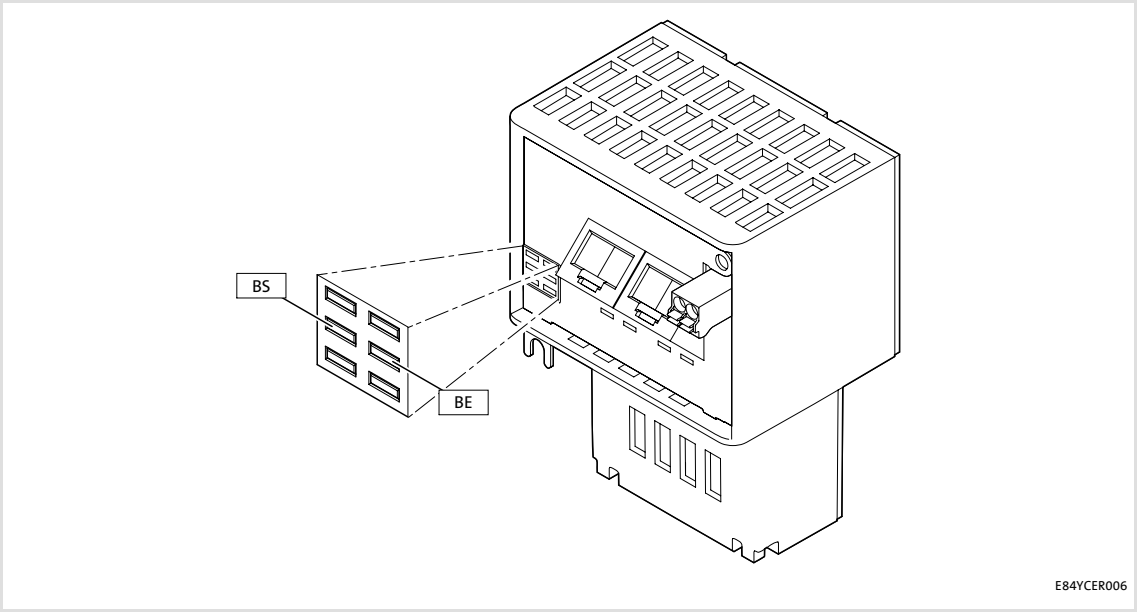
The LEDs **MS**, **ME**, and **DE** display the status of the module.



LED	Colour	Status	Description
MS	Green	On	The communication module is supplied with voltage and has established a connection to the standard device.
		Blinking	The communication module is supplied with voltage, but has not established a connection to the standard device. (Standard device is switched off, in the initialisation phase, or not available.)
ME	Red	On	An error in the communication module has occurred.
		Blinking	The "Node blinking test" PROFINET function is activated by the IO controller. The blinking LED serves to identify/localise accessible IO devices.
DE	Red	On	The communication module is not accepted by the standard device or the standard device is not active. (See notes in the documentation of the standard device.)

11.1.2 Fieldbus status displays

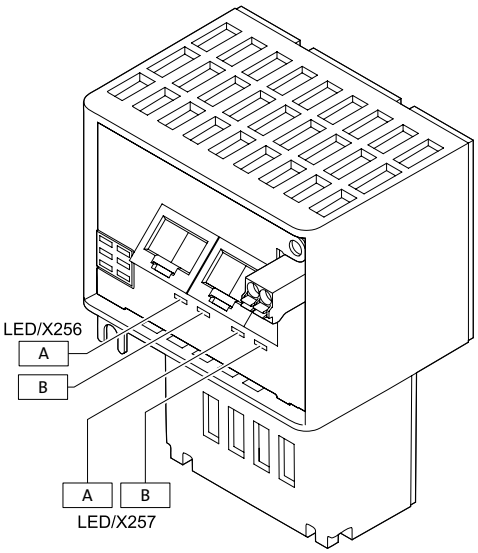
The LEDs **BS** and **BE** display the status of the fieldbus.



LED	Colour	Status	Description
BS	Green	Off	The communication module is not active on the fieldbus or is in the INIT status.
		Blinking	The communication module is in the DATA_EXCHANGE status.
BE	Red	On	Bus error/fault is active (e.g. Ethernet cable not connected). The communication module is in the NO_DATA_EXCHANGE state.
		Blinking	Impermissible settings: • Invalid station name • Invalid IP parameters The communication module has been initialised and continues to work internally with the respective standard values.

