Accessories

PROFIBUS®

E84AYCPM

Inverter Drives 8400

Communication Manual EN

13422193

Lenze

Contents

Contents

Contents

1 About this documentation

This documentation exclusively describes the E84AYCPM communication module (PROFIBUS).

Note!

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

The hardware manual contains safety instructions which must be observed!

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

Typical applications are explained with the help of examples.

The theoretical connections are only explained in so far as they are necessary for comprehending the function of the communication module.

This documentation does not describe the software of other manufacturers. No responsibility is taken for corresponding information given in this documentation. Information on how to use the software can be obtained from the documents of the control system (master).

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

Tip!

Detailed information about PROFIBUS can be found on the website of the PROFIBUS & PROFINET user organisation:

www.profibus.com

Target group

This documentation is intended for all persons who plan, install, commission and maintain the networking and remote servicing of a machine.

Tip!

Current documentation and software updates with regard to Lenze products can be found in the download area at:

www.Lenze.com

Validity information

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

Extension module	Type designation	From hardware version	From software version
PROFIBUS communication module	E84AYCPM	VA	01.00

Screenshots/application examples

All screenshots in this documentation are application examples. Depending on the firmware version of the communication module and the software version of the Engineering tools installed (»Engineer«, »STEP7«), the screenshots in this documentation may differ from the actual screen display.

1.1 Document history

Version			Description
1.0	11/2007	TD17	First edition
2.0	11/2008	TD17	General revision
3.0	02/2010	TD17	• Update of chapter structure • General revision
4.0	11/2010	TD17	General revision
5.0	11/2011	TD17	• New layout • New: Going online with »Engineer« via TCI (📖 35) • General corrections

1.2 Conventions used

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

Type of information	Writing	Examples/notes
Numbers		
Decimal separator	Point	The decimal point is always used. Example: 1234.56
Hexadecimal	0x[0 ... 9, A ... F]	Example: 0x60F4
Binary • Nibble	In inverted commas Point	Example: '100' Example: '0110.0100'
Text		
Version information	Text colour blue	All pieces of information that only apply to or from a specific software version of the inverter are highlighted accordingly in this documentation. Example: This function extension is available from software version V3.0!
Program name	» «	The Lenze PC software »Engineer«...
Window	*italics*	The *message window*... / The *Options* dialog box ...
Variable name		Setting *bEnable* to TRUE...
Control element	**Bold**	The **OK** button ... / The **Copy** command ... / The Properties tab ... / The **Name** input field ...
Sequence of menu commands		If several successive commands are required for executing a function, the individual commands are separated from each other by an arrow: Select the command **File → Open** to...
Hyperlink	underlined	Optically highlighted reference to another topic. Can be activated with a mouse-click in this online documentation.
Symbols		
Page reference	(📖 6)	Optically highlighted reference to another page. Can be activated with a mouse-click in this online documentation.
Step-by-step instructions		Step-by-step instructions are indicated by a pictograph.

1.3 Terminology used

Term	Meaning
Inverter	Lenze inverter of the "Inverter Drives 8400" product series
Standard device	
Code	Parameters which serve to parameterise or monitor the inverter. This term is usually called "index".
Subcode	If a code contains several parameters, these are stored in subcodes. This manual uses a slash "/" as a separator between code and subcode (e.g. "C118/3"). This term is usually called "subindex".
GSD / GSE	Device data base file (device description for PROFIBUS stations)
HW	Hardware
Lenze setting	Settings with which the device is preconfigured ex works.
Basic setting	
	PROFIBUS® (Process Field Bus) is a widely-used fieldbus system for the automation of machines and production plants. PROFIBUS® is a registered trademark and patented technology licensed by the PROFIBUS & PROFINET International (PI) user organisation.
PDO	Process data object
PLC	Programmable Logic Controller (German designation: SPS - Speicherprogrammierbare Steuerung)
»STEP7«	Siemens software for programming and configuring PROFIBUS Siemens control systems
SW	Software
TCI	Tool Calling Interface

1.4 Notes used

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

Safety instructions

Structure of the safety instructions:

Danger!

(characterises the type and severity of danger)

Note

(describes the danger and informs 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 property damage if the corresponding measures are not taken.

Application notes

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

2 Safety instructions

Note!

Always observe the specified safety measures to avoid severe injury to persons and damage to property!

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

2.1 General safety and application instructions

Danger!

If you disregard the following basic safety measures, this can cause severe injury to persons and damage to material assets.

Lenze drive and automation components ...

- must only be used as directed.
  ▸ Application as directed (📖 13)
- must never be commissioned in the event of visible damage.
- must never be technically modified.
- must never be commissioned before they have been completely mounted.
- must never be operated without the covers required.
- can - depending on their degree of protection - have live, moving or rotating parts during and after operation. Surfaces can be hot.

For Lenze drive components ...

- use only the accessories approved.
- use only original spare parts from the manufacturer.

Observe all specifications given in the attached and associated documentation.

- This is the precondition for safe and trouble-free operation and for obtaining the product features specified.
  ▸ Features (📖 14)
- The procedural notes and circuit details described in this document are only proposals. It is up to the user to check whether they can be adapted to the particular applications. Lenze does not take any responsibility for the suitability of the procedures and circuit proposals described.

Only qualified personnel may work with and on Lenze drive and automation components. According to IEC 60364 and CENELEC HD 384, these are persons ...

- who are familiar with the installation, assembly, commissioning and operation of the product.
- who have the corresponding qualifications for their work.
- who know all regulations for the prevention of accidents, directives and laws applicable on site and are able to apply them.

2.2 Device- and application-specific safety instructions

- During operation, the communication module must be firmly connected to the standard device.
- Only use cables corresponding to the given specifications.
  ▸ Bus cable specification (📖 28)

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

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

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, protection against accidental contact is not ensured without implementing external measures.
▸ Protective insulation (📖 16)

Device protection

The communication module contains electronic components which may be damaged or destroyed by electrostatic discharge.
▸ Installation (📖 21)

3 Product description

3.1 Application as directed

The communication module ...

- is an accessory module for use in conjunction with the following Lenze standard devices:

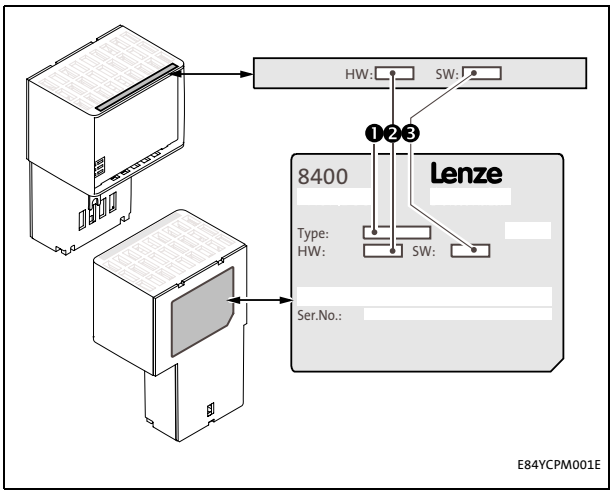
Product series	Type designation	From software version
Inverter Drives 8400 StateLine	E84AVSCxxxxx	01.00
Inverter Drives 8400 HighLine	E84AVHCxxxxx	01.00
Inverter Drives 8400 TopLine	E84AVTCxxxxx	01.00

- is a device intended for use in industrial power systems.
- is only to be operated under the operating conditions specified in this documentation.
- may only be used in PROFIBUS networks.

Any other use shall be deemed inappropriate!

3.2 Identification

The type designation as well as the hardware and software version 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
PM	PROFIBUS
V/S	V: coated version S: standard version

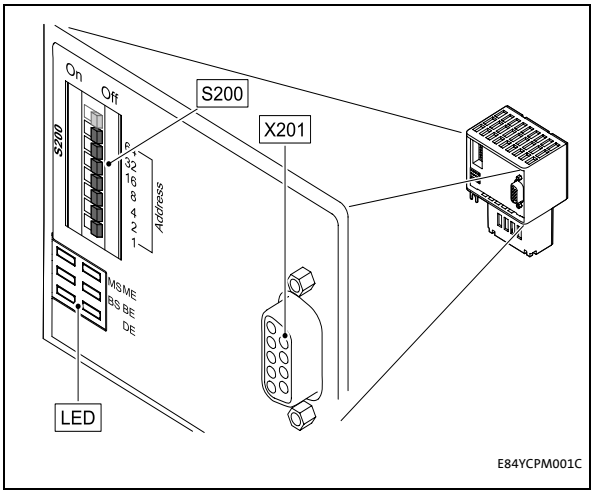
2 Hardware version (HW)

3 Software version (SW)

3.3 Features

- Interface module for the PROFIBUS communication system for connection to the expansion slots of the Inverter Drives 8400
- Support of parameter data channels DRIVECOM (DP-V0) and PROFIDrive (DP-V1)
- A maximum of 16 process data words per direction can be exchanged.
- The communication module is supplied with voltage via the standard device.
- Bus coupling via remote bus according to the RS485 standard
- Automatic detection of the baud rate (9.6 kbps to 12 Mbps)
- Setting of the station address is possible via DIP switch or code.
- Access to all Lenze parameters

3.4 Terminals and interfaces



[3-2] E84AYCPM communication module (PROFIBUS)

S200 DIP switches for setting the station address
- Setting the station address (📖 32)

X201 PROFIBUS connection
- 9-pin Sub-D socket
- Network topology (📖 25)
- PROFIBUS connection (📖 29)

MS 5 LED status displays for diagnostics
ME
- Module status displays (📖 85)

BS
- Fieldbus status displays (📖 86)

BE
DE

4 Technical data

"Inverter Drives 8400" hardware manual

Here you can find the **ambient conditions** and information on the **electromagnetic compatibility (EMC)** which also apply to the communication module.

4.1 General data and operating conditions

Area	Values
Order designation	• E84AYCPMV (coated version) • E84AYCPMS (standard version)
Communication profile	• PROFIBUS DP-V0 (DRIVECOM) • PROFIBUS DP-V1 (PROFIdrive)
Communication medium	RS485
Interface	9-pin Sub-D socket
Network topology	• Line (without repeater) • Tree/line (with repeater)
Bus device type	PROFIBUS slave
Number of slaves	• Max. 31 (without repeater) • Max. 125 (with repeater)
Max. cable length	1200 m (depending on the selected baud rate and the cable type used)
PNO identification number	0x0A89
Baud rate for cable type A (EN 50170)	9.6 kbps ... 12 Mbps (automatic detection)
Conformities, approvals	• CE • UL

4.2 Protective insulation

Danger!

Dangerous voltage

If the Inverter Drives 8400 are used on a phase earthed mains with a rated mains voltage ≥ 400 V, protection against accidental contact is not ensured without implementing external measures.

Possible consequences:

Death or severe injury

Protective measures:

If protection against accidental contact is required for the control terminals of the inverter and the terminals of the plugged-in device modules, ...

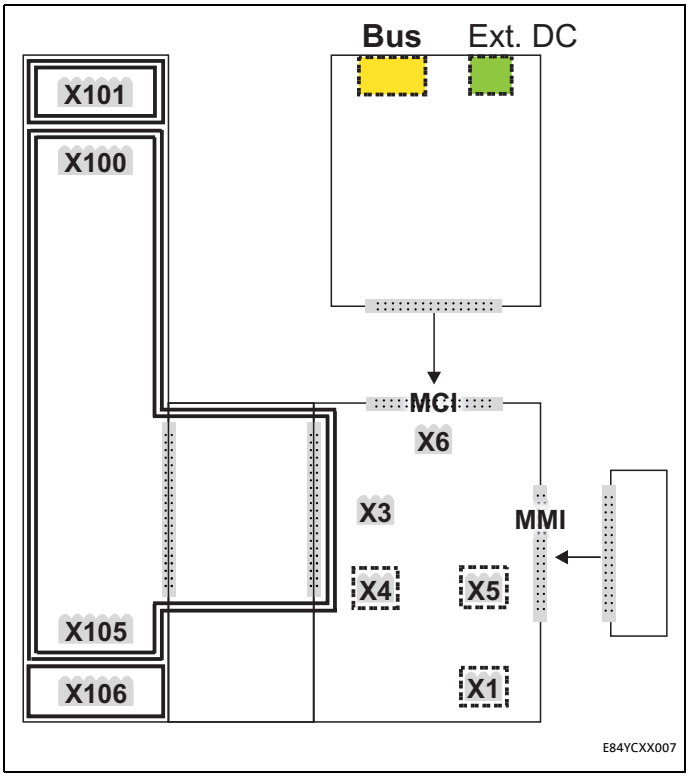
- a double isolating distance must be provided.
- the components to be connected must be provided with a second isolating distance.

Note!

The existing protective insulation in the Inverter Drives 8400 is implemented according to EN 61800-5-1.

The following illustration ...

- shows the arrangement of the terminal strips and the separate potential areas of the Inverter Drives 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 used between the bus terminal of the device module in the MCI slot and the mains terminal X100?

The separate potential area with the better protective insulation is decisive.

- The separate potential area of the device module's bus terminal is "functionally insulated".
- The separate potential area of the mains terminal has a "reinforced insulation".

Result: The insulation between the mains terminal X100 and the bus terminal is of the "reinforced insulation" type.

4.3 Protocol data

Area	Values
Process data words (PCD)	1 ... 16 words (16 bits/word)
Cyclic parameter data channel (DP-V0)	4 words
Acyclic parameter data channel (DP-V1)	Max. 240 bytes
PROFIBUS user data length	1 ... 16 words process data channel + 4 words parameter data channel

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 a PROFIBUS network depend on ...

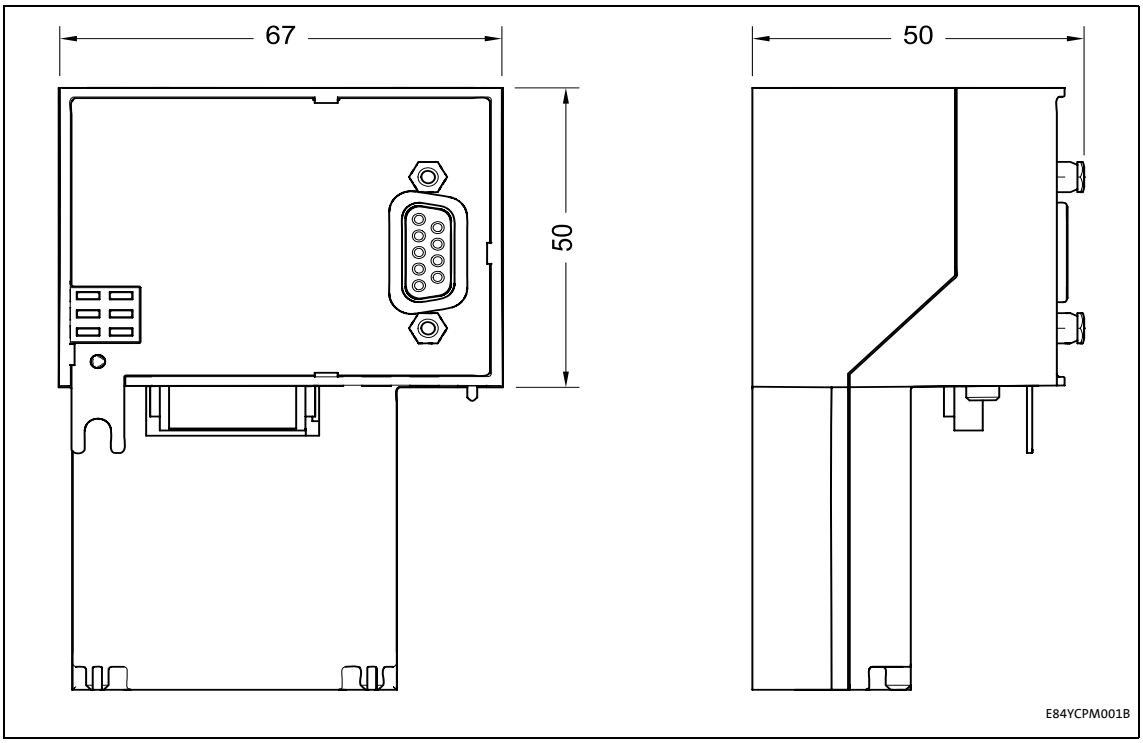
- the processing time in the inverter;
- the transmission delay time (baud rate / telegram length);
- the nesting depth of the network.

Processing time in the inverter

Data	Processing time	
Process data	Approx. 2 ms + 0 ... 1 ms + 1 ... x ms	update cycle processing time in the module application task runtime of the technology application used (tolerance)
Parameter data	Approx. 30 ms + 20 ms tolerance (typical) For some codes, the processing time may be longer (see software manual// »Engineer« online help for Inverter Drives 8400).	

There are no interdependencies between parameter data and process data.

4.5 Dimensions



[4-2] Dimensions

Dimensions in mm

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 defective.
- Communication via the fieldbus is not possible or faulty.

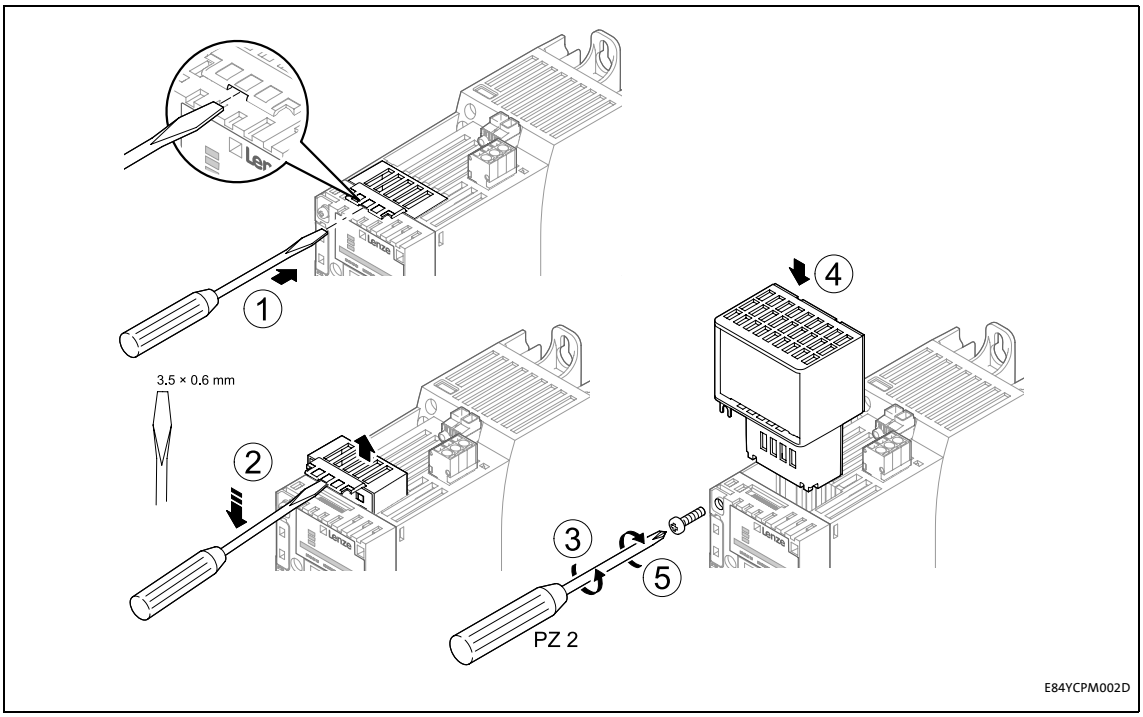
Protective measures

Discharge electrostatic charges before touching the module.

5.1 Mechanical installation

The communication module can be plugged into the MCI slot or unplugged while the inverter is switched on. When the module is plugged in, it is detected automatically, and a plausibility check regarding the function and version is carried out.

