



E84AYCEC

POWERLINK

Inverter Drives 8400 -----

Communication manual EN



13564917

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1 About this documentation

Contents

This documentation exclusively describes the E84AYCEC communication module (POWERLINK).



Note!

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

The features and functions of the communication module POWERLINK are described in detail. Examples illustrate typical applications.

This documentation also contains the following:

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

The theoretical context is only explained as far as it is required for understanding the function of the communication module.

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

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



Tip!

Detailed information about POWERLINK can be found on the website of the "Ethernet POWERLINK Standardization Group":

www.ethernet-powerlink.org

Screenshots/application examples

All screenshots in this documentation are application examples. Depending on the firmware version of the field devices and the software version of the installed engineering tools (»Engineer«), the screenshots in this documentation may differ from the screen representation.

About this documentation

Target group

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

Information regarding the validity

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

Extension module	Type designation	From hardware version	From software version
Communication module POWERLINK	E84AYCEC	VA	01.00

About this documentation

Document history

1.1 Document history

Version			Description
4.0	02/2019	TD23	General updates
3.0	09/2012	TD17	General updates Description of code C13060 (0x1006 cycle time) corrected.
2.0	02/2011	TD17	General revision
1.0	11/2010	TD17	First edition

About this documentation

Conventions used

1.2 Conventions used

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

Type of information	Highlighting	Examples/notes
Spelling of numbers		
Decimal	Normal spelling	Example: 1234
Hexadecimal	0x[0 ... 9, A ... F]	Example: 0x60F4
Binary • Nibble	In inverted commas Point	Example: '100' Example: '0110.0100'
Decimal separator	Point	The decimal point is always used. For example: 1234.56
Text		
Program name	» «	PC software Example: Lenze »Engineer«
Window	<i>italics</i>	The <i>message window</i> ... / The <i>Options</i> dialog box...
Control element	Bold	The OK button... / The Copy command... / The Properties tab... / The Name input field...
Hyperlink	<u>Underlined</u>	Optically highlighted reference to another topic. Can be activated with a mouse-click in this documentation.
Icons		
Page reference	 7	Optically highlighted reference to another page. Can be activated with a mouse-click in this documentation.
Step-by-step instructions		Step-by-step instructions are indicated by a pictograph.

About this documentation

Terminology used

1.3 Terminology used

Term	Meaning
Inverter	Lenze inverter of the "Inverter Drives 8400" product series
Standard device	
»Engineer«	Lenze PC software which supports you during the "Engineering" process (parameterisation, diagnostics, and configuration) throughout the whole life cycle, i. e. from planning to maintenance of the machine commissioned.
Code	Parameter which serves to parameterise and monitor the inverter. In normal usage, the term is usually referred to as "Index".
Subcode	If a code contains several parameters, they are stored in "subcodes". This manual uses a slash "/" as a separator between code and subcode (e.g. "C00118/3"). This term is also referred to as "subindex" in common parlance.
Lenze setting	Default settings of the device, preconfigured ex works.
Basic setting	
HW	Hardware
SW	Software
EPL	Abbreviation for "POWERLINK"
(EPL) nodes	POWERLINK nodes (<i>Managing Node, Controlled Nodes</i>)
CN	Controlled node (EPL slave)
MN	Managing node (EPL master) The <i>Managing Node</i> accepts the control function for the data communication of the decentralised field devices. Typically, the <i>Managing Node</i> is the communication interface of a PLC.
Node ID	EPL node address

About this documentation

Notes used

1.4 Notes used

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

Safety instructions

Layout of the safety instructions:



Pictograph and signal word!

(characterise the type and severity of danger)

Note

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

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

2 Safety instructions



Note!

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

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

2.1 General safety and application notes



Danger!

If the following basic safety measures are disregarded, severe injuries to persons and damage to material assets may result.

- Lenze drive and automation components ...
 - must only be used as directed.
 - ▶ [Application as directed](#) (□ 12)
 - must never be commissioned if they display signs of damage.
 - must never be technically modified.
 - must never be commissioned if they are not fully mounted.
 - must never be operated without required covers.
 - during and after operation can have live, moving and rotating parts, depending on their degree of protection. Surfaces can be hot.
- The following applies to Lenze drive components ...
 - only use the accessories approved.
 - Only use original manufacturer spare parts.
- Observe all specifications contained in the enclosed documentation and related documentation.
 - This is the precondition for safe and trouble-free operation and for obtaining the product features specified.
 - ▶ [Product features](#) (□ 13)
 - The specifications, processes, and circuitry described in this document are for guidance only and must be adapted to your own specific application. Lenze does not take responsibility for the suitability of the process and circuit proposals.
- All works on and with Lenze drive and automation components must only be carried out by qualified personnel. According to IEC 60364 or CENELEC HD 384 these are persons who ...
 - are familiar with installing, mounting, commissioning, and operating the product.
 - who have the corresponding qualifications for their work.
 - who know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

Safety instructions

Device and application-specific safety instructions

2.2 Device and application-specific safety instructions

- During operation, the communication module must be securely connected to the standard device.
- With external voltage supply, always use a separate power supply unit, safely separated to EN 61800-5-1 in every control cabinet (SELV/PELV).
- Only use cables corresponding to the given specifications.
 - ▶ [Ethernet cable specification](#) (📖 32)



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

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

2.3 Residual hazards

Protection of persons

- If the Inverter Drives 8400 are operated on a phase-earthed mains with a rated mains voltage of ≥ 400 V, external measures need to be implemented in order to ensure protection against accidental contact.
 - ▶ [Protective insulation](#) (📖 16)

Device protection

- The communication module contains electronic components which may be damaged or destroyed by electrostatic discharge.
 - ▶ [Installation](#) (📖 21)

Product description

Application as directed

3 Product description

3.1 Application as directed

The communication module ...

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

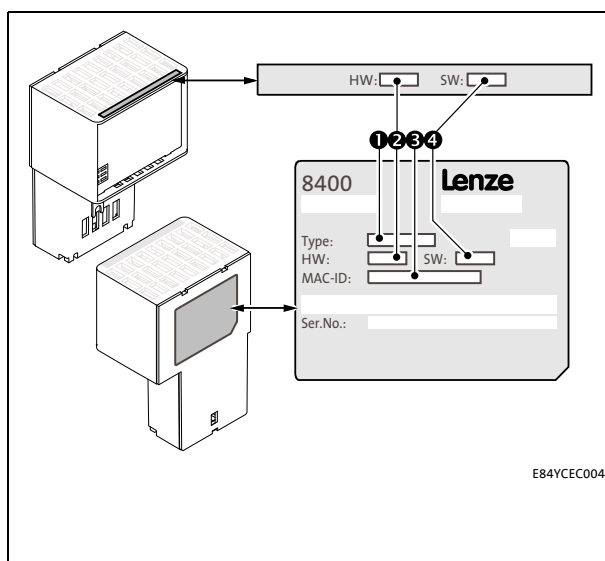
Product series	Type designation	From software version
Inverter Drives 8400 StateLine	E84AxSCxxxx	5.00
Inverter Drives 8400 HighLine	E84AxHCxxxx	5.00
Inverter Drives 8400 TopLine	E84AxTCxxxx	1.00

- is a device intended for use in industrial power systems.
- should only be used under the operating conditions prescribed in this documentation.
- can only be used in POWERLINK networks.

Any other use shall be deemed inappropriate!

3.2 Identification

Type designation and hardware and software version of the communication module are indicated on the nameplate:



1 Type designation (type)

E84 Product series
A Version
Y Module identification: Extension module
C Module type: Communication module
EC POWERLINK CN
V/S V: Coated version
S: Standard version

2 Hardware version (HW)

3 MAC address (MAC-ID)

00-0A-86-xx-yy-zz:
Hardware address of the communication module for unique identification in the network

4 Software version (SW)

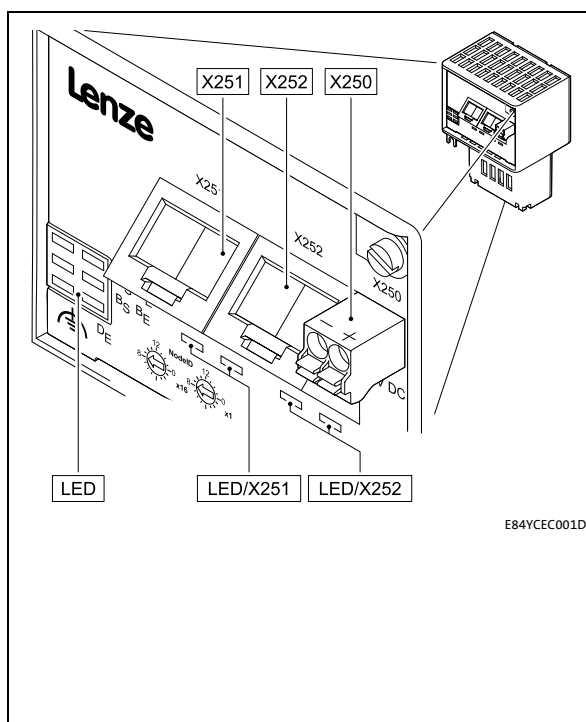
[3-1] Identification data

3.3 Product features

- Interface module for the POWERLINK communication system, for attachment to the expansion slots of Inverter Drives 8400
- The communication module can either be supplied internally by the standard device or externally by a separate voltage source.
- Real-time Ethernet with the Ethernet POWERLINK V2 communication profile for motion and general applications
- A line topology can be implemented by means of the integrated 2-port hub.
- Supported functions:
 - POWERLINK CN
- Use of max. 6 PDO crosslinks for the managing node or the controlled node to create systems with "distributed intelligence"
- Very short CN response times for optimal network performance
- Parallel Ethernet communication between the Lenze »Engineer« and the Inverter Drive 8400 if an EPL router is used.
- Access to all Lenze parameters

3.4 Connections and interfaces

- 2 RJ45 sockets for the POWERLINK connection
- 2-pole plug connector for the external voltage supply of the communication module.
- 2 rotary coding switches for setting the node address (node ID)
- Front LEDs for diagnosing the ...
 - voltage supply of the communication module;
 - connection to the standard device;
 - POWERLINK connection;
 - POWERLINK activity.



X250 External voltage supply of the communication module

- 2-pin plug connector with spring connection

▶ [External voltage supply](#) (□ 34)

X251 POWERLINK port 1

X252 POWERLINK port 2

- RJ45 sockets according to IEC/EN 60603-7
- each with 2 LED status displays for diagnostics

▶ [POWERLINK connection](#) (□ 30)

▶ [Status displays at the RJ45 sockets \(X251, X252\)](#) (□ 55)

x1 Rotary coding switch for setting the node address (node ID)

x16 ▶ [Node address setting](#) (□ 37)

MS 5 LED status displays for diagnostics

ME ▶ [Module status displays](#) (□ 53)

BS ▶ [Fieldbus status displays](#) (□ 54)

BE

EN

[3-2] E84AYCEC communication module (POWERLINK)

Technical data

General data and operating conditions

4 Technical data

4.1 General data and operating conditions

Range	Values	
Order designation	E84AYCEC	
Communication profile	POWERLINK	
Communication medium	S/FTP (Screened Foiled Twisted Pair, ISO/IEC 11801 or EN 50173), CAT 5e	
Interface	RJ45: Standard Ethernet (in accordance with IEEE 802.3), 100Base-TX (Fast Ethernet)	
Network topology	Tree, star, and line	
Type of node	Controlled node	
Node addresses (node IDs)	1 ... 239	
Transmission mode	Half duplex	
Baud rate	100 Mbps	
Voltage supply	External supply via separate power supply unit • +: U = 24 V DC (20.4 V - 0 % ... 28.8 V + 0 %), I = 140 mA • -: reference potential for external voltage supply	
Conformities, approvals	CE	2004/108/EC, EMC Directive 2006/95/EC, Low-Voltage Directive
	EAC	Eurasian conformity TR CU: Technical Regulations of Customs Union
		TP TC 004/2011 (TR CU 004/2011) About the safety of low voltage equipment
		TP TC 020/2011 (TR CU 020/2011) Electromagnetic compatibility of technical means
	UL	UL 508C / C22.2 No. 14, Power Conversion Equipment (File-No. E132659)



Hardware manual for Inverter Drives 8400

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

4.2 Protective insulation



Danger!

Dangerous voltage

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

Possible consequences:

- Death or severe injuries

Protective measures:

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



Note!

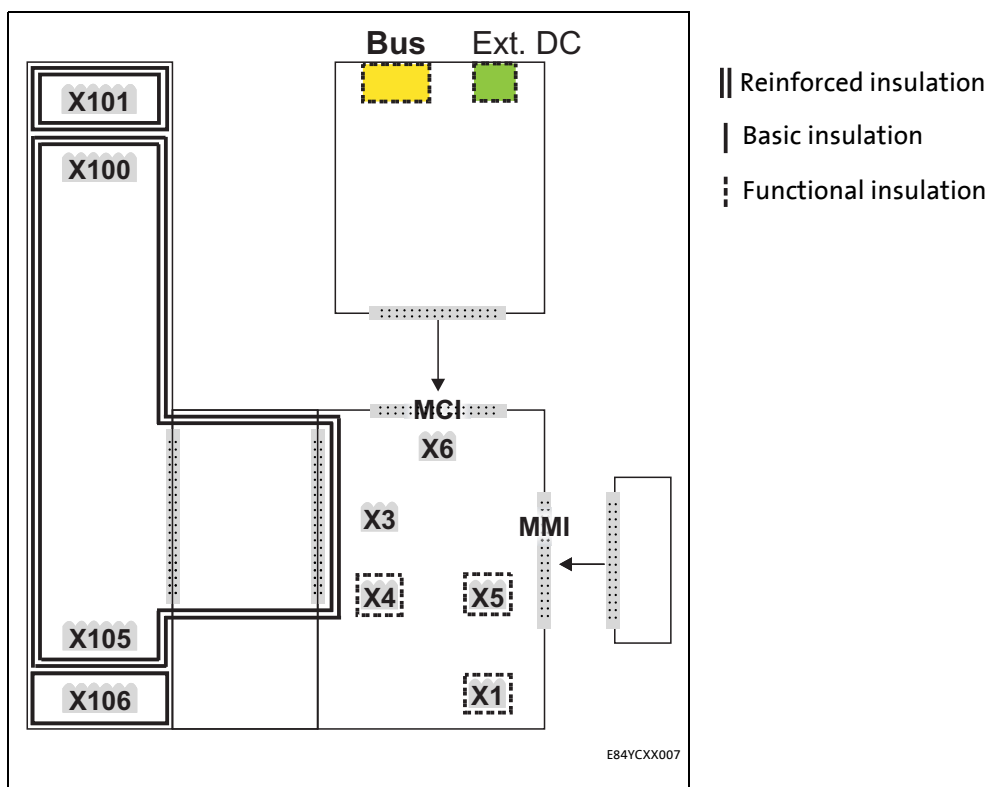
The existing protective insulation in the Inverter Drives 8400 is implemented according to EN 61800-5-1.

Technical data

Protective insulation

The following illustration ...

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



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

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

Example

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

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

4.3 POWERLINK communication data

Range	Values
Min. cycle time	400 µs
Total cycle times	0.4 / 0.5 / 1.0 / 2.0 / 3.0 ... 20.0 ms
Buffer size	• Tx-iso: max. 1490 bytes • Rx-iso: max. 1490 bytes (max. 32 bytes of PDO user data)
Delay time	• Controlled node ($T_{Preq} - T_{Res}$): approx. 2.6 µs • Controlled node ($T_{SoA} - T_{ASnd}$): approx. 2.6 µs
Frame size	Max. asynchronous telegram size (MTU): 1490 bytes
SDO communication method	UDP/IP or ASND
Number of RPDOs	Max. 6 channels
RPDO user data per application (all RPDOs)	Max. 16 objects (max. 32 bytes)
Number of TPDOs	1 channel (data access of all nodes by broadcasting)
TPDO user data per application	Max. 16 objects (32 bytes)
CN operating modes	Support of ... • Multiplex CNs • Optional CNs

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 an POWERLINK network depend on the ...

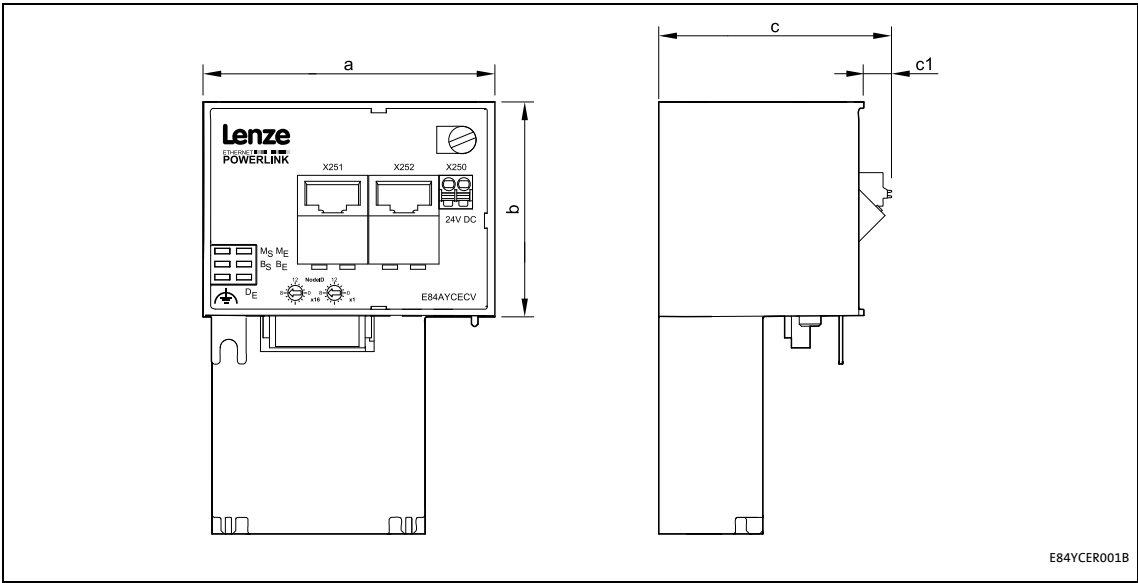
- processing time in the inverter;
- frame runtime (baud rate / frame length);
- the nesting depth of the network.

Processing time inside the inverter

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

There are no interdependencies between parameter data and process data.

4.4 Dimensions



[4-2] Dimensions

Type	Dimensions [mm]			
	a	b	c	c1
E84AYCEC	67	50	57	8

5 Installation



Stop!

Electrostatic discharge

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

Possible consequences:

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

Protective measures

- Before touching the module, be sure that you are free of electrostatic charge.

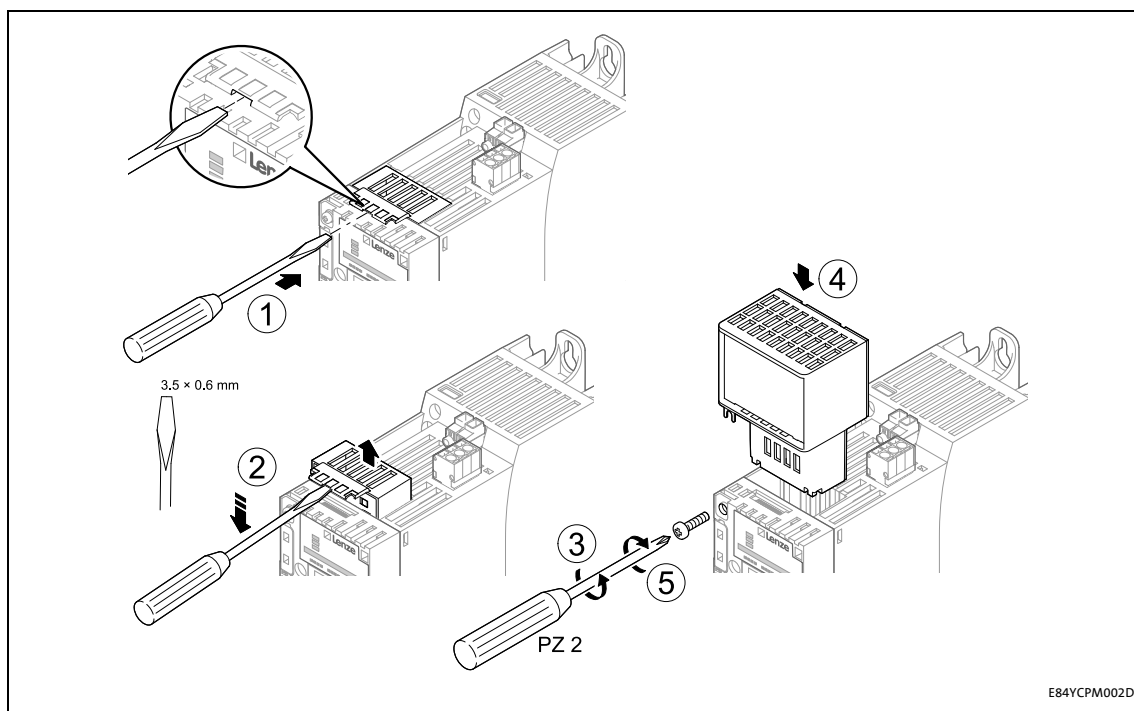
Installation

Mechanical installation

5.1 Mechanical installation

The communication module can be plugged in or unplugged from the MCI slot when the inverter is switched on. When the module is plugged in, it is detected automatically, and a function and version plausibility check is executed.

5.1.1 Mounting for standard devices of 0.25 kW and 0.37 kW

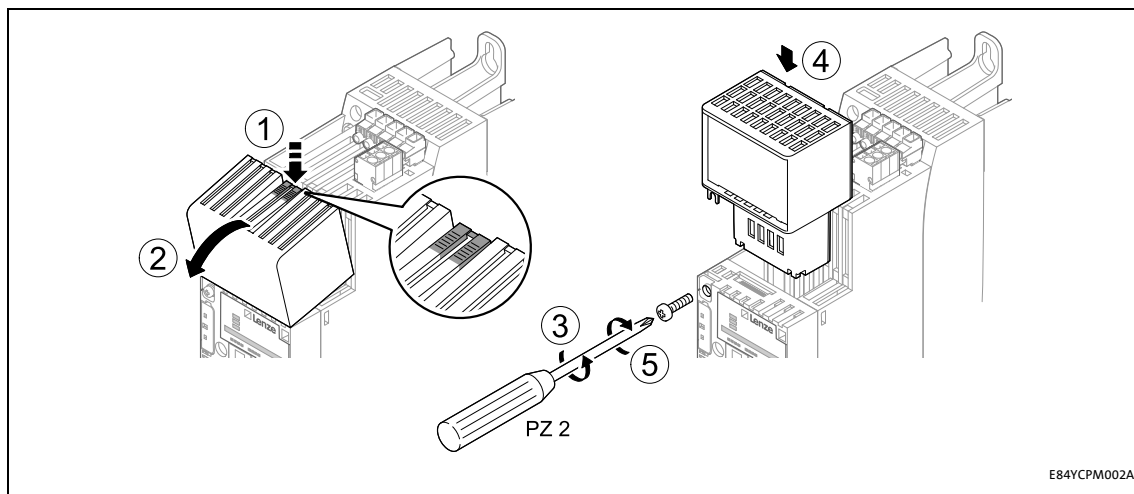


[5-1] Mounting for standard devices of 0.25 kW and 0.37 kW

Mounting steps

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

5.1.2 Mounting for standard devices of 0.55 kW or more

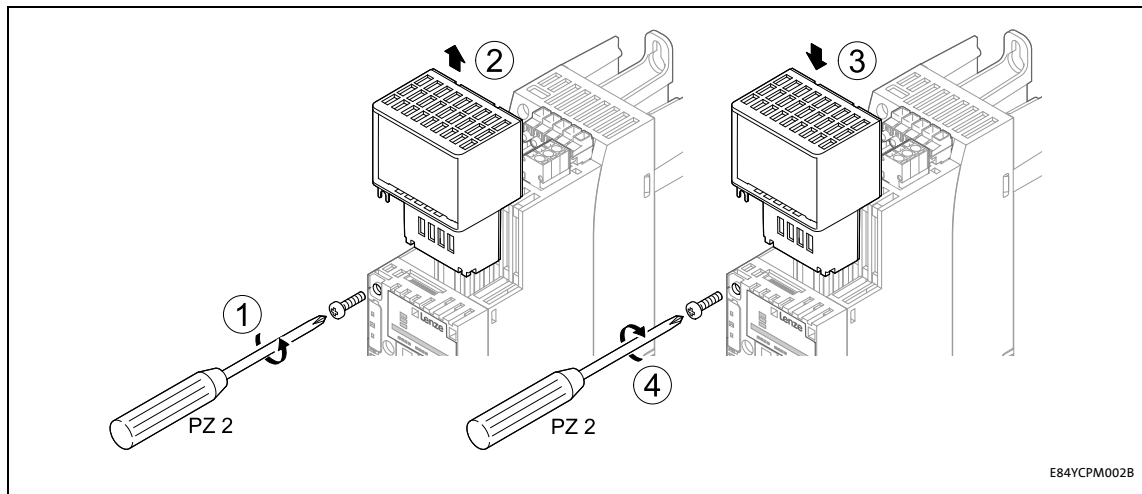


[5-2] Mounting for standard devices of 0.55 kW or more

Mounting steps

1. Slightly press on the marked spot on the top of the MCI slot cover of the standard device (1).
2. Tilt the cover forward and remove it from the standard device (2).
3. Loosen the securing screw for the communication module at the standard device (3).
4. Insert the communication module into the MCI slot of the standard device (4).
5. Tighten the securing screw again (5).

5.1.3 Exchanging the communication module



[5-3] Exchanging the communication module

Mounting steps

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

5.2 Electrical installation



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

Observe the notes and wiring instructions contained in this documentation.

5.2.1 Wiring according to EMC guidelines

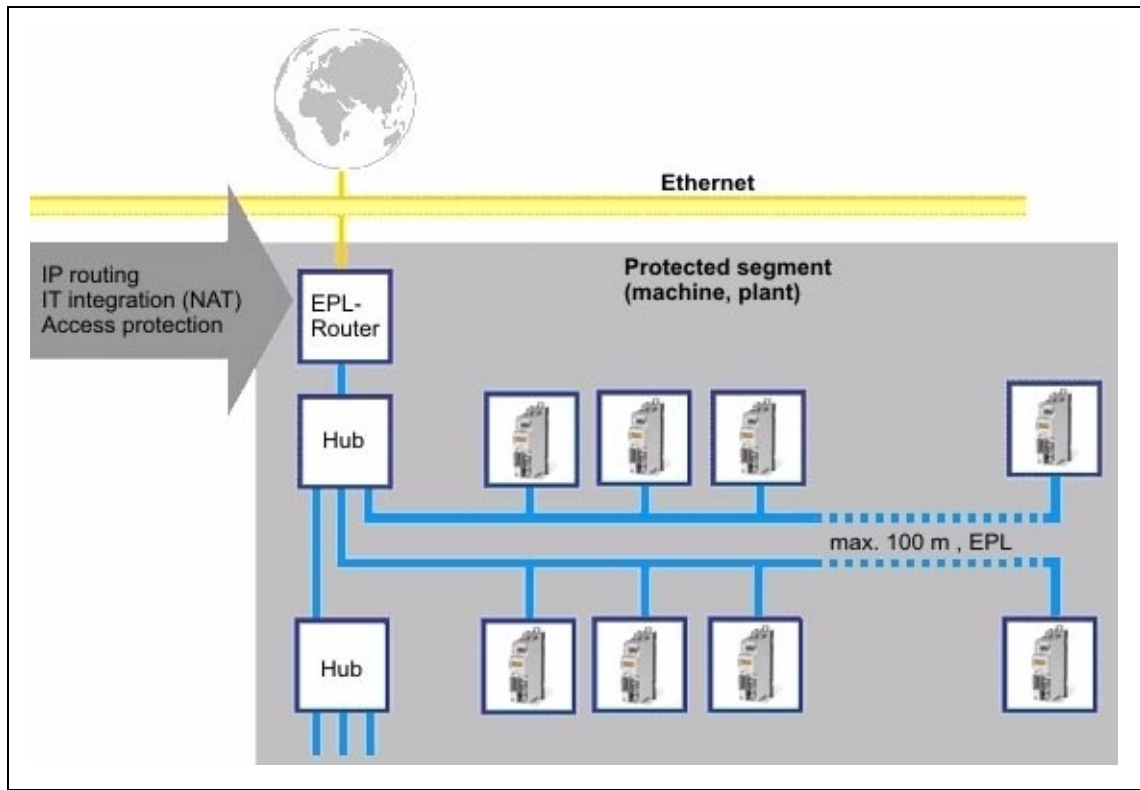
In typical systems, standard shielding is sufficient for Ethernet cables.