11.1.3 Status displays at X256 and X257

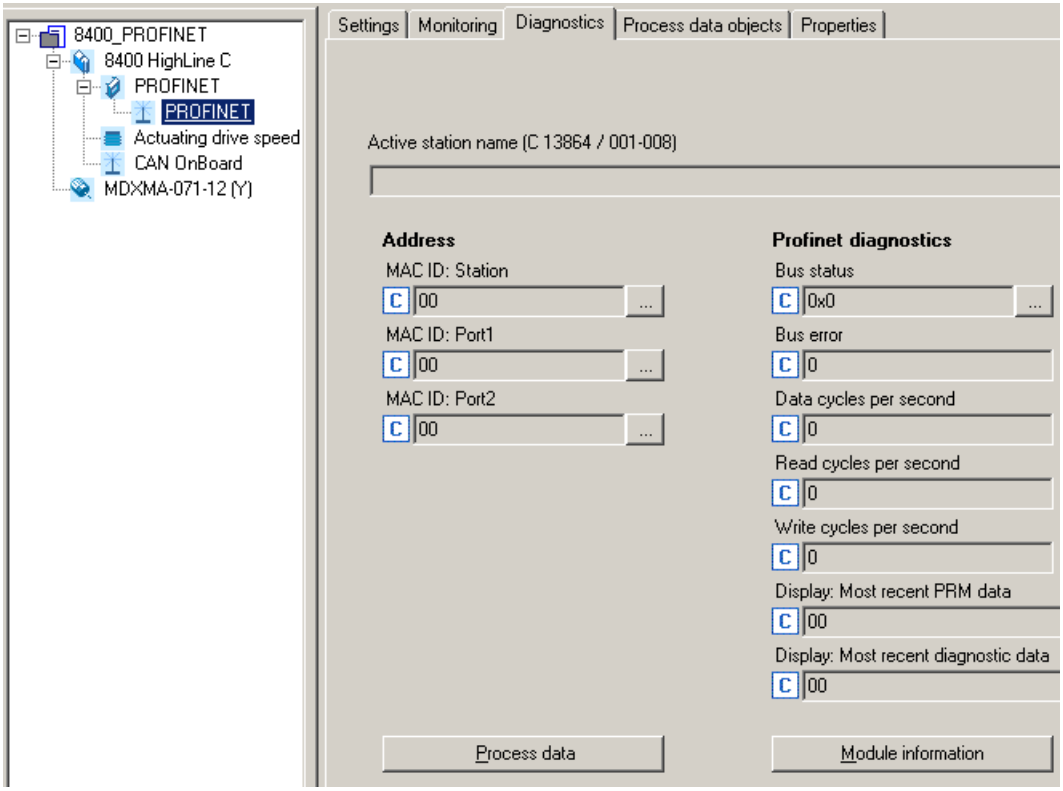
The LEDs below RJ45 sockets X256 and X257 display the PROFINET connection status.



LED	Colour	Status	Description
A	Green	Off	There is no PROFINET connection.
		On	There is a PROFINET connection.
B	Yellow	Off	No communication
		On *or* Jittering	Communication active

11.2 Diagnostics with the »Engineer«

In the »Engineer« under the **Diagnostics** tab, various PROFINET diagnostic information can be displayed.

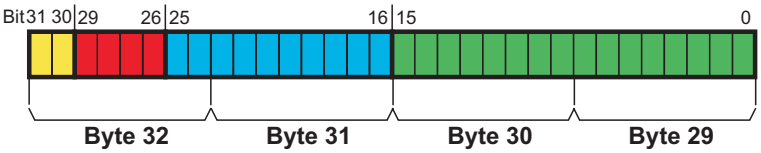


11.3 Diagnostic data

- The IO device sends an alarm message to the IO controller to signalise the diagnostic data below.
- Code C13887 serves to inhibit the transmission of alarm messages to the IO controller. By this, errors of a specific type can be systematically suppressed.
- Errors and warnings in the Inverter Drive 8400 and the plugged-in module are sent to the IO controller as extended diagnostic messages.
- The diagnostic data can be displayed using the hexadecimal representation of the Siemens S7 engineering tool.