5.1.1 Mounting for 0.25 kW and 0.37 kW standard devices

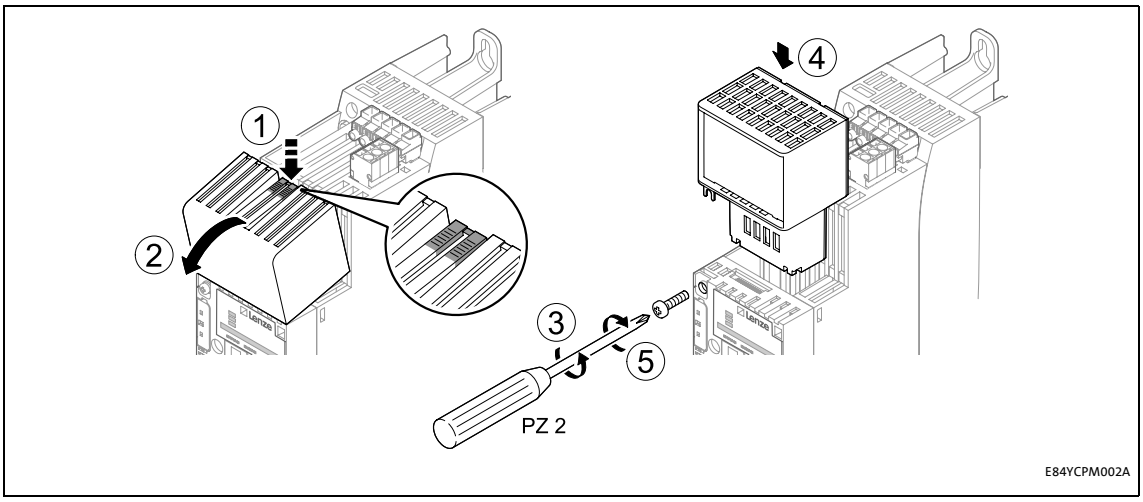


[5-1] Mounting for 0.25 kW and 0.37 kW standard devices

Mounting steps

1. Pry the cover out of the MCI slot using a screwdriver 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. Fasten the securing screw (5).

5.1.2 Mounting for standard devices of 0.55 kW and more

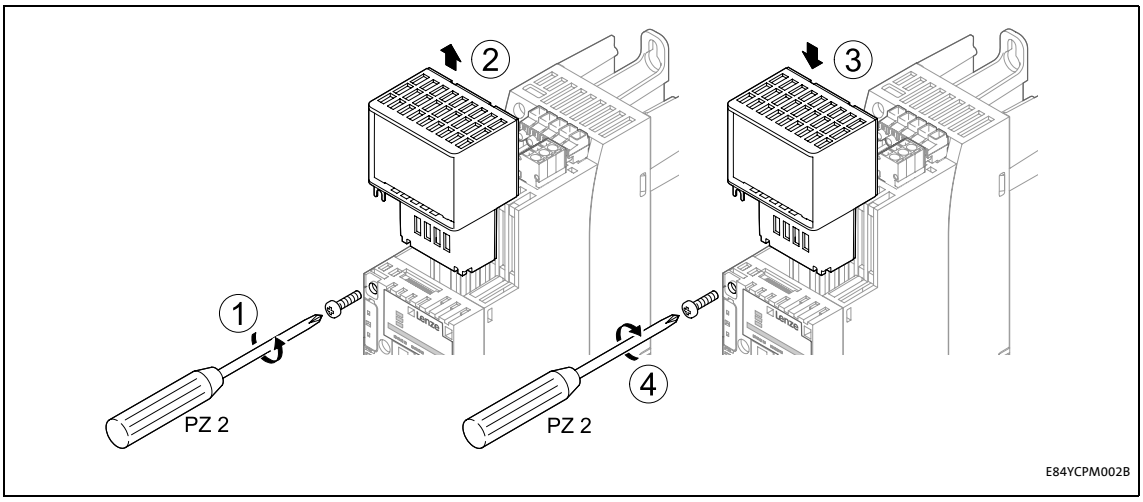


[5-2] Mounting for standard devices of 0.55 kW and more

Mounting steps

1. Slightly press on the area indicated in the illustration at the top of the cover for the standard device's MCI slot (1).
2. Tilt the cover forward 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. Fasten the securing screw (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. Remove 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. Fasten the securing screw (4).

5.2 Electrical installation

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

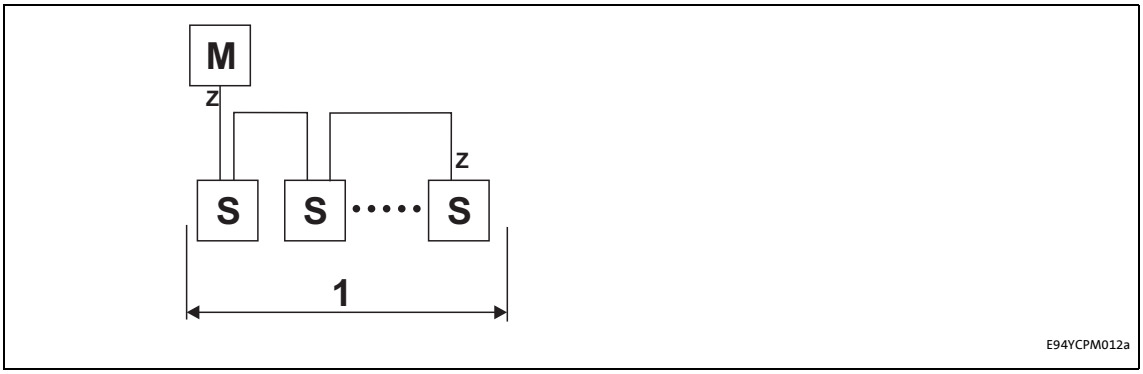
Observe the notes and wiring instructions given in the documentation.

5.2.1 Network topology

The following examples show two simple RS485 networks.

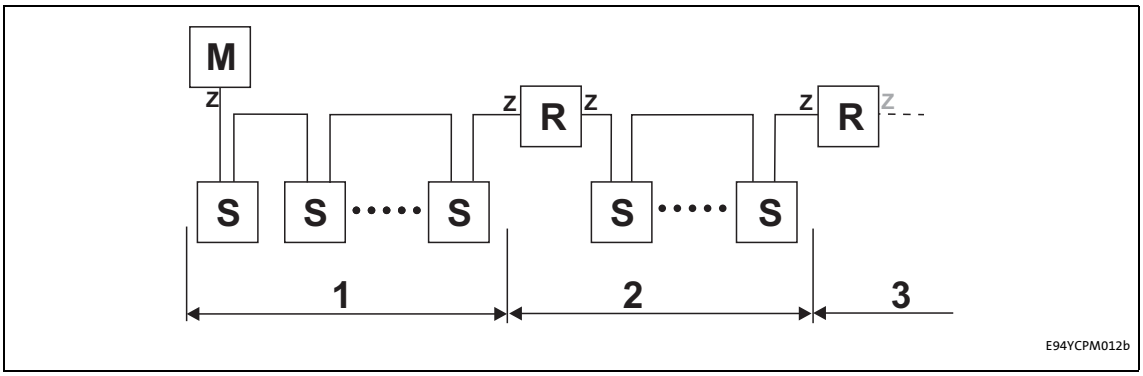
Every segment of the network must be terminated at both ends. The bus terminators of the PROFIBUS are marked with a "Z" in the below examples.

In the case of an RS485 network of only one segment, the PROFIBUS master (M) with the integrated bus terminator starts the segment while the bus terminating resistor in the connector of the last PROFIBUS station (S) must be activated.



[5-4] RS485 network with one segment

An RS485 network consisting of several segments contains repeaters (R) for coupling the segments. The repeaters are provided with integrated bus terminating resistors.



[5-5] RS485 network with a repeater

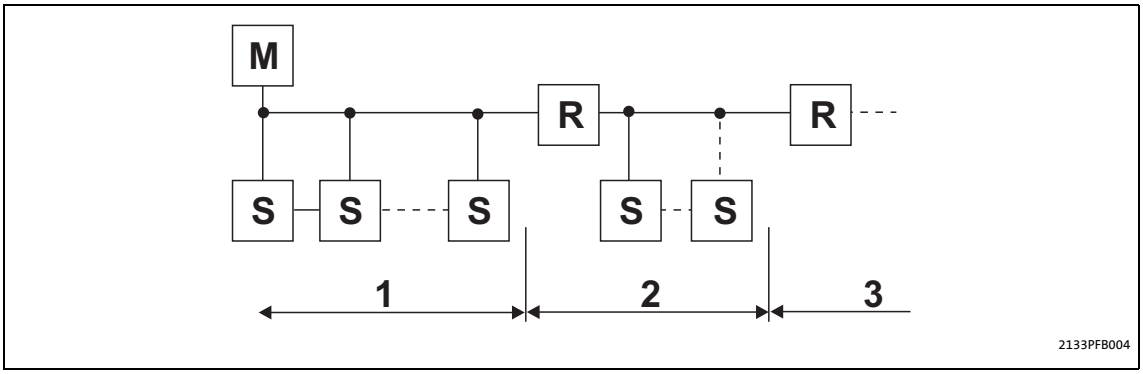
If no repeater is to be used at the end of the segment, the bus terminating resistor must be activated in the connector of the last device. The bus termination is supplied by the station itself.

Stop!

The bus terminator must always be supplied. Otherwise, the bus can get unstable.

▸ Activating the bus terminating resistor (📖 27)

Number of stations



[5-6] Number of stations

Segment	Master (M)	Slave (S)	Repeater (R)
1	1	31	-
	2	30	-
2	-	30	1
3	-	30	1

Tip!

Repeaters do not have a station address. When calculating the maximum number of stations, they reduce the number of stations by 1 on each side of the segment.

Repeaters can be used to build up line and tree topologies. The maximum total bus system expansion depends on ...

- the baud rate used;
- the number of repeaters used.

5.3 Activating the bus terminating resistor

The PROFIBUS must be terminated by a bus terminating resistor at the first and last physical bus station.

The bus terminating resistor in the bus connector of the bus cable is activated by means of a switch.

PROFIBUS cables with integrated bus terminating resistor are offered by several cable manufacturers.

Note!

If you want to disconnect individual bus stations, ensure that the bus terminators at the cable ends remain active.

Please observe that the bus termination is not active any longer if ...

- the bus connector has been disconnected;
- the voltage supply of the Inverter Drive 8400 has been switched off.

5.3.1 Bus cable specification

Note!

Only use cables which meet the listed specifications of the PROFIBUS user organisation.

Area	Values
Cable resistance	135 ... 165 Ω/km, (f = 3 ... 20 MHz)
Capacitance per unit length	≤ 30 nF/km
Loop resistance	< 110 Ω/km
Core diameter	> 0.64 mm
Core cross-section	> 0.34 mm^2
Cores	Twisted in pairs, insulated and shielded

Bus cable length

The length of the bus cable depends on the baud rate and cable type used. The data in the following table applies to PROFIBUS cables of "FC-Standard Cable" cable type .

Baud rate	Length
9.6 ... 93.75 kbps	1200 m
187.5 kbps	1000 m
500 kbps	400 m
1500 kbps	200 m
3000 ... 12000 kbps	100 m

Note!

The baud rate depending of the data volume, cycle time and number of stations should only be selected as high as required for the application.

Tip!

We recommend taking the use of optical fibres into consideration for high baud rates.

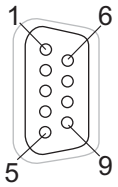
Advantages of optical fibres:

- External electromagnetic interferences have no effect on the transmission path.
- Bus lengths of several kilometres are also possible with higher baud rates.
- The bus length is ...
  - independent of the baud rate;
  - dependent on the optical fibre used.

5.3.2 PROFIBUS connection

The 9-pole Sub-D socket **X201** serves to connect the communication module to the bus system.

Assignment of the 9-pin Sub-D socket X201

View	Pin	Assignment	Description
	1	Not assigned	-
	2	Not assigned	-
	3	RxD/TxD-P	Data line B (received data/transmitted data, plus)
	4	RTS	Request To Send (received data/transmitted data, no differential signal)
	5	M5V2	Data ground (ground to 5 V)
	6	P5V2	5 V DC / 30 mA (bus termination)
	7	Not assigned	-
	8	RxD/TxD-N	Data line A (received data/transmitted data, minus)
	9	Not assigned	-

6 Commissioning

During commissioning, plant-specific data such as motor parameters, operating parameters, responses, and parameters for fieldbus communication are defined for the inverter. Lenze devices use codes for this purpose.

The codes of the inverter and for communication are saved to the memory module in a non-volatile data set.

In addition, there are codes for diagnosing and monitoring the stations.

▸ Parameter reference (📖 95)

6.1 Before initial switch-on

Stop!

Before switching on the inverter for the first time, check ...

- the entire wiring for completeness, short circuit and earth fault.
- whether the bus system is terminated by means of a bus terminating resistor at the first and last physical bus station.
  ▸ Activating the bus terminating resistor (📖 27)

6.2 Configuration of the controller (master)

The controller (master) must be configured before communication with the communication module is possible.

Configuration for the controller (master) and the DP-V0 parameter data channel

For configuring the PROFIBUS you must read the device description file of the communication module into the master.

The device description file for the E84AYCPM communication module (PROFIBUS) can be found in the Download area at:

www.Lenze.com

The following language variants of the device description file can be used:

- LENZ0A89.GSD (source file, English)
- LENZ0A89.GSG (German)
- LENZ0A89.GSE (English)

Defining the user data length

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

The Inverter Drives 8400 support the configuration of a maximum of 16 process data words (max. 32 bytes). The optional activation of the cyclic parameter data channel additionally occupies 4 process data word (8 bytes).

The user data lengths for process input data and process output data are the same.

Description of the device data base file

Selection text	Parameter data with consistency	Process data		Assigned IO memory
		with consistency	without consistency	
DRIVECOM-PAR (cons) + PCD (**n**W cons)	Yes	**n** words	-	**4** + **n** words
PCD (**n**W cons)	-	**n** words	-	**n** words
PCD (**n**W)	-	-	**4** words	**4** words
n = 1 ... 16 process data words				

Example of selecting the device data base file

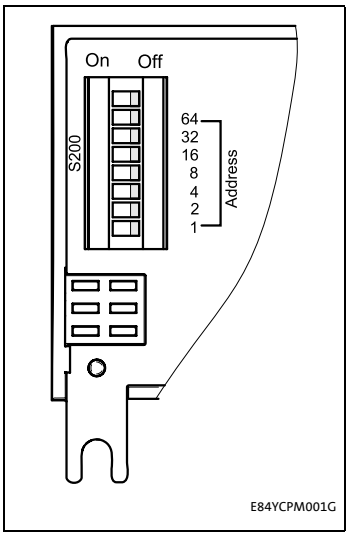
```
DRIVECOM-PAR (cons) + PCD (8W cons)
```

- "Drivecom-PAR (cons)" = DP-V0 parameter data channel (4 words)
- "PCD (8W cons)" = 8 process data words

Tip!

A detailed description of consistency is given in the chapter "Consistent parameter data" (📖 80).

6.3 Setting the station address



[6-1] DIP switch

The station address can be set via DIP switches **1 ... 64** or via the »Engineer« (code C13899).

The unlabelled DIP switch (topmost position) does not have any function.

Lenze setting: all switches in OFF position

The station addresses must differ from each other if several networked PROFIBUS stations are used.

The station address can be set via DIP switches **1 ... 64** or via the »Engineer« (code C13899).

	Setting the station address via ...	
	DIP switch	**C13899**
Condition	At least one switch **1 ... 64 = ON**	• Switches **1 ... 64 = OFF** • All switches **1 ... 64 = ON** (invalid value "127")

The housing labelling indicates the valencies of the individual DIP switches for setting the station address.

DIP switch	**64**	**32**	**16**	**8**	**4**	**2**	**1**
Switch position	OFF	OFF	**ON**	OFF	**ON**	**ON**	**ON**
Value	0	0	16	0	4	2	1
Station address	**= sum of the valencies = 16 + 4 + 2 + 1 = 23** ▶ DIP switch positions for setting the station address (📖 107)						

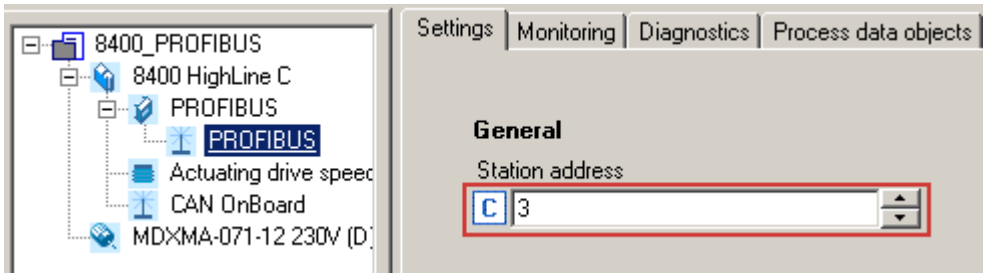
- Valid address range: 1 ... 126 (max. 126 slave stations)
- C13920: Display of the current address setting of the switches
- C13864: Display of the station address active on the PROFIBUS

Note!

Switch off the voltage supply of the communication module and then on again in order to activate changed settings.

Setting the station address via the »Engineer«

In the »Engineer«, the station address can be set via the **Settings** tab.



Impermissible addresses are displayed in red in the **Station address** (code C13899).

Save the changed settings with device command **C00002/11** (save all parameter sets).

6.4 Initial switch-on

Documentation for the standard device

Observe the safety instructions and residual hazards stated.

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 established, the externally supplied module operates independently of the power on/off state of the standard device.

Protection against uncontrolled restart

After a fault (e.g. short-time mains failure), the restart of a drive is not always wanted and - in some cases - even not allowed.

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

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

C00142 = 9 (Lenze setting)

- The inverter remains inhibited (even if the fault is no longer active).
- Bit 0 (inhibited at power-on) and bit 3 (inhibited at undervoltage) are set.
- The drive starts in a controlled mode by explicitly enabling the inverter: LOW-HIGH edge at digital input X4/RFR.

C00142 = 8 (enabled)

- To enable the device directly at power-on, bit 0 must be set to zero (FALSE).
- An uncontrolled restart of the drive is possible.

6.5 Going online with »Engineer« via TCI

Via Tool Calling Interfaces (TCI) you can connect to a TCI-capable integrated development environment and parameterise and diagnose your field devices without having to exit the integrated development environment.

You cannot set the TCI communication path directly in the »Engineer«. The selection is carried out by the »STEP7« Siemens software.

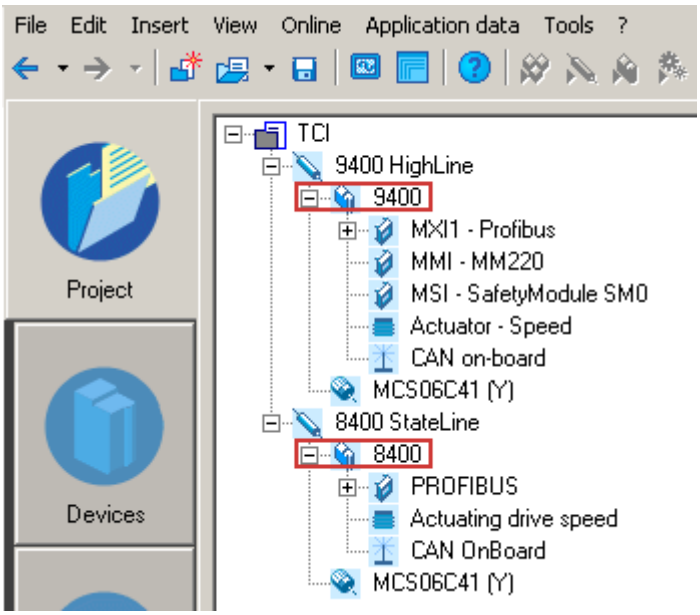
The TCI function requires a PN/DP-CPU. Information on the Siemens PLC types that are equipped with the TCI function is provided via the Siemens Support at:

http://support.automation.siemens.com

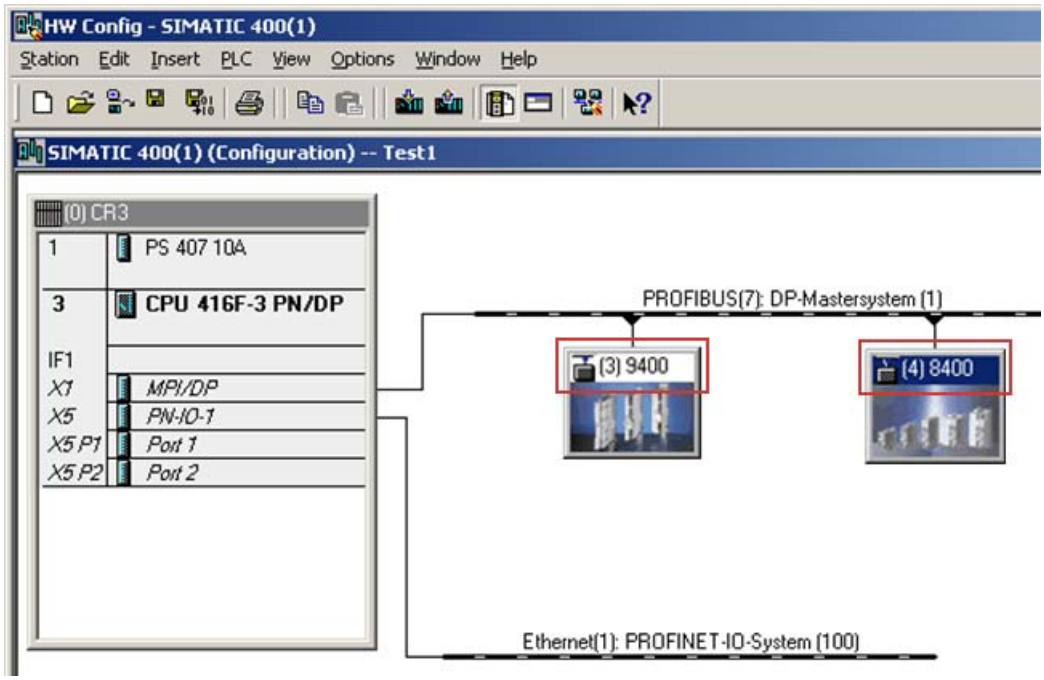
How to configure TCI communication:

1. Allocate names for the individual axes in the »Engineer« project.

   In our case, "9400" was allocated for 9400 HighLine, and "8400" for 8400 StateLine:



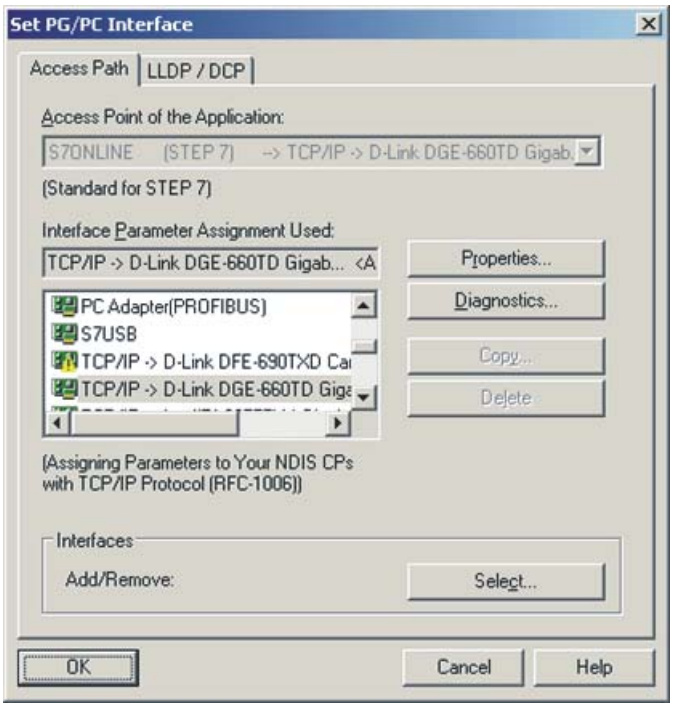
2. In »STEP7« in the »HW Konfig« ...
   - create the Lenze PROFIBUS stations with the corresponding station addresses and
   - create a PROFIBUS network.