However, in environments with a very high level of interference, EMC resistance can be improved by additionally earthing the cable shield on both sides.

For this observe the following notes:

1. Remove the plastic sheath of the cable at a length of 2 cm.
2. Fasten the cable shield to the shield support of the standard device.

5.2.2 Network topology



[5-4] Network topology for POWERLINK



Note!

The use of class I hubs and switches inside the EPL network segment is not permitted.

Inside the segment only Ethernet hubs may be used as infrastructure elements. The hubs must meet the requirements on class II repeaters acc. to IEEE 802.3u.

For this purpose Lenze offers the dual hub integrated into the communication module and the separate eight-fold hub, type E94AZCEH.

Class I hubs and switches are not permissible since they have considerably longer delay times for the frame forwarding and a bigger jitter. Both sizes reduce the real-time capability and dynamics.

The cable length between both nodes is limited to 100 m.

The topology rules (IEEE 802.3u) required for controlling the collisions may be violated in the EPL network segment since according to the EPL access order frame collisions are prevented. This enables a structure of lines and any hybrid forms between star and line topology.

Recommended topology

For an easy configuration and due to many possible topology variants we recommend to create networks according to the following rules:

1. Create CN groups with up to 10 nodes.
2. Connect CN groups in star shape to the managing node.

Installation

Electrical installation

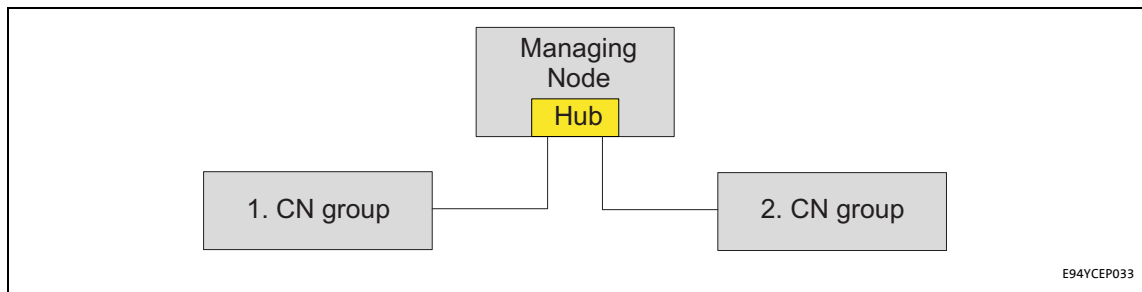
3. Connect CN groups to the managing node via one external hub each.
 - For more than 2 CN groups, use an external 8-port hub (e.g. Lenze hub E94AZCEH).
 - For max. 7 CN groups one hub is sufficient.
 - For more than 7 CN groups, use further hubs.
 - The groups can be distributed on the hubs just as you like.
 - Observe the restrictions of the used managing node.



Note!

E94AYCEP communication module als Managing Node

With maximally 2 CN groups and the use of an E94AYCEP communication module as *Managing Node*, connect the CN group(s) directly to the POWERLINK terminals X211 and X212 of the E94AYCEP communication module.



[5-5] Star topology for 1 to 2 CN groups

5.2.3 Ethernet POWERLINK



Note!

Standard Ethernet nodes are not permitted in the POWERLINK network segment.

In order to use the real-time capability of the POWERLINK technology, POWERLINK nodes must be interconnected in a separate network segment.

In accordance with the EPL rules, only the managing node controls the network access of EPL nodes. The managing node is the only node that transmits autonomously. The slave nodes (i.e. all controlled nodes) only transmit when they are entitled to transmit by the managing node.

Non-EPL nodes (e.g. PCs) typically violate these rules by sending frames independently of the managing node. These frames interfere with the cyclic frame exchange of the EPL nodes and impede the real-time capability of POWERLINK.

Connection to the standard Ethernet network

The connection to an external standard Ethernet network is carried out via an POWERLINK router or an POWERLINK gateway.

These infrastructure components separate the network traffic in the POWERLINK network segment from the one in the standard Ethernet. The handling of the frames depend on their direction:

- Standard Ethernet ---> EPL network segment:
Only frames that are addressed to nodes in the EPL network segment are forwarded. The forwarding takes place in the asynchronous area of the EPL cycle.
- EPL network segment ---> standard Ethernet:
Only asynchronous frames that are not addressed to nodes in the EPL network segment are forwarded.



Tip!

Detailed information on the function and setting of the router or gateway can be found in the documentation of the component manufacturer.

5.2.4 Basic Ethernet Mode



Note!

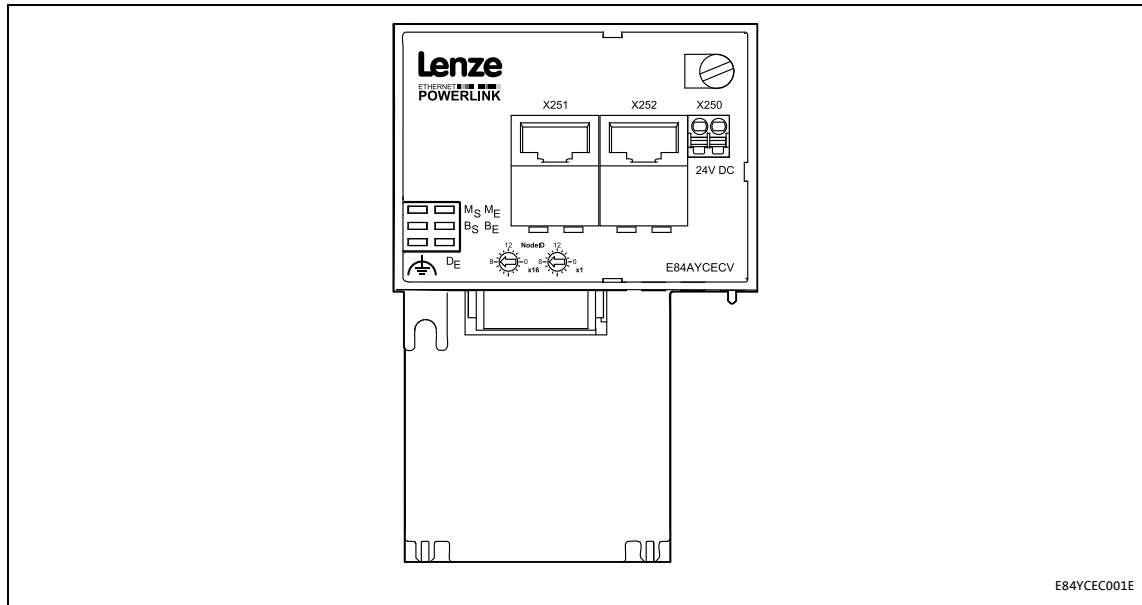
Operation in the "Basic Ethernet Mode" does not permit any real-time communication.

The communication module can be operated in the "Basic Ethernet Mode" for a basic parameter setting provided that the following applies:

1. Operation of the module with network address ≤ 239 .
 - IP address: 192.168.100.[*EPL address*]
 - see [Node address setting](#) (37)
2. No operation with real-time EPL must be carried out.
3. No integration of a managing node (EPL address = 240) into the standard Ethernet network.

5.2.5 POWERLINK connection

POWERLINK is connected via the RJ45 sockets **X251 (P1)** and **X252 (P2)**.



[5-6] POWERLINK connections X251 (P1) and X252 (P2)

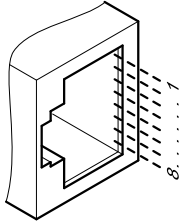
- If possible, do not wire more than 10 nodes in a row in a network line.
- In case of more than 10 nodes you should deactivate the automatic calculation of the hub level in the »Engineer« and enter it manually to increase the performance.
- With a cycle time of 1 ms, 25 nodes can be operated.
 - The number of nodes can be increased if the EPL cycle time is increased as well.
- You can use a standard Ethernet patch cable to connect the communication module to the POWERLINK fieldbus (see [Ethernet cable specification](#) (□ 32)).
- The installation and removal of the Ethernet cables is optimised for the use of connectors in accordance with the "Automation Initiative of German Domestic Automobile Manufacturers" (AIDA).



Note!

To prevent the RJ45 socket from being damaged, insert or remove the Ethernet cable connector straight (at a right angle) into or from the socket.

Pin assignment of the RJ45 sockets

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



Tip!

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

5.2.6 Ethernet cable specification

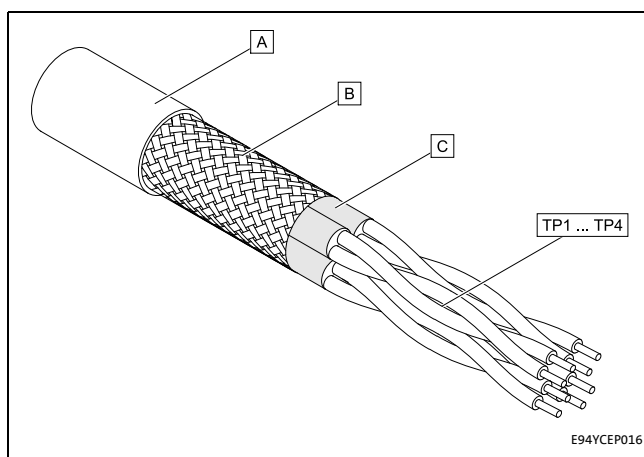


Note!

Only use cables that meet the listed specifications.

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

Structure of the Ethernet cable



A Cable insulation

B Braid

C Foil shielding

TP1 Twisted core pairs 1 ... 4

... [▶ Colour code of the Ethernet cable](#)

TP4 [\(33\)](#)

[5-7] Structure of the Ethernet cable (S/FTP, CAT 5e)

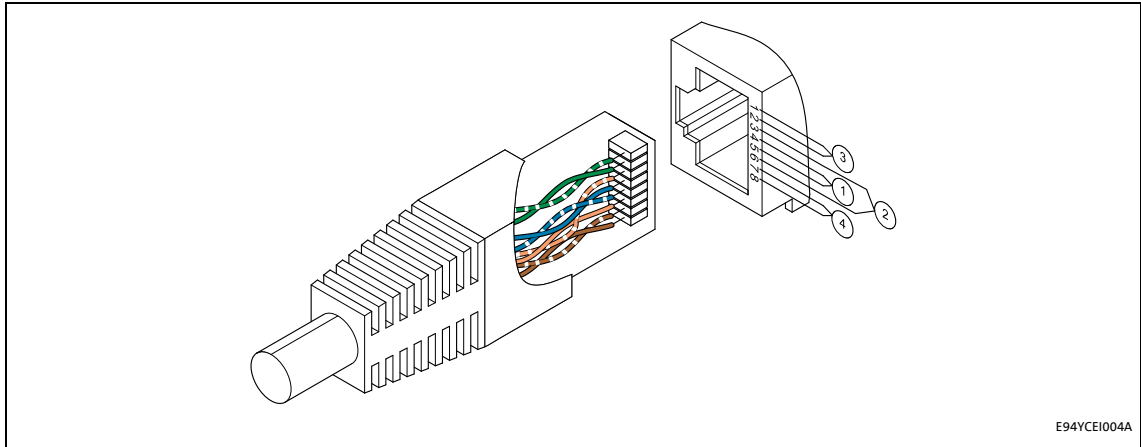
Colour code of the Ethernet cable



Note!

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

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



E94YCEI004A

[5-8] Ethernet plug in accordance with EIA/TIA 568A/568B

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

5.2.7 External voltage supply

The communication module can be externally supplied with voltage via separate supply cables at the 2-pin plug connector **X250**.



Note!

Always use a separate power supply unit safely separated according to EN 61800-5-1 ("SELV/PELV") in every control cabinet for external voltage supply.

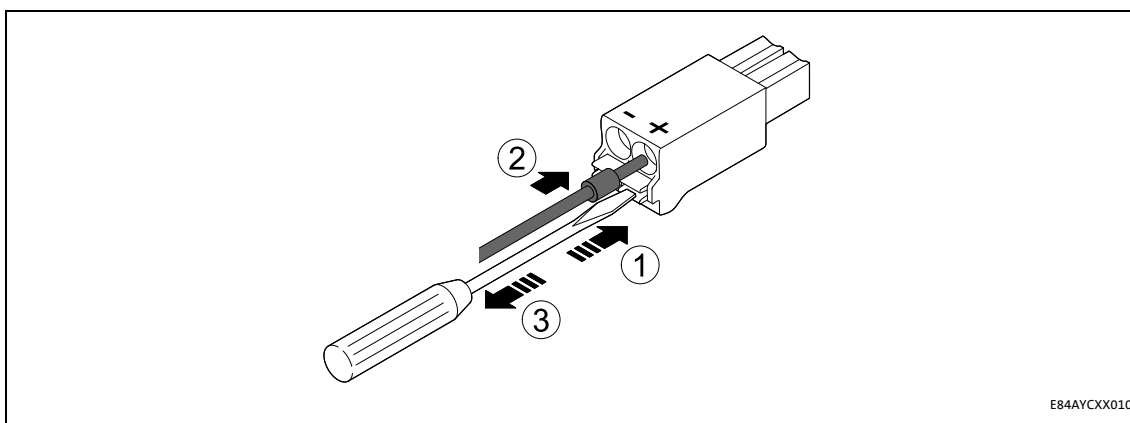
- External voltage supply of the communication module is required if the communication via the bus should be maintained when the supply of the standard device fails.
- Access to parameters of a standard device disconnected from the mains is not possible.

Wiring of the X250 plug connector



Stop!

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



[5-9] Wiring of the 2-pin plug connector with spring connection

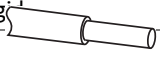
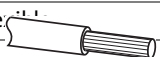
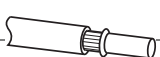
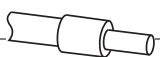
How to wire the plug connector with spring connection:

1. Press a screwdriver into the notch below the terminal and keep it pressed.
2. Place the supply cable in the terminal.
3. Remove the screwdriver from the notch.

Assignment of the X250 plug connector

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

Terminal data

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

6 Commissioning

During commissioning, system-related data such as motor parameters, operating parameters, responses, and parameters for fieldbus communication are defined for the inverter. For Lenze devices, this is done via the codes.

The codes of the inverter and communication are saved non-volatilely as a data set in the memory module.

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

▶ [Parameter reference](#) (□ 65)

6.1 Before initial switch-on



Stop!

Before switching on the Inverter Drive 8400 and the communication module for the first time, check the entire wiring for completeness, short circuit and earth fault.

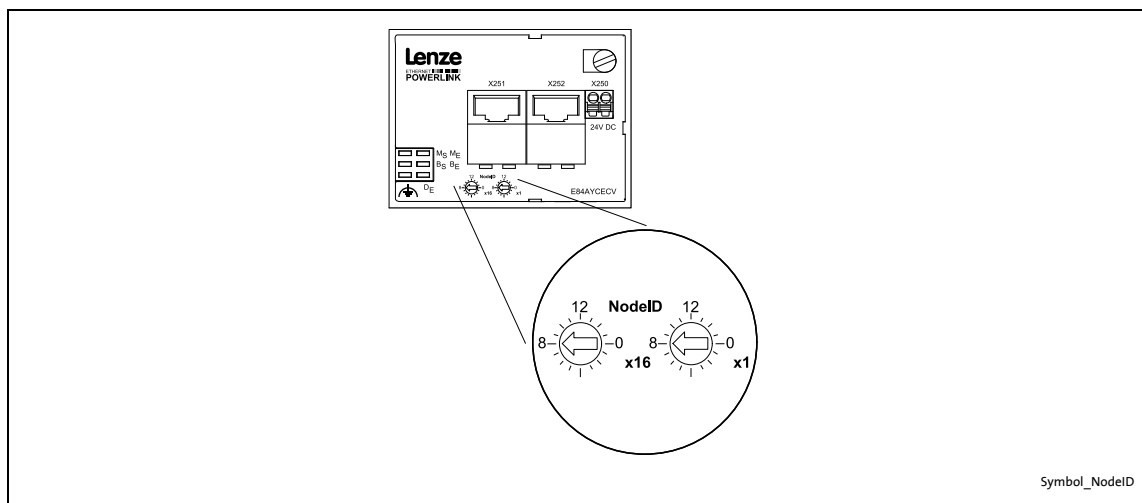
6.2 Node address setting



Note!

- Each network node address must only be used once.
- The node address setting in the configuration software (e.g. »Engineer«) and the rotary encoder switches must be identical for each node.
- Adjustable address range: 1 ... 239
- Switch the voltage supply of the communication module off and on again to activate changed settings.

The node address is set via the two front panel rotary coding switches "Node ID".



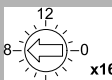
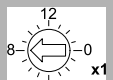
[6-1] Rotary coding switches "Node ID"

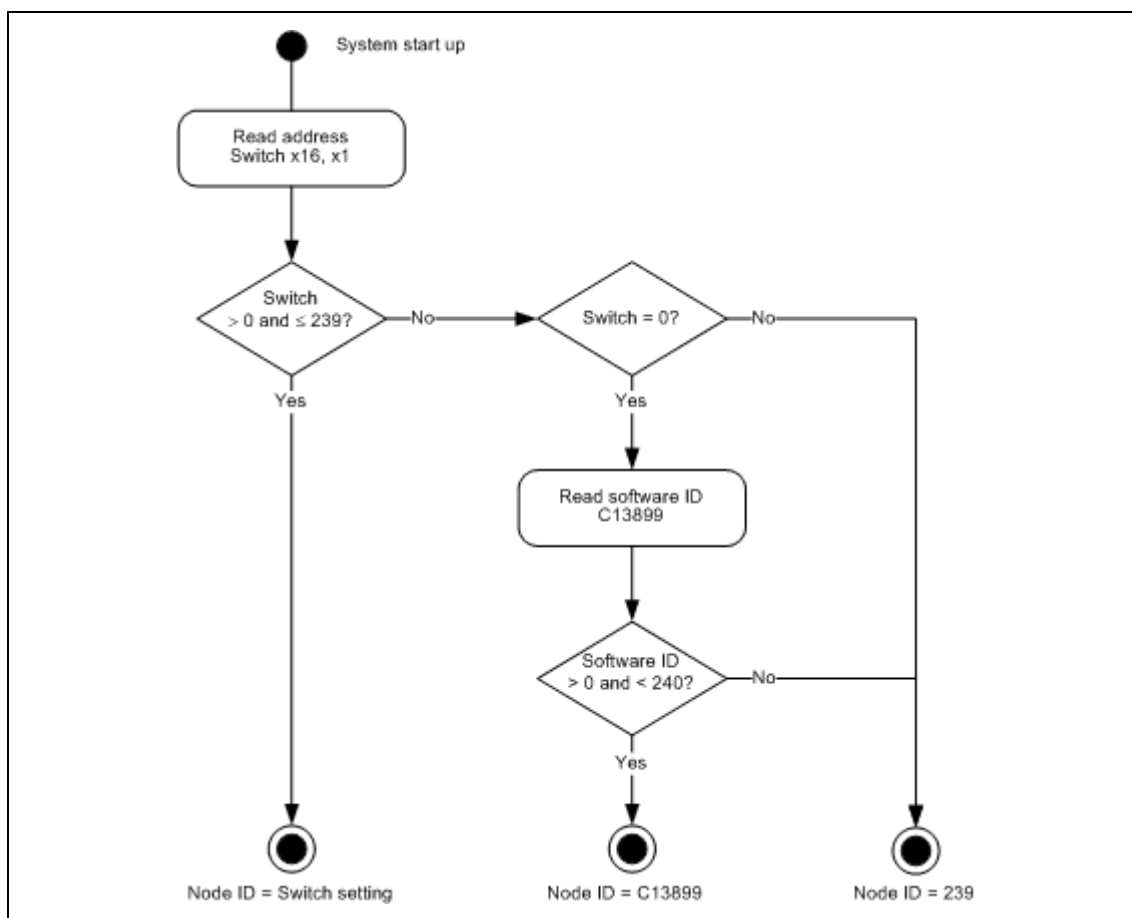
- The labelling of the rotary coding switches corresponds to the values for determining the node address.
- Valid addresses for the communication module in the EPL network:
 - 1 ... 100: Controlled node with Lenze module E94AYCEP as managing node
 - 1 ... 239: Controlled node with managing node of another manufacturer
- The corresponding Ethernet IP address of the communication module results from the address setting of the rotary coding switches:
 - IP address: 192.168.100.[EPL address]

Commissioning

Node address setting

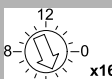
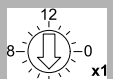
Possible settings of the rotary coding switches

Position of the rotary coding switches				Resulting node address
				
0	× 16	0	× 1	Value from code C13899
0 ... 14		1 ... 15		1 ... 239
15		0 ... 15		239



[6-2] Internal check of the rotary coding switch setting after the system start

Example: Setting of the node address "52"

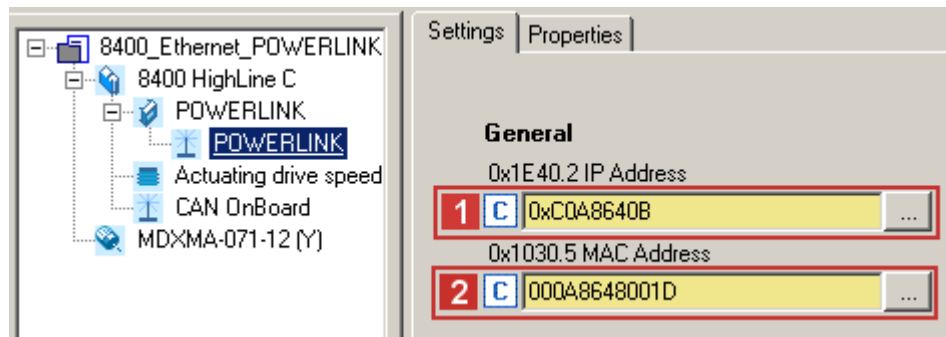
Position of the rotary coding switches				Resulting node address
				
3	× 16	4	× 1	$(3 \times 16) + (4 \times 1) = 52$

Commissioning

Setting and displays in the »Engineer«

6.3 Setting and displays in the »Engineer«

The **1** IP address (C13000) and the **2** MAC address (C13004) are displayed on the **Settings** tab.



6.4 Initial switch-on



Documentation for the standard device

Observe the safety instructions and information on residual hazards.



Note!

Establishing communication

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

For further communication of the externally supplied module it is not relevant whether the standard device is switched on or not.

Activating changed setting

Sequence for activating changed settings:

- Execute device command "11: Save all parameter sets" via standard device code **C00002**.
- Switch the voltage supply of the communication module off and on again.

Protection against uncontrolled restart

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

The restart protection is activated in the Lenze setting of the Inverter Drives 8400.

The restart behaviour of the inverter can be set via **C00142** ("auto-start option"):

- **C00142 = 9** (Lenze setting)
 - The inverter remains inhibited (even if the fault is no longer active).
 - Bit 0 (inhibit at power-on) and bit 3 (inhibit in the case of undervoltage) are set.
 - The drive restarts in a controlled mode through explicit controller enable: LOW-HIGH edge at digital input X4/RFR.
- **C00142 = 8** (Enabled)
 - In order to enable the device directly when switching it on, set bit 0 to zero (FALSE).
 - An uncontrolled restart of the drive is possible.

Commissioning

Initial switch-on



Initial switch-on and diagnosing

1. Switch on the controller and check whether it is ready for operation using the diagnostic LEDs of the communication module.
 - Red diagnostic LEDs must not be on.
 - The following signalling should be visible:

LED	Colour	Status	Meaning
MS	green	On	Module Status
EN	-	Off	Device Error
X251	green	On	LED is lit if a connection to the node has been established.
X252	green	On	

2. If not already done, load the EPL configuration into the inverter.
3. Repeat steps 1 and 2 for all EPL nodes.
4. Start network.

The network starts automatically if you set the managing node **last**.

Otherwise there are two options:

- Switch off the network nodes and switch them on together or
- execute a fault reset on the managing node (EPL address 240).

5. Check the EPL network again using the diagnostic LEDs of the communication module.

The following signalling should be visible:

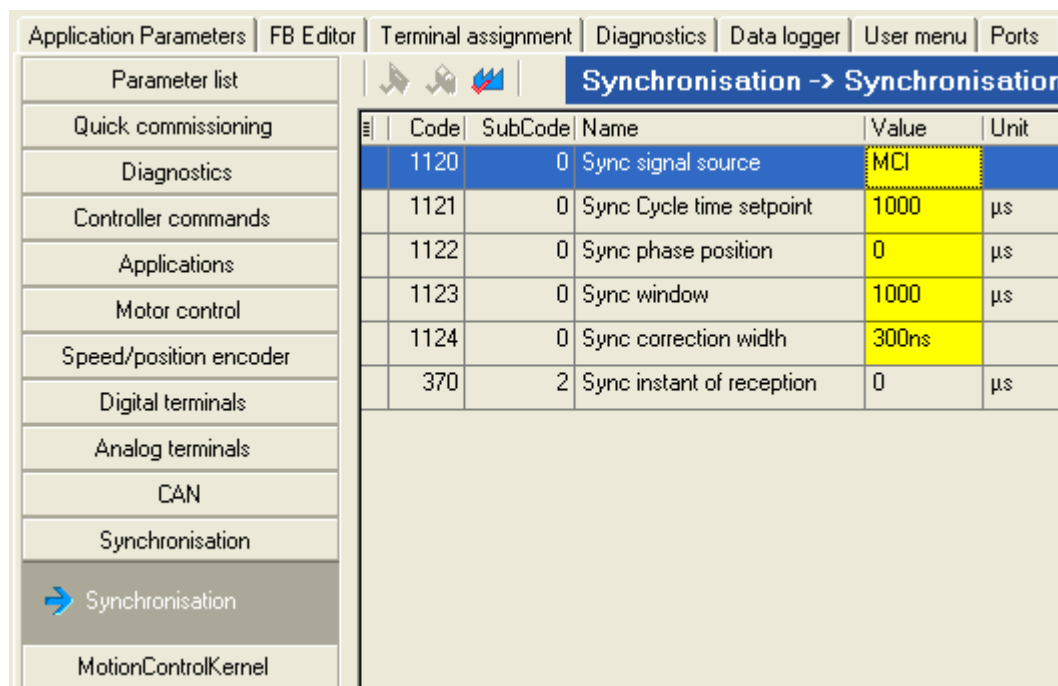
LED	Colour	Status	Meaning
MS	green	On	Module Status
ME	-	Off	Module Error
BE	-	Off	Bus Error
EN	-	Off	Device Error
BS	green	On	Bus Status
X251	green	On	LED is lit if a connection to the node has been established.
X252	green	On	

6.5 Drive synchronisation

Examples of the use of drive synchronisation via POWERLINK:

- Implementation of the "electrical shaft"
- Specification of cyclic position information
- Exactly simultaneous data processing of several drives
- Optimisation of the processing times of cyclic process data (PDO).

Settings in the »Engineer«



Code	SubCode	Name	Value	Unit
1120	0	Sync signal source	MCI	
1121	0	Sync Cycle time setpoint	1000	µs
1122	0	Sync phase position	0	µs
1123	0	Sync window	1000	µs
1124	0	Sync correction width	300ns	
370	2	Sync instant of reception	0	µs

- Set "MCI" as synchronisation source in code **C01120** of the inverter.
- The cycle time setpoint **C01121** and the phase position **C01122** are automatically calculated from the communication module. Default settings of these parameters are ignored.
- It is not necessary to adjust the sync window **C01123** and the sync correction width **C01124**.