Bytes	Meaning	Value [hex]
1 ... 6	Diagnostic block header	0x0010 001C 0100
7 ... 8	Alarm type	0x0001 (Diagnosis)
9 ... 12	API (Application Programming Interface)	0x0000 0000
13, 14	Slot number	0x0001 / 0x0002
15, 16	Subslot number	0x0001
17 ... 20	Module ID	ID according to module
21 ... 24	Submodule number	ID according to module
25, 26	Alarm specification	0xB000
27, 28	User structure ID	0x0001
29 ... 32	Error code	

Error code of the Inverter Drive 8400



[11-1] Error code of the Inverter Drive 8400

- Bytes 29 ... 32 of the diagnostic message indicate the error code of the Inverter Drive 8400.
- To make reading easier, the following syntax is used to display the error number in the logbook and standard device code **C00165**:
  [error type].[error subject area no.].[error ID]

Example

Diagnostic message of the error "PROFINET: Data_Exchange status quit [0x01bc6531]":

Bit assignment (bytes 29 ... 32)	Information	Values from the example
Bit31 30 0 0	Reserved	Bits 24 ... 31: **0x01** (00000001_{bin})
Bit29 26 0 0 0 0	Error type	
Bit25 16 0 1 1 0 1 1 1 1 0 0	Error subject area	Bits 16 ... 23: **0xbc** (10111100_{bin})
Bit15 0 0 1 1 0 0 1 0 1 0 0 1 1 0 0 0 1	Error ID	Bits 8 ... 15: **0x65** (01100101_{bin}) Bits 0 ... 7: **0x31** (00110001_{bin})

Software manual/»Engineer« online help for the Inverter Drive 8400

Here you'll find some detailed information on the error codes.

12 Error messages

This chapter provides the error messages of the communication module as a supplement to the error list in the software manual and the »Engineer« online help for the Inverter Drive 8400.

Software manual/»Engineer« online help for the Inverter Drive 8400

General information on diagnostics & fault analysis and error messages is provided here.

12.1 Short overview (A-Z) of the PROFINET error messages

The following table contains all error messages of the communication module in alphabetical order with the preset error response and, if available, the parameter for setting the error response.

Tip!

When you click the cross-reference in the last column, you will get a detailed description (causes and remedies) of the corresponding error message.

Error text	Error type	Subject area no.	Error no.	Adjustable in	Detailed information
PROFINET: Data_Exchange status quit	0: None	444	25905	C13880/1	0x01bc6531
PROFINET: Error: Lenze setting loaded	1: Fault	444	25632	-	0x01bc6420
PROFINET: Exist. connect. to 8400 lost	1: Fault	444	12544	-	0x01bc3100
PROFINET: Internal error	1: Fault	444	24593	-	0x01bc6011
PROFINET: Internal error	1: Fault	444	24832	-	0x01bc6100
PROFINET: Internal error	1: Fault	444	24833	-	0x01bc6101
PROFINET: Internal error	1: Fault	444	26192	-	0x01bc6650
PROFINET: Invalid module configuration	1: Fault	444	25648	-	0x01bc6430
PROFINET: Invalid output data	4: Warning locked	444	25859	-	0x01bc6503
PROFINET: Invalid parameter set	1: Fault	444	25631	-	0x01bc641f
PROFINET: IP address error	1: Fault	444	25907	-	0x01bc6533
PROFINET: Memory: No access	1: Fault	444	21809	-	0x01bc5531
PROFINET: Memory: Read error	1: Fault	444	21810	-	0x01bc5532
PROFINET: Memory: Write error	1: Fault	444	21811	-	0x01bc5533
PROFINET: Restart by watchdogreset	1: Fault	444	24592	-	0x01bc6010
PROFINET: Stack init error	1: Fault	444	25908	-	0x01bc6534
PROFINET: Station name error	1: Fault	444	25906	-	0x01bc6532
PROFINET: Record parameter: Invalid read	4: Warning locked	444	25857	-	0x01bc6501
PROFINET: Record parameter: Invalid write	4: Warning locked	444	25858	-	0x01bc6502

12.2 Possible causes and remedies

In this chapter, all error messages of the communication module are listed in numerical order of the error numbers. Possible causes and remedies and responses to the error messages are described in detail.

Tip!

You will find a list of all error messages of the communication module in alphabetical order in the previous chapter "Short overview (A-Z) of the PROFINET error messages" (📖 73).

PROFINET: Exist. conn. to 8400 lost [0x01bc3100]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
• Network cable (plug) is defective. • Network cable at PROFINET terminal X256 or X257 is disconnected. • Voltage supply is interrupted.	Check cables and connections. Plug in network cable at PROFINET terminal X256 or X257.

PROFINET: Memory: No access [0x01bc5531]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Memory could not be accessed.	Send device with error description to Lenze.

PROFINET: Memory: Read error [0x01bc5532]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Parameter could not be read.	Send device with error description to Lenze.

PROFINET: Memory: Write error [0x01bc5533]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Parameter could not be written.	Send device with error description to Lenze.

PROFINET: Restart by watchdogreset [0x01bc6010]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Device is defective.	Send device with error description to Lenze.