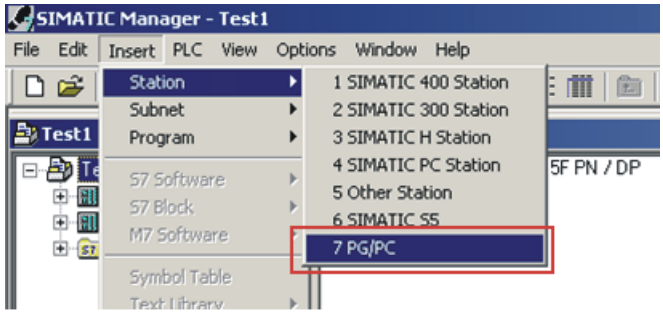
Here a Servo Drive 9400 (address 3) and an Inverter Drive 8400 (address 4) are operated on the PROFIBUS.

- The names of the PROFIBUS slaves in the »HW Konfig« must be identical to those of the corresponding Lenze axes in the »Engineer« (here "9400" and "8400").
- The selection of the process data configuration has no impact on TCI communication.

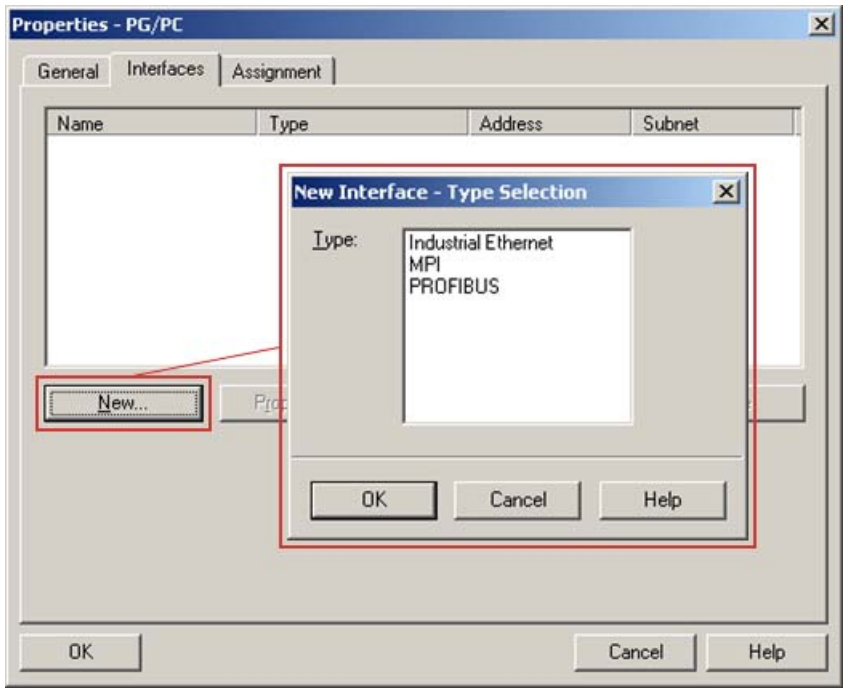
3. Establish an Ethernet connection to the PROFIBUS CPU.



4. Load the »STEP7« project to the CPU.
5. Use the menu command **Insert → Station → 7 PG/PC** to integrate a PG/PC station into the »STEP7« project.

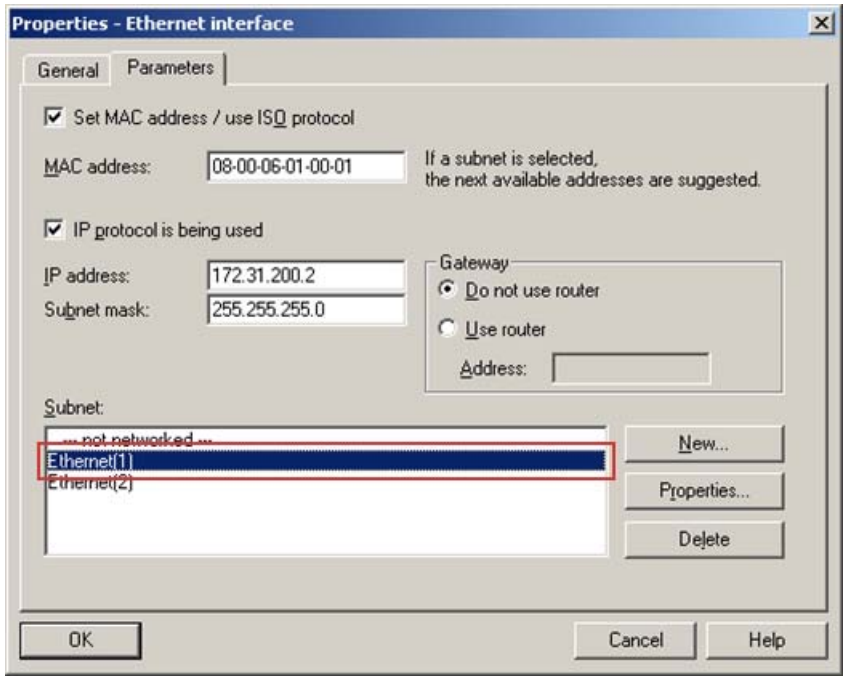


6. By double-clicking the PG/PC station inserted, open its "Properties" dialog.
7. Under the **Interfaces** tab, select a new Ethernet interface and confirm the selection with **OK**.



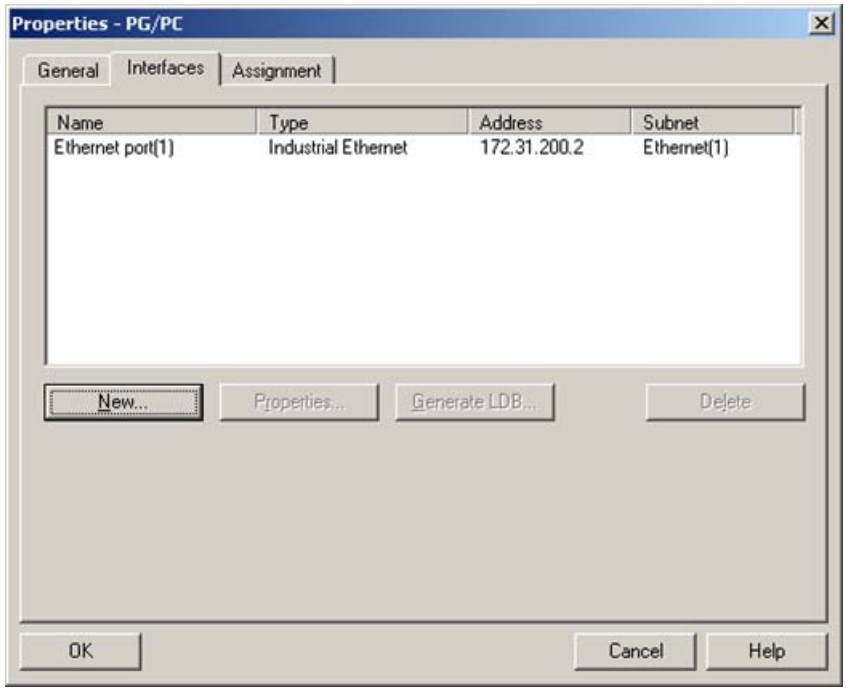
8. Select the Ethernet connection which you are using to go online with »STEP7« (the same Ethernet connection that has been configured in the »HW Konfig«).

   In our case this is the Ethernet(1) connection:

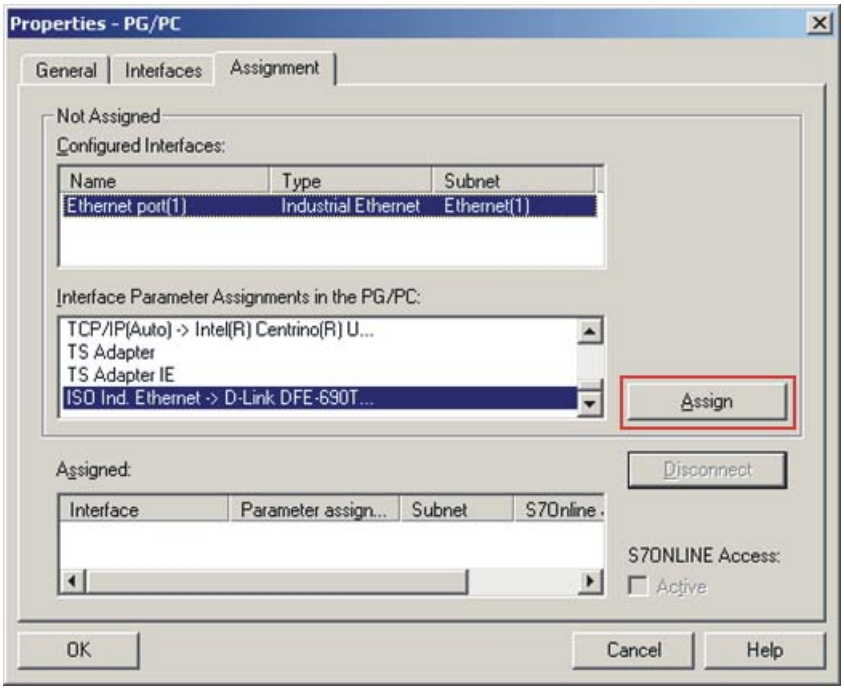


9. Confirm the selection with **OK**.

   The connection has been accepted.

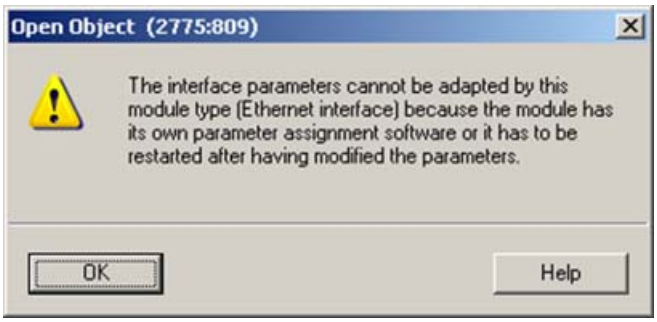


10. Select the actual PG/PC connection under the **Assignment** tab.

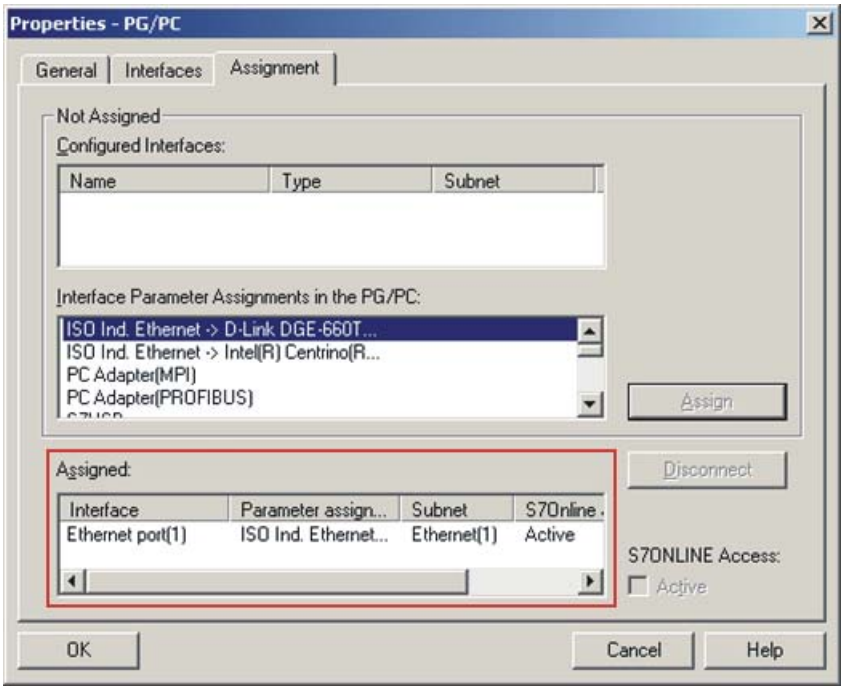


The connection highlighted is assigned by means of the **Assign** button.

11. Confirm the following message with **OK**.

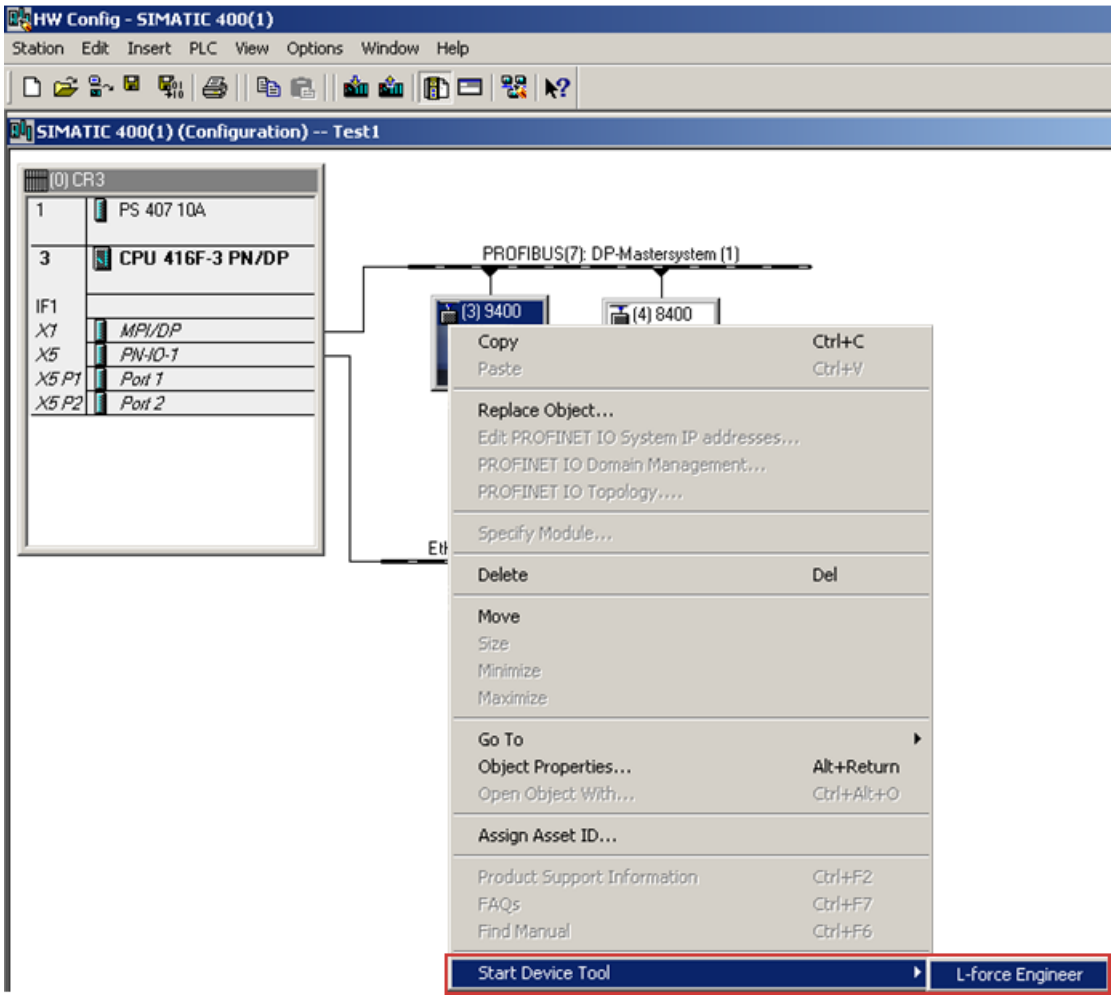


12. After the assignment, the connection appears in the "Assigned" display area. Close the dialog with **OK**.

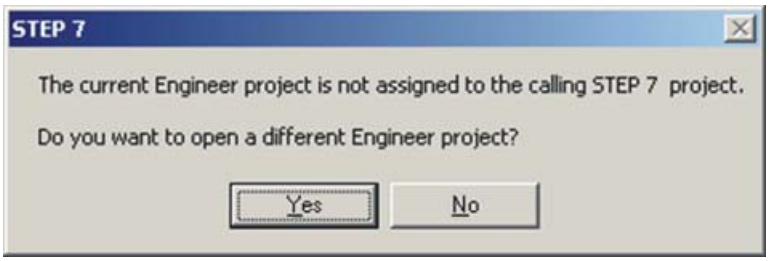


13. In the »STEP7« project, the PG/PC station is marked with a yellow arrow. (The connection selected is active.)

14. Start the transfer of the TCI communication parameters in the »HW Konfig« using the right mouse button and the menu command **Start Device Tool→ L-force Engineer**.