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

Here you can find detailed information on drive synchronisation and the corresponding parameters.

6.6 Optimisation of networks

SDO bandwidth



Note!

The channel bandwidth should only be increased if the network is below capacity limit.

The SDO channel width ([C13075](#)) is the size of the asynchronous channel used for parameter setting and diagnostics. A higher value improves the transmission of large amounts of data (e.g. parameter downloads) and at the same time reduces the number of possible nodes.

Maximum time for device search

During the device search, the managing node has to wait until all controlled nodes have been found.

- Unless all controlled nodes are available in the defined EPL cycle time, the "EPL_BOOTUP_1" error message is generated. The managing node remains in this status.
- If the managing node has found all controlled nodes, it starts the network.

Due to machine or system-specific switch-on sequences, it may be required to adapt the following EPL objects:

- CN object **0x1F99**: NMT_CNBasicEthernetTimeout_U32 ([C13078](#))
- MN object **0x1F89**: NMT_BootTime_REC



Note!

In order to avoid a too quick change to the "[Basic Ethernet Mode](#)" ([82](#)), the value of the **0x1F99** object (NMT_CNBasicEthernetTimeout_U32) must be higher than the value of the **0x1F89** object (NMT_BootTime_REC) which is the case by default.

► [Index table](#) ([82](#))

7 Process data transfer

POWERLINK transmits process data, parameter data, configuration data and diagnostic data between the managing node and the controlled nodes. Depending on their time-critical behaviour, the data are transmitted via different communication channels.

- Process data are transmitted via the process data channel.
- Process data serve to control the Inverter Drive 8400.
- The transmission of process data is time-critical.
- Process data are cyclically transferred between the managing node and the controlled nodes (permanent exchange of current input and output data).
- The managing node can directly access the process data. In the PLC, for instance, the data are directly assigned to the I/O area.
- Up to 16 process data words (16 bit/word) can be exchanged per direction.
- Process data are not saved in the inverter.
- Process data are e.g. setpoints, actual values, control words, and status words.

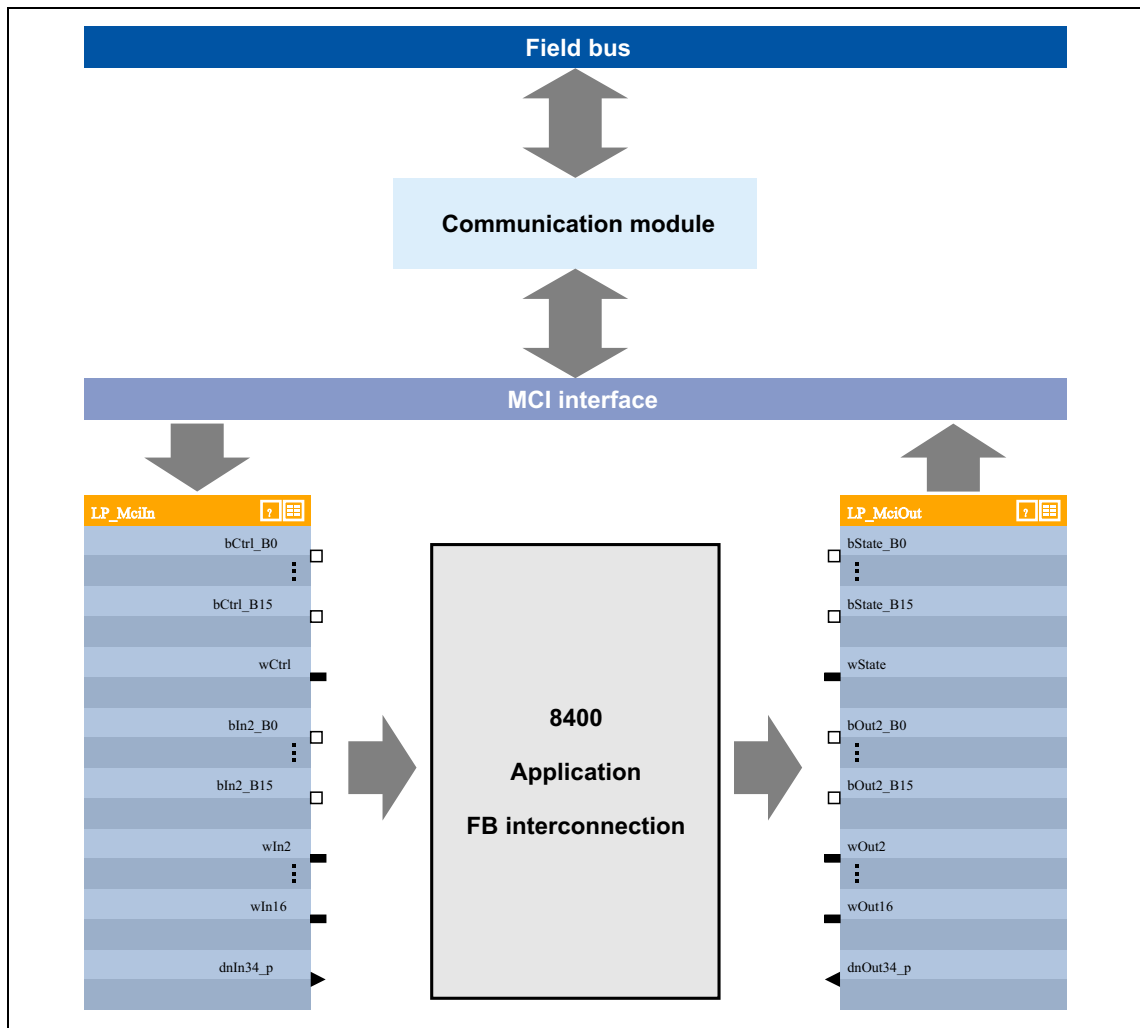
Process data transfer

Access to process data / PDO mapping

7.1 Access to process data / PDO mapping

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

- A maximum of 16 words are exchanged per direction.
- The process data are accessed via the port blocks **LP_MciIn** and **LP_MciOut**. These port blocks are also referred to as process data channels.
- The port block **LP_MciIn** maps the received MCI-PDOs.
- The port block **LP_MciOut** maps the MCI-PDOs to be sent.
- The port/function block interconnection for the process data objects (PDO) is carried out with the Lenze »Engineer«.



[7-1] External and internal data transfer between the bus system, inverter, and application



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

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

Process data transfer

Preconfigured port interconnection of the process data objects (PDO)



Note!

The »Engineer« screenshots shown on the following pages are only examples of the setting sequence and the resulting displays.

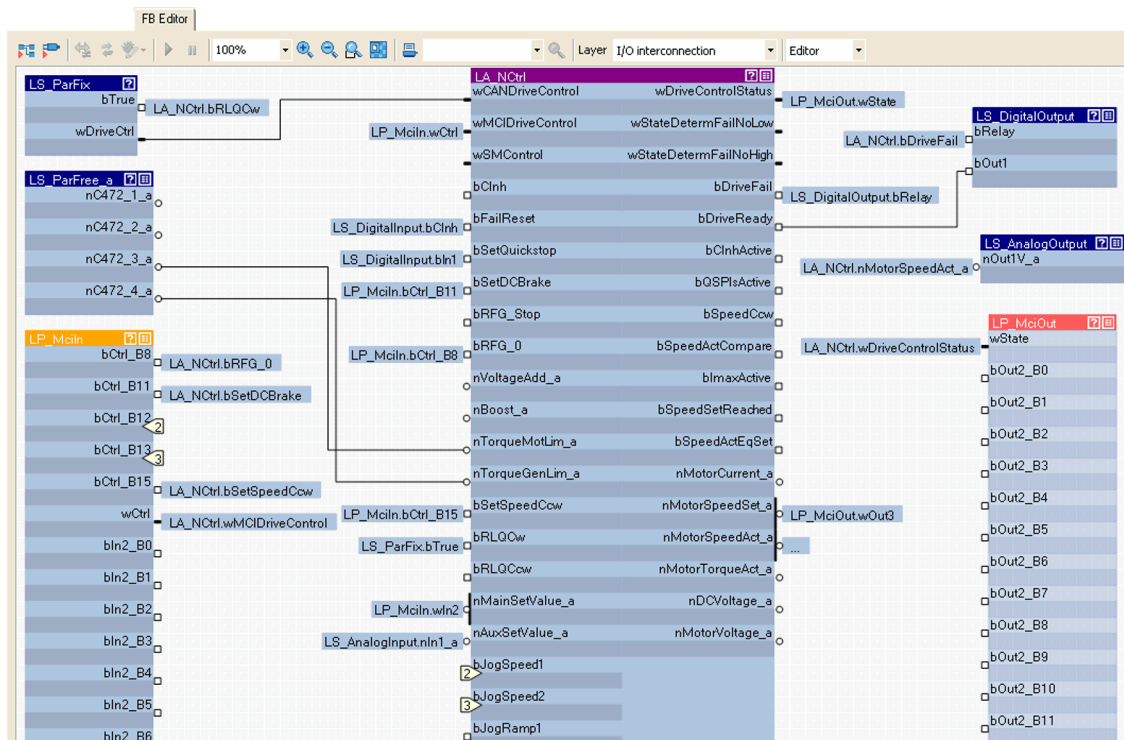
The data in the display fields may differ from the ones of your project.

7.2

Preconfigured port interconnection of the process data objects (PDO)

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

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



Process data transfer

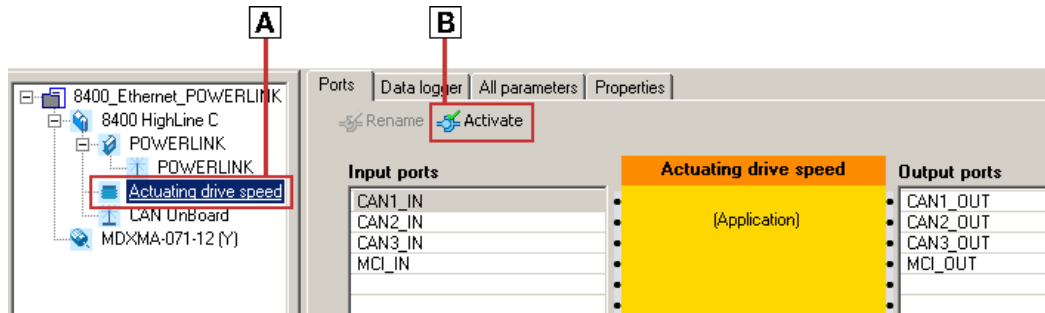
Freely configuring the port interconnection of the process data objects (PDO)

7.3 Freely configuring the port interconnection of the process data objects (PDO)

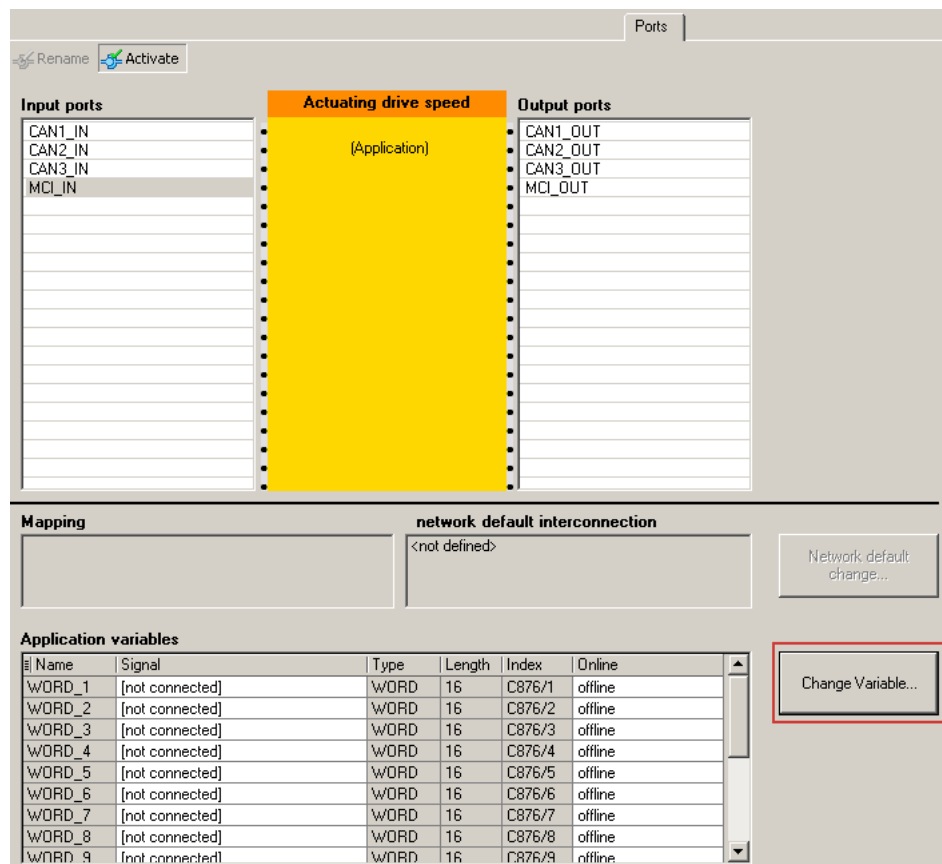


How to configure the port interconnection freely in the »Engineer«:

1. Go to the project view of the »Engineer« and select the application (A).
2. Select the port blocks **MCI_IN** or **MCI_OUT** on the **Ports** tab with a mouse-click and activate them with the **Activate** button (B).



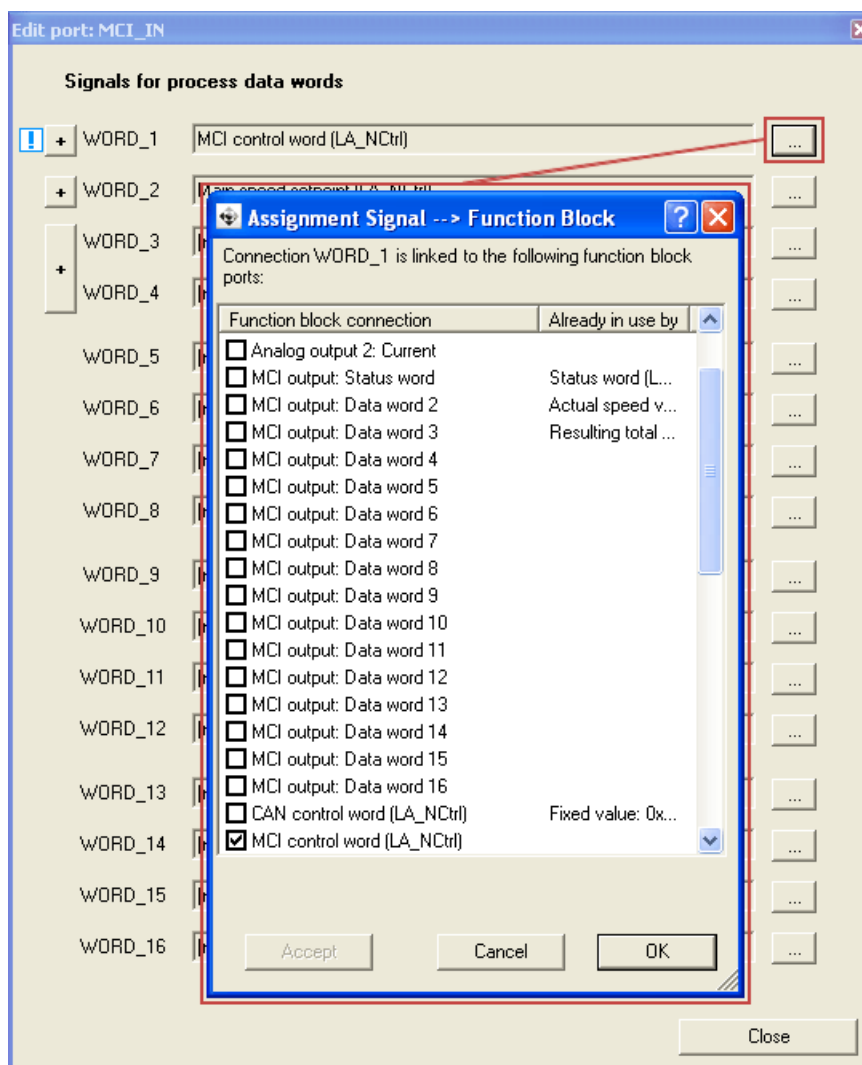
3. Click the **Change Variable ...** button.



Process data transfer

Freely configuring the port interconnection of the process data objects (PDO)

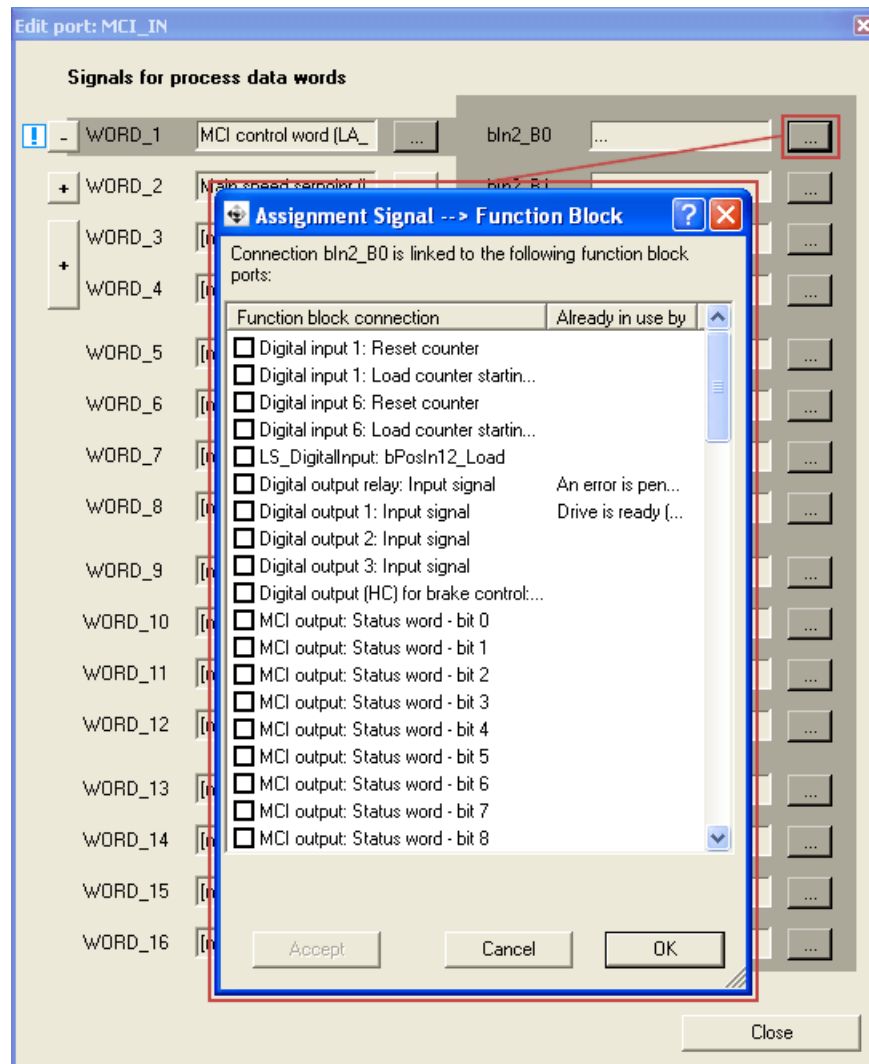
4. Via the  button, you can assign signals to the process data words in the *Assignment Signal --> Function Block* dialog window.
→ Select the signals and then confirm the selection with **OK**.



Process data transfer

Freely configuring the port interconnection of the process data objects (PDO)

Furthermore you can assign signals to the individual control and status bits of the WORD_1 ... WORD_4 process data words via the  and  buttons.
→ Select signals and confirm the selection by clicking the OK button.



Process data transfer

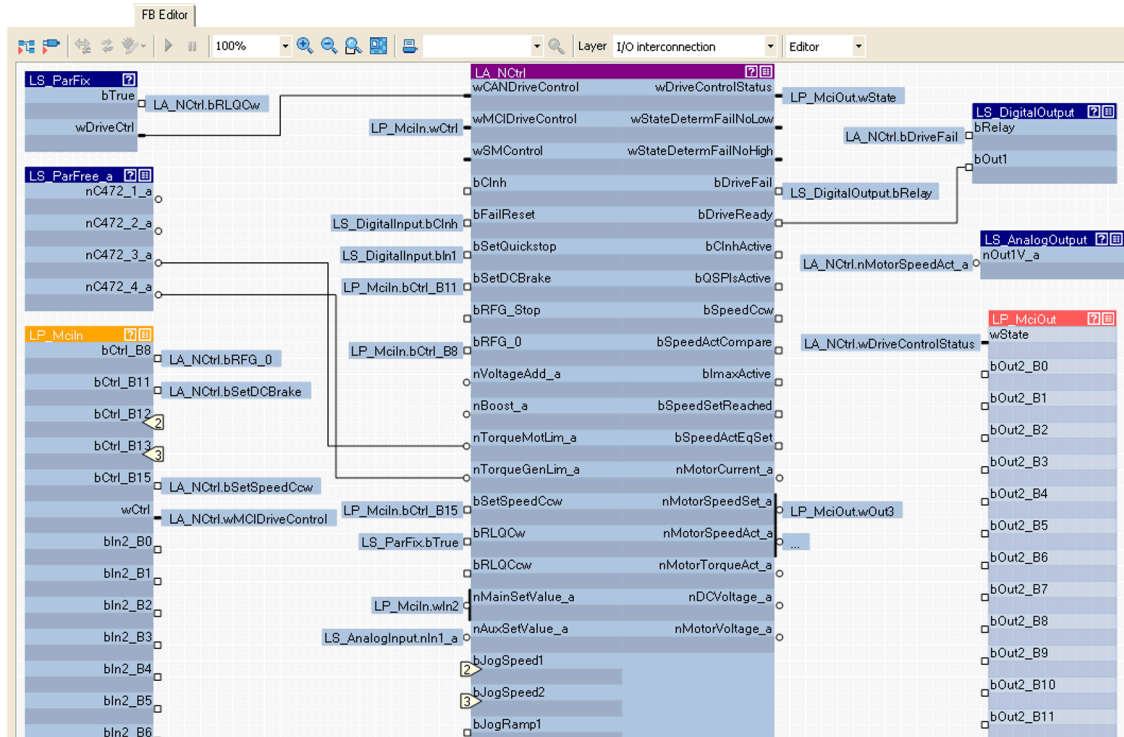
Freely configuring the port interconnection of the process data objects (PDO)



Tip!

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

In order to improve the clarity, unassigned signals can be hidden for each block.



8 Monitoring

Interruption of POWERLINK communication

An interruption of POWERLINK communication in the OPERATIONAL state, e.g. by cable break or failure of the managing node, is detected by the controlled node. The response to this interruption of communication depends on the following settings:

1. The watchdog monitoring time defined in the managing node is transferred to the controlled node when the POWERLINK communication is initialised.
If the controlled node being in the OPERATIONAL state does not receive valid process data, the process data are handled according to the setting in [C13885](#). (The last data sent by the managing node can either be used or set to zero.)
If communication fails, the controlled node state changes to PRE-OPERATIONAL (see [C13861](#)) and the red LED "BE" is activated (see [Fieldbus status displays](#) (□ 54)).
By default, there is no response in the controlled node.
2. To cause a response by the controlled node, you additionally have to ...
 - set a response of the controlled node ([C13880/1](#)).

9 Diagnostics

The LEDs on the front panel of the communication module serve to diagnose faults.

9.1 LED status displays



Note!

LED status displays for trouble-free operation:

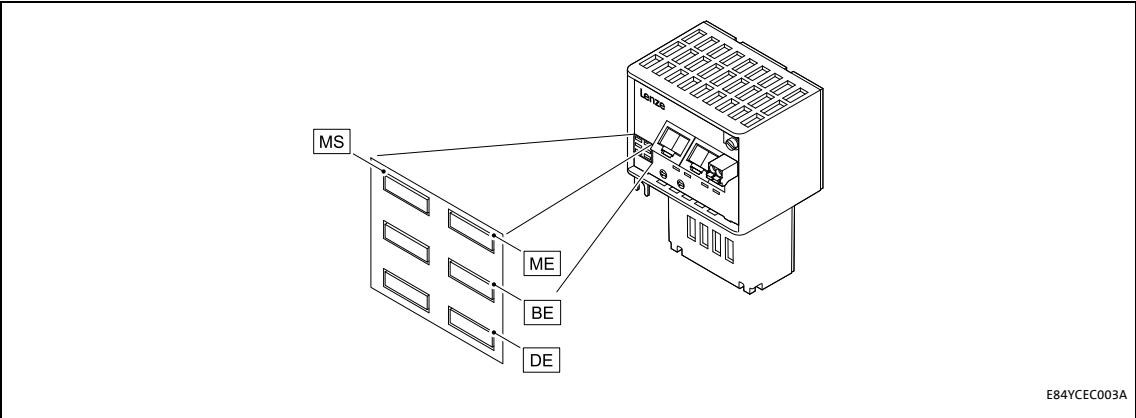
- The LEDs **MS** (53) and **BS** (54) are permanently lit.
- The green LED at the RJ45 sockets X251 and X252 is permanently lit or blinking (55).

The following status displays are distinguished:

- [Module status displays](#) (53)
- [Fieldbus status displays](#) (54)
- [Status displays at the RJ45 sockets \(X251, X252\)](#) (55)

9.1.1 Module status displays

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

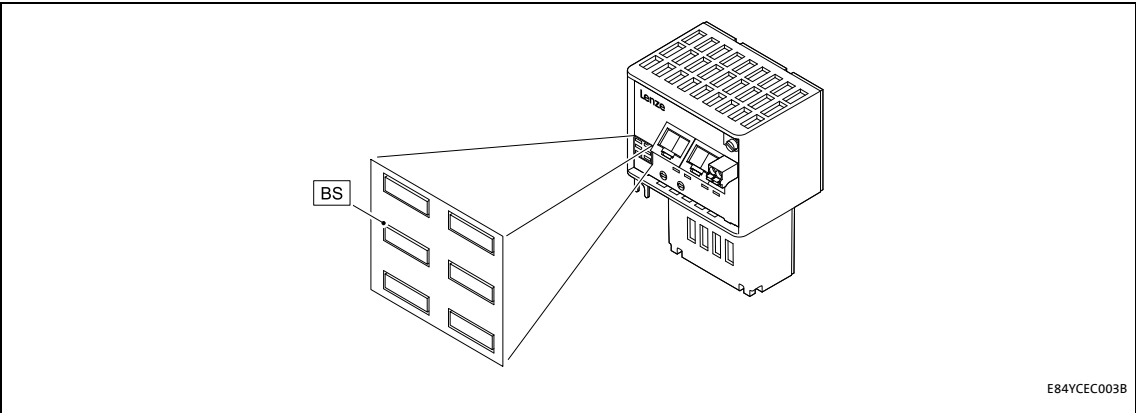


MS	Module Status
ME	Module Error
BE	Bus Error
EN	Device Error

LED	Colour	Status	Description
MS	green	On	 The communication module is supplied with voltage and is connected to the standard device.
		blinking	 The communication module is supplied with voltage, but has no connection to the standard device. (The standard device is either switched off, in the initialisation phase, or not available).
ME	red	On	 An error has occurred in the communication module.
BE	red	On	 A fieldbus error has occurred.
EN	red	On	 The communication module is not accepted by the standard device. See notes given in the documentation for the standard device.

9.1.2 **Fieldbus status displays**

The **BS** LED indicates the fieldbus status.