PROFINET: Internal error [0x01bc6011]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Device is defective.	Send device with error description to Lenze.

PROFINET: Internal error [0x01bc6100]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Internal error	Send device with error description to Lenze.

PROFINET: Internal error [0x01bc6101]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Internal error	Send device with error description to Lenze.

PROFINET: Invalid parameter set [0x01bc641f]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Loading of an active parameter set was not possible.	Download application again (including module).

PROFINET: Error: Lenze setting loaded [0x01bc6420]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	**Remedy**
Access via standard device to parameter set in the memory module was not successful.	Download application again (including module).

PROFINET: Invalid module configuration [0x01bc6430]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	

Cause	Remedy
A module or submodule does not comply with the configuration of the Siemens S7 engineering tool.	Check configuration.

PROFINET: Record Parameter: Invalid read [0x01bc6501]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☐ Fault ☐ Trouble ☐ Quick stop by trouble ☒ **Warning locked** ☐ Warning ☐ Information	

Cause	Remedy
Invalid parameter read access	Check configuration.

PROFINET: Record Parameter: Invalid write [0x01bc6502]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☐ Fault ☐ Trouble ☐ Quick stop by trouble ☒ **Warning locked** ☐ Warning ☐ Information	

Cause	Remedy
Invalid parameter write access	Check configuration.

PROFINET: Invalid output data [0x01bc6503]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☐ Fault ☐ Trouble ☐ Quick stop by trouble ☒ **Warning locked** ☐ Warning ☐ Information	

Cause	Remedy
Output data invalid. Connection to Siemens S7 has been interrupted.	Check cables and connections. Plug in network cable at PROFINET terminal X256 or X257.

PROFINET: Data_Exchange status quit [0x01bc6531]

Response (Lenze setting in bold)	**Setting:** C13880/1 (☑ Adjustable response)
☒ **None** ☐ System fault ☑ Fault ☐ Trouble ☑ Quick stop by trouble ☑ Warning locked ☐ Warning ☑ Information	

Cause	Remedy
The data exchange via PROFINET has been terminated. • See also chapter "Interruption of PROFINET communication" (📖 65).	Check cables and connections. Plug in network cable at PROFINET terminal X256 or X257.

PROFINET: Station name error [0x01bc6532]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☐ Fault ☐ Trouble ☐ Quick stop by trouble ☒ **Warning locked** ☐ Warning ☐ Information	

Cause	Remedy
A station name that is not conform to PROFINET has been defined.	Change the station name in accordance with the PROFINET specification: • 1 or several labels separated by ".". • Max. length per label: 63 characters • Max. total length: 240 characters • Permissible characters: [a ... z], [0 ... 9], [.], [-] • Labels must not begin or end with [-]. • Prohibited syntax: – "n.n.n.n" (n = 0 ... 999) – "port-xyz" (x, y, z = 0 ... 9) – "port-xyz-abcde" (a, b, c, d, e, x, y, z = 0 ... 9)

PROFINET: IP address error [0x01bc6533]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	

Cause	Remedy
An invalid IP address has been assigned by the IO controller via PROFINET or has been set in code C13000.	• Make sure that the IO controller has assigned a valid IP address via PROFINET. • Set a valid IP address. ▸ Setting the IP configuration (📖 38)

PROFINET: Stack init error [0x01bc6534]

Response (Lenze setting in bold)	**Setting:** not possible
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	

Cause	Remedy
The stack cannot be initialised with the parameters selected by the user. This may be due to a station name which does not comply with the PROFINET specification.	Check and, if necessary, adapt PROFINET parameters: ▸ Setting the IP configuration (📖 38) ▸ Setting the station name (📖 36)

PROFINET: Internal error [0x01bc6650]

Response (Lenze setting in bold)
☐ None ☐ System fault ☒ **Fault** ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information

Cause	Remedy
Internal error	Send device with error description to Lenze.

13 Parameter reference

This chapter supplements the parameter list and the table of attributes in the software manual and in the »Engineer« online help for the Inverter Drive 8400 by the parameters of the E84AYCER communication module (PROFINET).

Software manual/»Engineer« online help for the Inverter Drive 8400

General information on parameters is provided here.

13.1 Parameters of the communication module

This chapter lists the parameters of the E84AYCER communication module (PROFINET) in numerically ascending order.

Note!