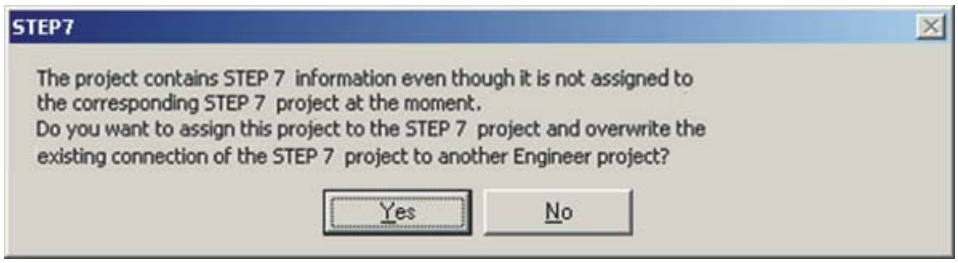
15. If the »Engineer« has already been started with the applicable project, the following message will appear:



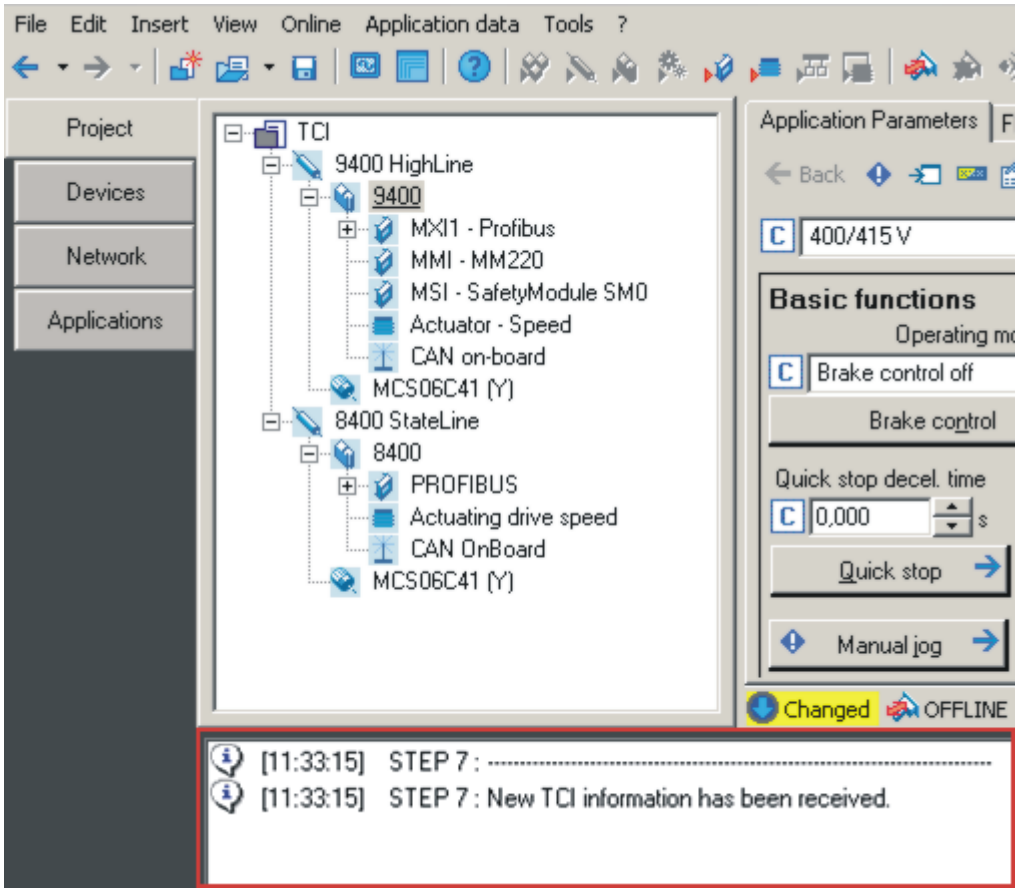
- The message says that the »Engineer« project is not set to a TCI communication path and provides information about whether this action is to be executed now.
- If you confirm the message with **Yes**, the applicable TCI communication parameter settings of the »STEP7« project are transferred to the »Engineer«.

If the »Engineer« has not already been started, it is started automatically now and you have to open the applicable project.

If the project selected has not been set to a TCI communication path yet, this can now be executed by clicking **Yes**:

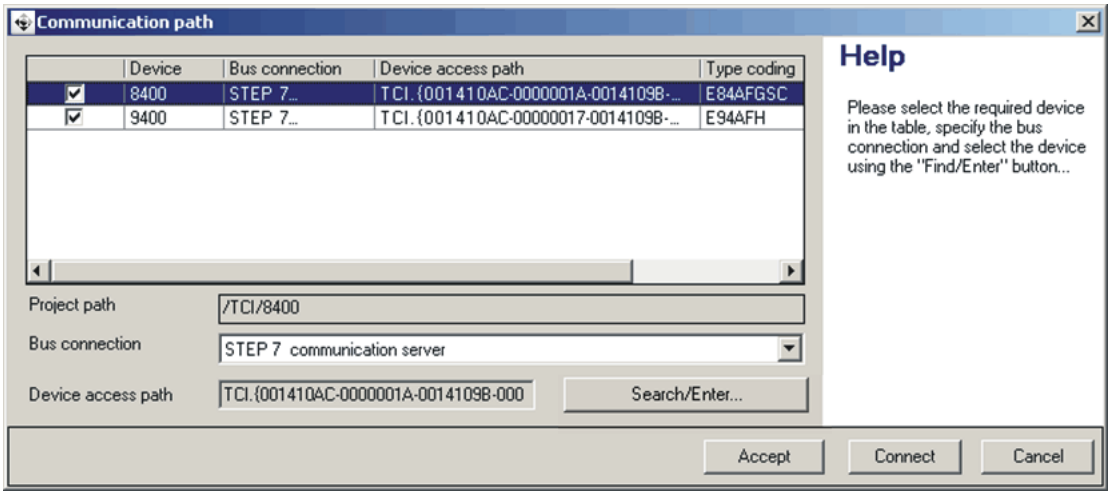


16. The transfer of the TCI communication parameters is documented in the »Engineer« message window.



Here the communication settings have been carried out successfully. The individual PROFIBUS addresses in the respective codes have been adapted to the »STEP7« project.

17. If you now call the "Go online" function of the »Engineer«, the TCI communication settings are displayed as follows:



- "STEP7 Communication Server" appears as bus connection.
- The device access path contains a very long string.
- Use the **Connect** button to establish an online connection.
- By means of the **Search/Enter** button, you can update the TCI communication parameters.

7 Data transfer

The PROFIBUS master and inverter communicate through the exchange of data telegrams via PROFIBUS. The user data area of the data telegram contains parameter data or process data. In the inverter, different communication channels are assigned to the parameter data and process data.

Communication channels

The process data channel serves to transfer process data.

- The process data serve to control the inverter.
- The controller (master) can directly access the process data. In the PLC, for instance, the data are directly saved to the I/O area.
- Process data are not saved in the inverter.
- Process data are transferred cyclically between the controller and the inverters (permanent exchange of current input / output data).
- Process data are, for instance, setpoints, actual values, control words and status words.
- The Inverter Drives 8400 can exchange a maximum of 16 process data word (16 bits/word) per direction.

Note!

Observe the direction of the information flow!

- Process input data (Rx data):
  - Process data from the inverter (slave) to the master
- Process output data (Tx data):
  - Process data from the master to the inverter (slave)

The parameter data channel serves to transfer parameter data.

- The parameter data channel provides access to all Lenze codes.
- In general, the parameter data transfer is not time-critical.
- Parameter data are, for instance, operating parameters, diagnostic information, and motor data.
- Parameter changes must be saved by means of code **C00002** of the Inverter Drive 8400.

8 Process data transfer

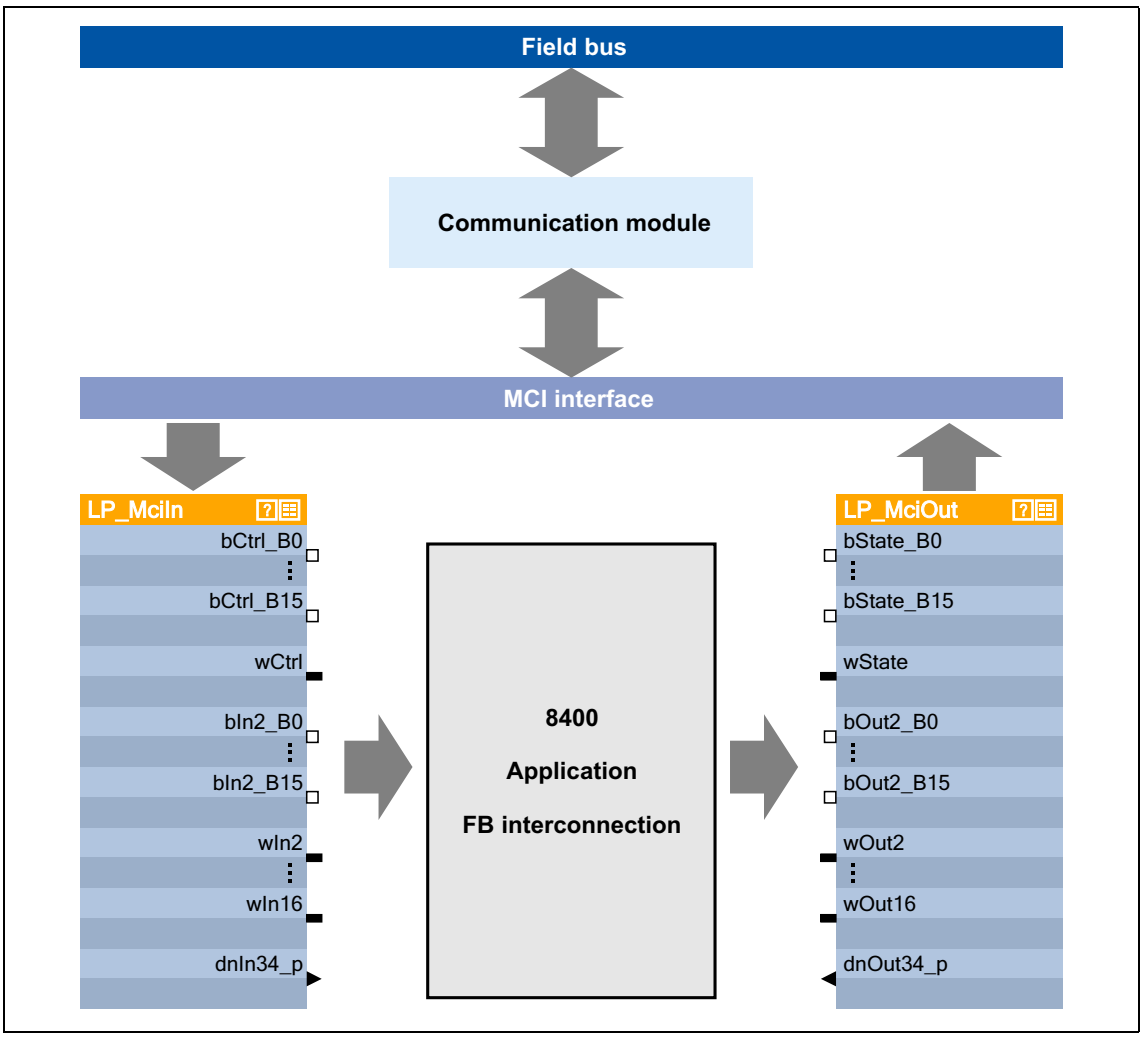
8.1 Access to process data / PDO mapping

Note!

PDO mapping and the objects required for this purpose are not supported in the software version 01.00 of the E84AYCPM communication module.

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

- A maximum of 16 words for each direction is exchanged.
- The process data are accessed via the **LP_MciIn** and **LP_MciOut** port blocks. These port blocks are also referred to as process data channels.
- The port/function block interconnection of the process data objects (PDO) takes place via the Lenze »Engineer«.



[8-1] External and internal data transfer between the bus system, inverter, and function block interconnection

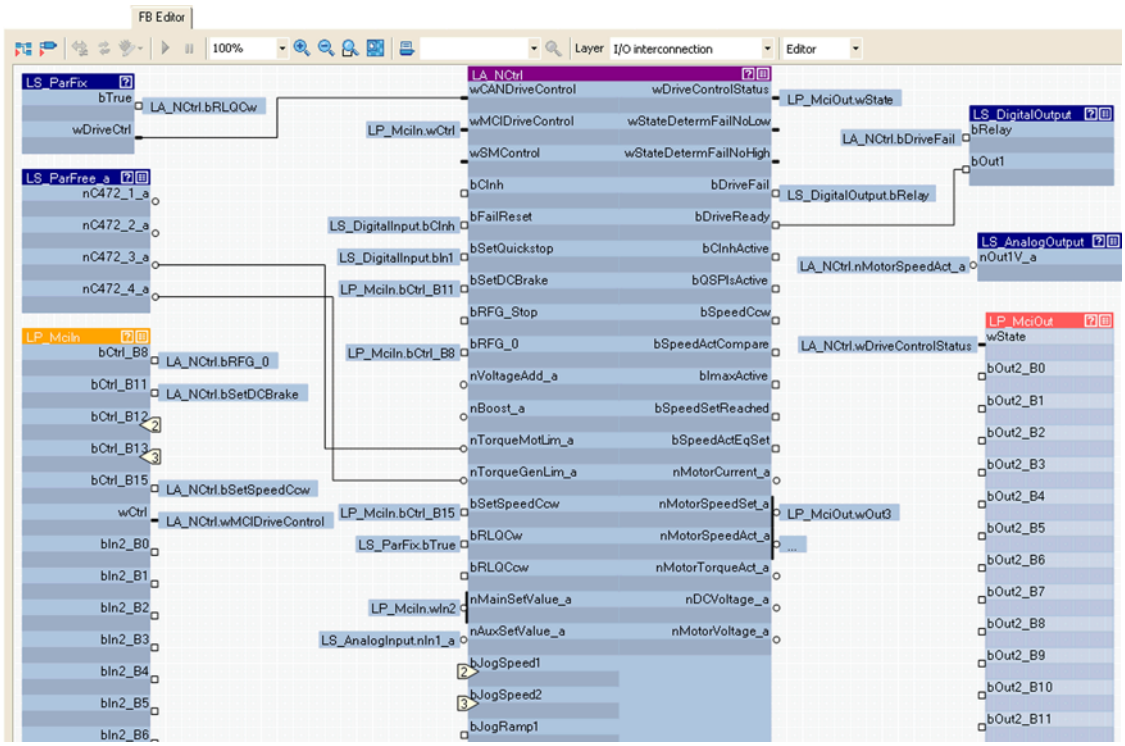
Software manual/ »Engineer« online help for Inverter Drives 8400

Here you'll find some detailed information about the port/function block interconnection in the »Engineer« and about port blocks.

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

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

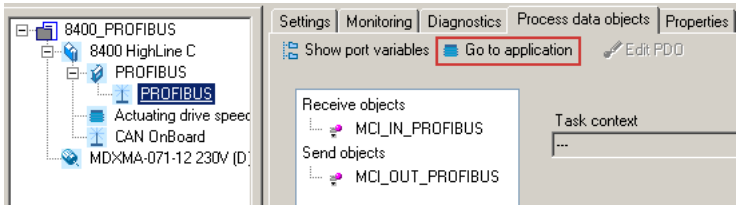
It is possible to display the port blocks "LP_MciIn" and "LP_MciOut" as well as the preconfigured interconnections in the »FB Editor« :



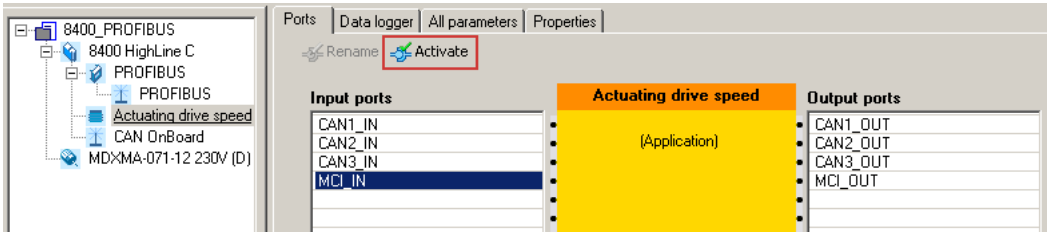
8.3 Free configuration of the port interconnection of process data objects (PDO)

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

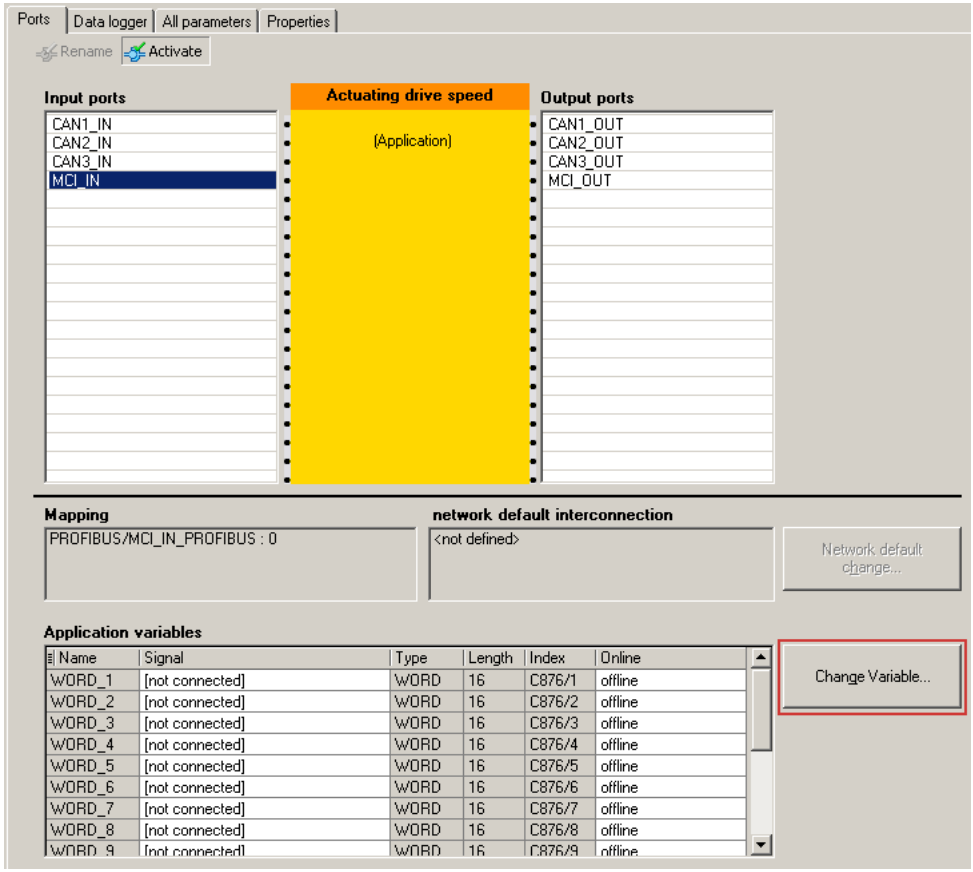
1. Go to the **Process data objects** tab and click **Go to application**.



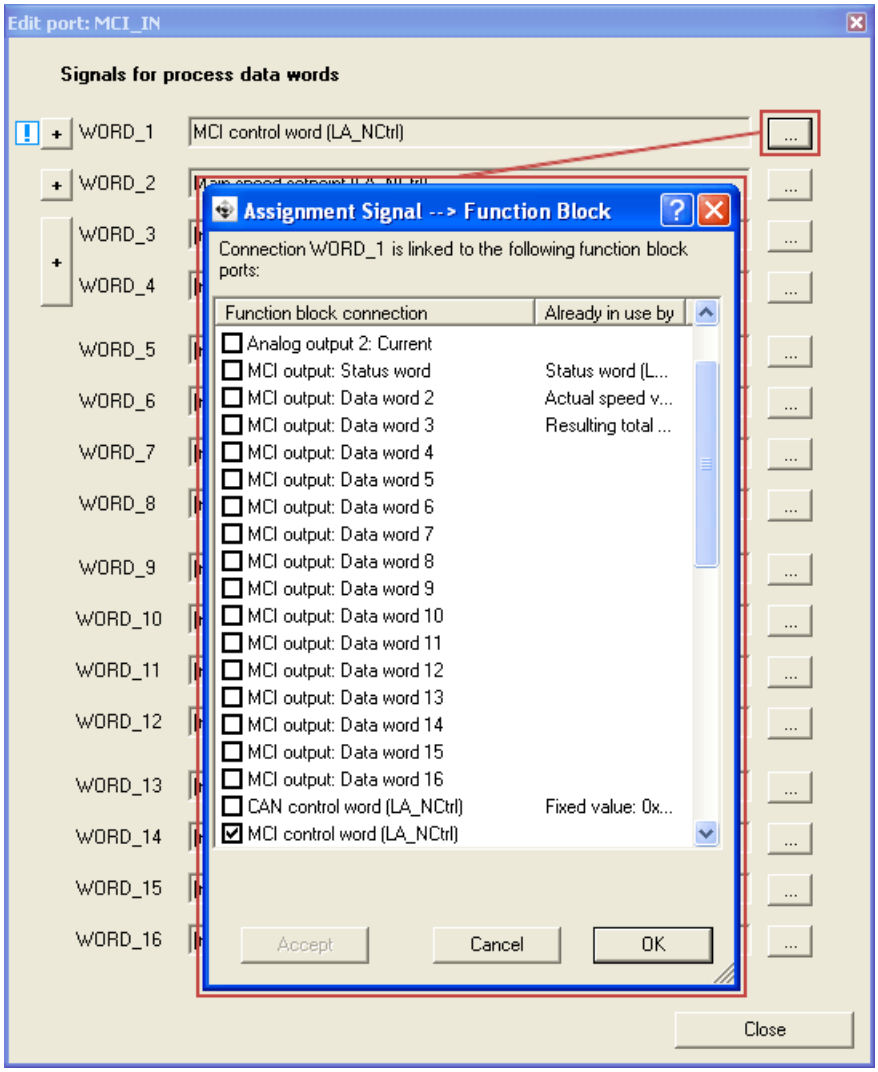
2. Go to the **Ports** tab and select the port block "MCI_IN" or "MCI_OUT" via mouse-click. Activate it by clicking **Activate**.