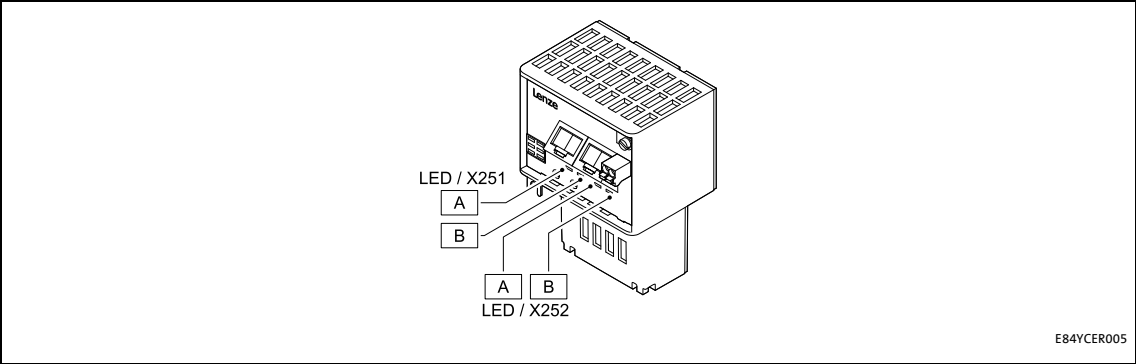


BS	Bus Status
----	------------

LED	Colour	Status	Description
BS	green	Off	The communication module is not active on the fieldbus or is in the INIT state.
		blinking	 EPL network is in the initialisation phase. EPL status: NMT_CS_PREOPERATIONAL_1
		blinking	 EPL network is in the initialisation phase with cyclic traffic. EPL status: NMT_CS_PREOPERATIONAL_2
		blinking	 EPL node is waiting for the start signal. EPL status: NMT_CS_READY_TO_OPERATE
		blinking	 The EPL node has not found a managing node and is in Basic Ethernet Mode (29). EPL status: NMT_CS_BASIC_ETHERNET
		blinking	 EPL node is in the "Stopped" status (waiting for disconnection). EPL status: NMT_CS_STOPPED
		On	 EPL node is in the operating phase. EPL status: NMT_CS_OPERATIONAL

9.1.3 Status displays at the RJ45 sockets (X251, X252)

The LEDs at the RJ45 sockets **X251** and **X252** indicate the POWERLINK connection status.



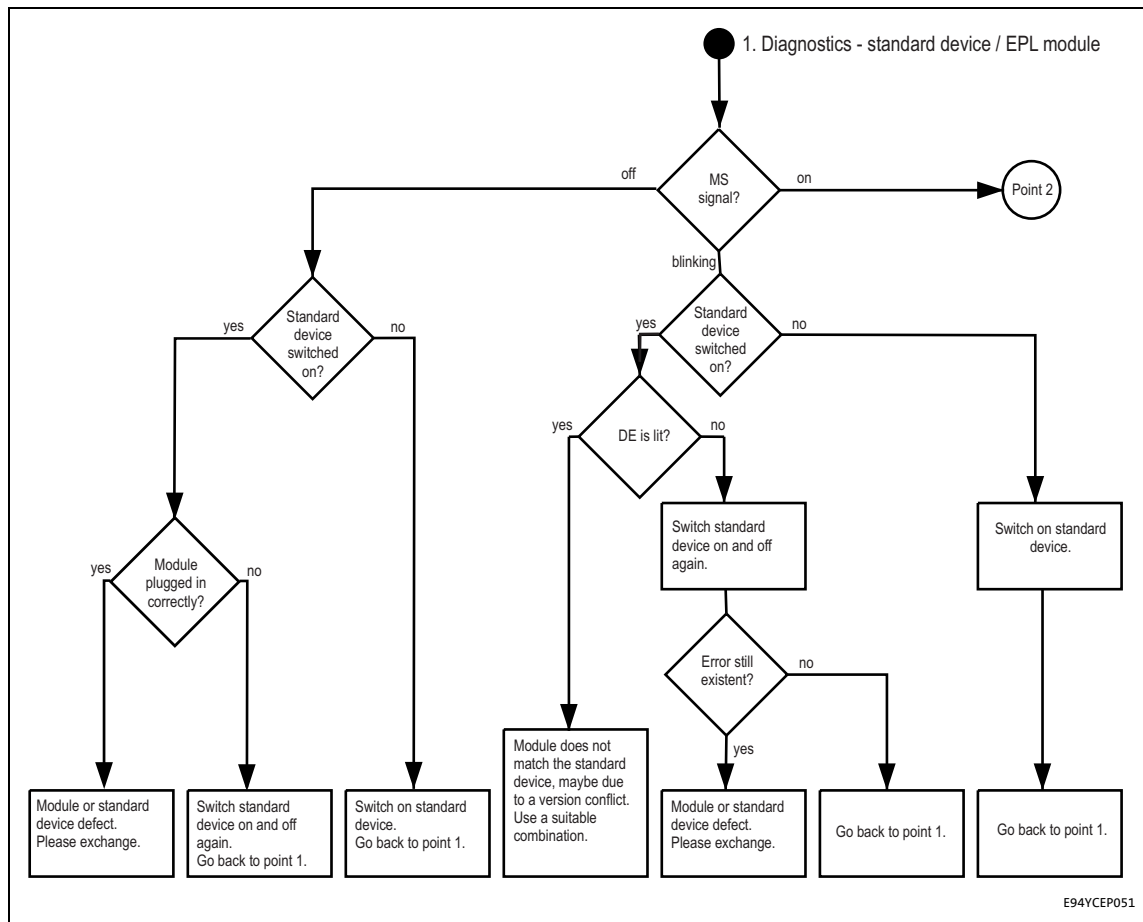
LED	Colour	Status	Description
A	green	Off	No POWERLINK connection
		On	 POWERLINK connection has been established.
		Flickers	 Data communication of POWERLINK connection is active.
B	red	On	 POWERLINK collision has occurred.

9.2 Troubleshooting with module signalling

In the following, troubleshooting via the module signals will be described.

Please particularly observe ...

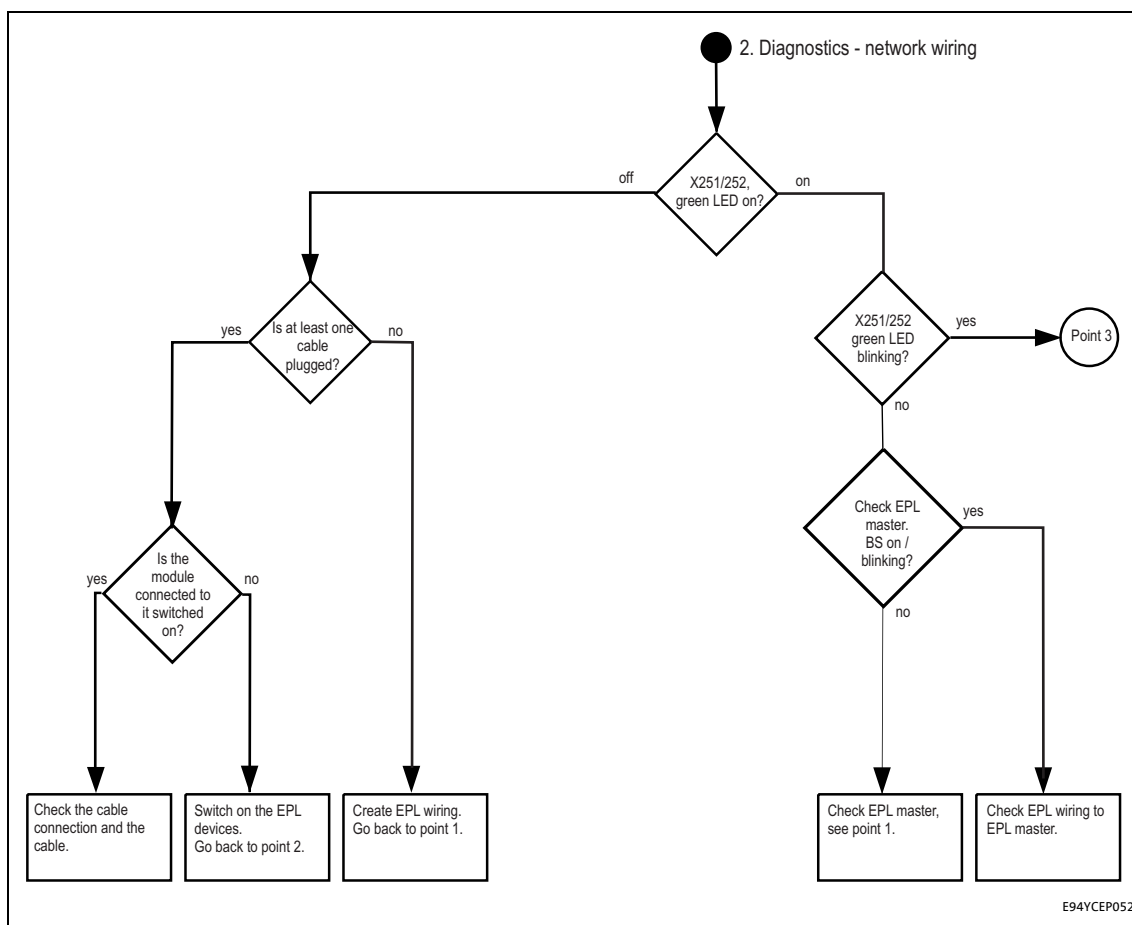
- the basic readiness for operation between the standard device and the communication module;
- the network wiring.



[9-1] Diagnostics - standard device / POWERLINK module

Diagnostics

Troubleshooting with module signalling



[9-2] Diagnostics - network wiring



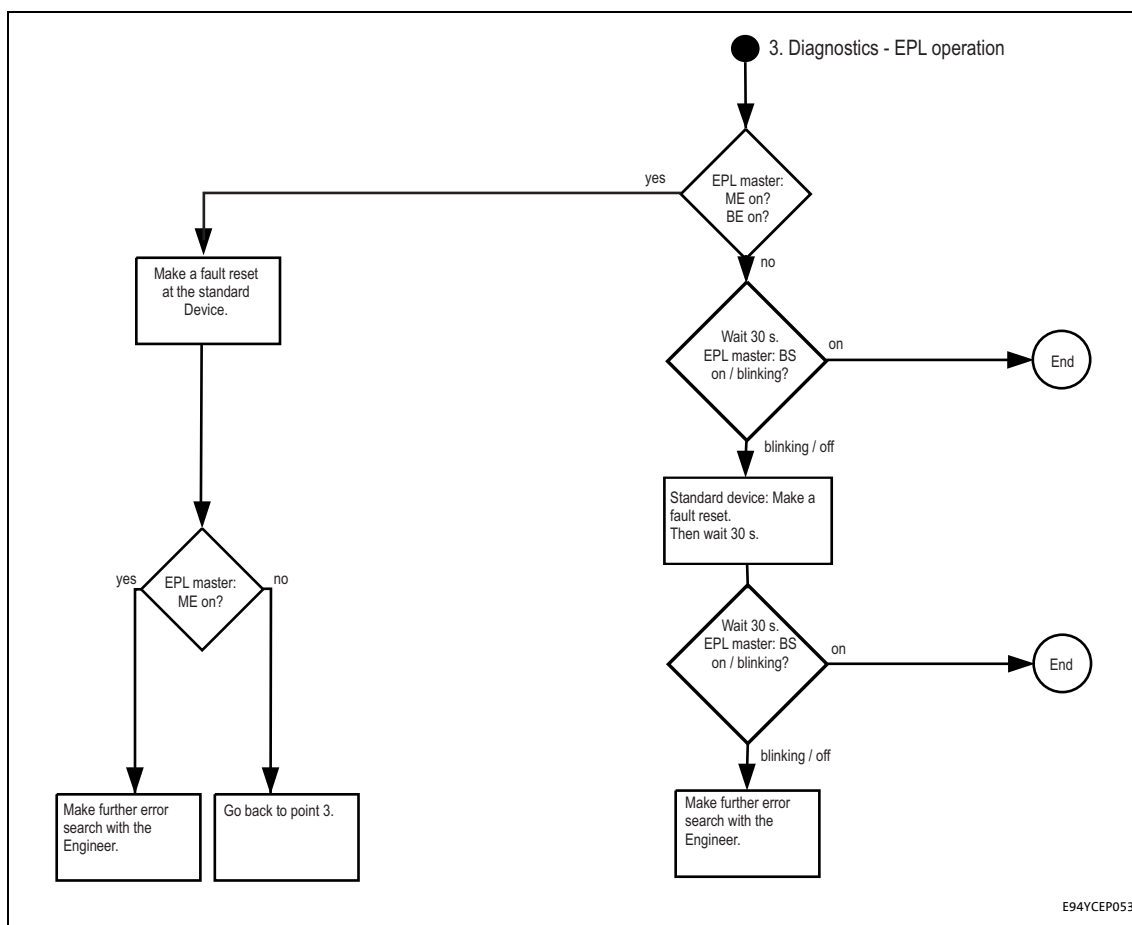
Note!

The **BS** (*Bus State*) LED refers to the Lenze communication module E94AYCEP as managing node.

This status display applies analogously to the managing nodes of other manufacturers.

Diagnostics

Troubleshooting with module signalling



[9-3] Diagnostics - POWERLINK operation



Note!

The LEDs **ME** (*Module Error*), **BE** (*Bus Error*) and **BS** (*Bus State*) refer to the Lenze communication module E94AYCEP as managing node.

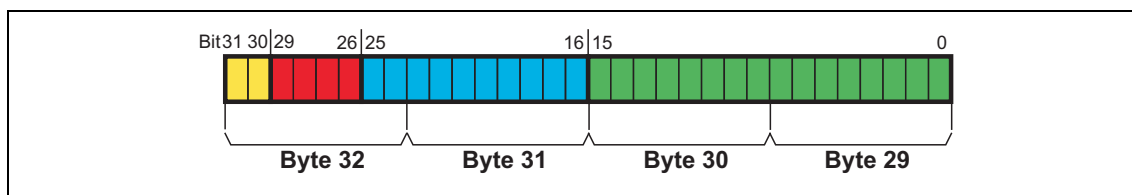
These status displays apply analogously to the managing nodes of other manufacturers.

9.3 Diagnostic data

- Pending diagnostic data are signalled from the controlled node to the managing node by means of an emergency message.
- Code [C13887](#) serves to suppress sending emergency messages to the managing node. You can select which type of error is to be suppressed.
- Errors and warnings in the Inverter Drive 8400 and the plugged communication module are sent to the managing node as extended diagnostic messages.
- The diagnostic data are visible via the PLC Engineering software.

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

Error code of Inverter Drive 8400



[9-4] Error code of Inverter Drive 8400

- The error code of the Inverter Drive 8400 can be found in bytes 29 ... 32 of the diagnostic message.
- In the logbook and in code **C00165** of the standard device, the error number is shown in the following syntax in order to facilitate the readability:
[error type].[error subject area no.].[error ID]

Example

Diagnostic message of the error "[EPL: State OPERATIONAL lost \[0x01bc8131\]](#)":

Bit assignment (Bytes 29 ... 32)	Information	Values from the example
Bit31 30 	Reserved	0
Bit29 26 	Error type / error response	Setting via C13880/1 : • 0: No error response • 1: No Response • 3: Quick stop • 4: Warning locked • 6: Information
Bit25 16 	Error subject area	0x01bc (444 _{dec})
Bit15 0 	Error ID	0x8131 (33073 _{dec})



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

Detailed information on the error codes is provided here.

Error messages

Short overview of the POWERLINK error messages

10 Error messages

[ALinkKeywords]
Error messages

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



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

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

[Search-Keywords]
Error messages

10.1 Short overview of the POWERLINK error messages

The following table contains all error messages of the communication module in numerical order of the error numbers. Moreover the preset error response and - if applicable - the parameters for setting the error response are specified.



Tip!

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

Error no. [hex]	Subject area no. [dec]	Error no. [dec]	Error text	Error type (Error response)	Adjustable in
0x01bc3100	444	12544	EPL: Lost connection to 8400 target	1: No Response	-
0x01bc5531	444	21809	EPL: NV memory: No access	1: No Response	-
0x01bc5532	444	21810	EPL: NV memory: Read error	1: No Response	-
0x01bc5533	444	21811	EPL: NV memory: Write error	1: No Response	-
0x01bc6010	444	24592	EPL: Restart after watchdog reset	1: No Response	-
0x01bc6011	444	24593	EPL: Watchdog reset	1: No Response	-
0x01bc6100	444	24832	EPL: Software error	1: No Response	-
0x01bc6101	444	24833	EPL: Fatal software error	1: No Response	-
0x01bc6110	444	24848	EPL: Invalid PDO mapping	1: No Response	-
0x01bc641f	444	25631	EPL: Invalid parameter set	1: No Response	-
0x01bc6420	444	25632	EPL: Default setting loaded	1: No Response	-
0x01bc6430	444	25648	EPL: Invalid module configuration	1: No Response	-
0x01bc8131	444	33073	EPL: OPERATIONAL status left	1: No Response	C13880/1
0x01bc8261	444	33377	EPL: Invalid address selected	1: No Response	-
0x01bc8265	444	33381	EPL: Synchronisation of MN lost	0: None	C13880/2
0x01bc8266	444	33382	EPL: Frame error (CRC)	0: None	C13880/3

Error messages

Possible causes and remedies

10.2 Possible causes and remedies

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

► [Short overview of the POWERLINK error messages](#) (61)

EPL: Lost connection to 8400 target [0x01bc3100]

Response (Lenze setting printed in bold)		Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information		
Cause	Remedy	
MCI communication to Inverter Drive 8400 is interrupted. • Inverter Drive 8400 is switched off. • The communication module is not connected correctly at the MCI slot of the Inverter Drive 8400.	• Switch on Inverter Drive 8400. • Check screwed connection of the communication module at the MCI slot of the Inverter Drive 8400. • Send the communication module and Inverter Drive 8400 together with a description of the fault to Lenze.	

EPL: NV Memory: No access [0x01bc5531]

Response (Lenze setting printed in bold)		Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information		
Cause	Remedy	
Access to parameter set in memory module via standard device was not successful.	Download application again (including module).	

EPL: NV Memory: Read error [0x01bc5532]

Response (Lenze setting printed in bold)		Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information		
Cause	Remedy	
Parameter in the memory module could not be read.	Download application again (including module).	

EPL: NV Memory: Write error [0x01bc5533]

Response (Lenze setting printed in bold)		Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information		
Cause	Remedy	
Parameter in the memory module could not be written.	Download application again (including module).	

EPL: Restart after watchdog reset [0x01bc6010]

Response (Lenze setting printed in bold)		Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information		
Cause	Remedy	
Communication module is defective.	Send the communication module and a description of the fault to Lenze.	

Error messages

Possible causes and remedies

EPL: Watchdog reset [0x01bc6011]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
Communication module is defective.	Send the communication module and a description of the fault to Lenze.

EPL: Software error [0x01bc6100]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
Communication module is defective.	Send the communication module and a description of the fault to Lenze.

EPL: Fatal software error [0x01bc6101]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
Communication module is defective.	Send the communication module and a description of the fault to Lenze.

EPL: PDO Mapping invalid [0x01bc6110]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
Invalid mapping configuration.	Correct the mapping configuration.

EPL: Invalid parameter set [0x01bc641f]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
No active parameter set could be loaded.	Download application again (including module).

EPL: Factory settings loaded [0x01bc6420]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
Access to parameter set in memory module via standard device was not successful.	Download application again (including module).

Error messages

Possible causes and remedies

EPL: Invalid module configuration [0x01bc6430]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
Module configuration is faulty.	Check and correct module configuration.

EPL: State OPERATIONAL lost [0x01bc8131]

Response (Lenze setting printed in bold)	Setting: C13880/1
☒ No reaction ☐ System fault ☒ Fault ☒ Trouble ☒ Quick stop by trouble ☒ WarningLocked ☐ Warning ☒ Information	
Cause	Remedy
Data exchange via POWERLINK has been terminated. • Also see the chapter " Interruption of POWERLINK communication " (📖 51).	• Check the network cable (plug) and replace it if necessary. • Connect the network cable to the Ethernet POWERLINK terminals X251 or X252 and continue to check the status of the managing node.

EPL: Invalid address selected [0x01bc8261]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
An invalid IP address has been assigned by the managing node via POWERLINK or set as node ID.	• Ensure that a valid IP address is assigned by the managing node via POWERLINK. • Set valid node ID. ▶ Node address setting (📖 37)

EPL: Synchronisation lost from MN [0x01bc8265]

Response (Lenze setting printed in bold)	Setting: C13880/2
☒ No reaction ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information	
Cause	Remedy
In the controlled node, the synchronisation cycle of the managing node has failed. The controlled node changes automatically to the NMT_CS_PREOPERATIONAL_1 state and waits for a new run-up by the managing node.	• Check network cable and components (failure of managing node, router). • Restart managing node if required.

EPL: Telegram error detected (CRC) [0x01bc8266]

Response (Lenze setting printed in bold)	Setting: C13880/3
☒ No reaction ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information	
Cause	Remedy
Faulty Ethernet frames (CRC error) have been detected. Possible causes: • A device in the network is not EPL-compliant. • EMC interference is too strong.	• Check if a non-EPL-compliant device is in the network (e.g. diagnostics PC). • Reduce EMC interference on the network or use an additional shield connection.

Parameter reference

Parameters of the communication module

11 Parameter reference

[ALinkKeywords]
Parameters

This chapter supplements the parameter list and the table of attributes for the Inverter Drive 8400 contained in the software manual and in the »Engineer« online help by the parameters of the communication module E84AYCEC (POWERLINK).



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

Here you will find general information on parameters.

[Search-Keywords]
Hlp_Para

11.1 Parameters of the communication module

This chapter lists the parameters of the E84AYCEC communication module (POWERLINK) in numerically ascending order.

C13000

Parameter Name: C13000 0x1E40.2 IP Address			Data type: UNSIGNED_32 Index: 11575 _d = 2D37 _h
The code displays the IP address of the communication module. • The IP address is derived from the EPL node address (Node ID): 192.168.100.[Node ID] • The node ID is derived from the coding switch position or from C13899. ▶ Node address setting (📖 37)			
Display range (min. value unit max. value)			
0.0.0.0 (0x00000000)	255.255.255.255 (0xFFFFFFFF)		
Subcodes		Info	
C13000/1		IP address • Lenze setting: 0xC0A86401 = 192.168.100.1	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☐ COM ☐ MOT			

C13001

Parameter Name: C13001 0x1E40.3 Subnet Mask			Data type: UNSIGNED_32 Index: 11574 _d = 2D36 _h
The code declares the IP subnet mask which restricts the directly addressable IP address range (i.e. without a gate- way in the EPL segment of the routers). The value 255.255.255.0 (0xFFFFF00) is always assigned to the subnet mask in one segment.			
Display range (min. value unit max. value)			
255.0.0.0 (0xFF000000)		255.255.255.0 (0xFFFFF00)	
Subcodes			Info
C13001/1			EPL IP Subnet Mask • Lenze setting: 0xFFFFF00 = 255.255.255.0
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☐ COM ☐ MOT			

Parameter reference

Parameters of the communication module

C13003

Parameter Name: C13003 0x1E40.5 IP Address Router		Data type: UNSIGNED_32 Index: 11572 _d = 2D34 _h
The code declares the IP address of the router which connects the EPL segment to the higher-level network. The standard entry corresponds to the standard router address of the EPL specification: → 192.168.100.254 Permissible entries replace the lowest-order byte of the standard entry with the EPL address of the node which has the function of a router.		
Setting range (min. value unit max. value)		
0.0.0.0 (0x00000000)		255.255.255.255 (0xFFFFFFFF)
Subcodes	Lenze setting	Info
C13003/1	3232261374	IP address router • Lenze setting: 0xC0A864FE = 192.168.100.254
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13004

Parameter Name: C13004 0x1030.5 MAC Address		Data type: OCTET_STRING Index: 11571 _d = 2D33 _h
The code indicates the physical address (MAC address) of the Ethernet interface of the communication module. When the communication module is produced, the MAC address is assigned unequivocally worldwide and provides addressing on the lowest level.		
Subcodes		Info
C13004/1		MAC Address (octet string[6]) 00-0A-86-xx-yy-zz • 00-0A-86 = Lenze • xx-yy-zz = consecutive number
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Parameter reference

Parameters of the communication module

C13028

Parameter Name: C13028 0x1F81 Node Assignment CN		Data type: UNSIGNED_32 Index: 11547 _d = 2D1B _h
The code declares the controlled nodes 1 ... 100 and their properties.		
Value is bit-coded:		
Bit 0 ... 31	see below	
Subcodes	Lenze setting	Info
C13028/1	0	
...	..	
C13028/100	0	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

The describing bit field has the following structure:

Bit	Value	Description
0 (LSB)	0	EPL node with this ID does not exist.
	1	EPL node with this ID exists.
1	0	EPL node with this ID is not a controlled node.
	1	EPL node with this ID is a controlled node.
2	0	On detection of a booting controlled node, the application will not be informed.
	1	On detection of a booting controlled node, the application will be informed and the controlled node will be started.
3	0	Optional controlled node
	1	Obligatory controlled node
4	0	The managing node is allowed to send reset commands.
	1	The managing node must not send any reset command.
5	0	Software version verification of the controlled node is not required.
	1	Software version verification of the controlled node is required.
6	0	Automatic application software update is not allowed.
	1	Automatic application software update is allowed.
7	-	Reserved / No function
8	0	Isochronously accessed controlled node
	1	Asynchronously accessed controlled node (bit 9 is irrelevant)
9	0	Continuously accessed controlled node
	1	Multiplex EPL nodes are supported.
10	0	No "POWERLINK to standard Ethernet" router function.
	1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	0	No "POWERLINK to fieldbus" router function.
	1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	0	The managing node does not send any PRes frames
	1	The managing node sends PRes frames
13 ... 30	-	Reserved / No function
31 (MSB)	0	Bits 0 ... 30 inhibited
	1	Bits 0 ... 30 enabled

Parameter reference

Parameters of the communication module

C13029

Parameter Name: C13029 0x1F81 Node Assignment		Data type: UNSIGNED_32 Index: 11546 _d = 2D1A _h
The code declares managing node, diagnostic device, and router, and describes their properties.		
Value is bit-coded:		
Bit 0 ... 31	see below	
Subcodes	Lenze setting	Info
C13029/1	2147483661	EPL node assignment managing node Lenze setting (hex): 0x8000000D
C13029/2	0	EPL node assignment diagnostic device Lenze setting (hex): 0x00000000
C13029/3	2147483655	EPL node assignment router Lenze setting (hex): 0x80000007
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

The describing bit field has the following structure:

Bit	Value	Description
0 (LSB)	0	EPL node with this ID does not exist.
	1	EPL node with this ID exists.
1	0	EPL node with this ID is not a controlled node.
	1	EPL node with this ID is a controlled node.
2	0	On detection of a booting controlled node, the application will not be informed.
	1	On detection of a booting controlled node, the application will be informed and the controlled node will be started.
3	0	Optional controlled node
	1	Obligatory controlled node
4	0	The managing node is allowed to send reset commands.
	1	The managing node must not send any reset command.
5	0	Software version verification of the controlled node is not required.
	1	Software version verification of the controlled node is required.
6	0	Automatic application software update is not allowed.
	1	Automatic application software update is allowed.
7	-	Reserved / No function
8	0	Isochronously accessed controlled node
	1	Asynchronously accessed controlled node (bit 9 is irrelevant)
9	0	Continuously accessed controlled node
	1	Multiplex EPL nodes are supported.
10	0	No "POWERLINK to standard Ethernet" router function.
	1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	0	No "POWERLINK to fieldbus" router function.
	1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	0	The managing node does not send any PRes frames
	1	The managing node sends PRes frames
13 ... 30	-	Reserved / No function
31 (MSB)	0	Bits 0 ... 30 inhibited
	1	Bits 0 ... 30 enabled

Parameter reference

Parameters of the communication module

C13040

Parameter Name: C13040 0x1F82 Feature Flags		Data type: UNSIGNED_32 Index: 11535 _d = 2D0F _h
The code displays the Ethernet POWERLINK features implemented by the EPL node. Lenze standard value: 0x00000207		
Value is bit-coded:		
Bit 0 ... 31	see below	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

The describing bit field has the following structure:

Bit	Value	Description
0 (LSB)	0	Asynchronous access
	1	Isochronous access
1	0	No SDO by UDP/IP
	1	SDO by UDP/IP
2	0	No SDO by EPL "ASnd"
	1	SDO by EPL "ASnd"
3	0	No SDO integrated in PDO
	1	SDO integrated in PDO
4	0	No "NMT Info Services"
	1	"NMT Info Services" supported
5	0	No extended "NMT State Commands"
	1	Extended "NMT State Commands" supported
6	0	No dynamic PDO mapping
	1	Dynamic PDO mapping supported
7	-	Reserved / No function
8	0	No configuration manager function
	1	Configuration manager function
9	0	Only isochronous cyclic access permitted.
	1	Isochronous multiplexed access possible.
10	0	No address assignment via software
	1	Address assignment via software
11	-	Reserved / No function
12	0	No "POWERLINK to standard Ethernet" router function.
	1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
13	0	No "POWERLINK to fieldbus" router function.
	1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
14 ... 31 (MSB)	-	Reserved / No function

Parameter reference

Parameters of the communication module

C13060

Parameter Name: C13060 0x1006 Cycle Time		Data type: UNSIGNED_32 Index: 11515 _d = 2CFB _h
The code defines the length of the EPL cycle in μs. • In the configured state, this code must have an identical value in all EPL nodes. • The selected value must correspond to the actual bus cycle time so that the internal monitoring functions work correctly.		
Selection list (Lenze setting printed in bold)		
400	400	
500	500	
600	600	
800	800	
1000	1000	
2000	2000	
3000	3000	
4000	4000	
5000	5000	
6000	6000	
7000	7000	
8000	8000	
9000	9000	
10000	10000	
11000	11000	
12000	12000	
13000	13000	
14000	14000	
15000	15000	
16000	16000	
17000	17000	
18000	18000	
19000	19000	
20000	20000	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Parameter reference

Parameters of the communication module

C13066

Parameter Name: C13066 0x1F8D PResPayloadLimit RPDO CN		Data type: UNSIGNED_16 Index: 11509 _d = 2CF5 _h	
The code defines the reserved user data length of the PRes telegrams for controlled nodes 1 ... 100. Each subcode number corresponds to one EPL node with the same node ID. The EPL node must be enabled via code C13028. The subcodes describe the PRes telegrams received. The value must be within the range of 36 ... 1490 bytes. The values are upper limit values for the entire size of the PDO mappings for received PRes telegrams. In the configured state, the values stored for the EPL nodes must be identical to the corresponding C13072 entries. C13066 must have an identical value in all EPL nodes of the network.			
Setting range (min. value unit max. value)			
0	Byte	1490	
Subcodes	Lenze setting	Info	
C13066/1	0 byte		
...	...		
C13066/100	0 byte		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13067

Parameter Name: C13067 0x1F8D PResPayloadLimit RPDO		Data type: UNSIGNED_16 Index: 11508 _d = 2CF4 _h	
The code defines the reserved user data length of the PRes frames for managing node, diagnostic device or router. Each subcode number corresponds to one EPL node with the same node ID. The EPL node must be enabled via code C13028. The subcode describes the PRes telegrams received. The value must be within the limits of 36 ... 1490 bytes. The values are upper limit values for the entire size of the PDO mappings for received PRes telegrams. In the configured state, the values stored for the nodes must be identical to the corresponding C13072 entries. C13067 must have an identical value in all EPL nodes of the network.			
Setting range (min. value unit max. value)			
0	Byte	1490	
Subcodes	Lenze setting	Info	
C13067/1	0 byte	Managing node	
C13067/2	0 byte	Diagnostics device	
C13067/3	0 byte	router	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13071

Parameter Name: C13071 0x1F98.4 PReqPayloadLimit RPDO			Data type: UNSIGNED_16 Index: 11504 _d = 2CF0 _h		
The code defines the maximum data size to be received by the controlled node via PReq for the current network configuration. C13071 is an upper limit value for the entire size of the PDO mapping for the PReq telegram. In the configured state, the value must be identical to the entry for a response valid for the EPL node.					
Setting range (min. value unit max. value)			Lenze setting		
36	Byte	1490	36 bytes		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

Parameter reference

Parameters of the communication module

C13072

Parameter Name: C13072 0x1F98.5 PResPayloadLimit TPDO			Data type: UNSIGNED_16 Index: 11503 _d = 2CEF _h
The code defines the maximum data size to be sent by the EPL node for the current network configuration. The PDO mapping is allowed to assign data with a total size greater than or equal to C13072. In the configured state, C13072 must be identical to the entry in C13066 valid for the EPL node.			
Setting range (min. value unit max. value)			Lenze setting
36	Byte	1490	36 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13074

Parameter Name: C13074 0x1F98.7 Multiplex Cycle Counter			Data type: UNSIGNED_8 Index: 11501 _d = 2CED _h		
This code serves to define the maximum number of the multiplexed cycles. If, for instance, the value "3" is entered, the multiplexed cycle is repeated every three cycles. Within one multiplexed cycle, the nodes are queried according to the value in code C13079 . If, for instance, the value "2" is entered for a node in C13079/x , it is always queried only in the second cycle of the three multiplexed cycles.					
Setting range (min. value unit max. value)			Lenze setting		
0	Cycles	255	0 cycles		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C13075

Parameter Name: C13075 0x1F98.8 SDO Channel Width (AsyncMTU)			Data type: UNSIGNED_16 Index: 11500 _d = 2CEC _h		
The code defines the maximum user data size of asynchronous frames. Protocol-specific headers for EPL, UDP/IP and others as well as service-specific headers are to be interpreted as part of the user data. In the configured state, the C13075 values of all EPL nodes must be identical.					
Setting range (min. value unit max. value)			Lenze setting		
300	Byte	1500	300 bytes		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C13076

Parameter Name: C13076 0x1F98.9 Prescaler_U16			Data type: UNSIGNED_16 Index: 11499 _d = 2CEB _h		
This code configures the change rate of the SoC PS flag.					
Setting range (min. value unit max. value)			Lenze setting		
0	Cycles	1000	2 Cycles		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C13078

Parameter Name: C13078 0x1F99 BasicEthTimeout			Data type: UNSIGNED_32 Index: 11497 _d = 2CE9 _h		
The code defines the time interval needed for the booting controlled node to wait for the managing node. If the controlled node detects a managing node within the interval, the controlled node changes to NMT_CS_PREOPERATIONAL_1, if not it changes to "Basic Ethernet Mode".					
Setting range (min. value unit max. value)			Lenze setting		
0	µs	4294967295	5000000 µs		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

Parameter reference

Parameters of the communication module

C13079

Parameter Name: C13079 0x1F9B Multiplex Cycle CN			Data type: UNSIGNED_8 Index: 11496 _d = 2CE8 _h		
This code indicates in which multiplexed cycle the node is queried. The value entered must not exceed the value in code C13074. If, for instance, the value "3" is entered in code C13074, the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C13079/x, it is always queried only in the second cycle of the three multiplexed cycles.					
Setting range (min. value unit max. value)					
0	Cycles	255			
Subcodes	Lenze setting		Info		
C13079/1	0 cycles				
...	...				
C13079/100	0 cycles				
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

Parameter reference

Parameters of the communication module

C13102

Parameter Name: C13102 0x1F9E NMT Reset Command		Data type: UNSIGNED_8 Index: 11473 _d = 2CD1 _h
A reset command to a single EPL node in the network can result in cycle and monitoring errors. The code initiates a reset of the EPL node. When the reset has been executed, the code is automatically set to "NoCommand / NMTInvalidService".		
Selection list (Lenze setting printed in bold)		
40	ResetNode	
41	ResetCommunication	
42	ResetConfiguration	
255	NoCommand	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13136

Parameter Name: C13136 SoC Cycle Counter		Data type: UNSIGNED_32 Index: 11439 _d = 2CAF _h
The subcodes of the code display a counter for EPL cycles. • The SoC cycle counter can be used for activity monitoring. • The counter is started at "0" each time the EPL node is switched on. The overflow is at "4294967295".		
Display range (min. value unit max. value)		
0		4294967295
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13852

Parameter Name: C13852 PDO words from MN		Data type: UNSIGNED_16 Index: 10723 _d = 29E3 _h
The code indicates the PDO words received (from the managing node).		
Subcodes	Info	
C13852/1	wCtrl	
C13852/2	wIn2	
...	...	
C13852/16	wIn16	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13853

Parameter Name: C13853 PDO words to MN		Data type: UNSIGNED_16 Index: 10722 _d = 29E2 _h
The code indicates the PDO words sent (to the managing node).		
Subcodes	Info	
C13853/1	wState	
C13853/2	wOut2	
...	...	
C13853/16	wOut16	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Parameter reference

Parameters of the communication module

C13859

Parameter Name: C13859 0x1A00.0 Number of mapped Tx PDO-1			Data type: UNSIGNED_8 Index: 10716 _d = 29DC _h		
Number of sent PDOs via the PDO channel 1 (Tx)					
Display range (min. value unit max. value)					
0		16			
Subcodes			Info		
C13859/1			0x1A00.0 Number of mapped Tx PDO-1		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C13860

Parameter Name: C13860 0x160x.0 Number of mapped Rx PDO			Data type: UNSIGNED_8 Index: 10715 _d = 29DB _h
Number of received PDOs via PDO channels 1 ... 6 (Rx)			
Display range (min. value unit max. value)			
0		16	
Subcodes			Info
C13860/1			0x1600.0 Number of mapped Rx PDO-1
...			...
C13860/6			0x1605.0 Number of mapped Rx PDO-6
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13861

Parameter Name: C13861 0x1F8C NMT Communication Status		Data type: UNSIGNED_8 Index: 10714 _d = 29DA _h
The code displays the current NMT state (according to the Ethernet POWERLINK specification) of the EPL node.		
Selection list (read only)		Info
0	Off	NMT_GS_OFF
25	Initialising	NMT_GS_INITIALISING
41	ResetAppl	NMT_GS_RESET_APPLICATION
57	ResetComm	NMT_GS_RESET_CONFIGURATION
121	ResetConfig	NMT_GS_RESET_CONFIGURATION
28	NotActive	NMT_CS_NOT_ACTIVE
29	PreOp1	NMT_CS_PRE_OPERATIONAL_2
93	PreOp2	NMT_CS_PRE_OPERATIONAL_2
109	ReadyToOp	NMT_CS_READY_TO_OPERATE
253	Operational	NMT_CS_OPERATIONAL
77	Stopped	NMT_CS_STOPPED
30	BasicEthernet	NMT_CS_BASIC_ETHERNET
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Parameter reference

Parameters of the communication module

C13864

Parameter Name: C13864 0x1F93.1 Node ID		Data type: UNSIGNED_8 Index: 10711 _d = 29D7 _h
The code displays the currently valid EPL node address (Node ID). • The node ID must be unequivocal in the EPL network segment. • See also C13899.		
Display range (min. value unit max. value)		
1		239
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13865

Parameter Name: C13865 0x1F93.2 Node ID by HW		Data type: UNSIGNED_8 Index: 10710 _d = 29D6 _h
The code indicates whether the EPL node address (node ID) has been set via rotary encoder switches at the communication module or via the software. • 0 (FALSE): Node ID has been set via software (C13899). • 1 (TRUE): node ID has been set via rotary encoder switches at the communication module. ▶ Node address setting (37)		
Display range (min. value unit max. value)		
0		1
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13879

Parameter Name: C13879 Bus error		Data type: UNSIGNED_32 Index: 10696 _d = 29C8 _h
The code displays the bus error state which is signalled by the LED "BE" (Bus Error). • Bit 0 = 0 (0x00000000) no bus error • Bit 0 = 1 (0x00000001) bus error active		
Value is bit-coded:		
Bit 0	Bus Error if TRUE	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13880

Parameter Name: C13880 error response		Data type: UNSIGNED_8 Index: 10695 _d = 29C7 _h
The subcodes determine the reaction when the OPERATIONAL state is left, when SoC is lost and when a CRC error occurs.		
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	Error reaction at OPERATIONAL loss
C13880/2	0: No Response	Error reaction at SoC loss
C13880/3	0: No Response	Error reaction at CRC error
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Parameter reference

Parameters of the communication module

C13884

Parameter Name: C13884 CU synchronisation active		Data type: BITFIELD_8 Index: 10691 _d = 29C3 _h
The code displays if the EPL node is synchronised. • Bit 0 = 0 (0x00000000) The EPL node is not synchronised. • Bit 0 = 1 (0x00000001) The EPL node is synchronised.		
Value is bit-coded:		
Bit 0	CU Synchronisation is locked if TRUE	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13885

Parameter Name: C13885 Response to RPDO monitoring		Data type: UNSIGNED_8 Index: 10690 _d = 29C2 _h
The code controls the error response to failing PDO communication with a node. The failure is detected because expected PDO data are missing.		
Selection list (Lenze setting printed in bold)		
0	Maintain PDO	
1	Delete PDO	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13887

Parameter Name: C13887 Suppress emergency message upon		Data type: BITFIELD_8 Index: 10688 _d = 29C0 _h
This code serves to suppress sending alarm messages to the managing node. You can explicitly suppress a certain type of error. Furthermore, all errors are entered into the logbook. • A change can only be effective immediately if no error number with the error type selected here is active in C00165.		
Value is bit-coded:		
Bit 0	Error	
Bit 1	Fault	
Bit 2	Quick stop by trouble	
Bit 3	Warning Locked	
Bit 4	Warning	
Bit 5	Information	
Bit 6	Reserved	
Bit 7	Reserved	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Parameter reference

Parameters of the communication module

C13898

Parameter Name: C13898 0x1F9A Host Name	Data type: VISIBLE_STRING Index: 10677 _d = 29B5 _h
The code defines a DNS-compatible device name. The length is limited to 20 characters. The device name must be non-ambiguous within the network domain. Naming convention: The device name ... • starts with a letter; • ends with a letter or a digit. The device name consists of ... • letters (A ... Z, a ... z); • digits (0 ... 9); • hyphen (-).	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13899

Parameter Name: C13899 Node ID SW	Data type: UNSIGNED_8 Index: 10676 _d = 29B4 _h
This code serves to set the node ID by means of the software. The value "0" is not a valid node ID. It serves to activate the setting via the rotary coding switches. ▶ Node address setting (37)	
Setting range (min. value unit max. value)	Lenze setting
0	239 0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13900

Parameter Name: C13900 Firmware Type	Data type: VISIBLE_STRING Index: 10675 _d = 29B3 _h
Display of the Lenze firmware type of the communication module (product designation).	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13901

Parameter Name: C13901 Firmware Date	Data type: VISIBLE_STRING Index: 10674 _d = 29B2 _h
Display of the creation date of the communication module firmware	
☒ 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 version number of the communication module firmware	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

Parameter reference

Parameters of the communication module

C13910

Parameter Name: C13910 Last Module Error		Data type: UNSIGNED_32 Index: 10665 _d = 29A9 _h
Display of the error code of the error last occurred in the communication module		
Selection list (Lenze setting printed in bold)		
0	No error	
297566817	Warning locked INVALID_ADDR	
29122816	Software error	
96239921	Fault OPER_LOST	
230457649	Quick stop OPER_LOST	
297566513	Warning locked OPER_LOST	
431784241	Information OPER_LOST	
96240229	Fault CN_SoC_LOSS	
230457957	Quick stop CN_SoC_LOSS	
297566821	Warning locked CN_SoC_LOSS	
431784549	Information CN_SoC_LOSS	
96240230	Fault COM_CRC	
230457958	Quick stop COM_CRC	
297566822	Warning locked COM_CRC	
431784550	Information COM_CRC	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13915

Parameter Name: C13915 CustomerObject[16]		Data type: OCTET_STRING Index: 10660 _d = 29A4 _h
The code contains an octet string[16] for customised use.		
Subcodes	Lenze setting	Info
C13915/1	00000000000000000000000000000000 000	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13920

Parameter Name: C13920 Current address switch			Data type: UNSIGNED_8 Index: 10655 _d = 299F _h	
The code indicates the current switch position for the communication module (node ID). Not all switch positions are useful. The values for node IDs assigned by means of switches usually are between 1 and 239. ▶ Node address setting (📖 37)				
Display range (min. value unit max. value)				
0		255		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☐ COM ☐ MOT				

Parameter reference

Table of attributes

11.2 Table of attributes

The table of attributes contains information required for communicating with the Inverter Drive 8400 via parameters.

How to read the table of attributes:

Column		Meaning	Entry	
Code		Parameter name	Cxxxxx	
Name		Parameter short text (display text)	Text	
Index	dec	Index under 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 (CINH) required	☒ Writing is only possible when the controller is inhibited (CINH)	

Parameter reference

Table of attributes

Table of attributes

Code	Name	Lenze index		Data				Access		
		dec	hex	DS	DA	DT	Factor	R	W	CINH
C13000	0x1E40.2 IP Address	11575	2D37	A	1	UNSIGNED_32		☒		
C13001	0x1E40.3 Subnet Mask	11574	2D36	A	1	UNSIGNED_32		☒		
C13003	0x1E40.5 IP Address Router	11572	2D34	A	1	UNSIGNED_32		☒	☒	
C13004	0x1030.5 MAC Address	11571	2D33	A	1	OCTET_STRING		☒		
C13028	0x1F81 Node Assignment CN	11547	2D1B	A	100	UNSIGNED_32		☒	☒	
C13029	0x1F81 Node Assignment	11546	2D1A	A	3	UNSIGNED_32		☒	☒	
C13040	0x1F82 Feature Flags	11535	2D0F	E	1	UNSIGNED_32		☒		
C13060	0x1006 Cycle Time	11515	2CFB	E	1	UNSIGNED_32	1	☒	☒	
C13066	0x1F8D PResPayloadLimit RPDO CN	11509	2CF5	A	100	UNSIGNED_16	1	☒	☒	
C13067	0x1F8D PResPayloadLimit RPDO	11508	2CF4	A	3	UNSIGNED_16	1	☒	☒	
C13071	0x1F98.4 PReqPayloadLimit RPDO	11504	2CF0	E	1	UNSIGNED_16	1	☒	☒	
C13072	0x1F98.5 PResPayloadLimit TPDO	11503	2CEF	E	1	UNSIGNED_16	1	☒	☒	
C13074	0x1F98.7 Multiplex Cycle Counter	11501	2CED	E	1	UNSIGNED_8	1	☒	☒	
C13075	0x1F98.8 SDO Channel Width (Asyn-cMTU)	11500	2CEC	E	1	UNSIGNED_16	1	☒	☒	
C13076	0x1F98.9 Prescaler_U16	11499	2CEB	E	1	UNSIGNED_16	1	☒	☒	
C13078	0x1F99 BasicEthTimeout	11497	2CE9	E	1	UNSIGNED_32	1	☒	☒	
C13079	0x1F9B Multiplex Cycle CN	11496	2CE8	A	100	UNSIGNED_8	1	☒	☒	
C13102	0x1F9E NMT Reset Command	11473	2CD1	E	1	UNSIGNED_8	1	☒	☒	
C13136	SoC Cycle Counter	11439	2CAF	E	1	UNSIGNED_32	1	☒		
C13852	PDO word from MN	10723	29E3	A	16	UNSIGNED_16		☒		
C13853	PDO words to MN	10722	29E2	A	16	UNSIGNED_16		☒		
C13859	0x1A00.0 Number of mapped Tx PDO-1	10716	29DC	A	1	UNSIGNED_8	1	☒		
C13860	0x160x.0 Number of mapped Rx PDO	10715	29DB	A	6	UNSIGNED_8	1	☒		
C13861	0x1F8C NMT Communication Status	10714	29DA	E	1	UNSIGNED_8	1	☒		
C13864	0x1F93.1 Node ID	10711	29D7	E	1	UNSIGNED_8	1	☒		
C13865	0x1F93.2 Node ID by HW	10710	29D6	E	1	UNSIGNED_8	1	☒		
C13879	Bus error	10696	29C8	E	1	UNSIGNED_32		☒		
C13880	Error response	10695	29C7	A	3	UNSIGNED_8	1	☒	☒	
C13884	CU synchronisation active	10691	29C3	E	1	BITFIELD_8		☒		
C13885	Error reaction on RPDO check	10690	29C2	E	1	UNSIGNED_8	1	☒	☒	
C13887	Suppress emergency message upon	10688	29C0	E	1	BITFIELD_8		☒	☒	
C13898	0x1F9A Host Name	10677	29B5	E	1	VISIBLE_STRING		☒	☒	
C13899	Node ID SW	10676	29B4	E	1	UNSIGNED_8	1	☒	☒	
C13900	Firmware Type	10675	29B3	E	1	VISIBLE_STRING		☒		
C13901	Firmware Date	10674	29B2	E	1	VISIBLE_STRING		☒		
C13902	Firmware version	10673	29B1	E	1	VISIBLE_STRING		☒		
C13910	Last Module Error	10665	29A9	E	1	UNSIGNED_32	1	☒	☒	
C13915	CustomerObject[16]	10660	29A4	A	1	OCTET_STRING		☒	☒	
C13920	Current address switch	10655	299F	E	1	UNSIGNED_8	1	☒		

12 Index table

The following objects specified by the POWERLINK communication profile (DS 301) are supported:

EPL index	Index name	Subindex name	Type	Attr.	Reference / description	Value
0x1000	NMT_DeviceType_U32	-	U32	R	-	0
0x1001	ERR_ErrorRegister_U8	-	I8	R	-	
0x1003.0	ERR_History_ADOM	NumberOfEntries	U8	RW	-	
0x1003.1 ...254	ERR_History_ADOM	ErrorEntry_DOM	DOMAIN	R	-	
0x1006	NMT_CycleLen_U32	-	U32	RW	C13060	2000
0x1008	NMT_ManufactDevName_VS	-	VS5	R	-	Lenze
0x1009	NMT_ManufactHwVers_VS	-	VS2	R	Hardware version, variable	
0x100A	NMT_ManufactSwVers_VS	-	VS6	R	Software version, variable	
0x1016.0	NMT_ConsumerHeartbeatTime_AU32	NumberOfEntries	U8	RW	-	0 ... 4
0x1016.1 ...4	NMT_ConsumerHeartbeatTime_AU32	HeartbeatDescription	U32	RW	Value in [ms]	
0x1018.0	NMT_IdentityObject_REC	NumberOfEntries	U8	R	-	1
0x1018.1	NMT_IdentityObject_REC	VendorId_U32	U32	R	-	59
0x1030.0	NMT_InterfaceGroup_0h_REC	NumberOfEntries	U8	R	-	9
0x1030.1	NMT_InterfaceGroup_0h_REC	InterfaceIndex_U16	U16	R	Interface no. of the Ethernet interface	1
0x1030.2	NMT_InterfaceGroup_0h_REC	InterfaceDescription_VSTR	VS3	R	Description of the Ethernet interface	EPL
0x1030.3	NMT_InterfaceGroup_0h_REC	InterfaceType_U8	U8	R	Interface type	6
0x1030.4	NMT_InterfaceGroup_0h_REC	InterfaceMtu_U32	U32	R	Maximum frame size [byte]	1490
0x1030.5	NMT_InterfaceGroup_0h_REC	InterfacePhysAddress_OSTR	OS6	R	C13004/1	
0x1030.6	NMT_InterfaceGroup_0h_REC	InterfaceName_VSTR	VS16	RW	Symbolic name of the Ethernet interface	ETH0
0x1030.7	NMT_InterfaceGroup_0h_REC	InterfaceOperState_U8	U8	R	Operation status of the Ethernet interface	0: down
0x1030.8	NMT_InterfaceGroup_0h_REC	InterfaceAdminState_U8	U8	RW	Administration status of the Ethernet interface	1: up
0x1030.9	NMT_InterfaceGroup_0h_REC	Valid_BOOL	BOOL	RW	Release of the interface description	1: TRUE
0x1300	SDO_SequLayerTimeout_U32	-	U32	RW	Value in [ms]	15000
0x1301	SDO_CmdLayerTimeout_U32	-	U32	RW	Value in [ms]	30000
0x1400.0	PDO_RxCommParam_00h_REC	NumberOfEntries	U8	R	-	2
0x1400.1	PDO_RxCommParam_00h_REC	NodeID_U8	U8	RW	-	
0x1400.2	PDO_RxCommParam_00h_REC	MappingVersion_U8	U8	R	Version of PDO mapping	0
0x1401.0	PDO_RxCommParam_01h_REC	NumberOfEntries	U8	R	-	2
0x1401.1	PDO_RxCommParam_01h_REC	NodeID_U8	U8	RW	-	
0x1401.2	PDO_RxCommParam_01h_REC	MappingVersion_U8	U8	R	Version of PDO mapping	0
0x1402.0	PDO_RxCommParam_02h_REC	NumberOfEntries	U8	R	-	2
0x1402.1	PDO_RxCommParam_02h_REC	NodeID_U8	U8	RW	-	
0x1402.2	PDO_RxCommParam_02h_REC	MappingVersion_U8	U8	R	Version of PDO mapping	0
0x1403.0	PDO_RxCommParam_03h_REC	NumberOfEntries	U8	R	-	2
0x1403.1	PDO_RxCommParam_03h_REC	NodeID_U8	U8	RW	-	
0x1403.2	PDO_RxCommParam_03h_REC	MappingVersion_U8	U8	R	Version of PDO mapping	0
0x1404.0	PDO_RxCommParam_04h_REC	NumberOfEntries	U8	R	-	2
0x1404.1	PDO_RxCommParam_04h_REC	NodeID_U8	U8	RW	-	
0x1404.2	PDO_RxCommParam_04h_REC	MappingVersion_U8	U8	R	Version of PDO mapping	0
0x1405.0	PDO_RxCommParam_05h_REC	NumberOfEntries	U8	R	-	2
0x1405.1	PDO_RxCommParam_05h_REC	NodeID_U8	U8	RW	-	
0x1405.2	PDO_RxCommParam_05h_REC	MappingVersion_U8	U8	R	Version of PDO mapping	0

Index table

EPL index	Index name	Subindex name	Type	Attr.	Reference / description	Value
0x1600.0	PDO_RxMappParam_00h_REC	NumberOfEntries	U8	RW	C13860/1	
0x1600.1 ...16	PDO_RxMappParam_00h_REC	ObjectMapping_U64	U64	RW	-	
0x1601.0	PDO_RxMappParam_01h_REC	NumberOfEntries	U8	RW	C13860/2	
0x1601.1 ...16	PDO_RxMappParam_01h_REC	ObjectMapping_U64	U64	RW	-	
0x1602.0	PDO_RxMappParam_02h_REC	NumberOfEntries	U8	RW	C13860/3	
0x1602.1 ...16	PDO_RxMappParam_02h_REC	ObjectMapping_U64	U64	RW	-	
0x1603.0	PDO_RxMappParam_03h_REC	NumberOfEntries	U8	RW	C13860/4	
0x1603.1 ...16	PDO_RxMappParam_03h_REC	ObjectMapping_U64	U64	RW	-	
0x1604.0	PDO_RxMappParam_04h_REC	NumberOfEntries	U8	RW	C13860/5	
0x1604.1 ...16	PDO_RxMappParam_04h_REC	ObjectMapping_U64	U64	RW	-	
0x1605.0	PDO_RxMappParam_05h_REC	NumberOfEntries	U8	RW	C13860/6	
0x1605.1 ...16	PDO_RxMappParam_05h_REC	ObjectMapping_U64	U64	RW	-	
0x1800.0	PDO_TxCommParam_00h_REC	NumberOfEntries	U8	R	-	2
0x1800.1	PDO_TxCommParam_00h_REC	NodeID_U8	U8	R	Node ID of the receiver	0 (pseudo node ID for PRes-Tx)
0x1800.2	PDO_TxCommParam_00h_REC	MappingVersion_U8	U8	R	Version of PDO mapping	0
0x1A00.0	PDO_TxMappParam_00h_REC	NumberOfEntries	U8	RW	C13859/1	
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0x1C0A.0	DLL_CNCollision_REC	NumberOfEntries	U8	R	-	1
0x1C0A.1	DLL_CNCollision_REC	CumulativeCnt_U32	U32	R	-	
0x1C0B.0	DLL_CNLossSoC_REC	NumberOfEntries	U8	R	-	3
0x1C0B.1	DLL_CNLossSoC_REC	CumulativeCnt_U32	U32	R	-	
0x1C0B.2	DLL_CNLossSoC_REC	ThresholdCnt_U32	U32	R	-	
0x1C0B.3	DLL_CNLossSoC_REC	Threshold_U32	U32	RW	-	
0x1C0F.0	DLL_CNCRCErrror_REC	NumberOfEntries	U8	R	-	1
0x1C0F.1	DLL_CNCRCErrror_REC	CumulativeCnt_U32	U32	R	-	
0x1C0F.2	DLL_CNCRCErrror_REC	ThresholdCnt_U32	U32	R	-	
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0x1C10	DLL_CNLossOfLinkCum_U32	-	U32	R	-	0
0x1E40.0	NWL_IpAddrTable_0h_REC	NumberOfEntries	U8	R	-	5
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0x1F93.1	NMT_EPLNodeID_REC	NodeID_U8	U8	R	C13864	
0x1F93.2	NMT_EPLNodeID_REC	NodeIDByHW_BOOL	BOOL	R	-	
0x1F98.0	NMT_CycleTiming_REC	NumberOfEntries	U8	R	-	9
0x1F98.1	NMT_CycleTiming_REC	IsochrTxMaxPayload_U16	U16	R	Size of the isochronous transmit memory	1490
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Your opinion is important to us

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

Perhaps we have not succeeded in achieving this objective in every respect. If you have suggestions for improvement, please e-mail us to:

feedback-docu@lenze.com

Thank you very much for your support.