PROFINET command "Reset to factory defaults"

If the "Reset to factory defaults" PROFINET command is executed by a supervisor or an IO controller, the PROFINET-specific parameters will be reset to their standard values:

- C13000 | IP address
- C13001 | Subnetwork mask
- C13002 | Gateway address
- C13010 | Active IP address
- C13011 | Active subnetwork mask
- C13012 | Active gateway address
- C13864 | Active station name
- C13899 | Station name
- C13910 | I&M1 system designation
- C13911 | I&M1 installation site
- C13912 | I&M2 installation date
- C13913 | I&M3 additional information
- C13914 | I&M4 signature code

C13000

Parameter | Name:
C13000 | IP address

Data type: UNSIGNED_32
Index: $11575_d = 2D37_h$

Setting the IP address
▸ Setting the IP configuration (📖 38)

Setting range (min. value | unit | max. value)			Lenze setting
0		4294967295	**0**

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13001

Parameter | Name:
C13001 | Subnetwork mask

Data type: UNSIGNED_32
Index: $11574_d = 2D36_h$

Setting the subnet mask
▸ Setting the IP configuration (📖 38)

Setting range (min. value | unit | max. value)			Lenze setting
0		4294967295	**0**

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13002

Parameter | Name:
C13002 | Gateway address

Data type: UNSIGNED_32
Index: $11573_d = 2D35_h$

Setting the gateway address
▸ Setting the IP configuration (📖 38)

Setting range (min. value | unit | max. value)			Lenze setting
0		4294967295	**0**

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13003

Parameter | Name:
C13003 | Physical address

Data type: OCTET_STRING
Index: $11572_d = 2D34_h$

Display of the MAC-ID

Subcodes	Information
C13003/1	MAC ID: Station
C13003/2	MAC ID: Port1
C13003/3	MAC ID: Port2

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13010

Parameter | Name:
C13010 | Active IP address

Data type: UNSIGNED_8
Index: $11565_d = 2D2D_h$

Display of the active IP address
- The active IP address may differ from the contents of code C13000, depending on whether the station name was changed via the fieldbus or the parameter.

Subcodes	Information
C13010/1	Active IP address.1
C13010/2	Active IP address.2
C13010/3	Active IP address.3
C13010/4	Active IP address.4

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13011

Parameter | Name:
C13011 | Active subnetwork mask

Data type: UNSIGNED_8
Index: $11564_d = 2D2C_h$

Display of the active subnetwork mask
- The active subnetwork mask may differ from the contents of code C13001, depending on whether the station name was changed via the fieldbus or the parameter.

Display range (min. value | unit | max. value)		
0		255

Subcodes	Information
C13011/1	Active subnetwork mask.1
C13011/2	Active subnetwork mask.2
C13011/3	Active subnetwork mask.3
C13011/4	Active subnetwork mask.4

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13012

Parameter | Name:
C13012 | Active gateway address

Data type: UNSIGNED_8
Index: $11563_d = 2D2B_h$

Display of the active gateway address
- The active gateway address may differ from the contents of code C13002, depending on whether the station name was changed via the fieldbus or the parameter.

Display range (min. value | unit | max. value)		
0		255

Subcodes	Information
C13012/1	Active gateway address.1
C13012/2	Active gateway address.2
C13012/3	Active gateway address.3
C13012/4	Active gateway address.4

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13850

Parameter | Name:
C13850 | All words to master

Data type: UNSIGNED_16
Index: $10725_d = 29E5_h$

Display of the process data words which are transmitted from the controller to the IO controller.
In the subcodes 1 to 16, all process data words to the IO controller are displayed. However, only the configured process data words are valid.

Display range (min. value | unit | max. value)		
0		65535

Subcodes	Information
C13850/1	
...	
C13850/16	

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13851

Parameter | Name:
C13851 | All words from master

Data type: UNSIGNED_16
Index: $10724_d = 29E4_h$

Display of the process data words which are transmitted from the IO controller to the controller.
In the subcodes 1 to 16, all process data words from the IO controller are displayed. However, only the configured process data words are valid.

Display range (min. value | unit | max. value)		
0		65535

Subcodes	Information
C13851/1	
...	
C13851/16	

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13852

Parameter | Name:
C13852 | All words to standard device

Data type: UNSIGNED_16
Index: $10723_d = 29E3_h$

Display of the process data words 1 ... 16, which are transmitted from the IO controller to the controller.

Display range (min. value | unit | max. value)		
0		65535

Subcodes	Information
C13852/1	
...	
C13852/16	

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13853

Parameter | Name: **C13853 | All words from standard device**	Data type: UNSIGNED_16 Index: $10722_d = 29E2_h$

Display of the process data words 1 ... 16, which are transmitted from the controller to the IO controller.