3. Click the **Edit port ...** button.

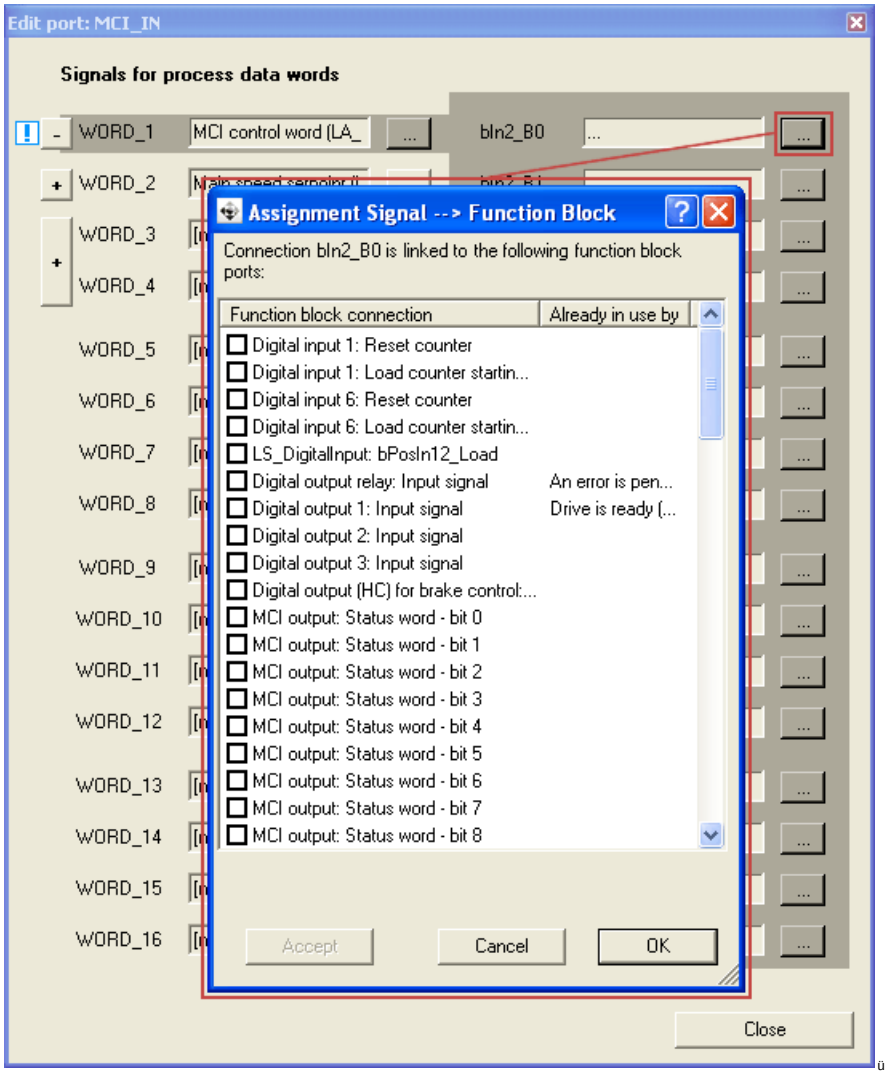


4. Via the ... button, you can assign signals to the process data words in the *Assignment Signal --> Function Block* dialog box.
   ➞ Select the signals and then confirm the selection with **OK**.



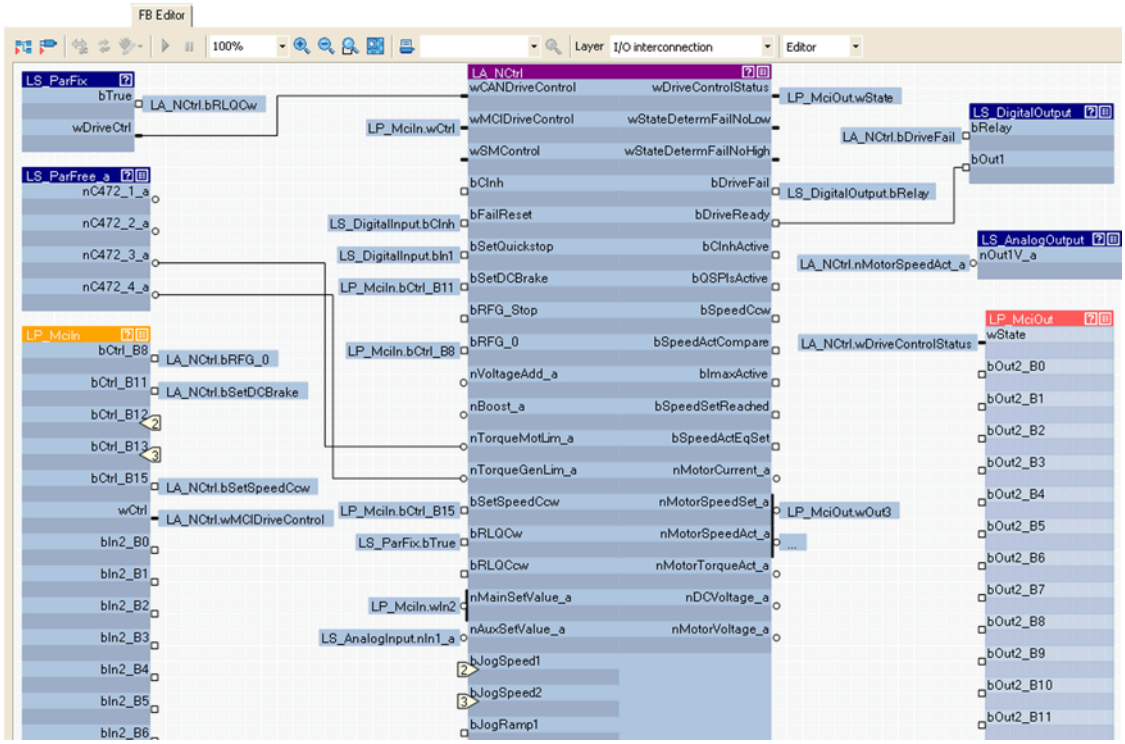
For the process data words WORD_1 and WORD_2, you can also assign signals to the individual control bits and status bits via the [+] and [...] buttons.

➞ Select the signals and then confirm the selection with **OK**.



Tip!

If the port blocks "LP_MciIn" and "LP_MciOut" are activated (see step 1), they are displayed in the »FB Editor«. Here you can also assign signals to the process data words.



9 Parameter data transfer

The E84AYCPM communication module supports the cyclic and acyclic transmission of parameter data:

- Cyclic DP-V0 parameter data are based on the DRIVECOM profile.
  If the DP-V0 parameter data channel is active, it additionally occupies 4 words of the input data and the output data.
- Acyclic DP-V1 parameter data are based on the PROFIdrive profile.

9.1 Addressing of the parameter data

The parameter data are addressed via codes which can be found in this documentation and in the corresponding documentation of your inverter.

▸ Parameter reference (📖 95)

Addressing of Lenze parameters

In the case of the DP-V0 parameter data channel, the parameters of a device are not addressed directly via Lenze code numbers, but via indices (bytes 3 + 4) and subindices (byte 2).

The conversion is made via an offset (24575 / 0x5FFF):

- PROFIBUS-DP $index_{dec}$ = 24575 - Lenze code number
- PROFIBUS-DP $index_{hex}$ = 0x5FFF - Lenze code $number_{hex}$

Example of C00105 (quick stop deceleration time):

- PROFIBUS-DP $index_{dec}$ = 24575 - 105 = 24470
- PROFIBUS-DP $index_{hex}$ = 0x5FFF - 0x69 = 0x5F96

The parameter values are entered into the user data (bytes 5 to 8) of the telegram.

9.2 DRIVECOM parameter data channel (DP-V0)

The DRIVECOM parameter data channel (DP-V0) ...

- enables parameter setting and diagnosing of the inverter.
- provides access to all Lenze parameters (codes).
- additionally occupies 4 words (16 bits/word) of the input and output data words in the master.
- is identical for both transmission directions.

9.2.1 Telegram structure (overview)

The telegram of the parameter data channel consists of a total of 8 bytes:

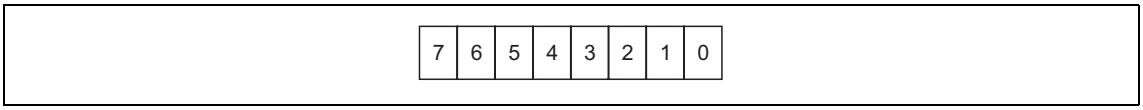
Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	Index High byte	Index Low byte	Data 4 / Error 4	Data 3 / Error 3	Data 2 / Error 2	Data 1 / Error 1

The individual bytes are described in detail in the following subchapters.

9.2.2 Byte 1: Service

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	Index High byte	Index Low byte	Data 4 / Error 4	Data 3 / Error 3	Data 2 / Error 2	Data 1 / Error 1

Request and response control for the parameter data channel



[9-1] Method of counting for bits 0 ... 7

Bit 0 ... 2: Request	
Read/write request from the master to the inverter	
000	No request
001	Read request ▸ Reading parameter data from the inverter (📖 54)
010	Write request (write data to the inverter) ▸ Writing parameter data to the inverter (📖 54)
100	Data transfer abort by the master ▸ Data transfer abort by the master (📖 55)

Bit 3
Reserved

Bit 4/5: Data length	
Data length ≤ 4 bytes in the telegram bytes 5 ... 8 (data 1 ... 4 / error 1 ... 4)	
00	1 byte
01	2 bytes
10	3 bytes
11	4 bytes

Bit 6: Handshake
Indicates a new request. • The state of this (toggle) bit is changed by the master for every new request. • The inverter copies the bit into its response telegram.

Bit 7: Status	
Status information from the inverter to the master when sending the request confirmation. This status bit informs the master whether the request has been carried out without errors.	
0	Request completed without errors.
1	Request not completed because of an error. • The set status bit indicates that the telegram is an "error telegram". The data of bytes 5 ... 8 (data/error) must be interpreted as an error message. ▸ Error codes (📖 58)

9.2.2.1 Reading parameter data from the inverter

General procedure:

1. Define the user data area of the inverter, i.e. define the location of the DP user data in the controller (observe manufacturer-specific information).
2. Enter the address of the required parameter in the "Index" and "Subindex" fields (DP output data).
3. Request in the service byte = read request.
   The handshake bit in the service byte must be changed (DP output data).
4. Check whether the handshake bit in the service byte is the same for the DP input data and the DP output data.
   - If the handshake bit is the same, the response has been received.
   - It is useful to implement a time monitoring tool.
5. Check whether the status bit in the service byte is set:
   - Status bit is not set: The "Data/Error" field contains the required Parameter value (data) (📖 57).
   - Status bit is set: The read request has not been executed correctly. The "Data/Error" field contains the Error codes (📖 58).

9.2.2.2 Writing parameter data to the inverter

General procedure:

1. Define the user data area of the inverter, i.e. define the location of the DP user data in the controller (observe manufacturer-specific information).
2. Enter the address of the required parameter in the "Index" and "Subindex" fields (DP output data).
3. Enter the parameter value in the "Data/Error" field.
4. Request in the service byte = write request.
   The handshake bit in the service byte must be changed (DP output data).
5. Check whether the handshake bit in the service byte is the same for the DP input data and the DP output data.
   - If the handshake bit is the same, the response has been received.
   - It is useful to implement a time monitoring tool.
6. Check whether the status bit in the service byte is set:
   - Status bit is not set: The write request has been executed correctly.
   - Status bit is set: The write request has not been executed correctly. The "Data/Error" field contains the Error codes (📖 58).

9.2.2.3 Abort of data transfer by the inverter

The error telegram is used to abort the transfer.

- The error telegram is marked by a set status bit in the service byte.
- The telegram can either be the response to an "Initiate Read/Write Service" or to a "Read/Write Segment Service".

Inverter response in the event of an error:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	Index High byte	Index Low byte	Data 4 / Error 4	Data 3 / Error 3	Data 2 / Error 2	Data 1 / Error 1
1t110000	SIDX	IDXH	IDXL	Error Class	Error code	Additional Code High	Additional Code Low

9.2.2.4 Data transfer abort by the master

The master can use this error telegram to abort a running segment transmission.

- The error telegram is marked by a set status bit in the service byte.
- The service byte also contains the request code "4" (100_{bin}).
- Bit 4 and bit 5 in the service byte (data length) are without meaning.
- Additional information (subindex, index, error information) is not transmitted.

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
1txx0100	0	0	0	0	0	0	0

Inverter response in the case of correct execution:

The inverter confirms the error telegram of the master by also sending an error telegram.

- The error telegram is marked by a set status bit in the service byte.
- In the case of correct execution, the telegram contains the error information "0x00000000" in bytes 5 ... 8.
- Additional information (subindex, index) is not transmitted.

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	SIDX	IDXH	IDXL	Error Class	Error code	Additional Code High	Additional Code Low
1t110000	0	0	0	0	0	0	0

9.2.3 Byte 2: Subindex

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	**Subindex**	Index High byte	Index Low byte	Data 4 / Error 4	Data 3 / Error 3	Data 2 / Error 2	Data 1 / Error 1

Additional addressing via the subindex is required for those codes of the Inverter Drives 8400 that contain a subcode (see code table).

9.2.4 Bytes 3 + 4: Index

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	**Index High byte**	**Index Low byte**	Data 4 / Error 4	Data 3 / Error 3	Data 2 / Error 2	Data 1 / Error 1

The parameter (Lenze code) is selected via these two bytes according to the formula:

- **Index = 24575 - Lenze code number**

(Also see "Addressing of Lenze parameters" (📖 51))

Example:

The parameter C00105 (quick stop (QSP) deceleration time) is to be addressed:

- Index = 24575 - 105 = 24470 = 0x5F96
- The entries in bytes 3 + 4 for this example would be:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	**0x5F**	**0x96**	Data 4 / Error 4	Data 3 / Error 3	Data 2 / Error 2	Data 1 / Error 1

9.2.5 Bytes 5 ... 8: Parameter value / error information

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	Index High byte	Index Low byte	**Data 4 / Error 4**	**Data 3 / Error 3**	**Data 2 / Error 2**	**Data 1 / Error 1**

The state of status bit 7 in the service byte determines the meaning of this data field:

Status bit	Meaning of bytes 5 ... 8
0	Bytes 5 ... 8 contain the parameter value (data 1 ... 4).
1	Bytes 5 ... 8 contain an error message (error 1 ... 4) due to an invalid access. ▸ Error codes (📖 58)

Parameter value (data)

Note!

Strings or data blocks cannot be transmitted.

Depending on the data format, the length of the parameter value is between 1 and 4 bytes.

Data are saved in the Motorola format, i.e. first the high byte (high word), then the low byte (low word):

Byte 5	Byte 6	Byte 7	Byte 8
High byte	Low byte	High byte	Low byte
High word		Low word	
Double word			

Principle for the assignment of bytes 5 ... 8 with parameter values of different lengths:

Byte 5	Byte 6	Byte 7	Byte 8
Parameter value (length 1)	0x00	0x00	0x00
Parameter value (length 2)		0x00	0x00
Parameter value (length 4)			

9.2.6 Error codes

The following error messages may appear:

Byte 8	Byte 7	Byte 6	Byte 5	Meaning
Error 1	Error 2	Error 3	Error 4	
0x06	0x03	0x00	0x00	No right to access
0x06	0x05		0x11	Invalid subindex
0x06	0x05		0x12	Data length too large
0x06	0x05		0x13	Data length too small
0x06	0x07		0x00	Object does not exist
0x06	0x08		0x00	Data types do not comply with each other
0x08	0x00		0x00	Request cannot be executed
0x08	0x00		0x20	Request cannot be executed at the moment
0x08	0x00		0x22	Request cannot be executed due to the device status / The parameter can only be changed in the case of a controller inhibit
0x08	0x00		0x30	Value ranged exited
0x08	0x00		0x31	Parameter value too high
0x08	0x00		0x32	Parameter value too low
0x08	0x00		0x80	Hardware error

9.2.7 Telegram examples

9.2.7.1 Read request: Querying the heatsink temperature

The heatsink temperature of the inverter is to be read.

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

Byte 1: Service (request)

Request = $0t110001_{bin}$

- Bit 0 ... 2 = 001_{bin} for read request
- Bit 3 = 0 (reserved)
- Bit 4/5 = 01_{bin} for 2-byte data length (only relevant for the response telegram)
- Bit 6 = handshake bit (t ≡ status is changed in the response telegram)
- Bit 7 = status bit (only relevant for the response telegram)

Byte 2: Subindex

Subindex = 0 because code C00061 does not contain any subindices.

Bytes 3 + 4: Index

Index = 24575 - code number = 24575 - 61 = 24514 = 0x5FC2

- Byte 3 (high byte) = 0x5F
- Byte 4 (low byte) = 0xC2

Bytes 5 ... 8: Data

The response telegram contains the value of code C00061:

Data 3 + 4 = 43 [°C] x 1 (internal factor) = 43 = 0x002B

Result:

Request telegram from master to drive:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	Index High byte	Index Low byte	Data 4	Data 3	Data 2	Data 1
0x01	0x00	0x5F	0xC2	0x00	0x00	0x00	0x00
$0t000001_{bin}$	00000000_{bin}	01011111_{bin}	11000010_{bin}	00000000_{bin}	00000000_{bin}	00000000_{bin}	00000000_{bin}
Waiting for change of handshake bit 6 in service byte 1 of the response.							

Response telegram from drive to master (for correct execution):

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	Index High byte	Index Low byte	Data 4	Data 3	Data 2	Data 1
0x11	0x00	0x5F	0xC2	0x00	0x2B	0x00	0x00
$0t010001_{bin}$	00000000_{bin}	01011111_{bin}	11000010_{bin}	00000000_{bin}	00101011_{bin}	00000000_{bin}	00000000_{bin}

9.2.7.2 Write request: Setting the deceleration time for quick stop (QSP)

In the inverter, the deceleration time for quick stop (QSP) is to be set to 50 ms.

- Code to be written: C00105

Byte 1: Service (request)

Request = $0t110010_{bin}$

- Bit 0 ... 2 = 010_{bin} for write request
- Bit 3 = 0 (reserved)
- Bit 4/5 = 11_{bin} for 4-byte data length
- Bit 6 = handshake bit (t ≡ status is changed in the response telegram)
- Bit 7 = status bit (only relevant for the response telegram)

Byte 2: Subindex

Subindex = 0 because code C00105 does not contain any subindices.

Bytes 3 + 4: Index

Index = 24575 - code number = 24575 - 105 = 24470 = 0x5F96

- Byte 3 (high byte) = 0x5F
- Byte 4 (low byte) = 0x96

Bytes 5 ... 8: Data

The parameter value of 0.05 s to be set is multiplied by the code-specific factor of "1000" and entered in the user data:

Data 1 ... 4 = 0.05 [s] x 1000 (internal factor) = 50 = 0x00000032

Result:

Request telegram from master to drive:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	Index High byte	Index Low byte	Data 4	Data 3	Data 2	Data 1
0x72	0x00	0x5F	0x96	0x00	0x00	0x00	0x32
$0t110010_{bin}$	00000000_{bin}	01011111_{bin}	10010110_{bin}	00000000_{bin}	00000000_{bin}	00000000_{bin}	00110010_{bin}
Waiting for change of handshake bit 6 in service byte 1 of the response							

Response telegram from drive to master (for correct execution):

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Service	Subindex	Index High byte	Index Low byte	Data 4	Data 3	Data 2	Data 1
0x40	0x00	0x5F	0x96	0x00	0x00	0x00	0x32
$0t000000_{bin}$	00000000_{bin}	01011111_{bin}	10010110_{bin}	00000000_{bin}	00000000_{bin}	00000000_{bin}	00110010_{bin}

9.3 PROFIdrive parameter data channel (DP-V1)

Data communication with PROFIBUS-DP-V0 is characterised by cyclic diagnostics and cyclic process data and parameter data transfer.

An optional service expansion is the acyclic parameter data transfer of PROFIBUS-DP-V1. This service does not impair the functionality of the standard services under PROFIBUS-DP-V0.

PROFIBUS-DP-V0 and PROFIBUS-DP-V1 can be operated simultaneously in the same network. This enables the step-by-step expansion or retrofitting of a system.

The services of PROFIBUS-DP-V1 can be used by the class 1 master (PLC) and the class 2 master (diagnostics master, etc.).

The integration of the acyclic service into the fixed bus cycle depends on the corresponding configuration of the class 1 master:

- With configuration, a time slot is reserved.
- Without configuration the acyclic service is *appended* when a class 2 master acyclically accesses a DP-V1 slave.