Your Lenze documentation team

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E94AYCEP

POWERLINK

Servo Drives 9400

Communication Manual

EN



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1 About this documentation

Contents

This documentation exclusively describes the E94AYCEP communication module (POWERLINK).



Note!

This documentation supplements the **mounting instructions** supplied with the drive and the "**Servo Drives 9400**" hardware manual.

The mounting instructions contain safety instructions which must be observed!

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

Examples illustrate typical applications.

The theoretical context is only explained as far as it is required for understanding 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 host (PLC).

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



Tip!

Detailed information on POWERLINK can be found on the website of the "Ethernet POWERLINK Standardization Group":

www.ethernet-powerlink.org

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

Information regarding the validity

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

Extension module	Type designation	From hardware version	From software version
Communication module POWERLINK	E94AYCEP	VB	01.50

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 installed engineering tools (e.g. »Engineer«), the screenshots in this documentation may differ from the screen representation.

1.1**Document history**

Version			Description
1.0	10/2006	TD17	First edition
2.0	11/2006	TD17	General revision
3.0	11/2007	TD17	• Revised for publication as »Engineer« online help • Other corrections
4.0	08/2011	TD17	General revision
5.0	09/2012	TD17	• General updates • Supplements in the chapter Error messages (📖 60)
6.0	02/2014	TD17	• New layout • General updates

1 About this documentation

1.2 Conventions used

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

Type of information	Writing	Examples/notes
Spelling of numbers		
Decimal	Standard notation	Example: 1234
Decimal separator	Point	The decimal point is always used. For 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	Blue text colour	All information that applies to from a certain software version of the device onwards are marked accordingly in this documentation. Example: This function extension is available from software version V3.0 onwards!
Program name	» «	The Lenze PC software »Engineer«...
Control element	bold	The OK button ... / The Copy command ... / The Properties tab ... / The Name input field ...
Sequence of menu commands		If several commands are required to execute one function, the single commands are separated by an arrow: Select the File → Open command to...
Hyperlink	Underlined	Optically highlighted reference to another topic. It is activated with a mouse-click in this online documentation.
Icons		
Page reference	(9)	Optically highlighted reference to another page. In this online documentation activated via mouse-click.
Step-by-step instructions		Step-by-step instructions are indicated by a pictograph.

1.3

Terminology used

Term	Meaning
Drive	Lenze inverter of the "Servo Drives 9400" product series for which the communication module can be used. ► Application as directed (□ 13)
Inverter	
Standard device	
CN	Controlled Node (POWERLINK slave)
Code	Parameter which serves to parameterise and monitor the drive. In normal usage, the term is usually referred to as "Index".
Subcode	If a code contains several parameters, they are stored in "subcodes". In the documentation, the slash "/" is used as a separator between the code and the subcode (e.g. "C00118/3"). In everyday language, the term is also referred to as "subindex".
»Engineer«	Lenze PC software which supports you during the "Engineering" process (parameterisation, diagnostics, and configuration) throughout the whole life cycle, i. e. from planning to maintenance of the machine commissioned.
EPL	Abbreviation for "Ethernet POWERLINK"
(EPL) nodes	POWERLINK nodes (Managing Node, Controlled Nodes)
	POWERLINK is a real-time capable fieldbus system based on Ethernet. For user data exchange, POWERLINK specifies a communication protocol based on CANopen. POWERLINK is a patented technology, licenced by the Ethernet POWERLINK Standardization Group (EPSG), Germany.
HW	Hardware
Host	SPS, Managing Node (POWERLINK master)
Lenze setting	Default settings of the device, preconfigured ex works.
Basic setting	
MN	Managing Node (POWERLINK master) The Managing Node accepts the control function for the data communication of the decentralised field devices. Typically, the Managing Node is the communication interface of a PLC.
Node ID	POWERLINK node address
SW	Software

1.4

Notes used

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

Safety instructions

Layout of the safety instructions:



Pictograph and signal word!

(characterise the type and severity of danger)

Note

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

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

2

Safety instructions

**Note!**

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

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

2.1

General safety and application notes

**Danger!**

If the following basic safety measures are disregarded, severe injuries to persons and damage to material assets may result.

Lenze drive and automation components ...

- must only be used as directed.
 - [Application as directed](#) (13)
- must never be commissioned if they display signs of damage.
- must never be technically modified.
- must never be commissioned if they are not fully mounted.
- must never be operated without required covers.
- during and after operation can have live, moving and rotating parts, depending on their degree of protection. Surfaces can be hot.

The following applies to Lenze drive components ...

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

Observe all specifications contained in the enclosed documentation and related documentation.

- This is the precondition for safe and trouble-free operation and for achieving the specified product features.
 - [Product features](#) (14)
- The specifications, processes, and circuitry described in this document are for guidance only and must be adapted to your own specific application. Lenze does not take responsibility for the suitability of the process and circuit proposals.

All works on and with Lenze drive and automation components must only be carried out by qualified personnel. According to IEC 60364 or CENELEC HD 384 these are persons who ...

- are familiar with installing, mounting, commissioning, and operating the product.
- who have the corresponding qualifications for their work.
- who know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

2.2**Device and application-specific safety instructions**

- During operation, the communication module must be securely connected to the standard device.
- With external voltage supply, always use a separate power supply unit, safely separated to EN 61800-5-1 in every control cabinet (SELV/PELV).
- Only use cables corresponding to the given specifications.
 - ▶ [Ethernet cable specification](#) (📖 32)

**Documentation on standard device, host (PLC), system/machine**

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

2.3**Residual hazards****Protection of persons**

If Servo Drives 9400 are used on a phase earthed mains with a rated mains voltage ≥ 400 V, protection against accidental contact is not guaranteed without external measures.

- ▶ [Protective insulation](#) (📖 19)

Device protection

The communication module contains electronic components which may be damaged or destroyed by electrostatic discharge.

- ▶ [Installation](#) (📖 23)

3 Product description

3.1 Application as directed

3 Product description

3.1 Application as directed

The communication module ...

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

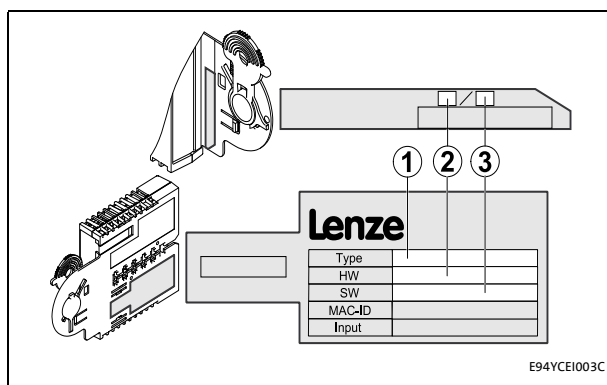
Product series	Type designation	From hardware version	From software version
Servo Drives 9400 HighLine	E94AxHExxx	VB	01.50
Servo Drives 9400 PLC	E94AxPExxxx	VA	02.00
Regenerative power supply module	E94ARNxxxx	VA	01.00

- is a device intended for use in industrial power systems.
- should only be used under the operating conditions prescribed in this documentation.
- can only be used in POWERLINK networks.

Any other use shall be deemed inappropriate!

3.2 Identification

The type designation and hardware and software version of the communication module are specified on the nameplate:



[3-1] Identification data

1 Type designation (type)

- E94 Product series
- A Version
- Y Module identification: Extension module
- C Module type: Communication module
- EP POWERLINK

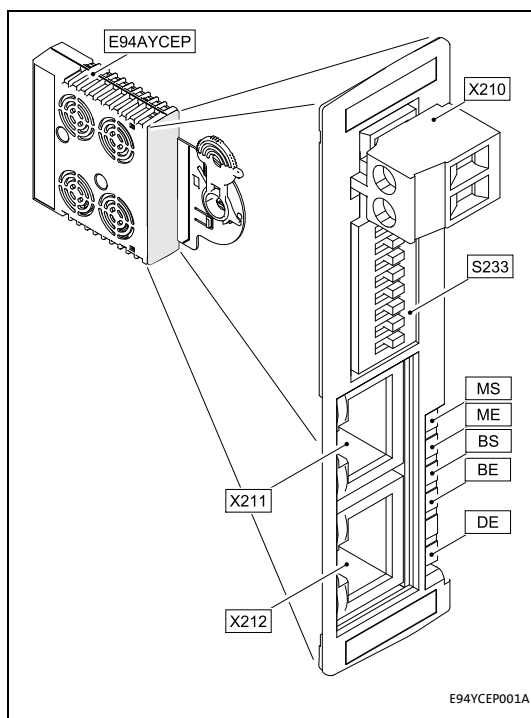
2 Hardware version (HW)

3 Software version (SW)

3.3**Product features**

- Interface module for the POWERLINK communication system to be connected to the expansion slots of the Servo Drives 9400
- The communication module can either be supplied internally by the standard device or externally by a separate voltage source.
- Real time Ethernet with the POWERLINK V2 communication profile for motion and general applications
- A line topology can be implemented by means of the integrated 2-port hub.
- Supported functions:
 - POWERLINK MN (Managing Node)
 - POWERLINK CN (Controlled Node)
- The "Managing Node mode" supports up to 50 nodes.
- Use of max. 10 PDO crosslinks for the Managing Node or the Controlled Node to create systems with "distributed intelligence"
- Very short CN response times for optimal network performance
- Parallel Ethernet communication between the Lenze »Engineer« and the Servo Drive 9400 if a POWERLINK router is used.
- Access to all Lenze parameters

3.4 Terminals and interfaces



[3-2] E94AYCEP communication module (POWERLINK)

X210 External voltage supply of the communication module

- 2-pole connector with screw connection
- ▶ [External voltage supply](#) (📖 34)

X211 POWERLINK port 1

X212 POWERLINK port 2

- RJ45-sockets
- each with 2 LED status displays for diagnostics
- ▶ [POWERLINK connection](#) (📖 30)
- ▶ [Status displays at the RJ45 sockets \(X211, X212\)](#) (📖 53)

S233 DIP switch for setting the node address (Node ID)

- ▶ [Node address setting](#) (📖 36)

MS LED status displays for diagnostic purposes

ME ▶ [Module status displays](#) (📖 51)

BS ▶ [Fieldbus status displays](#) (📖 52)

BE

DE

4

Technical data

4.1

General data and operating conditions

Range	Values
Order designation	E94AYCEP
Communication profile	POWERLINK V2
Communication medium	S/FTP (Screened Foiled Twisted Pair, ISO/IEC 11801 or EN 50173), CAT 5e
Interface for communication	RJ45, Standard Ethernet (according to IEEE 802.3), 100Base-TX (Fast Ethernet)
Network topology	Tree, star, line
Max. cable length	Number of nodes x 100 m
Cable length between 2 nodes/hubs	max. 100 m
Baud rate	100 Mbps
Type of node	• Managing Node (support of up to 50 nodes) • Controlled Node Adjustable by node address (node ID).
Node addresses (Node IDs)	240 E94AYCEP is Managing Node (max. 50 nodes)
	1 ... 100 E94AYCEP is Controlled Node with another E94AYCEP as Managing Node.
	1 ... 239 E94AYCEP is Controlled Node with Managing Node of another manufacturer.
Voltage supply	External supply via separate power supply unit +: U = 24 V DC (20.4 V ... 28.8 V), I = 140 mA -: Reference potential for external voltage supply
Conformities, approvals	• CE • UL (see also hardware manual)



Servo Drives 9400 hardware manual

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

4.2

POWERLINK communication data

Range	Values
Jitter synchronisation information	approx. 1 µs
Minimum cycle time	Managing Node: 1.0 ms
	Controlled Node: 0.5 ms
Total cycle times	Managing Node: 1.0 ... 20.0 ms
	Controlled Node: 0.5 / 1.0 / 2.0 / 3.0 ... 20.0 ms
Buffer size	Tx-iso: max. 92 bytes (64 bytes of PDO user data)
	Rx-iso: max. 328 Bytes (300 bytes of PDO user data)
Delay times (Controlled Node)	$T_{\text{Preq}} - T_{\text{Res}}$: approx. 1 µs
	$T_{\text{SoA}} - T_{\text{ASnd}}$: approx. 20 µs
Dead times for Managing Node	Between 2 transmission messages: min. 1 µs
	Between receive and transmit frame: min. 1 µs
Frame size	Max. asynchronous frame size (MTU): 1518 bytes
SDO communication method	UDP/IP
Number of RPDOs	Max. 10 channels (max. 300 bytes of PDO user data per channel)
RPDO user data per application (all RPDOs)	Max. 32 objects (max. 64 bytes)
Number of TPDOs	1 channel (data access of all nodes by broadcasting)
TPDO user data per application	Max. 32 objects (max. 64 bytes)

4.2.1

Operating mode "Managing Node"

Range	Values
Node address (node ID)	240
Max. number of nodes	50 Controlled Nodes + POWERLINK router + diagnostic device
Nodes per ms	Approx. 25
Support of multiplex CNs	Yes
Support of optional CNs	Yes

4.2.2

Operating mode "Controlled Node"

- Support of multiplexed CNs
- Support of optional CNs

4.2.3 Communication time

Parameter data (SDO)

The communication time for parameter data is the time between the transmission of an SDO request and the arrival of the corresponding response.

- The processing time in the Servo Drive 9400 is approx. 30 ms + 20 ms tolerance (typical)
- For some codes, the processing time may be longer (see reference manual/»Engineer« online help for the Servo Drive 9400).

Process data (PDO)

The communication time for process data is the time between the reception of a PDO with setpoints and the return of a PDO with the current actual values.

The communication times for process data depend on ...

- processing time in the Servo Drive 9400 (interval time of the application task, process data mode);
- Telegram runtime on the fieldbus (telegram length, number of nodes, PDO update time, instant of transmission of the POWERLINK telegram);
- Use of the synchronisation to the POWERLINK cycles.

Processing time

The basic conditions mentioned above cause the following processing times for the process data in the Servo Drive 9400:

- Process data for synchronised operation: approx. 1.2 ms
- Process data for non-synchronised operation: approx. 3.0 ms

4.3

Protective insulation

**Danger!****Dangerous voltage**

If the Servo Drives 9400 are operated on a phase earthed mains with a rated mains voltage ≥ 400 V, external measures need to be implemented in order to ensure protection against accidental contact.

Possible consequences:

Death or severe injuries

Protective measures:

If protection against accidental contact is required for the control terminals of the Servo Drive 9400 and the connections of the plugged device modules, ...

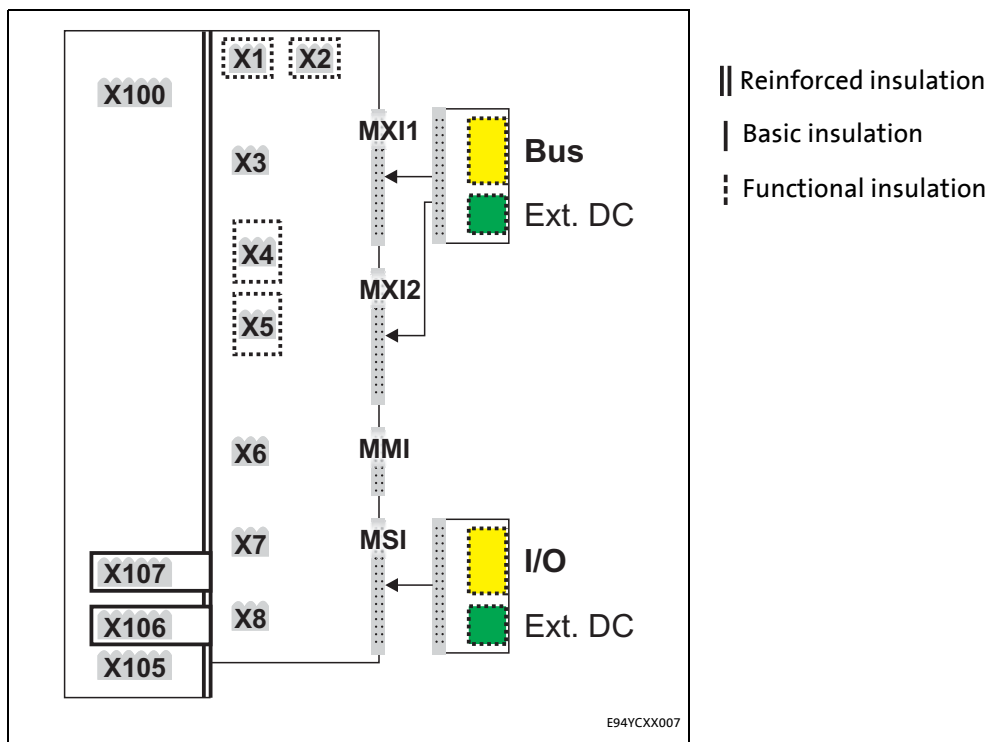
- a double isolating distance must exist.
- the components to be connected must be provided with the second isolating distance.

**Note!**

The protective insulation provided in Servo Drives 9400 is implemented in accordance with EN 61800-5-1.

The following illustration ...

- shows the arrangement of the terminal strips and the separate potential areas of the Servo Drive 9400.
- 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	Terminal strip	Connection
X100	L1, L2, L3 (Single Drive only)	X1	CAN on board 9400
	+UG, -UG	X2	State bus
X105	U, V, W		24 V (ext.)
	Rb1, Rb2 (Single Drive only)	X3	Analog inputs/outputs
X106	Motor PTC	X4	Digital outputs
X107	Control of the motor holding brake	X5	Digital inputs
		X6	Diagnostics
		X7	Resolver
		X8	Encoder
		MXI1, MXI2	Extension module
		MMI	Memory module
		MSI	Safety module

Example

Which type of protective insulation is used between the bus terminal of the device module in slot MXI1 or MXI2 and the mains terminal X100?

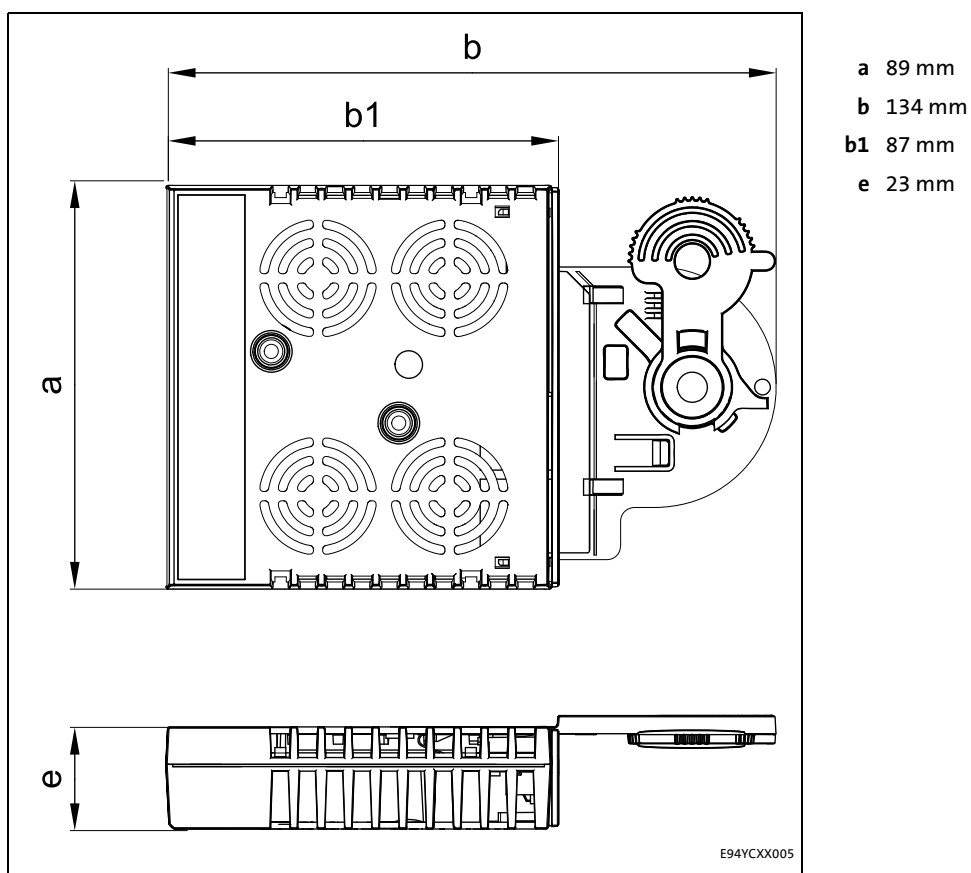
The separate potential area with the better protective insulation is decisive.

- The separate potential area of the bus terminal of the device module has a "functional insulation".
- The separate potential area of the mains terminal has a "reinforced insulation".

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

4.4

Dimensions



[4-2] Dimensions

5 Installation



Stop!

Electrostatic discharge

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

Possible consequences:

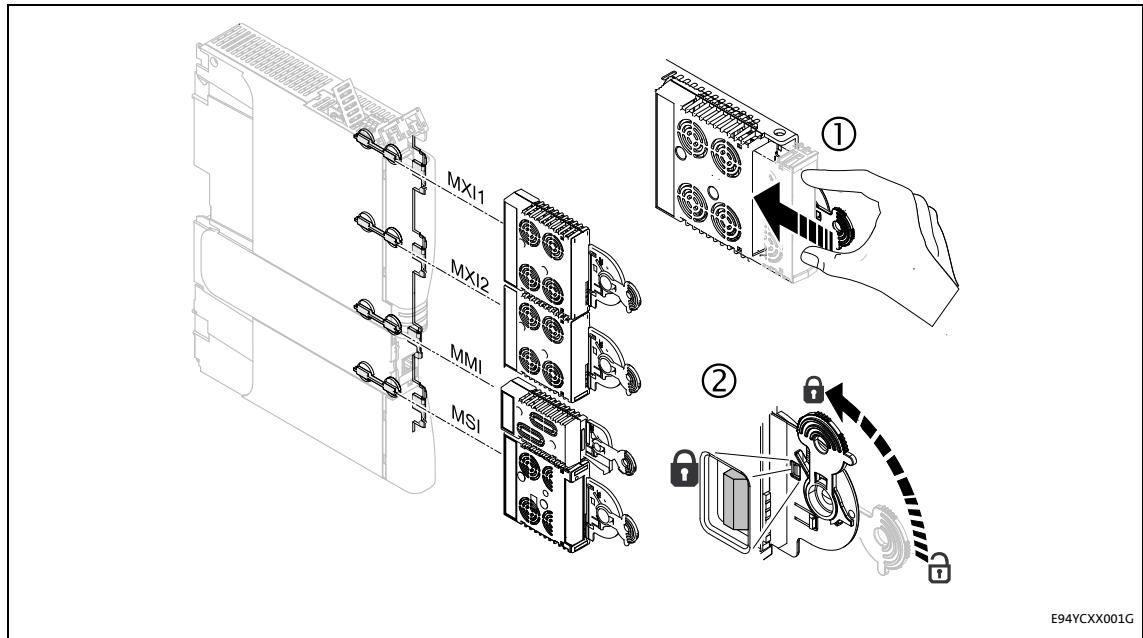
- The communication module is defective.
- Fieldbus communication is not possible or faulty.

Protective measures

- Before touching the module, be sure that you are free of electrostatic charge.

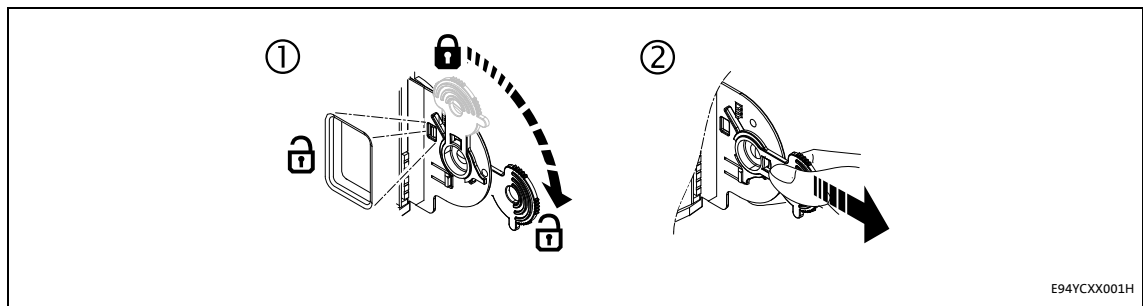
5.1 Mechanical installation

5.1.1 Assembly



[5-1] Assembly

5.1.2 Disassembly



[5-2] Disassembly

5.2

Electrical installation

**Documentation on standard device, host (PLC), system/machine**

Observe the notes and wiring instructions contained in this documentation.

5.2.1

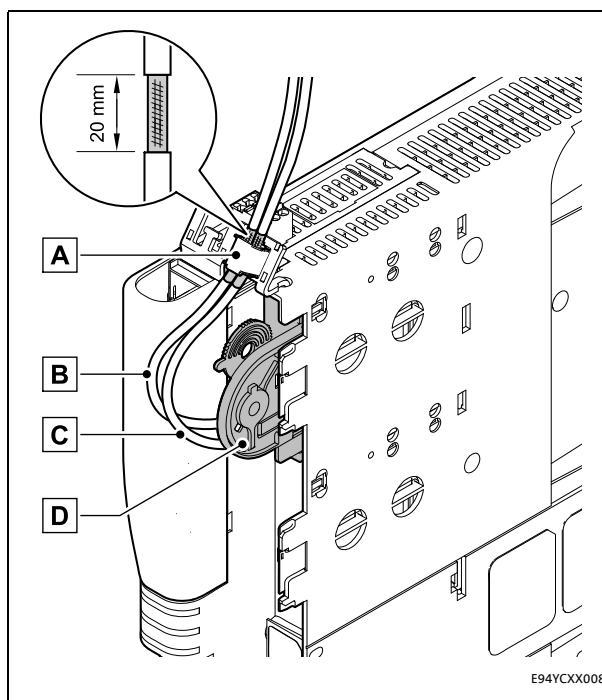
Wiring according to EMC guidelines

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

However, in environments with a very high level of interference, EMC resistance can be improved by additionally earthing the cable shield on both sides.

For this observe the following notes:

1. The distance between the additional earthing and the Ethernet plug depends on the module slot and is as follows:
 - approx. 10 cm for the upper slot (MXI1)
 - approx. 20 cm for the lower slot (MXI2)
2. Measure the appropriate distance along the cable and, starting from this point, remove 2 cm of the cable's plastic sheath.
3. Connect the cable shield to the shield sheet of the Servo Drive 9400.