Display range (min. value | unit | max. value)		
0		65535

Subcodes	Information
C13853/1	
...	
C13853/16	

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13860

Parameter | Name: **C13860 | Settings**	Data type: UNSIGNED_8 Index: $10715_d = 29DB_h$

Display range (min. value | unit | max. value)		
0		255

Subcodes	Information
C13860/1	Reserved
C13860/2	Number of process data words
C13860/3	Reserved
C13860/4	Reserved

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13861

Parameter | Name: **C13861 | Bus status**	Data type: BITFIELD_16 Index: $10714_d = 29DA_h$

Bit-coded display of current bus status

Value is bit-coded:	
Bit 0	Initialised
Bit 1	Online
Bit 2	Connected
Bit 3	Address conflict
Bit 4	Hardware error
Bit 5	EEPROM error
Bit 6	Watchdog error
Bit 7	Protocol error
Bit 8	Profinet stack ok
Bit 9	Profinet stack not configured
Bit 10	Ethernet controller error
Bit 11	UDP stack error
Bit 12	Reserved
Bit 13	Reserved
Bit 14	Reserved
Bit 15	Reserved

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13862

Parameter | Name: **C13862 | Bus counter**			Data type: UNSIGNED_32 Index: $10713_d = 29D9_h$
Display of data cycles per second (irrespective of data changes)			
Display range (min. value | unit | max. value)			
0		4294967295	

Subcodes	Information
C13862/1	Data cycles per second
C13862/2	Read cycles per second
C13862/3	Write cycles per second

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13864

Parameter | Name: **C13864 | Active station name**	Data type: VISIBLE_STRING Index: $10711_d = 29D7_h$
Displays the active station name used by the controller. It may differ from the contents of code C13899, depending on whether the station name has been changed via the fieldbus or via C13899. ▸ Setting the station name (📖 36)	

Subcodes	Information
C13864/1	1st ... 30th character
C13864/2	31st ... 60th character
C13864/3	61st ... 90th character
C13864/4	91st ... 120th character
C13864/5	121st ... 150th character
C13864/6	151st ... 180th character
C13864/7	181st ... 210th character
C13864/8	211th ... 240th character

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13867

Parameter | Name:
C13867 | Display: Most recent diagnostic data

Data type: OCTET_STRING
Index: $10708_d = 29D4_h$

Display of diagnostic data sent by the controller most recently:

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

Bytes	Information
0	Slot
1	
2	Subslot
3	
4	Error code
...	
7	
8	Slot
9	
10	Subslot
11	
12	Error code
...	
15	

C13877

Parameter | Name:
C13877 | Bus error(1)

Data type: UNSIGNED_16
Index: $10698_d = 29CA_h$

The code contains the error currently detected on the fieldbus.
- The error values can occur in combination with the error values from code C13878.

Selection list (read only)		Information
0	No fail	
1	Internal error	
2	Unit ID unknown	
3	Max. units exceeded	
4	Invalid size	
5	Unit type unknown	
6	Runtime plug	
7	Invalid argument	
8	Service pending	
9	Stack not ready	
10	Command unknown	
11	Invalid address descriptor	
12	Watchdog expired	
13	Protocol not supported	

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13878

Parameter | Name:
C13878 | Bus error(2)

Data type: BITFIELD_16
Index: $10697_d = 29C9_h$

The code contains the error currently detected on the fieldbus.
- The error values can occur in combination with the error values from code C13877.

Value is bit-coded:		Information
Bit 0	Reserved	
...	...	
Bit 6	Reserved	
Bit 7	IP address error	
Bit 8	Station name error	
Bit 9	DataExch left	
Bit 10	Stack boot error	
Bit 11	Stack online error	
Bit 12	Stack state error	
Bit 13	Stack revision error	
Bit 14	Stack init error	
Bit 15	Stack CPU boot error	

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13880

Parameter | Name:
C13880 | Reaction on communication failure

Data type: UNSIGNED_8
Index: $10695_d = 29C7_h$

The action set in subcode 1 of the code is carried out when the node recognises that it is no longer in the DATA_EXCHANGE status.
- Please also observe the notes in code C13881.
- A change in the monitoring response becomes effective immediately.

Selection list	
0	No response
1	Error
3	Quick stop by trouble
4	Warning locked
6	Information

Subcodes	Lenze setting	Information
C13880/1	0: No response	"Watchdog/Data Exchange" monitoring

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13881

Parameter | Name:
C13881 | Reaction time delay

Data type: UNSIGNED_16
Index: $10694_d = 29C6_h$

If the "DATA_EXCHANGE" status is exited, the response parameterised in C13880 is activated after the time set here .
- The value = 65535 in this code deactivates monitoring.
- A change in the monitoring mode becomes effective immediately.