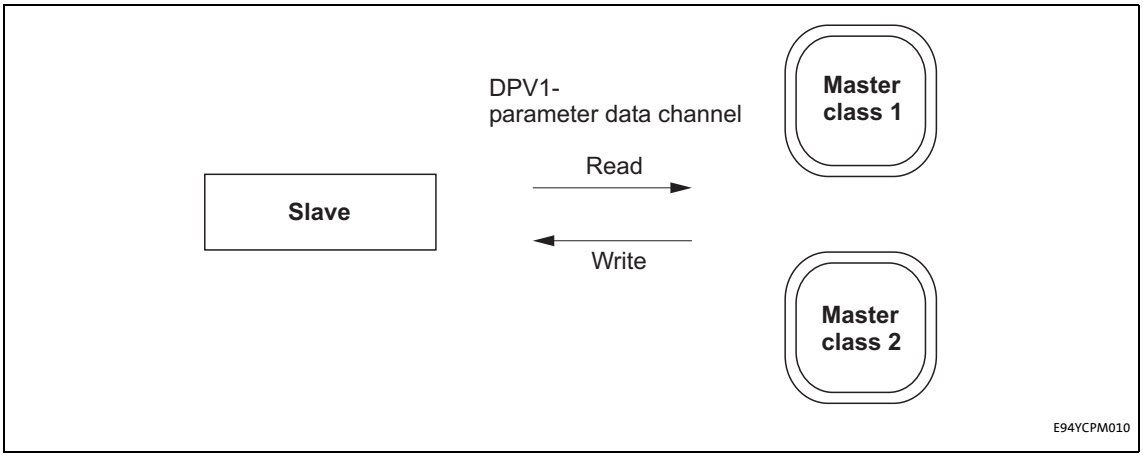
Features

- Parameter number and subindex addresses with a width of 16 bits each.
- Several parameter requests can be combined to one request (multi-parameter request).
- There is always only one parameter request in process (no pipelining).
- A parameter request/response must fit into a data block (max. 240 bytes). Requests/responses cannot be split into several data blocks.
- No spontaneous messages are transferred.
- There are only acyclic parameter requests.
- Profile-specific parameters can be read independently of the slave state.

9.3.1 Connection establishment between master and slave

A class 1 master can always request parameters from a slave if the slave is in the "Data_Exchange" state.

In addition to the class 1 master, a class 2 master can establish a communication connection to the slave:

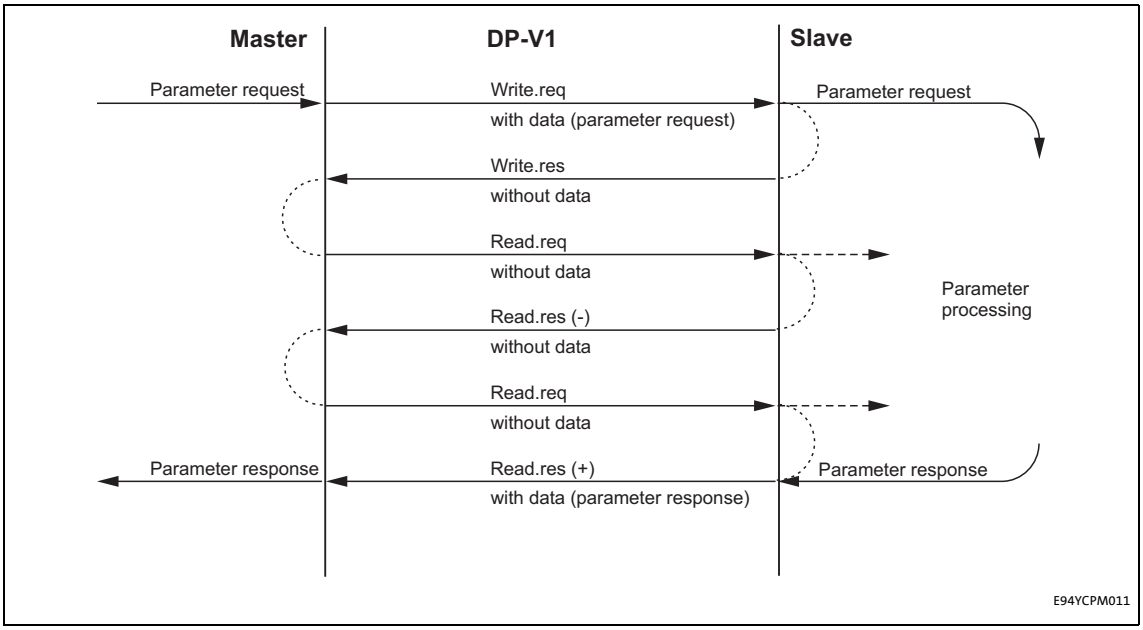


[9-2] Data communication via the DP-V1 parameter data channel

9.3.2 Acyclic data transfer

Note!

A parameter request refers to one or several parameter(s) (multi-parameter request).

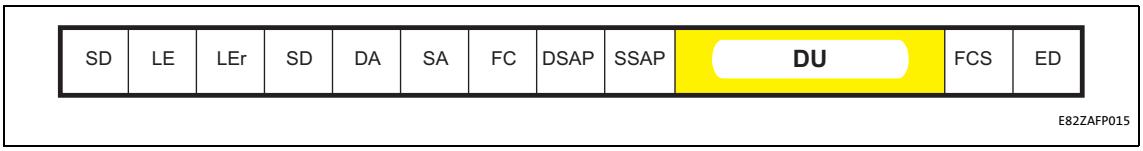


[9-3] Transmission directions

Explanation

- A "Write.req" is used to pass the data set (DB47) to the slave in the form of a parameter request.
- With "Write.res" the master receives the confirmation for the receipt of the message.
- The master requests the response of the slave with "Read.req".
- The slave responds with "Read.res (-)" if processing has not yet been completed.
- After parameter processing, the parameter request is completed by transmitting the parameter response to the master with "Read.res (+)".

9.3.3 Telegram structure



[9-4] PROFIBUS data telegram

The data unit (DU) contains the DP-V1 header and the parameter request or the parameter response.

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

Note!

The DP-V1 header consists of:
- Function identification
- Slot number
- Data set
- Length of the user data

Please refer to the corresponding PROFIBUS specification for further information on the DP-V1 header.

Assignment of the user data depending on the data type

Depending on the data type used, 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		0x00			
U16	2 bytes	High byte	Low byte			
U32	4 bytes	High word		Low word		
		High byte	Low byte	High byte	Low byte	

9.3.3.1 Reading parameter data from the inverter

Note!

- When a read request is processed, no parameter value is written to the slave.
- In the case of a multi-parameter read request, the parameter attribute, index, and subindex are repeated with the number "n" of the requested parameters.
- A read request must not exceed the maximum data length of 240 bytes.

Request header

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

Field	Data type	Values
Request reference	U8	This value is specified by the master
Request identification	U8	0x01: Request parameters 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 (For array elements: Enter the number of array elements required.)

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)

9.3.3.2 Response to a correctly executed read request

Note!

Responses to a read request do not contain parameter attributes, indices and subindices.

Response header

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

Field	Data type	Values
Request reference	U8	Mirrored value of the parameter request
Response identification	U8	0x01: Parameter has been 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 or number of requested subindices/parameters (with several subindices/parameters 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 (length > 4 bytes possible)
	U8	0x00 .... 0xFF
	U16	0x0000 .... 0xFFFF
	U32	0x0000 0000 .... 0xFFFF FFFF

9.3.3.3 Response to a read error

Note!

In the case of a multi-parameter request, correct and possible faulty messages are summarised in one telegram. They have the following data contents:

Correct message

- Format: data type of the value requested
- Number of values: as described in the chapter "Reading parameter data from the inverter" (📖 65).
- Parameter value: value requested

Faulty message

- Format: 0x44
- Number of values: 0x01 or 0x02
- Error code without additional information (for number of values = 0x01) or
- Error code with additional information (for number of values = 0x02)

A faulty access to a parameter "n" is indicated at the nth position in the response telegram of a multi-parameter request.

Response header

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

Field	Data type	Values
Request reference	U8	Mirrored value of the parameter request
Response identification	U8	0x81: Parameter has not been read • The data in the bytes 7 + 8 must be interpreted as an 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 codes (📖 74)
Additional information (if available)	U16	

9.3.3.4 Writing parameter data to the inverter

Note!

When a multi-parameter write request is transferred, the ...
- Parameter attribute
- Index and subindex

and then the ...
- Parameter format
- Parameter value

... are repeated with the number "n" of the parameters addressed.

A write request must not exceed the maximum data length of 240 bytes.

Request header

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

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

Parameter attribute

Byte 5	Byte 6
Attribute	Number of subindices

Field	Data type	Values
Attribute	U8	0x10: Value
Number of subindices	U8	0x00 (For array elements: Enter the number of array elements required.)

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 or number of written subindices/parameters (with several subindices/parameters 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 (length > 4 bytes possible)
	U8	0x00 .... 0xFF
	U16	0x0000 .... 0xFFFF
	U32	0x0000 0000 .... 0xFFFF FFFF

9.3.3.5 Response to a correctly executed write request

Note!

In the case of a multi-parameter request, correct and possible faulty messages are summarised in one telegram. They 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 (for number of values = 0x01) or with additional information (for number of values = 0x02)

A faulty access to a parameter "n" is indicated at the nth position in the response telegram of a multi-parameter request.

Response header

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

Field	Data type	Values
Request reference	U8	Mirrored value of the parameter request
Response identification	U8	0x02: Parameter has been written
Axis	U8	0x00 or 0x01
Number of indices	U8	0xn (n = number of parameter addressed)

9.3.3.6 Response to a write error

Response header

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

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

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 codes (📖 74)
Additional information (if available)	U16	

9.3.4 Error codes

Error code	Description	Explanation	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 beyond the value limits	Subindex
0x0003	Faulty subindex	Access to unavailable subindex	Subindex
0x0004	No array	Access with subindex to non-indicated parameter	-
0x0005	Wrong data type	Change access with value that does not match the data type of the parameter	-
0x0006	No setting permitted (only resettable)	Change access with value unequal to 0 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 the IR is not available)	-
0x0009	Description data not 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 in the cyclic traffic cannot be read)	-
0x000E	Reserved	(PROFIdrive profile V2: Name in the cyclic traffic cannot be read)	-
0x000F	No text array available	Access to unavailable text array (parameter value is available)	-
0x0010	Reserved	(PROFIdrive profile V2: Missing PPO-Write)	-
0x0011	Request cannot be executed due to the operating state	Access is not possible due to temporary reasons not specified here	-
0x0012	Reserved	(PROFIdrive profile V2: Other error)	-
0x0013	Reserved	(PROFIdrive profile V2: date in the cyclic traffic cannot be read)	-
0x0014	Value impermissible	Change access with the value that is inside the value limits but not permissible for other permanent reasons (parameters with defined individual values)	Subindex
0x0015	Response too long	The length of the current response exceeds the maximum transmittable length	-
0x0016	Parameter address impermissible	Impermissible or non-supported value for attribute, number of subindices, parameter number, or subindex, or a combination	-
0x0017	Format impermissible	Write request: Impermissible or non-supported format of parameter data	-
0x0018	Number of values not consistent	Write request: Number of values of the parameter data do not match the number of subindices in the parameter address	-
0x0019	Reserved	-	-
...			
0x0064			

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

9.3.5 Telegram examples

9.3.5.1 Read request: Querying the heatsink temperature

The heatsink temperature of the inverter 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	Request identification	Axis	Number of indices
0xXX	0x01	0x00	0x01
	Request parameters 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 to a correctly executed read request

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

Byte 5	Byte 6
Format	Number of values
0x03	0x01
Integer16	1 value

Byte 7	Byte 8
Value	
High byte	Low byte
0x00	0x2B
Value read = 0x 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 (mirrored)	Response identification	Axis (mirrored)	Number of indices
0xXX	0x81	0x00	0x01
	Parameter has not been read		

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 the meaning, see the "Error codes" (📖 74) chapter	

9.3.5.2 Write request: Setting the deceleration time for quick stop (QSP)

In the inverter, the deceleration time for quick stop (QSP) is to be set to 50 ms.

Code to be written: C00105

Parameter request

Byte 1	Byte 2	Byte 3	Byte 4
Request reference	Request 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 to a correctly executed write request

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

Parameter response to a read error

Byte 1	Byte 2	Byte 3	Byte 4
Request reference (mirrored)	Response identification	Axis (mirrored)	Number of indices
0xXX	0x82	0x00	0x01
	Parameter has not been written		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 the meaning, see the Error codes (📖 74)	

9.4 Consistent parameter data

In the PROFIBUS communication system, data are permanently exchanged between the control system (CPU + PROFIBUS master) and the inverter via the plugged-on slave interface module. Both the PROFIBUS master and the CPU (central processing unit) of the control system access a joint memory: the dual port memory (DPM).

The DPM permits a data exchange in both directions (write/read):

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

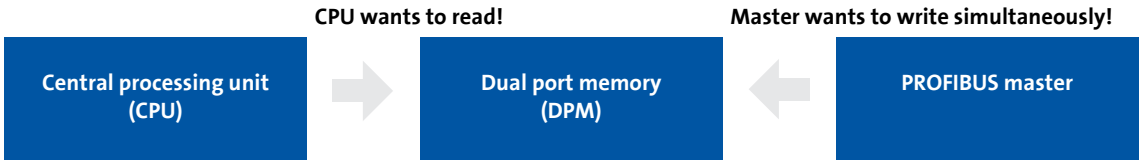
In order to avoid such an impermissible state, the parameter data to be transmitted must be marked as "consistent".

Data communication with consistent data

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

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

The result becomes clear from the example below:



1. As the master can only write if the CPU does not read, the master waits until the data are read completely by the CPU.
2. The master only writes a complete data set into DPM.

Configuring consistent data

Note!

Consistency is achieved by an appropriate PROFIBUS master configuration.

For this purpose, refer to the documentation for your configuring software.

10 Monitoring

10.1 Permanent interruption of PROFIBUS communication

If PROFIBUS communication is interrupted permanently, e.g. by cable breakage or failure of the PROFIBUS master, no process data are transmitted to the slave being in the "Data Exchange" state.

After the watchdog monitoring time determined by the master has expired, the response parameterised in C13880/1 is executed in the inverter (slave).

The process data are treated according to the setting in C13885. (The data sent last by the master can be used or can be set to zero.)

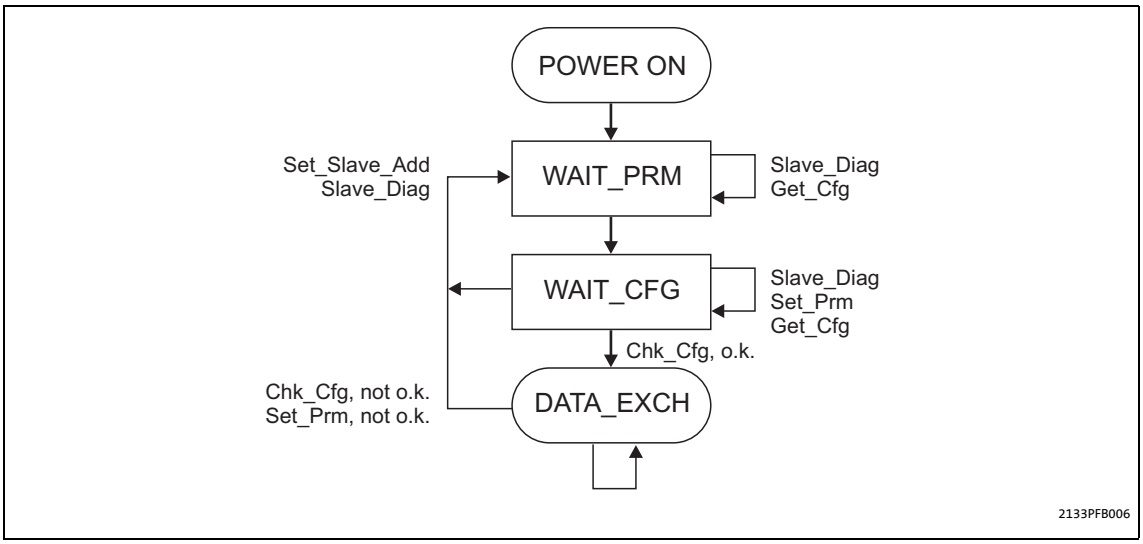
Preconditions for a inverter (slave) response

- A monitoring time of 1 ... 65534 ms for the "Data_Exchange" status (C13881) is set.
  A value of "65535 ms" (Lenze setting) deactivates the monitoring.
- A response for the slave is set in C13880/1 (Lenze setting "No response").
- The slave is in the "Data_Exchange" state.
- The watchdog monitoring time is configured correctly in the master.

If one of these preconditions is not met, the response to the absence of cyclic process data telegrams from the master is not executed.

▸ Settings and displays in the »Engineer« (📖 83)

10.2 Short-time interruption of PROFIBUS communication



[10-1] DP states (Decentralized Peripherals) for short-time interruption of communication

The master detects the communication fault and, only after a few microseconds, transfers the slave to the "WAIT_PRM" status of the DP state machine (see fig. [10-1]).

Only after the state chain of the DP state machine ending in the "Data_Exchange" state (DATA_EXCH) has been passed through, the watchdog monitoring time calculated for the slave (in milliseconds) continues to run.

Note!

The watchdog monitoring time does not continue running if the slave does not reach the "Data_Exchange" state due to repeated communication errors (e.g. caused by loose contact).

Additional monitoring for the data exchange

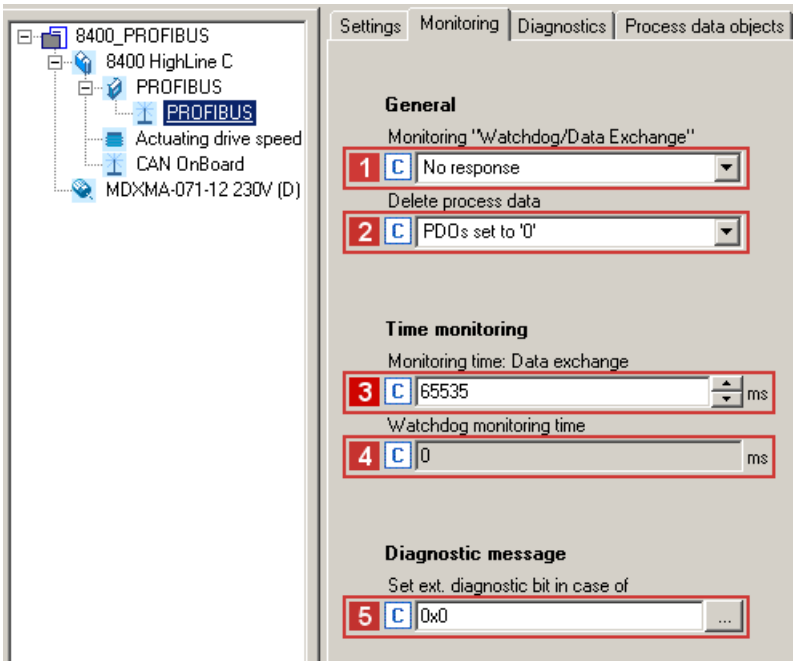
For this reason an additional monitoring function for the data exchange is available with C13881, which is activated when "Data_Exchange" is exited and the parameterised time (0 ... 65535 ms) has expired. The active monitoring triggers the response parameterised in C13880/1.

Note!

Observe the following condition for the time setting:

Monitoring time for the data exchange (C13881) ≤ watchdog monitoring time of the PROFIBUS (C13882/1).

10.3 Settings and displays in the »Engineer«



On the **Monitoring** tab of the »Engineer«, you can set or display the following parameters:

Parameter		Description
1	**Reaction on communication fault** (C13880/1)	The response set here takes place if the PROFIBUS station ... • does not receive a message from the master within the watchdog monitoring time (displayed in C13882/1) if there is an active connection; • recognises that it is not in the "Data_Exchange" status anymore. Please see also the information on 3.
2	**Clear process data** (C13885)	Selection of the process data which the inverter will process in the event of a PROFIBUS failure in order to maintain internal communication. The process data sent last by the master can be used or the process data can be set to zero.
3	**Monitoring time: Data exchange** (C13881)	After the monitoring time set here has elapsed, the response set in 1 takes place for the data exchange. • The value "65535" deactivates the monitoring function. • The monitoring time set here must be smaller than the watchdog monitoring time 4. • A change in monitoring is effective immediately. ▸ Permanent interruption of PROFIBUS communication (📖 81)
4	**Monitoring time: Watchdog** (C13882/1)	Display of the watchdog monitoring time determined by the PROFIBUS master • Monitoring starts with the receipt of the first telegram. • When a value of "0" is displayed, the monitoring function is deactivated. • A change in the watchdog monitoring time in the master is immediately effective. ▸ Permanent interruption of PROFIBUS communication (📖 81)
5	**Set ext. diagnostic bit upon** (C13886)	Bit-coded selection of the error responses in the standard device causing the external diagnostic bit ("diag bit") to be set (see PROFIBUS specification; bit 3 of byte 1 of the DP diagnostic messages). • The diagnostic bit is sent to the PROFIBUS master where it is evaluated separately. • The diagnostic bit is always set when a system error occurs. • The Lenze setting "0" means that the diagnostic bit is not set for the following error responses. • An advanced diagnostic message is always sent.