A Connection to the shield sheet of the Servo Drive 9400

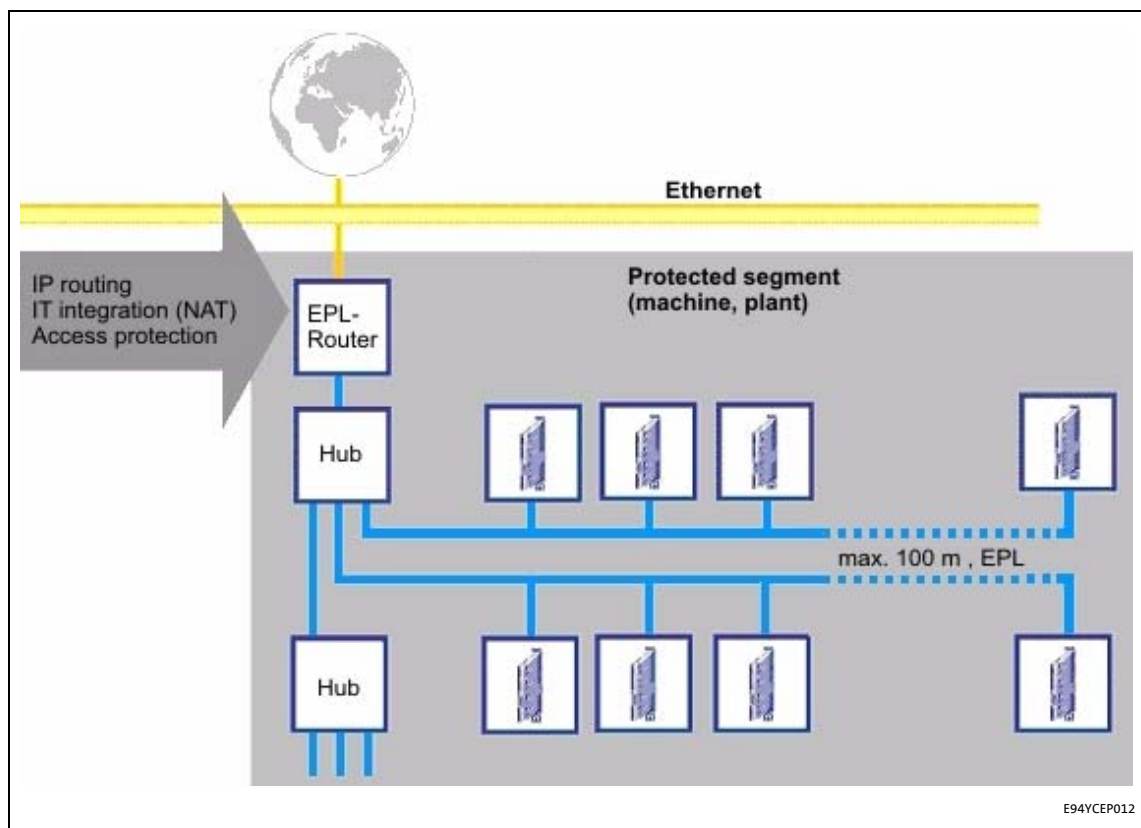
B Ethernet cable to X211

C Ethernet cable to X212

D Communication module in slot MXI1 of the Servo Drive 9400

[5-3] Wiring according to EMC guidelines

5.2.2 Network topology



[5-4] Network topology for POWERLINK



Note!

The use of class I hubs and switches inside the POWERLINK network segment is not permitted.

Inside the segment only Ethernet hubs may be used as infrastructure elements. The hubs must meet the requirements on class II repeaters acc. to IEEE 802.3u.

For this purpose Lenze offers the dual hub integrated into the communication module and the separate eight-fold hub, type E94AZCEH.

Class I hubs and switches are not permissible since they have considerably longer delay times for the frame forwarding and a bigger jitter. Both sizes reduce the real-time capability and dynamics.

The cable length between two POWERLINK nodes is limited to 100 m.

The topology rules (IEEE 802.3u) required for controlling the collisions may be violated in the POWERLINK network segment since according to the POWERLINK access order, telegram collisions are prevented. This enables a structure of lines and any hybrid forms between star and line topology.

Recommended topology

For an easy configuration and due to many possible topology variants we recommend to create networks according to the following rules:

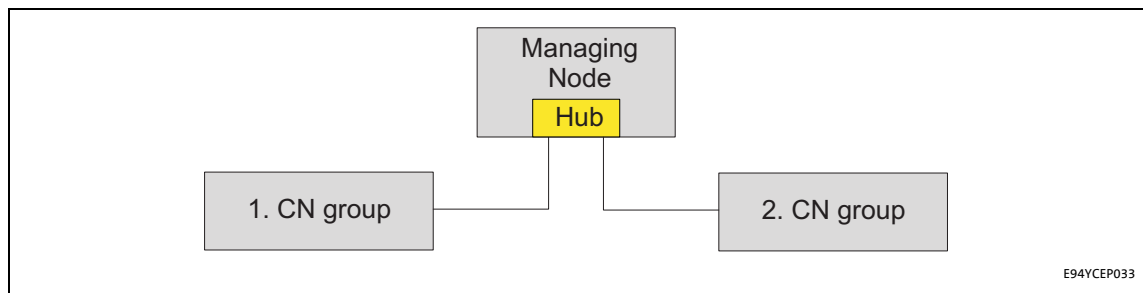
1. Create CN groups with up to 10 nodes.
2. Connect CN groups in star shape to the Managing Node.
3. Connect CN groups to the Managing Node via one external hub each.
 - For more than 2 CN groups, use an external 8-port hub (e.g. Lenze hub E94AZCEH).
 - For max. 7 CN groups one hub is sufficient.
 - For more than 7 CN groups, use further hubs.
 - The groups can be distributed on the hubs just as you like.
 - Observe the restrictions of the used Managing Node.



Note!

E94AYCEP communication module als Managing Node

With maximally 2 CN groups and the use of an E94AYCEP communication module as Managing Node, connect the CN group(s) directly to the POWERLINK terminals X211 and X212 of the E94AYCEP communication module.



[5-5] Star topology for 1 to 2 CN groups

5.2.3

Ethernet POWERLINK**Note!**

Standard Ethernet nodes are not permitted in the POWERLINK network segment.

In order to use the real-time capability of the POWERLINK technology, POWERLINK nodes must be interconnected in a separate network segment.

In accordance with the POWERLINK rules, only the Managing Node controls the access of POWERLINK nodes to the network. The Managing Node is the only node that transmits autonomously. The slave nodes (i.e. all Controlled Nodes) only transmit when they are entitled to transmit by the Managing Node.

Non-POWERLINK nodes (e.g. PCs) typically violate these rules by sending telegrams independently from the Managing Node. The telegrams interfere with the cyclic telegram exchange of the POWERLINK-nodes and impede the real-time capability of POWERLINK.

Connection to the standard Ethernet network

The connection to an external standard Ethernet network is carried out via an POWERLINK router or an POWERLINK gateway.

These infrastructure components separate the network traffic in the POWERLINK network segment from the one in the standard Ethernet. The handling of the frames depends on their direction:

- Standard Ethernet ---> POWERLINK network segment:
Only telegrams that are addressed to nodes in the network segment are forwarded. The forwarding takes place in the asynchronous area of the POWERLINK cycle.
- POWERLINK network segment ---> standard Ethernet:
Only asynchronous telegrams that are not addressed to nodes in the POWERLINK network segment are forwarded.

**Tip!**

Detailed information on the function and setting of the router or gateway can be found in the documentation of the component manufacturer.

5.2.4

Basic Ethernet Mode

**Note!**

Operation in the "Basic Ethernet Mode" does not permit any real-time communication.

The communication module can be operated in the "Basic Ethernet Mode" for a basic parameter setting provided that the following applies:

1. Operation of the module with network address ≤ 239 .
 - IP address: 192.168.100.[Node ID]
 - see [Node address setting](#) (36)
2. Operation with real time POWERLINK must not be carried out.
3. No integration of a Managing Node (node ID = 240) into the standard Ethernet network.

5.2.5 POWERLINK connection

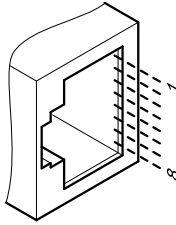
- The POWERLINK is wired using the two RJ45 sockets **X211** and **X212**.
- If possible, do not wire more than 10 nodes in a row in a network line.
- In case of more than 10 nodes you should deactivate the automatic calculation of the hub level in the »Engineer« and enter it manually to increase the performance.
- With a cycle time of 1 ms, 25 nodes can be operated.
 - The number of nodes can be increased if the POWERLINK cycle time is increased as well.
- You can use a standard Ethernet patch cable to connect the communication module to the POWERLINK fieldbus.
 - ▶ [Ethernet cable specification](#) (32)
- The installation and removal of the Ethernet cables is optimised for the use of connectors in accordance with the "Automation Initiative of German Domestic Automobile Manufacturers" (AIDA).



Note!

To prevent the RJ45 socket from being damaged, insert or remove the Ethernet cable connector straight (at a right angle) into or from the socket.

Pin assignment of the RJ45 sockets

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

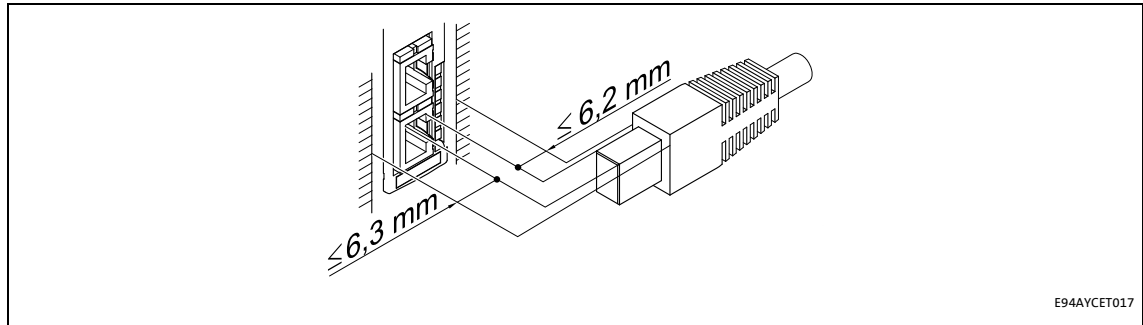


Tip!

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

Mounting clearance

When ordering and using your Ethernet cable, note the amount of free space available.



[5-6] Mounting clearance

5.2.6 Ethernet cable specification

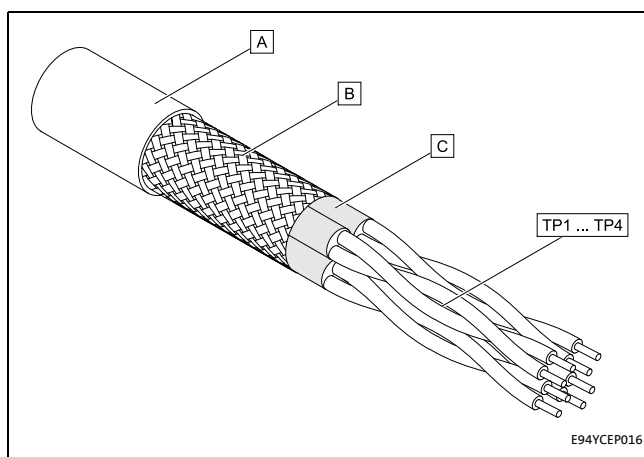


Note!

Only use cables that meet the listed specifications.

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

Structure of the Ethernet cable



A Cable insulation

B Braid

C Foil shielding

TP1 Twisted core pairs 1 ... 4

...

TP4

[5-7] Structure of the Ethernet cable (S/FTP, CAT 5e)

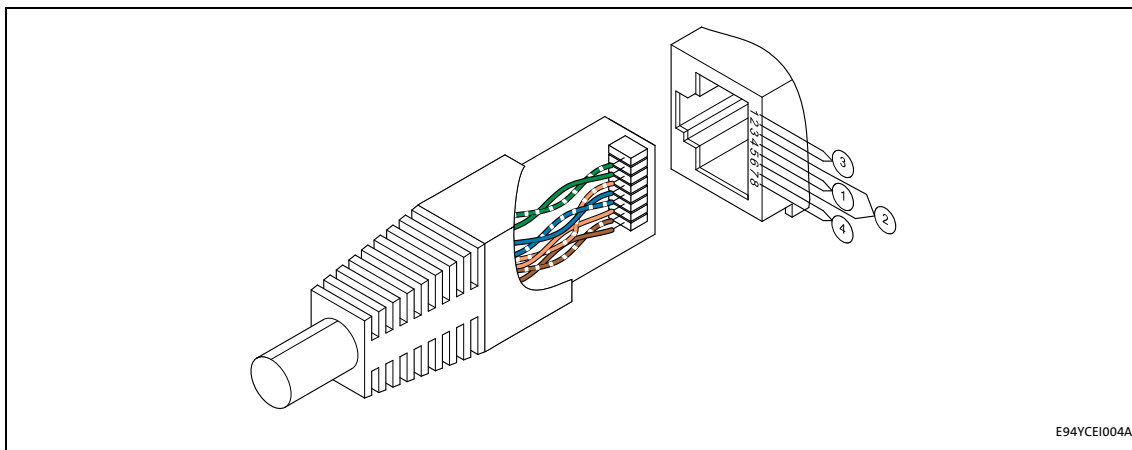
Colour code of the Ethernet cable



Note!

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

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



[5-8] Ethernet plug in accordance with EIA/TIA 568A/568B

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

5.2.7 External voltage supply

The communication module can be externally supplied with voltage via separate supply cables at the 2-pin plug connector **X210**.



Note!

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

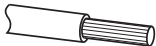
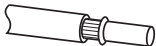
The external voltage supply of the communication module is necessary if the power supply for the basic device fails but communication via the fieldbus is to be maintained.

Access to parameters of a standard device disconnected from the mains is not possible.

Assignment of the X210 plug connector

Name	Explanation
+	U = 24 V DC (20.4 ... 28.8 V) I = 140 mA
-	Reference potential for external voltage supply

Data of the terminals

Range	Values
Electrical connection	2-pole connector with screw connection
Possible connections	Rigid:
	 1.5 mm ² (AWG 16)
	Flexible:
	 Without wire end ferrule 1.5 mm ² (AWG 16)
	 With wire end ferrule, without plastic sleeve 1.5 mm ² (AWG 16)
	 With wire end ferrule, with plastic sleeve 1.5 mm ² (AWG 16)
Starting torque	0.5 ... 0.6 Nm (4.4 ... 5.3 lb-in)
Stripping length	6 mm

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.

**Note!**

When parameterising the communication module, please note that the code number depends on the slot of the Servo Drive 9400 into which the communication module is plugged.

The first two digits of the code number indicate the slot:

- C13nnn for slot MXI1
 - ▶ [Parameters of the communication module for slot MXI1](#) (📖 71)
- C14nnn for slot MXI2
 - ▶ [Parameters of the communication module for slot MXI2](#) (📖 101)

You also have to set the [Parameters of the standard device that are relevant to communication](#) (📖 69).

6.1

Before initial switch-on

**Stop!**

Before switching on the Servo Drive 9400 and the communication module for the first time, check the entire wiring for completeness, short circuit and earth fault.

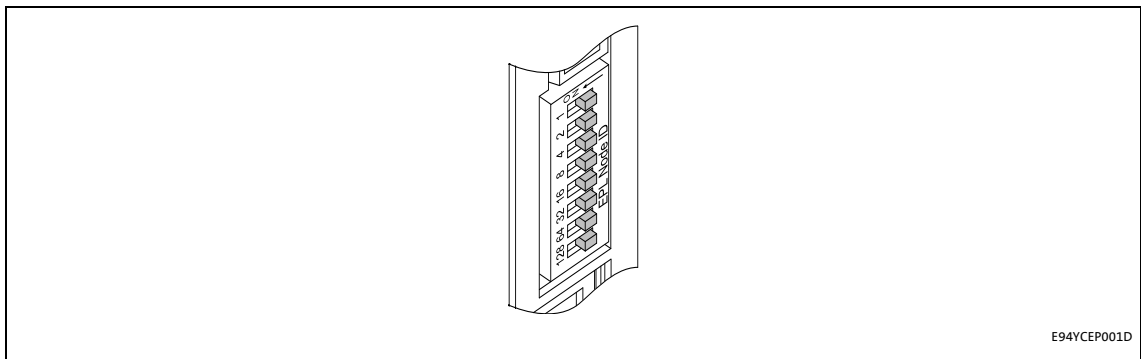
6.2

Node address setting

**Note!**

- Each network node address must only be used once.
- The node address setting in the configuration software (e.g. »Engineer«) and the DIP switches must be identical for each node.
- Switch the voltage supply of the communication module off and on again to activate changed settings.

The POWERLINK node address (node ID) is set via the front DIP switches.



[6-1] DIP switch

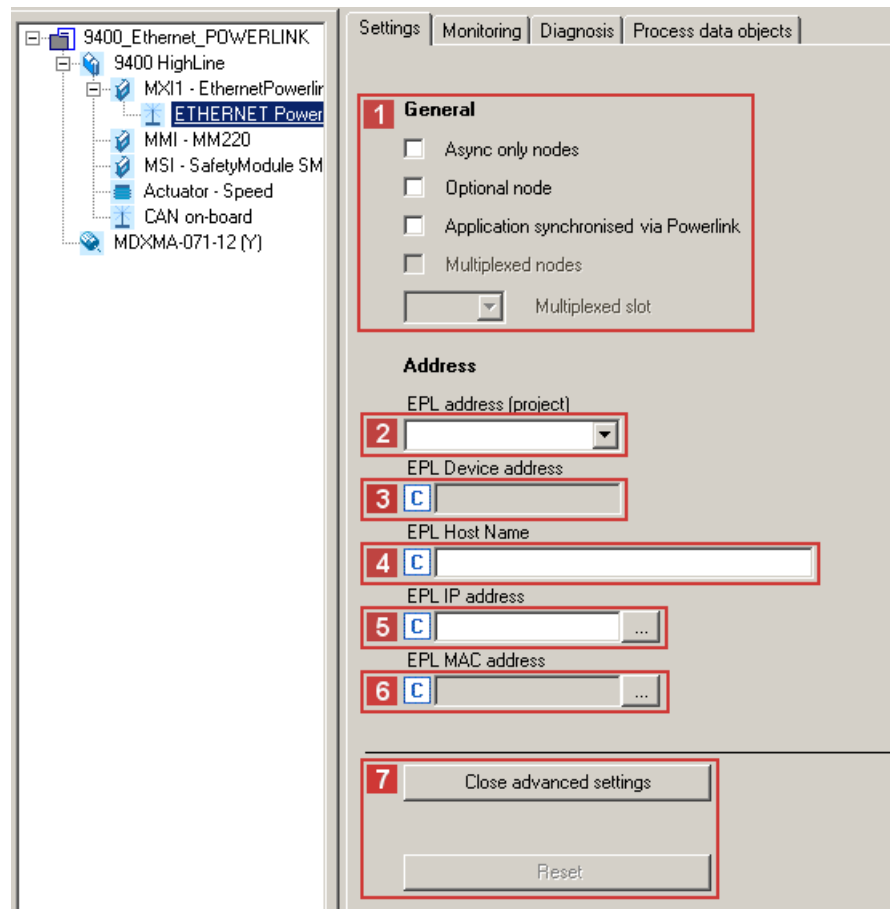
- The labelling on the housing corresponds to the valencies of the individual DIP switches for determining the node address (Node ID).
- Lenze setting for DIP switches 1 ... 128 = OFF (invalid value "0")
- Valid addresses in the POWERLINK network for the communication module:
 - 240: Managing Node
The Managing Node mode" supports max. 50 nodes.
 - 1 ... 100: Controlled Node with Lenze module E94AYCEP as Managing Node
 - 1 ... 239: Controlled Node with Managing Node of another manufacturer
- The corresponding Ethernet IP address of the communication module results from the address setting of the DIP switches:
IP address: 192.168.100.[Node ID]

Examples for address setting with the DIP switches

Address setting	DIP switch							
	128	64	32	16	8	4	2	1
1 (Controlled Node)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
2 (Controlled Node)	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
3 (Controlled Node)	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON
4 (Controlled Node)	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
5 (Controlled Node)	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON
6 (Controlled Node)	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
7 (Controlled Node)	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
8 (Controlled Node)	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
9 (Controlled Node)	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
10 (Controlled Node)	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
...	...	...	...	...	...	...	...	...
239 (Controlled Node)	ON	ON	ON	OFF	ON	ON	ON	ON
240 (Managing Node)	ON	ON	ON	ON	OFF	OFF	OFF	OFF

6.3

Settings and displays in the »Engineer«



Setting / display	Description
1 General	General information on the node type or the synchronisation of the application
2 EPL address (project)	Setting of the POWERLINK address (node ID: C13044 / C14044) • If the address '240' (Managing Node) is set here, only "Application synchronised via Powerlink" can be activated in the general settings. • The "Managing Node node" supports max. 50 nodes.
3 Current EPL device address	Display of the current POWERLINK device address (C13042 / C14042)
4 EPL host name	The DNS-compatible host name (C13045 / C14045) has to be non-ambiguous within the network domain. The device name ... • consists of max. 15 characters ([A ... Z], [a ... z], [0 ... 9], [-]); • starts with a letter; • ends with a letter or a digit.
5 EPL IP address	The IP address (C13000 / C14000) is created from the POWERLINK address (Node ID): 192.168.100.[C13044 / C14044]
6 EPL MAC address	Display of the MAC address (C13004 / C14004)
7 Open/close advanced settings	Here, the POWERLINK communication can be reset.

6.4

Initial switch-on

**Documentation for the Servo Drive 9400**

Observe the safety instructions and information on residual hazards.

**Note!****Establishing communication**

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

For further communication of the externally supplied module it is not relevant whether the standard device is switched on or not.

Activating changed setting

In order to activate any changed settings, ...

- execute the device command "11: Save start parameter" via the standard device code **C00002** and ...
- then reset the bus node or switch off and on again the voltage supply of the communication module.

Protection against uncontrolled restart

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

In the Lenze setting of Servo Drives 9400, the restart protection is activated.

Via the standard device code **C00142** ("Auto restart after mains connection") you can set the restart behaviour of the inverter:

C00142 = "0: Inhibited" (Lenze setting)

- The inverter remains inhibited (even if the fault is no longer active).
- An explicit controller enable causes the drive to start up in a controlled manner: LOW-HIGH edge at digital input X5/RFR.

C00142 = "1: Enabled"

- An uncontrolled restart of the drive is possible.



Initial switch-on and diagnosing

1. Switch on the Servo Drive 9400 and check whether it is ready for operation using the diagnostic LEDs of the communication module.
 - Red diagnostic LEDs must not be on.
 - The following signalling should be visible:

LED	Colour	Status	Meaning
MS	Green	On	Module Status
DE	-	Off	Device Error
X211	Green	On	LED is lit if a connection to the node has been established.
X212	Green	On	LED is lit if a connection to the node has been established.

2. If not already done, load the POWERLINK configuration into the Servo Drive 9400.
3. Repeat steps 1. and 2. for all POWERLINK nodes.
4. Start the POWERLINK network.

The network starts automatically if you set the Managing Node last.

Otherwise there are two options:

- Switch off the network nodes and switch them on together or
 - execute a fault reset at the Managing Node (Node ID = '240').
5. Check the POWERLINK network again using the diagnostic LEDs of the communication module.

The following signalling should be visible:

LED	Colour	Status	Meaning
MS	Green	On	Module Status
ME	-	Off	Module Error
BE	-	Off	Bus Error
DE	-	Off	Device Error
BS	Green	On	Bus Status
X211	Green	On	LED is lit if a connection to the node has been established.
X212	Green	On	LED is lit if a connection to the node has been established.

6.5 Drive synchronisation

Examples of the use of drive synchronisation via POWERLINK:

- Implementation of the "electrical shaft"
- Specification of cyclic position information
- Exactly simultaneous data processing of several drives
- Optimisation of the processing times of cyclic process data (PDO).

Settings in the »Engineer«

Application Parameters		FB Editor	Terminal assignment	Ports	User menu	Diagnostics	Data logger	Oscilloscope	All parameters
Parameter list		Parameter list -> Parameter list							
Parameter list									
Stellantrieb - Drehzahl									
Diagnostics									
Control terminals/TP(Tou...									
Controller settings									
VFC/SLVC - Settings									
		C...	S	Name	Value	Unit			
		1120	0	Sync source	Module in MX11				
		1121	0	Sync cycle time	1000	µs			
		1122	0	Sync phase position	400	µs			
		1123	0	Sync tolerance	0	µs			
		1124	0	Sync-PLL increment	109 ns				

- Set the MXI slot of the communication module as synchronisation source in code **C01120** of the Servo Drive 9400.
- The sync cycle time **C01121** and the sync phase position **C01122** are automatically calculated from the communication module. Default settings of these parameters are ignored.
- It is not necessary to adjust the sync tolerance **C01123** and the sync increment **C01124**.



Reference manual/»Engineer« online help for Servo Drive 9400

Here you can find detailed information on drive synchronisation and the corresponding parameters.

6.6 Optimising the POWERLINK communication

SDO bandwidth



Note!

The channel bandwidth should only be increased if the network is below capacity limit.

The SDO channel width ([C13075](#) / [C14075](#)) is the size of the asynchronous channel used for parameter setting and diagnostics. A higher value improves the transmission of large amounts of data (e.g. parameter downloads) and at the same time reduces the number of possible nodes.

Maximum time for device search

During the device search, the Managing Node has to wait until all Controlled Nodes have been found.

- Unless all Controlled Nodes are available in the defined POWERLINK cycle time, the "EPL_BOOTUP_1" error message is generated. The Managing Node remains in this status.
- If the Managing Node has found all Controlled Nodes, it starts the network.

Due to machine or system-specific switch-on sequences, it may be required to adapt the following POWERLINK objects:

- CN object **0x1F99**: NMT_CNBasicEthernetTimeout_U32 ([C13078](#) / [C14078](#))
- MN object **0x1F89**: NMT_BootTime_REC ([C13062](#) / [C14062](#))



Note!

In order to avoid a too quick change to the [Basic Ethernet Mode](#) ([29](#)), the value of the **0x1F99** object (NMT_CNBasicEthernetTimeout_U32) must be higher than the value of the **0x1F89** object (NMT_BootTime_REC) which is the case by default.

► [POWERLINK objects](#) ([136](#))

7 Process data transfer

POWERLINK transmits process data, parameter data, configuration data and diagnostic data between the Managing Node and the Controlled Nodes. Depending on their time-critical behaviour, the data are transmitted via different communication channels.

- Process data are transmitted via the process data channel.
- Process data serve to control the Servo Drive 9400.
- The transmission of process data is time-critical.
- Process data are cyclically transferred between the Managing Node and the Controlled Nodes (permanent exchange of current input and output data).
- The Managing Node can directly access the process data. In the PLC, for instance, the data are directly assigned to the I/O area.
- 1 ... 10 process data words (16 bits/word) can be received:
PDO_RX01 ([C13231](#) / [C14231](#)) ... PDO_RX10 ([C13240](#) / [C14240](#)).
- 1 process data word can be sent:
PDO_TX01 ([C13531](#) / [C14531](#))
- Process data are not saved in the Servo Drive 9400.
- Process data are e.g. setpoints, actual values, control words, and status words.