Setting range (min. value | unit | max. value)			Lenze setting
0	ms	65535	**0 ms**

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13885

Parameter | Name:
C13885 | Clear process data

Data type: UNSIGNED_8
Index: $10690_d = 29C2_h$

This code is used to set the process data that are to be processed by the IO device in order to maintain internal communication when the PROFINET has left the DATA_EXCHANGE status.

Selection list (Lenze setting printed in bold)		Information
0	Use of most recent master PDOs	The last data sent by the IO controller are used.
1	**PDOs are set to the value'0'**	The contents of the process data are set to the value "0".

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13887

Parameter | Name:
C13887 | Suppress signalling diag. mess. upon

Data type: BITFIELD_8
Index: $10688_d = 29C0_h$

This code serves to inhibit the transmission of alarm messages to the IO controller. By this, errors of a specific type can be systematically suppressed. All errors are furthermore entered in the logbook.

- A change will only become effective immediately if no error number with the error type selected here is pending in **C00165**.

Value is bit-coded:		Information
Bit 0	Fault	
Bit 1	Trouble	
Bit 2	Quick stop by trouble	
Bit 3	Warning locked	
Bit 4	Warning	
Bit 5	Reserved	
Bit 6	Reserved	
Bit 7	Reserved	

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13899

Parameter | Name:
C13899 | Station name

Data type: VISIBLE_STRING
Index: $10676_d = 29B4_h$

The name with a max. length of 240 characters is distributed to the subindices. The name can be entered starting with subindex 1. The following unused subindices are not relevant.

- The station name must be assigned in accordance with the PROFINET specification. In the standard setting a deleted name is displayed. The name is also deleted if the "Reset to factory defaults" command is executed by an IO supervisor or an IO controller.
- A change of the station name will only become effective by switching the mains of the controller.

▸ Setting the station name (📖 36)

Subcodes	Lenze setting	Information
C13899/1		1st ... 30th character
C13899/2		31st ... 60th character
C13899/3		61st ... 90th character
C13899/4		91st ... 120th character
C13899/5		121st ... 150th character
C13899/6		151st ... 180th character
C13899/7		181st ... 210th character
C13899/8		211th ... 240th character

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13900

Parameter | Name:
C13900 | Firmware product type

Data type: VISIBLE_STRING
Index: $10675_d = 29B3_h$

The code contains a string with a length of 8 bytes. The identification code "E84DFYER" is displayed.

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13901

Parameter | Name:
C13901 | Firmware compilation date

Data type: VISIBLE_STRING
Index: $10674_d = 29B2_h$

The code contains a string with a length of 20 bytes. The software creation date ("MMM DD YYYY") and time ("hh:mm:ss") are displayed (e.g. "Mar 21 2005 12:31:21").

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13902

Parameter | Name:
C13902 | Firmware version

Data type: VISIBLE_STRING
Index: $10673_d = 29B1_h$

The code contains a string with a length of 11 bytes. The identification code is displayed (e.g. "01.00.00.00").

☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13910

Parameter | Name:
C13910 | I&M1 System designation

Data type: VISIBLE_STRING
Index: $10665_d = 29A9_h$

Input/output of the I&M1 plant identification code
- The Lenze setting shows an empty string.

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13911

Parameter | Name:
C13911 | I&M1 Installation site

Data type: VISIBLE_STRING
Index: $10664_d = 29A8_h$

Input/output of the I&M1 location identification code
- The Lenze setting shows an empty string.

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13912

Parameter | Name:
C13912 | I&M2 Installation date

Data type: VISIBLE_STRING
Index: $10663_d = 29A7_h$

Input/output of the I&M2 date of installation
- The Lenze setting shows an empty string.

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13913

Parameter | Name:
C13913 | I&M3 additional information

Data type: VISIBLE_STRING
Index: $10662_d = 29A6_h$

Input/output if the I&M3 additional information
- The Lenze setting shows an empty string.

Subcodes	Lenze setting	Information
C13913/1		I&M3 additional information
C13913/2		I&M3 additional information

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

C13914

Parameter | Name:
C13914 | I&M4 signature code

Data type: OCTET_STRING
Index: $10661_d = 29A5_h$

Input/output of the I&M4 signature

Setting range (min. value | unit | max. value)		

Subcodes	Lenze setting	Information
C13914/1	00000000000000000000000000000000 00000000000000000000000000	I&M4 signature
C13914/2	00000000000000000000000000000000 00000000000000000000000000	I&M4 signature

☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT

13.2 Table of attributes

The table of attributes contains information which is required for communicating with the controller via parameters.