11 Diagnostics

For diagnosing faults of the PROFIBUS module, the LEDs on the front panel are provided. Furthermore you can query the current bus status via code C13861.

11.1 LED status displays

Note!

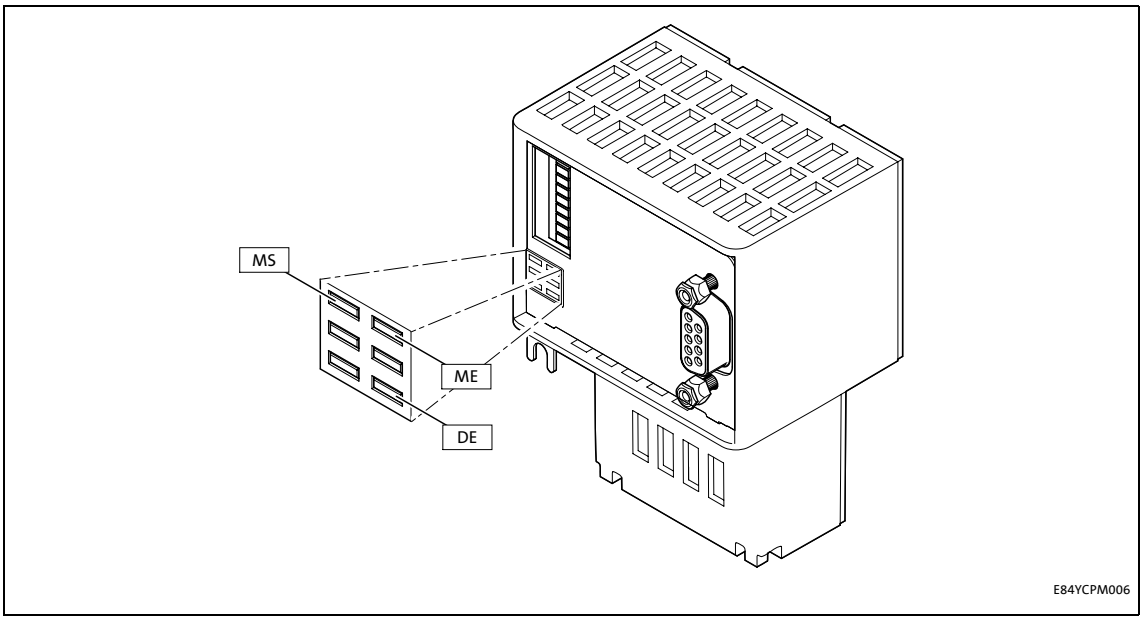
During normal operation, the LED **BS** (📖 86) blinks and the LED **MS** (📖 86) is lit permanently.

The following status displays are distinguished:

- Module status displays (📖 85)
- Fieldbus status displays (📖 86)

11.1.1 Module status displays

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

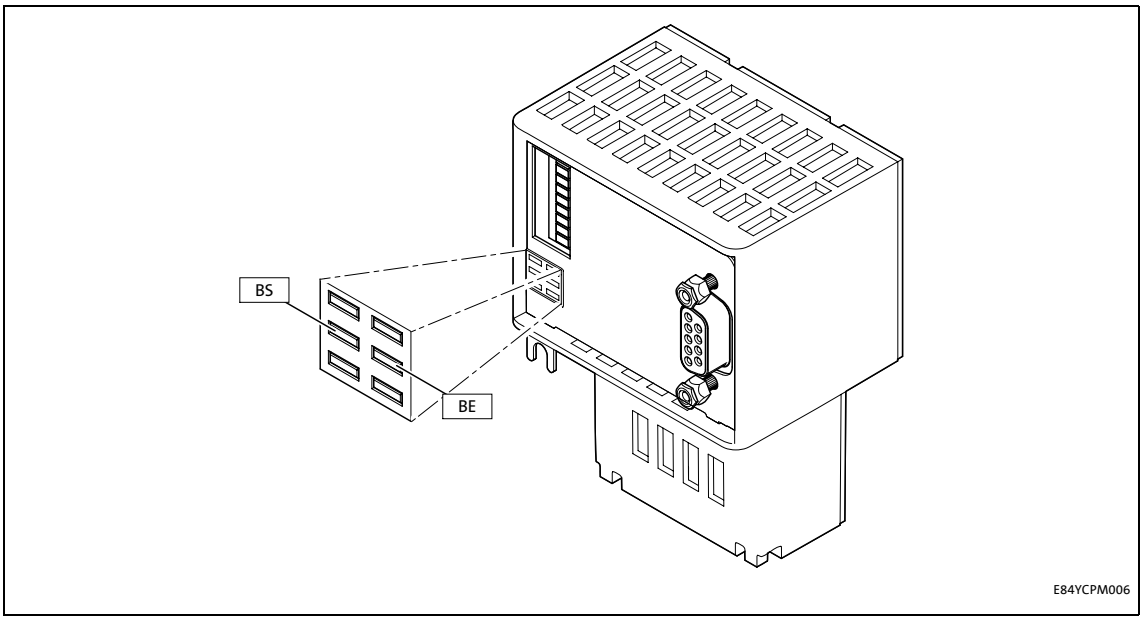


[11-1] LED status displays MS, ME, and DE

LED	Colour	State	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 yet established a connection to the standard device. (Standard device is switched off, initialising or not present.)
ME	Red	On	
			An error concerning the communication module has occurred.
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 for the standard device.)

11.1.2 Fieldbus status displays

The LEDs **BS** and **BE** indicate the fieldbus status.

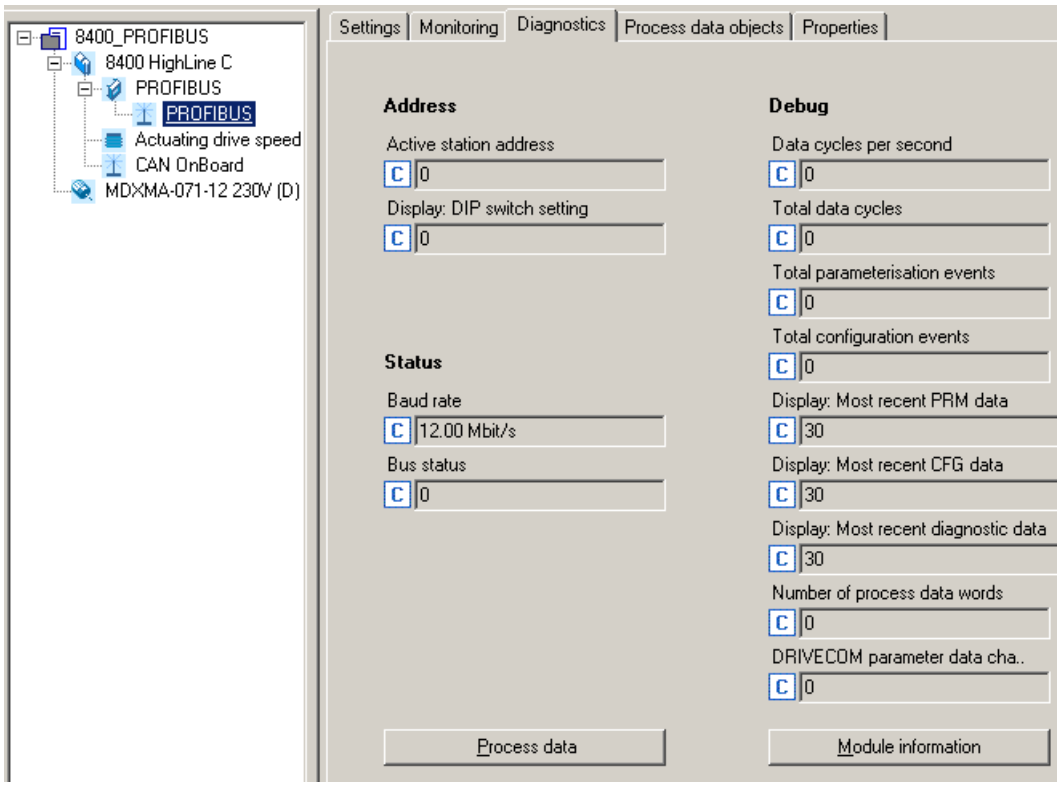


[11-2] LED status displays BS and BE

LED	Colour	State	Description
BS	Green	Off	The communication module is not active on the fieldbus or is being initialised.
		Blinking	
			The communication module is in the DATA_EXCH state ("Data_Exchange"). Data are exchanged via PROFIBUS.
BE	Red	Blinking	
			Incorrect setting for the station address. The communication module is initialised and internally operates with the respective default values.
		On	
			Bus error/fault is active (e.g. bus cable unplugged).

11.2 Diagnosing with the »Engineer«

In the »Engineer«, the **Diagnostics** tab displays various pieces of PROFIBUS diagnostic information.



Querying the current bus status

Code C13861 displays the current PROFIBUS status in a bit-coded form:

Bit assignment				Description	
Bit 3	Bit 2	Bit 1	Bit 0	Reserved	
		Bit 5	Bit 4	**Status of the DP state machine (DP-STATE)**	
		0	0	WAIT_PRM	The slave waits for a parameter data telegram after acceleration. Other types of telegrams will not be processed. Data exchange is not yet possible.
		0	1	WAIT_CFG	The slave waits for the configuration telegram that specifies the number of input and output bytes. The master informs the slave about the number of I/O bytes that will be transferred.
		1	0	DATA_EXCH	If the parameter settings as well as the configuration have been accepted by the firmware and by the application, the slave state changes to DATA_EXCH ("Data Exchange", exchange of user data with the master).
		1	1	Not possible	
		Bit 7	Bit 6	**Status of the watchdog state machine (WD-STATE)**	
		0	0	BAUD_SEARCH	The PROFIBUS slave is able to automatically detect the baud rate.
		0	1	BAUD_CONTROL	After recognising the correct baud rate, the slave status changes to BAUD_CONTROL and the baud rate is monitored.
		1	0	DP_CONTROL	The DP_CONTROL status serves for response monitoring of the master.
		1	1	Not possible	
Bit 11	Bit 10	Bit 9	Bit 8	**PROFIBUS baud rate detected**	
0	0	0	0	12 Mbps	
0	0	0	1	6 Mbps	
0	0	1	0	3 Mbps	
0	0	1	1	1.5 Mbps	
0	1	0	0	500 kbps	
0	1	0	1	187.5 kbps	
0	1	1	0	93.75 kbps	
0	1	1	1	45.45 kbps	
1	0	0	0	19.2 kbps	
1	0	0	1	9.6 kbps	
Bit 15	Bit 14	Bit 13	Bit 12	Reserved	

11.3 Advanced diagnostic message

Errors in the inverter and its plugged-in modules are transmitted to the PROFIBUS master in the form of advanced diagnostic messages.

Structure of the diagnostic message

Byte	Description
1	Bit 0: Station does not exist (set by the master). Bit 1: Slave is not ready for data exchange. Bit 2: Configuration data do not correspond. Bit 3: Slave has extended diagnostic data. Bit 4: Requested function is not supported by the slave. Bit 5: Slave response is invalid (set by the master) Bit 6: Incorrect parameter setting Bit 7: Slave has been parameterised by another master (set by the master).
2	Bit 0: Slave must be parameterised again. Bit 1: Static diagnostics Bit 2: Permanently set to "1". Bit 3: Watchdog active Bit 4: Freeze command received. Bit 5: Sync command received. Bit 6: Reserved Bit 7: Slave is deactivated (set by the master).
3	Bit 7: Diagnostics overflow - amount of diagnostic information present in the slave is too large to fit into one telegram.
4	Bits 0 ... 7: Master address after parameterisation ("0xFF" without parameterisation)
5	Bits 0 ... 7: ID number (high byte)
6	Bits 0 ... 7: ID number (low byte)
7	Header • The header contains the block length of the advanced diagnostics including the header byte. • In this case, the value of the entry is "0x0A" (bytes 7 ... 16 = 10 bytes).
8	Status_Type The value of this entry is fixed. For the following bit assignment it is "0x81": • Bit 7 = 1: "status" • Bit 0 = 1: "status message" • Value of all other bits = 0
9	Slot_Number The value of the slot number is "0x00".
10	Specifier • An indicated error is entered in the specifier with the identification "0x1" (status coming). • An eliminated error is entered in the specifier with the identification "0x02" (status going). • If no errors are indicated, the entry in the specifier has the value "0x00" (no further differentiation).
11	Reserved
12	
13 ... 16	Error code of the Inverter Drive 8400 • Code **C00165** can be used to read out the contents of the fault memory. • Detailed information regarding the error codes of the Inverter Drive 8400 can be found in the documentation of the inverter.

Example: "Short circuit (OC1)" error in the Inverter Drive 8400

Byte	Value [hex]	Description
1	x	Standard data (PRM_Fault)
...		
6		
7	0A	Block length of the advanced diagnostics = 10 bytes
8	81	Status message
9	00	Slot 0
10	01	Status coming
11	00	
12	00	
13	0B	Error message 0x11C4000B "Short circuit (OC1)" • Error type: "Warning locked" • Subject area: 0x11C4 (current) • Error ID: 0x000B The error number "0x11C4000B" indicates the following: In the "Current" subject area, an overcurrent has been detected. The error response to this is a "Warning locked", which must be unlocked separately after the error has been eliminated.
14	00	
15	C4	
16	11	

12 Error messages

This chapter supplements the error list contained in the software manual and in the »Engineer« online help for Inverter Drives 8400 by the error messages of the communication module.

Software manual/online help for Inverter Drives 8400

Here you can find general information on diagnostics & fault analysis and on error messages.

12.1 Short overview of the PROFIBUS error messages

The following table lists all PROFIBUS error messages in numerical order of the error number. Furthermore the preset error response and – if available – the parameters for setting the error response are specified.

Tip!

When you click the cross-reference in the first column, you will see a detailed description (causes and remedies) of this error message.

Error number			Error text	Error type	Adjustable in
hex	dec (subject area no.)	dec (error no.)			
0x01bc3100	444	12544	Connection to 8400 standard device lost	Error	-
0x01bc5531	444	21809	Memory: No access	Error	-
0x01bc5532	444	21810	Memory: Read error	Error	-
0x01bc5533	444	21811	Memory: Write error	Error	-
0x01bc6010	444	24592	Restart after watchdog reset	Error	-
0x01bc6011	444	24593	Internal error	Error	-
0x01bc6100	444	24832	Internal error	Error	-
0x01bc6101	444	24833	Internal error	Error	-
0x01bc6110	444	24848	Internal error	Error	-
0x01bc641f	444	25631	Invalid parameter set	Error	-
0x01bc6420	444	25632	Error: Lenze settings loaded	Error	-
0x01bc8130	444	33072	Profibus watchdog: Monitoring time elapsed	No response	C13880/1
0x01bc8131	444	33073	Profibus: Data_Exchange state exited	No response	C13880/1
0x01bc8132	444	33074	Profibus Watchdog: DP-V1 MSC2 monitoring time exceeded	No response	C13880/2

12.2 Possible causes and remedies

This chapter lists all PROFIBUS error messages in the numerical order of the error numbers. Possible causes and remedies as well as responses to the error messages are described in detail.

Connection to 8400 standard device lost [0x01bc3100]

Response (Lenze setting printed 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 is not connected to the PROFIBUS terminal X201. • Voltage supply is interrupted.	Check cables and terminals. Connect network cable to the PROFIBUS terminal X201.

Memory: No access [0x01bc5531]

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

Cause	Remedy
Access to memory was not possible.	Repeat the download of the application (including module)

Memory: Read error [0x01bc5532]

Response (Lenze setting printed 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.	Repeat the download of the application (including module)

Memory: Write error [0x01bc5533]

Response (Lenze setting printed 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.	Repeat the download of the application (including module)

Restart after watchdog reset [0x01bc6010]

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

Cause	Remedy
Module defective.	If this occurs repeatedly, contact the Lenze service.

Internal error [0x01bc6011]

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

Cause	Remedy
Module defective.	If this occurs repeatedly, contact the Lenze service.

Internal error [0x01bc6100]

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

Cause	Remedy
Internal error.	If this occurs repeatedly, contact the Lenze service.

Internal error [0x01bc6101]

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

Cause	Remedy
The communication module carries out an automatic software reset and reinitialises itself.	If this occurs repeatedly, contact the Lenze service.

Internal error [0x01bc6110]

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

Cause	Remedy
Module defective.	If this occurs repeatedly, contact the Lenze service.

Invalid parameter set [0x01bc641f]

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

Cause	Remedy
No active parameter set could be loaded.	Repeat the download of the application (including module)

Error: Lenze settings loaded [0x01bc6420]

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

Cause	Remedy
Access to parameter set was not successful.	Repeat the download of the application (including module).

Profibus watchdog: Monitoring time elapsed [0x01bc8130]

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

Cause	Remedy
Permanent interruption of communication to the PROFIBUS master. Also see the chapter "Permanent interruption of PROFIBUS communication" (📖 81).	Check cables and terminals.

Profibus: Data_Exchange state exited [0x01bc8131]

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

Cause	Remedy
Data exchange via PROFIBUS has been stopped. Also see the chapter "Permanent interruption of PROFIBUS communication" (📖 81).	Check cables and terminals. The slave must receive new parameterisation and configuration files from the master in order to be able to exchange data again.

Profibus watchdog: DP-V1 MSC2 monitoring time exceeded [0x01bc8132]

Response (Lenze setting printed in bold)	**Setting:** C13880/2 (☑ Adjustable response)
☒ **None** ☐ System fault ☑ Fault ☐ Trouble ☑ Quick stop by trouble ☑ Warning locked ☐ Warning ☑ Information	

Cause	Remedy
Permanent interruption of communication to C2-PROFIBUS master. Also see the chapter "Permanent interruption of PROFIBUS communication" (📖 81).	Check cables and terminals.

13 Parameter reference

This chapter supplements the parameter list and the table of attributes contained in the software manual and in the »Engineer« online help for Inverter Drives 8400 by the parameters of the E84AYCPM communication module (PROFIBUS).

Software manual/»Engineer« online help for Inverter Drives 8400

Here you can find general information on parameters.

13.1 Parameters of the communication module

This chapter lists the parameters of the E84AYCPM communication module (PROFIBUS) in numerically ascending order.