How to read the table of attributes:

Column		Meaning	Entry	
Code		Parameter name	Cxxxxx	
Name		Parameter short text (display text)	*Text*	
Index	dec	Index by which the parameter is addressed. The subindex for array variables corresponds to the Lenze subcode number.	24575 - Lenze code number	Only required for access via bus system.
	hex		$5FFF_h$ - Lenze code number	
Data	DS	Data structure	E	Single variable (only one parameter element)
			A	Array variable (several parameter elements)
	DA	Number of array elements (subcodes)	*Number*	
	DT	Data type	BITFIELD_8	1 byte, bit-coded
			BITFIELD_16	2 bytes, bit-coded
			BITFIELD_32	4 bytes, bit-coded
			INTEGER_8	1 byte with sign
			INTEGER_16	2 bytes with sign
			INTEGER_32	4 bytes with sign
			UNSIGNED_8	1 byte without sign
			UNSIGNED_16	2 bytes without sign
			UNSIGNED_32	4 bytes without sign
			VISIBLE_STRING	ASCII string
			OCTET_STRING	
	Factor	Factor for data transmission via a bus system, depending on the number of decimal positions	*Factor*	1 = no decimal positions 10 = 1 decimal position 100 = 2 decimal positions 1000 = 3 decimal positions
Access	R	Read access	☑ Reading permitted	
	W	Write access	☑ Writing permitted	
	CINH	Controller inhibit required	☑ Writing is only possible when the controller is inhibited	

Table of attributes

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	Data type	Factor	R	W	CINH
C13000	IP address	11575	2D37	E	1	UNSIGNED_32	1	☑	☑	
C13001	Subnetwork mask	11574	2D36	E	1	UNSIGNED_32	1	☑	☑	
C13002	Gateway address	11573	2D35	E	1	UNSIGNED_32	1	☑	☑	
C13003	Physical address	11572	2D34	A	3	OCTET_STRING		☑		
C13010	Active IP address	11565	2D2D	A	4	UNSIGNED_8	1	☑		
C13011	Active subnetwork mask	11564	2D2C	A	4	UNSIGNED_8	1	☑		
C13012	Active IP address	11563	2D2B	A	4	UNSIGNED_8	1	☑		
C13850	All words to master	10725	29E5	A	16	UNSIGNED_16	1	☑		
C13851	All words from master	10724	29E4	A	16	UNSIGNED_16	1	☑		
C13852	All words to standard device	10723	29E3	A	16	UNSIGNED_16	1	☑		
C13853	All words from standard device	10722	29E2	A	16	UNSIGNED_16	1	☑		
C13860	Settings	10715	29DB	A	4	UNSIGNED_8	1	☑		
C13861	Bus status	10714	29DA	E	1	BITFIELD_16		☑		
C13862	Bus counter	10713	29D9	A	3	UNSIGNED_32	1	☑		
C13864	Active station name	10711	29D7	A	8	VISIBLE_STRING		☑		
C13867	Display: Most recent diagnostic data	10708	29D4	E	1	OCTET_STRING		☑		
C13877	Bus error(1)	10698	29CA	E	1	UNSIGNED_16	1	☑		
C13878	Bus error(2)	10697	29C9	E	1	BITFIELD_16		☑		
C13880	Reaction on communication failure	10695	29C7	A	1	UNSIGNED_8	1	☑	☑	
C13881	Reaction time delay	10694	29C6	E	1	UNSIGNED_16	1	☑	☑	
C13885	Clear process data	10690	29C2	E	1	UNSIGNED_8	1	☑	☑	
C13887	Suppress signalling diag. mess. upon	10688	29C0	E	1	BITFIELD_8		☑	☑	
C13899	Station name	10676	29B4	A	8	VISIBLE_STRING		☑	☑	
C13900	Firmware product type	10675	29B3	E	1	VISIBLE_STRING		☑		
C13901	Firmware compilation date	10674	29B2	E	1	VISIBLE_STRING		☑		
C13902	Firmware version	10673	29B1	E	1	VISIBLE_STRING		☑		
C13910	I&M1 system designation	10665	29A9	E	1	VISIBLE_STRING		☑	☑	
C13911	I&M1 installation site	10664	29A8	E	1	VISIBLE_STRING		☑	☑	
C13912	I&M2 installation date	10663	29A7	E	1	VISIBLE_STRING		☑	☑	
C13913	I&M3 additional information	10662	29A6	A	2	VISIBLE_STRING		☑	☑	
C13914	I&M4 signature code	10661	29A5	A	2	OCTET_STRING		☑	☑	

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