C13850

Parameter | Name: **C13850 | All words to master**			Data type: UNSIGNED_16 Index: $10725_d = 29E5_h$
Display of the process data words transferred from the communication module to the PROFIBUS master. In subcodes 1 ... 16, all process data words to the master are displayed. Only the process data words configured are valid.			
Display area (min. value | unit | max. value)			
0		65535	
Subcodes			**Info**
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 transferred from the PROFIBUS master to the communication module. In subcodes 1 ... 16, all process data words to the master are displayed. Only the process data words configured are valid.			
Display area (min. value | unit | max. value)			
0		65535	
Subcodes			**Info**
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 process data words 1 ... 16 which are transferred from the communication module to the standard device. In subcodes 1 ... 16, all process data words from the communication module are displayed.			
Display area (min. value | unit | max. value)			
0		65535	
Subcodes			**Info**
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 process data words 1 ... 16 which are transferred from the standard device to the communication module. In subcodes 1 ... 16, all process data words from the standard device are displayed.			
Display area (min. value | unit | max. value)			
0		65535	
Subcodes			**Info**
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 of the current configuration data.			
Display area (min. value | unit | max. value)			
0		255	
Subcodes			**Info**
C13860/1			Reserved
C13860/2			Number of process data words (1 ... 16 words)
C13860/3			DRIVECOM parameter data channel • 0: Not active • 1: Active
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: UNSIGNED_16 Index: $10714_d = 29DA_h$
Bit-coded display of the current bus state. ▸ Querying the current bus status (📖 88)			
Display area (min. value | unit | max. value)			
0		65535	
☑ 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_16 Index: $10713_d = 29D9_h$
When the maximum count value of 65535 is reached, the counter starts again with 0.			
Display area (min. value | unit | max. value)			
0		65535	

Subcodes	Info
C13862/1	Data cycles per second
C13862/2	Total data cycles
C13862/3	Total parameterisation events
C13862/4	Total configuration events

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

C13863

Parameter | Name: **C13863 | Baud rate**		Data type: UNSIGNED_8 Index: $10712_d = 29D8_h$
Display of the baud rate		
Selection list (read only)		
0	12.00 Mbps	
1	6.00 Mbps	
2	3.00 Mbps	
3	1.50 Mbps	
4	500.00 kbps	
5	187.50 kbps	
6	93.75 kbps	
7	45.45 kbps	
8	19.20 kbps	
9	9.60 kbps	
☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13864

Parameter | Name: **C13864 | Active station address**			Data type: UNSIGNED_8 Index: 10711_d = $29D7_h$
Display of the active station address If all DIP switches 1 ... 64 are in the "OFF" position (Lenze setting), the station address set in C13899 becomes active and is displayed here after switching on. ▸ Setting the station address (📖 32)			
Display area (min. value | unit | max. value)			
0		255	
☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13865

Parameter | Name: **C13865 | Display: Most recent PRM data**	Data type: OCTET_STRING Index: 10710_d = $29D6_h$
Display of the last parameter data sent by the PROFIBUS master with the "Set-Prm" telegram (ASCII string with 24 characters)	
☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13866

Parameter | Name: **C13866 | Display: Most recent CFG data**	Data type: OCTET_STRING Index: 10709_d = $29D5_h$
Display of the last configuration data sent by the PROFIBUS master with the "Chk-Cfg" telegram (ASCII string with 22 characters)	
☑ 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 the last diagnostic data sent to the PROFIBUS master (ASCII string with 16 characters) ▸ Advanced diagnostic message (📖 89)	
☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13880

Parameter | Name: **C13880 | Reaction on communication fault**			Data type: UNSIGNED_8 Index: $10695_d = 29C7_h$
Monitoring response to a communication fault on the PROFIBUS A change in the monitoring response is effective immediately. ▸ Permanent interruption of PROFIBUS communication (📖 81)			
Selection list			
0	No response		
1	Error		
3	Quick stop by trouble		
4	Warning locked		
6	Information		
Subcodes	**Lenze setting**		**Info**
C13880/1	0: No response		The response set here for the "Watchdog/Data Exchange" monitoring function is executed if the bus station ... • does not receive a message from the master within the watchdog monitoring time (displayed in C13882/1) if there is an active connection. • detects that it is no longer in the "Data_Exchange" status. Please see also the notes given under C13881.
C13880/2	0: No response		The response set here for the "DPV1 MSAC2" monitoring is executed if the bus station does not receive any "DPV1 MSAC2" message from the master within the monitoring time (displayed in C13882/2 if there is an active connection) and the MSAC2 connection is stopped by the slave. **Note:** We recommend only setting "information" as response so that no drive-relevant response is executed.
☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13881

Parameter | Name: **C13881 | Monitoring time: Data exchange**			Data type: UNSIGNED_16 Index: $10694_d = 29C6_h$
If the "Data Exchange" state is exited, the response parameterised under C13880/1 is carried out when the monitoring time for data exchange set here has expired. • A value of "65535" in this code deactivates the monitoring function. • A change in monitoring is effective immediately. • The value set here for the monitoring time must be smaller than the watchdog monitoring time (C13882/1). ▸ Permanent interruption of PROFIBUS communication (📖 81)			
Setting range (min. value | unit | max. value)			**Lenze setting**
0	ms	65535	**65535 ms**
☑ Read access ☑ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13882

Parameter | Name: **C13882 | Monitoring time: Watchdog**			Data type: UNSIGNED_32 Index: $10693_d = 29C5_h$
Display of the watchdog monitoring time determined by the PROFIBUS master • A change in the watchdog monitoring time is immediately effective. • Monitoring starts with the receipt of the first telegram. • When a value of "0" is displayed, the monitoring function is deactivated. ▸ Permanent interruption of PROFIBUS communication (📖 81)			
Display area (min. value | unit | max. value)			
0	ms	4294967295	

Subcodes	Info
C13882/1	Watchdog monitoring time
C13882/2	DP-V1 MSC2

☑ 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: $10690_d = 29C2_h$
Selection of the process data which the inverter will process in the event of a PROFIBUS failure in order to maintain internal communication.	

Selection list (Lenze setting printed in bold)	
0	Use of most recent master PDOs
1	**PDOs are set to the value '0'**

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

C13886

Parameter | Name: **C13886 | Set ext. diagnostic bit by**	Data type: BITFIELD_8 Index: $10689_d = 29C1_h$
Bit-coded selection of the error responses in the standard device causing the external diagnostic bit ("diag bit") to be set (see PROFIBUS specification; bit 3 of byte 1 of the DP diagnostic messages). • The diagnostic bit is sent to the PROFIBUS master where it is evaluated separately. • The diagnostic bit is always set when a system error occurs. • The Lenze setting "0" means that the diagnostic bit is not set for the following error responses. • An advanced diagnostic message is always sent.	

Value is bit-coded:	
Bit 0	Error
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

C13887

Parameter | Name: **C13887 | Suppress signalling diag. mess. upon**	Data type: BITFIELD_8 Index: $10688_d = 29C0_h$
Selection of the error responses not causing a diagnostic request to the PROFIBUS master. The Lenze setting "0" means that for each of the following error responses a diagnostic request is signalled.	

Value is bit-coded:	
Bit 0	Error
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 address**	Data type: UNSIGNED_8 Index: $10676_d = 29B4_h$
Optional setting of the station address (instead of setting via DIP switches 1 ... 64) • The station address set here only becomes effective if the DIP switches 1 ... 64 have been set to OFF prior to mains switching. • The active station address is displayed under C13864. **Note:** A change of the station address will not be effective until the " Save parameter set" device command has been executed and another mains switching for the communication module/inverter has been performed. ▸ Setting the station address (📖 32)	

Setting range (min. value | unit | max. value)			**Lenze setting**
3		126	**3**

☑ 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: $10675_d = 29B3_h$
Display of the product type (string with a length of 8 bytes) The following identification code is displayed: "E84AFYPM".	

☑ 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: $10674_d = 29B2_h$
Display of the compilation date of the firmware (string with a length of 20 bytes) The 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: $10673_d = 29B1_h$
Display of the firmware version (string with a length of 5 bytes) Example: "01.00"	
☑ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13920

Parameter | Name: **C13920 | Display: DIP switch setting**	Data type: UNSIGNED_8 Index: $10655_d = 299F_h$
Display of the current DIP switch setting • The displayed value corresponds to the sum of the individual DIP switch values 1 ... 64. • The active station address is displayed under C13864. ▸ Setting the station address (📖 32)	

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

☑ 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 required for communication with the inverter via parameters.

How to read the table of attributes:

Column		Meaning	Entry	
Code		Parameter designation	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	Is only required for access via a 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 if controller inhibit is set	

Table of attributes

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	DT	Factor	R	W	CINH
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	UNSIGNED_16	1	☑		
C13862	Bus counter	10713	29D9	A	4	UNSIGNED_16	1	☑		
C13863	Baud rate	10712	29D8	E	1	UNSIGNED_8	1	☑		
C13864	Active station address	10711	29D7	E	1	UNSIGNED_8	1	☑		
C13865	Display: Most recent PRM data	10710	29D6	E	1	OCTET_STRING		☑		
C13866	Display: Most recent CFG data	10709	29D5	E	1	OCTET_STRING		☑		
C13867	Display: Most recent diagnostic data	10708	29D4	E	1	OCTET_STRING		☑		
C13880	Reaction on communication fault	10695	29C7	A	2	UNSIGNED_8	1	☑	☑	
C13881	Monitoring time: Data exchange	10694	29C6	E	1	UNSIGNED_16	1	☑	☑	
C13882	Monitoring time: Watchdog	10693	29C5	A	2	UNSIGNED_32	1	☑		
C13885	Clear process data	10690	29C2	E	1	UNSIGNED_8	1	☑	☑	
C13886	Set ext. diagnostic bit upon	10689	29C1	E	1	BITFIELD_8		☑	☑	
C13887	Suppress signalling diag. mess. upon	10688	29C0	E	1	BITFIELD_8		☑	☑	
C13899	Station address	10676	29B4	E	1	UNSIGNED_8	1	☑	☑	
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		☑		
C13920	Display: DIP switch setting	10655	299F	E	1	UNSIGNED_8	1	☑		

13.3 Implemented PROFIdrive objects (DP-V1)

I-918

Index | Name: **0x918 | Display of station address**			Data type: U16
Display of the station address set			
Display area (min. value | unit | max. value)			
1		126	
☑ Read access ☐ Write access			

I-963

Index | Name: **0x963 | Baud rate**		Data type: U16
Display of the PROFIBUS baud rate		
Selection list (read only)		
0	9.6 kbps	
1	19.2 kbps	
2	93.75 kbps	
3	187.5 kbps	
4	500 kbps	
6	1.5 Mbps	
7	3 Mbps	
8	6 Mbps	
9	12 Mbps	
10	31.25 kbps	
11	45.45 kbps	
☑ Read access ☐ Write access		

I-964

Index | Name: **0x964 | Device identification**		Data type: U16
Display of identification data		
Subindex	Display	**Info**
0x964/0	262	Manufacturer: Lenze
0x964/1	8400	Device type
0x964/2	xxyy	Software version, e.g. 0100 (V 01.00)
0x964/3	yyyy	Firmware date (year), e.g. 2007
0x964/4	ddmm	Firmware date (day/month), e.g. 0506 (5th June)
☑ Read access ☐ Write access		

I-974

Index | Name: **0x974 | Maximum time per DPV1 parameter access**		Data type: U16
Display of access statistics		
Subindex	Display	**Info**
0x974/0	240 bytes	Maximum block length
0x974/1	40	Maximum number of parameter accesses
0x974/2	0	Maximum time per access
☑ Read access ☐ Write access		

14 DIP switch positions for setting the station address

The station address results from the sum of the binary valencies of switches 1 ... 64.

The following table shows the switch positions for the valid address range 1 ... 126.

▸ Setting the station address (📖 32)

Station address	DIP switch						
	64	32	16	8	4	2	1
1	OFF	OFF	OFF	OFF	OFF	OFF	**ON**
2	OFF	OFF	OFF	OFF	OFF	**ON**	OFF
3	OFF	OFF	OFF	OFF	OFF	**ON**	**ON**
4	OFF	OFF	OFF	OFF	**ON**	OFF	OFF
5	OFF	OFF	OFF	OFF	**ON**	OFF	**ON**
6	OFF	OFF	OFF	OFF	**ON**	**ON**	OFF
7	OFF	OFF	OFF	OFF	**ON**	**ON**	**ON**
8	OFF	OFF	OFF	**ON**	OFF	OFF	OFF
9	OFF	OFF	OFF	**ON**	OFF	OFF	**ON**
10	OFF	OFF	OFF	**ON**	OFF	**ON**	OFF
11	OFF	OFF	OFF	**ON**	OFF	**ON**	**ON**
12	OFF	OFF	OFF	**ON**	**ON**	OFF	OFF
13	OFF	OFF	OFF	**ON**	**ON**	OFF	**ON**
14	OFF	OFF	OFF	**ON**	**ON**	**ON**	OFF
15	OFF	OFF	OFF	**ON**	**ON**	**ON**	**ON**
16	OFF	OFF	**ON**	OFF	OFF	OFF	OFF
17	OFF	OFF	**ON**	OFF	OFF	OFF	**ON**
18	OFF	OFF	**ON**	OFF	OFF	**ON**	OFF
19	OFF	OFF	**ON**	OFF	OFF	**ON**	**ON**
20	OFF	OFF	**ON**	OFF	**ON**	OFF	OFF
21	OFF	OFF	**ON**	OFF	**ON**	OFF	**ON**
22	OFF	OFF	**ON**	OFF	**ON**	**ON**	OFF
23	OFF	OFF	**ON**	OFF	**ON**	**ON**	**ON**
24	OFF	OFF	**ON**	**ON**	OFF	OFF	OFF
25	OFF	OFF	**ON**	**ON**	OFF	OFF	**ON**
26	OFF	OFF	**ON**	**ON**	OFF	**ON**	OFF
27	OFF	OFF	**ON**	**ON**	OFF	**ON**	**ON**
28	OFF	OFF	**ON**	**ON**	**ON**	OFF	OFF
29	OFF	OFF	**ON**	**ON**	**ON**	OFF	**ON**
30	OFF	OFF	**ON**	**ON**	**ON**	**ON**	OFF
31	OFF	OFF	**ON**	**ON**	**ON**	**ON**	**ON**
32	OFF	**ON**	OFF	OFF	OFF	OFF	OFF
33	OFF	**ON**	OFF	OFF	OFF	OFF	**ON**
34	OFF	**ON**	OFF	OFF	OFF	**ON**	OFF
35	OFF	**ON**	OFF	OFF	OFF	**ON**	**ON**
36	OFF	**ON**	OFF	OFF	**ON**	OFF	OFF
37	OFF	**ON**	OFF	OFF	**ON**	OFF	**ON**

Station address	DIP switch						
	64	32	16	8	4	2	1
38	OFF	**ON**	OFF	OFF	**ON**	**ON**	OFF
39	OFF	**ON**	OFF	OFF	**ON**	**ON**	**ON**
40	OFF	**ON**	OFF	**ON**	OFF	OFF	OFF
41	OFF	**ON**	OFF	**ON**	OFF	OFF	**ON**
42	OFF	**ON**	OFF	**ON**	OFF	**ON**	OFF
43	OFF	**ON**	OFF	**ON**	OFF	**ON**	**ON**
44	OFF	**ON**	OFF	**ON**	**ON**	OFF	OFF
45	OFF	**ON**	OFF	**ON**	**ON**	OFF	**ON**
46	OFF	**ON**	OFF	**ON**	**ON**	**ON**	OFF
47	OFF	**ON**	OFF	**ON**	**ON**	**ON**	**ON**
48	OFF	**ON**	**ON**	OFF	OFF	OFF	OFF
49	OFF	**ON**	**ON**	OFF	OFF	OFF	**ON**
50	OFF	**ON**	**ON**	OFF	OFF	**ON**	OFF
51	OFF	**ON**	**ON**	OFF	OFF	**ON**	**ON**
52	OFF	**ON**	**ON**	OFF	**ON**	OFF	OFF
53	OFF	**ON**	**ON**	OFF	**ON**	OFF	**ON**
54	OFF	**ON**	**ON**	OFF	**ON**	**ON**	OFF
55	OFF	**ON**	**ON**	OFF	**ON**	**ON**	**ON**
56	OFF	**ON**	**ON**	**ON**	OFF	OFF	OFF
57	OFF	**ON**	**ON**	**ON**	OFF	OFF	**ON**
58	OFF	**ON**	**ON**	**ON**	OFF	**ON**	OFF
59	OFF	**ON**	**ON**	**ON**	OFF	**ON**	**ON**
60	OFF	**ON**	**ON**	**ON**	**ON**	OFF	OFF
61	OFF	**ON**	**ON**	**ON**	**ON**	OFF	**ON**
62	OFF	**ON**	**ON**	**ON**	**ON**	**ON**	OFF
63	OFF	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**
64	**ON**	OFF	OFF	OFF	OFF	OFF	OFF
65	**ON**	OFF	OFF	OFF	OFF	OFF	**ON**
66	**ON**	OFF	OFF	OFF	OFF	**ON**	OFF
67	**ON**	OFF	OFF	OFF	OFF	**ON**	**ON**
68	**ON**	OFF	OFF	OFF	**ON**	OFF	OFF
69	**ON**	OFF	OFF	OFF	**ON**	OFF	**ON**
70	**ON**	OFF	OFF	OFF	**ON**	**ON**	OFF
71	**ON**	OFF	OFF	OFF	**ON**	**ON**	**ON**
72	**ON**	OFF	OFF	**ON**	OFF	OFF	OFF
73	**ON**	OFF	OFF	**ON**	OFF	OFF	**ON**
74	**ON**	OFF	OFF	**ON**	OFF	**ON**	OFF
75	**ON**	OFF	OFF	**ON**	OFF	**ON**	**ON**
76	**ON**	OFF	OFF	**ON**	**ON**	OFF	OFF
77	**ON**	OFF	OFF	**ON**	**ON**	OFF	**ON**
78	**ON**	OFF	OFF	**ON**	**ON**	**ON**	OFF
79	**ON**	OFF	OFF	**ON**	**ON**	**ON**	**ON**
80	**ON**	OFF	**ON**	OFF	OFF	OFF	OFF

Station address	DIP switch						
	64	32	16	8	4	2	1
81	**ON**	OFF	**ON**	OFF	OFF	OFF	**ON**
82	**ON**	OFF	**ON**	OFF	OFF	**ON**	OFF
83	**ON**	OFF	**ON**	OFF	OFF	**ON**	**ON**
84	**ON**	OFF	**ON**	OFF	**ON**	OFF	OFF
85	**ON**	OFF	**ON**	OFF	**ON**	OFF	**ON**
86	**ON**	OFF	**ON**	OFF	**ON**	**ON**	OFF
87	**ON**	OFF	**ON**	OFF	**ON**	**ON**	**ON**
88	**ON**	OFF	**ON**	**ON**	OFF	OFF	OFF
89	**ON**	OFF	**ON**	**ON**	OFF	OFF	**ON**
90	**ON**	OFF	**ON**	**ON**	OFF	**ON**	OFF
91	**ON**	OFF	**ON**	**ON**	OFF	**ON**	**ON**
92	**ON**	OFF	**ON**	**ON**	**ON**	OFF	OFF
93	**ON**	OFF	**ON**	**ON**	**ON**	OFF	**ON**
94	**ON**	OFF	**ON**	**ON**	**ON**	**ON**	OFF
95	**ON**	OFF	**ON**	**ON**	**ON**	**ON**	**ON**
96	**ON**	**ON**	OFF	OFF	OFF	OFF	OFF
97	**ON**	**ON**	OFF	OFF	OFF	OFF	**ON**
98	**ON**	**ON**	OFF	OFF	OFF	**ON**	OFF
99	**ON**	**ON**	OFF	OFF	OFF	**ON**	**ON**
100	**ON**	**ON**	OFF	OFF	**ON**	OFF	OFF
101	**ON**	**ON**	OFF	OFF	**ON**	OFF	**ON**
102	**ON**	**ON**	OFF	OFF	**ON**	**ON**	OFF
103	**ON**	**ON**	OFF	OFF	**ON**	**ON**	**ON**
104	**ON**	**ON**	OFF	**ON**	OFF	OFF	OFF
105	**ON**	**ON**	OFF	**ON**	OFF	OFF	**ON**
106	**ON**	**ON**	OFF	**ON**	OFF	**ON**	OFF
107	**ON**	**ON**	OFF	**ON**	OFF	**ON**	**ON**
108	**ON**	**ON**	OFF	**ON**	**ON**	OFF	OFF
109	**ON**	**ON**	OFF	**ON**	**ON**	OFF	**ON**
110	**ON**	**ON**	OFF	**ON**	**ON**	**ON**	OFF
111	**ON**	**ON**	OFF	**ON**	**ON**	**ON**	**ON**
112	**ON**	**ON**	**ON**	OFF	OFF	OFF	OFF
113	**ON**	**ON**	**ON**	OFF	OFF	OFF	**ON**
114	**ON**	**ON**	**ON**	OFF	OFF	**ON**	OFF
115	**ON**	**ON**	**ON**	OFF	OFF	**ON**	**ON**
116	**ON**	**ON**	**ON**	OFF	**ON**	OFF	OFF
117	**ON**	**ON**	**ON**	OFF	**ON**	OFF	**ON**
118	**ON**	**ON**	**ON**	OFF	**ON**	**ON**	OFF
119	**ON**	**ON**	**ON**	OFF	**ON**	**ON**	**ON**
120	**ON**	**ON**	**ON**	**ON**	OFF	OFF	OFF
121	**ON**	**ON**	**ON**	**ON**	OFF	OFF	**ON**
122	**ON**	**ON**	**ON**	**ON**	OFF	**ON**	OFF
123	**ON**	**ON**	**ON**	**ON**	OFF	**ON**	**ON**

Station address	DIP switch						
	64	32	16	8	4	2	1
124	**ON**	**ON**	**ON**	**ON**	**ON**	OFF	OFF
125	**ON**	**ON**	**ON**	**ON**	**ON**	OFF	**ON**
126	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**	OFF

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FEEDBACK

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.

If you have suggestions for improvement, please e-mail us to:

feedback-docu@Lenze.de

Thank you for your support.

Your Lenze documentation team

Lenze Drives GmbH
Postfach 10 13 52
D-31763 Hameln
Germany
+49 (0)51 54 / 82-0
+49 (0)51 54 / 82-28 00
Lenze@Lenze.de
www.Lenze.com

Service
Lenze Service GmbH
Breslauer Straße 3
D-32699 Extertal
Germany
00 80 00 / 24 4 68 77 (24 h helpline)
+49 (0)51 54 / 82-11 12
Service@Lenze.de