Port mapping in the »Engineer«

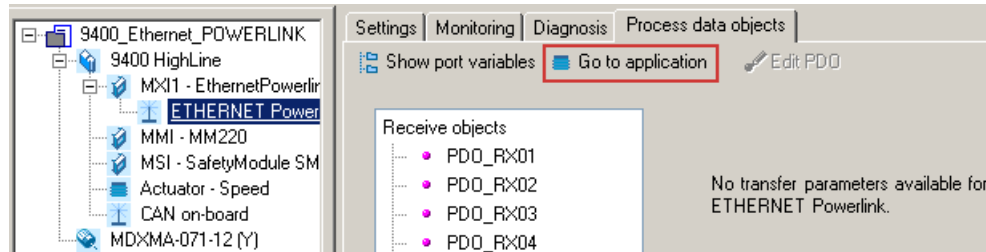
The port mapping in the »Engineer« can be automatically carried out via a selectable interface:

- POWERLINK MN/CN
- CAN on board
- Defined by the system

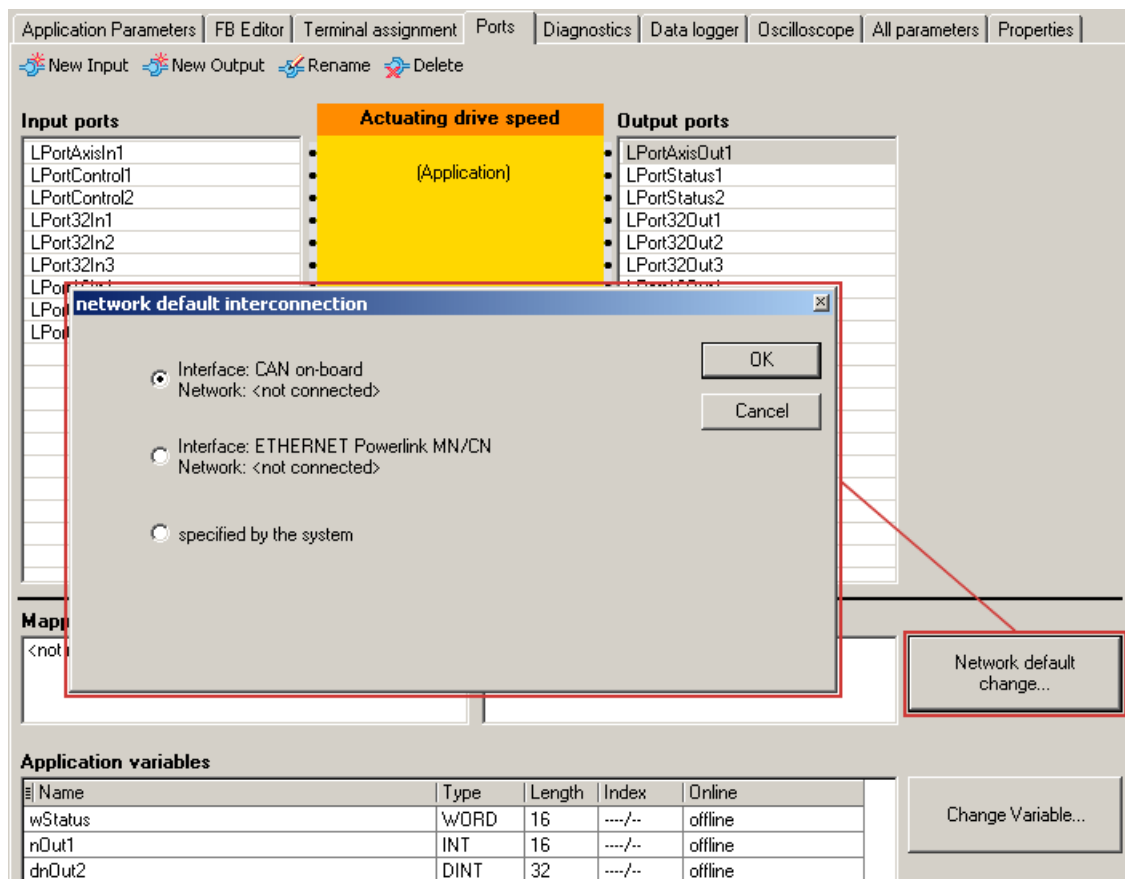


How to select the interface for automatic assignment of the port mapping:

1. Go to **Process data objects** tab and press the **"Go to application"** button.



2. Go to **Ports** tab of the application, press the **"Interface for automatic allocation ..."** button and select the desired interface.



8 Monitoring

The communication module provides several monitoring functions for the "Managing Node" and "Controlled Node" operating modes. The standard settings can be changed in the »Engineer« under the **Monitoring** tab.

For the settings, monitoring responses and monitoring thresholds can be specified. When the monitoring thresholds are exceeded, the response of the Servo Drive 9400 is specified together with the POWERLINK-specific monitoring response. The required status is adopted which is additionally entered into the logbook of the Servo Drive 9400. The setting 'No response' deactivates the monitoring function.



Note!

Generally, all set monitoring functions must be reset after they occurred and before they can be transmitted again since they affect the fieldbus behaviour and the behaviour of the communication module.

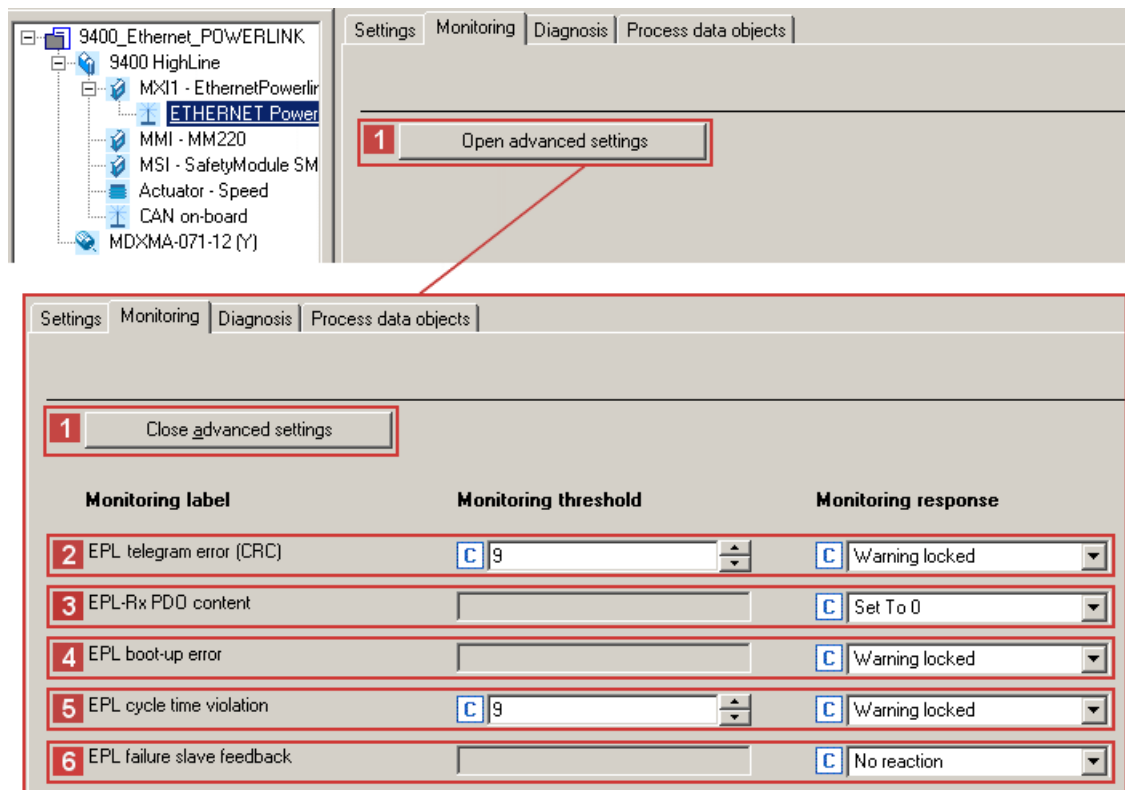
Weighted process

The monitoring threshold, for instance, serves to define the number of errors which may occur in succession. Here, the POWERLINK uses a weighted process which must be considered when the monitoring threshold is entered:

- As soon as an error occurs, an internal error counter is increased by the value "8".
- As soon as a POWERLINK cycle was successful, the error counter is reduced by the value '1'.
- Thus 8 faultless transmissions are required after an error has been detected, in order that the error counter assumes the value "0" again.

8.1

Monitoring functions of the Managing Node



In order to change the standard settings of the monitoring functions, press the **1** "Open advanced settings" button.

- The input fields for monitoring thresholds and monitoring responses are shown.
- The **1** "Close advanced settings" serves to mask out the input fields again.

Settings

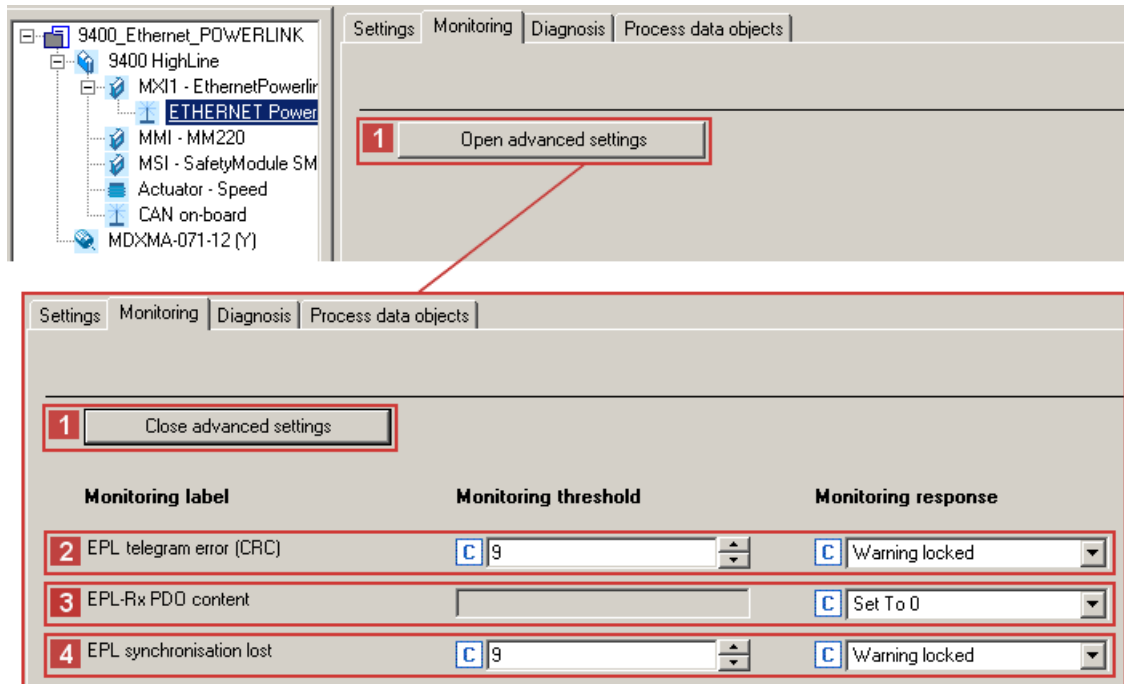
Monitoring function		Description
2	EPL frame error (CRC)	Weighted number of received faulty frames • This error can occur due to very strong EMC interferences or by non-POWERLINK-compliant nodes. • Monitoring threshold: C13115/3 / C14115/3 • Monitoring response: C13891/4 / C14891/4
3	EPL-Rx PDO contents	This monitoring response defines the way the cyclic process data (PDO) will be forwarded from the POWERLINK network to the standard device/ application in the event of an error. An error has occurred if no valid process data is received and a failed Controlled Node is reported to the Managing Node. The following settings are possible with C13885 / C14885: • 0: The valid data received last remains. • 1: All data is set to the value "0".
4	EPL bootup error	The Managing Node could not set the POWERLINK network to the "NMT_xx_OPERATIONAL" status. • Monitoring response: C13891/2 / C14891/2
5	EPL cycle time violation	Weighted number of non-executable POWERLINK cycles. This error can occur if the network nodes do not behave in a POWERLINK-compliant way or the Managing Node / the network is overloaded (wrong POWERLINK cycle time). • Monitoring threshold: C13117/3 / C14117/3 • Monitoring response: C13891/1 / C14891/1
6	EPL failure - slave feedback	If at least one Controlled Node defined via C13028 / C14028 has failed, the set monitoring response C13891/5 / C14891/5 is executed.

8.2

Monitoring functions of the Controlled Node

**Note!**

The E94AYCEP communication module as Controlled Node only supports monitoring for the "LeaveDataExchange" status.



In order to change the standard settings of the monitoring functions, press the **1** "Open advanced settings" button.

- The input fields for monitoring thresholds and monitoring responses are shown.
- The **1** "Close advanced settings" serves to mask out the input fields again.

Settings

Monitoring function		Description
2	EPL frame error (CRC)	Weighted number of received faulty frames • This error can occur due to very strong EMC interferences or by non-POWERLINK-compliant nodes. • Monitoring threshold: C13131/3 / C14131/3 • Monitoring response: C13891/4 / C14891/4
3	EPL-Rx PDO contents	This monitoring response defines the way the cyclic process data (PDO) are forwarded from the POWERLINK network to the standard device/application in the event of an error. An error has occurred if no valid process data is received and the "POWERLINK synchronisation loss" monitoring function is activated. The following settings are possible with C13885 / C14885 : • 0: The valid data received last remains. • 1: All data is set to the value "0".
4	EPL synchronisation loss	This monitoring detects a failure of the Managing Node by means of the number of POWERLINK cycles failed. This monitoring is independent of the setting for the Drive synchronisation (41). • Monitoring threshold: C13127/3 / C14127/3 • Monitoring response: C13891/3 / C14891/3

9

Diagnostics

For fault diagnostics, the communication module is provided with the LEDs on the front. Furthermore, you can carry out a comprehensive diagnostics of the entire POWERLINK network using the »Engineer«.

9.1

LED status displays



Note!

LED status displays for trouble-free operation:

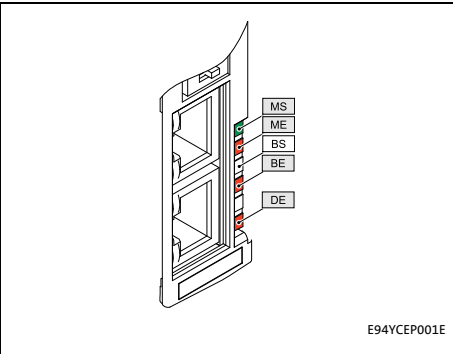
- The LEDs **MS** (51) and **BS** (52) are permanently lit.
- The green LED at the RJ45 sockets **X211** and **X212** is permanently lit or blinking (53).

The following status displays are distinguished:

- [Module status displays](#) (51)
- [Fieldbus status displays](#) (52)
- [Status displays at the RJ45 sockets \(X211, X212\)](#) (53)

9.1.1 Module status displays

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

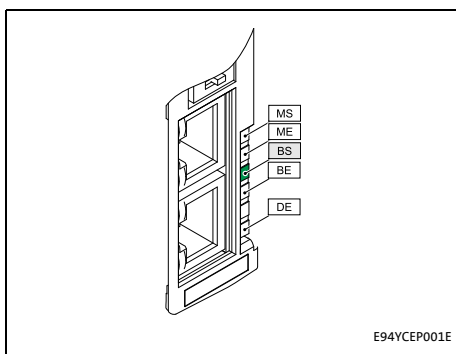


- MS: Module Status
- ME: Module Error
- BE: Bus Error
- DE: Device Error

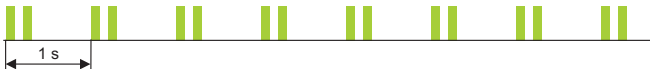
LED	Colour	Status	Description
MS	Green	On	 The communication module is supplied with voltage and is connected to the standard device.
		Blinking	 The communication module is supplied with voltage, but has no connection to the standard device. (The standard device is either switched off, in the initialisation phase, or not available).
ME	Red	On	 An error has occurred in the communication module.
BE	Red	On	 A fieldbus error has occurred.
DE	Red	On	 The communication module is not accepted by the standard device. See notes given in the documentation for the standard device.

9.1.2 Fieldbus status displays

The **BS** LED indicates the fieldbus status.

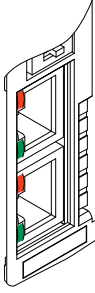
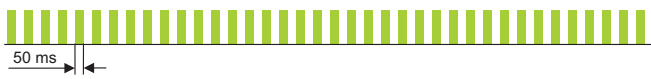


BS: Bus Status

LED	Colour	Status	Description
BS	Green	Off	The communication module is not active on the fieldbus or is in the INIT state.
		Blinking	 The POWERLINK network is in the initialisation phase. NMT_MS_PREOPERATIONAL_1 / NMT_CS_PREOPERATIONAL_1
		Blinking	 The POWERLINK network is in the initialisation phase with cyclic traffic. NMT_MS_PREOPERATIONAL_2 / NMT_CS_PREOPERATIONAL_2
		Blinking	 The POWERLINK node is waiting for the start signal. NMT_MS_READY_TO_OPERATE / NMT_CS_READY_TO_OPERATE
		Blinking	 The POWERLINK node has not found a Managing Node and is in Basic Ethernet Mode (29). NMT_CS_BASIC_ETHERNET
		Blinking	 The POWERLINK node is in the "Stopped" status (waiting for disconnection). NMT_CS_STOPPED
		On	 The POWERLINK node is in the operating phase. NMT_MS_OPERATIONAL / NMT_CS_OPERATIONAL

9.1.3 Status displays at the RJ45 sockets (X211, X212)

The LEDs at the RJ45 sockets **X211** and **X212** indicate the POWERLINK connection status.

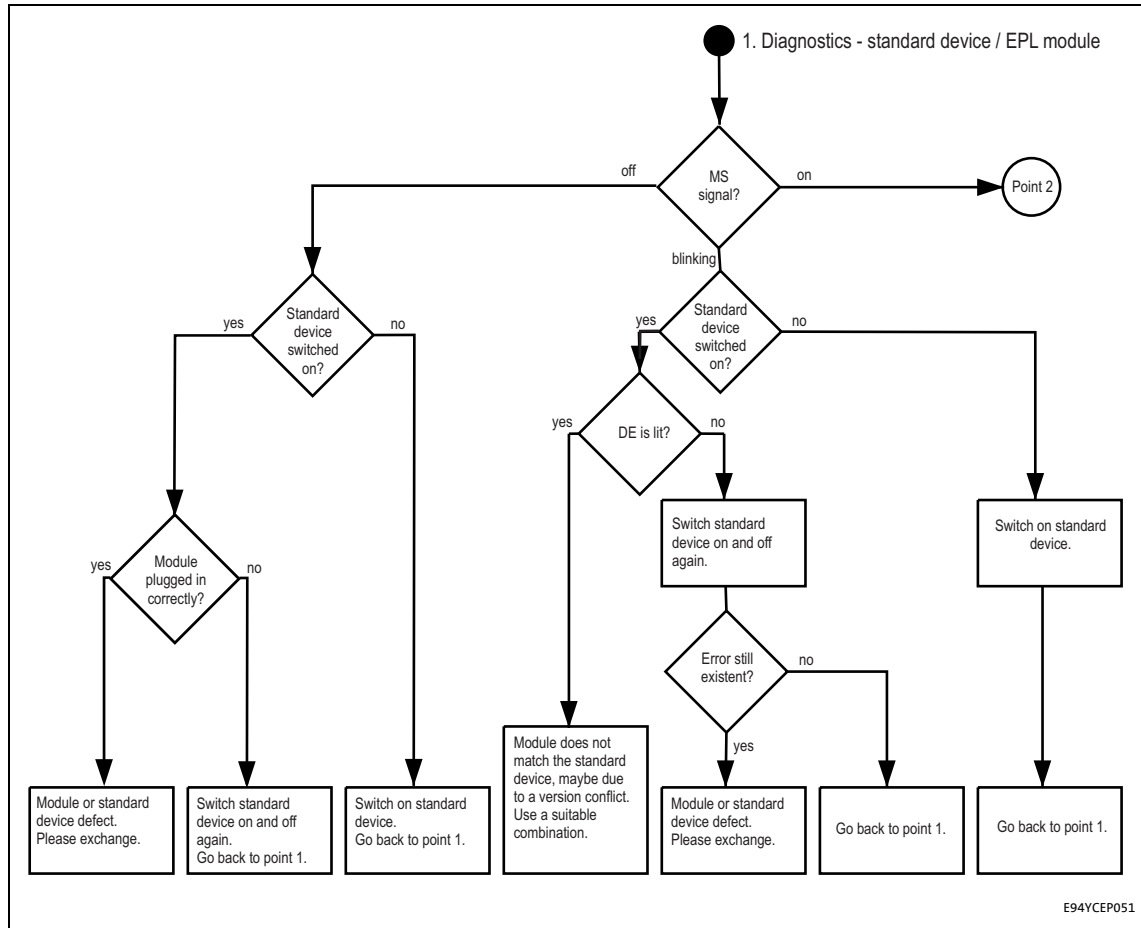
LEDs	Colour	Status	Description
 E94YCEP001E	Green	Off	No POWERLINK connection
		On	 POWERLINK connection has been established.
		flickers	 Data communication of POWERLINK connection is active.
	Red	On	 POWERLINK collision has occurred.

9.2 Troubleshooting with module signalling

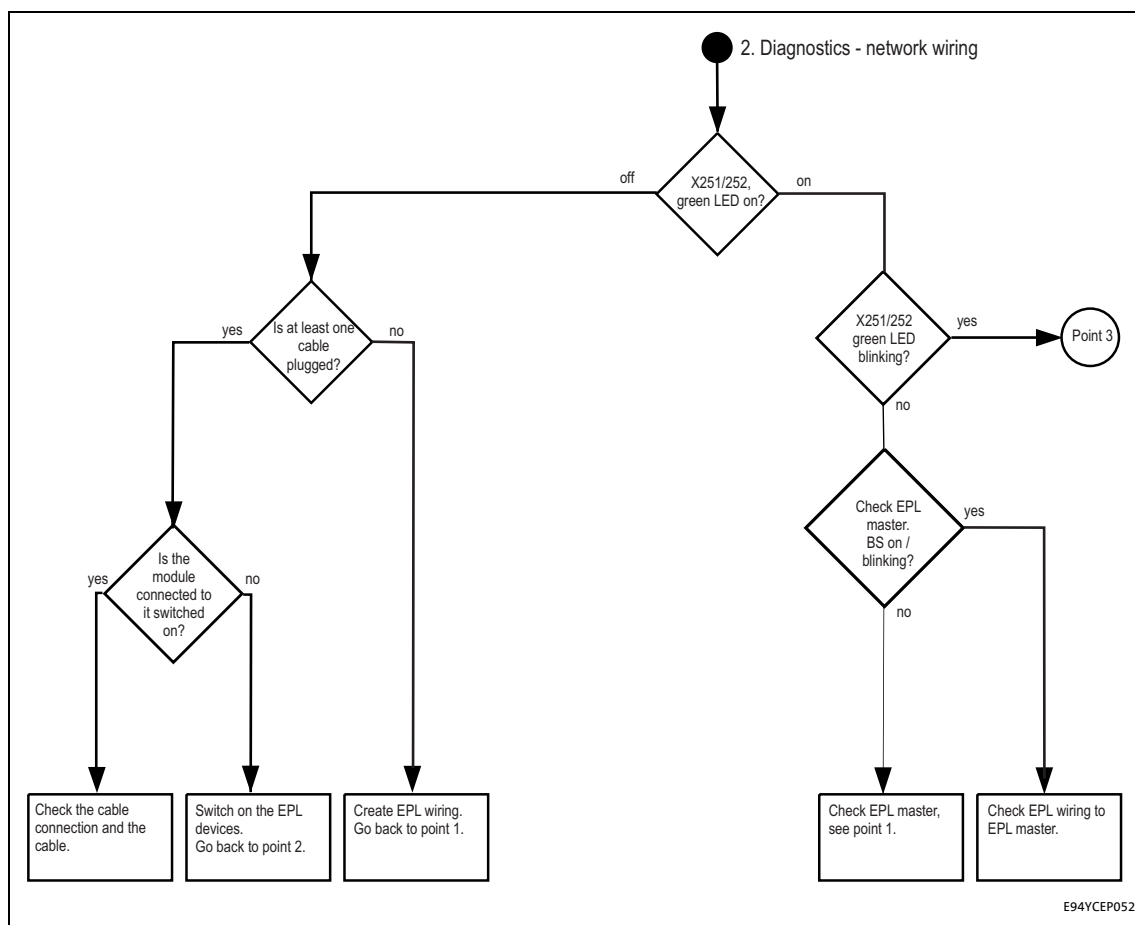
In the following, troubleshooting via the module signals will be described.

Please particularly observe ...

- the basic readiness for operation between the standard device and the communication module;
- the network wiring.



[9-1] Diagnostics - standard device / POWERLINK module

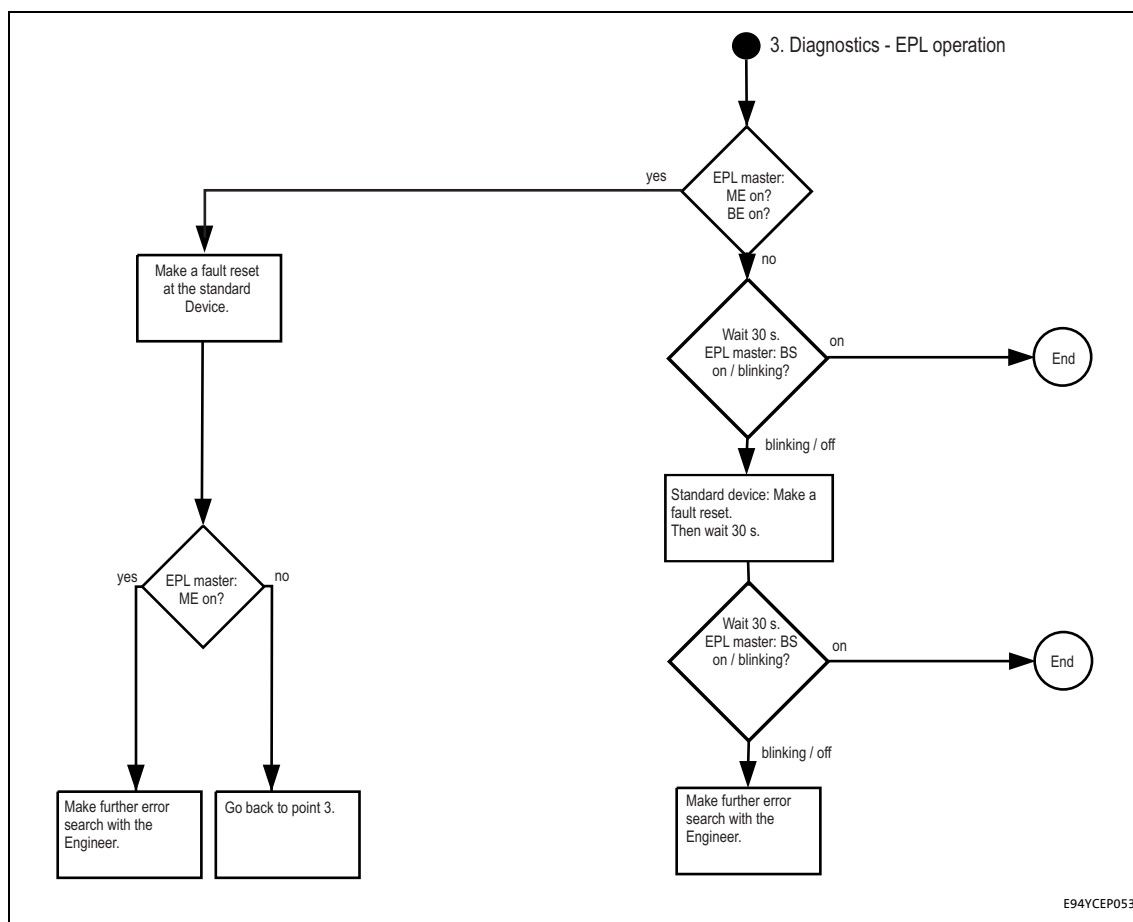


[9-2] Diagnostics - network wiring

**Note!**

The **BS** (Bus Status) LED refers to the Lenze E94AYCEP communication module as Managing Node.

This status display applies analogously to the Managing Nodes of other manufacturers.



[9-3] Diagnostics - POWERLINK operation

**Note!**

The LEDs **ME** (Module Error), **BE** (Bus Error) and **BS** (Bus Status) refer to the Lenze communication module E94AYCEP as Managing Node.

This status display applies analogously to the Managing Nodes of other manufacturers.

9.3 Diagnostic data

Pending diagnostic data are signalled from the Controlled Node to the Managing Node by means of an emergency message.

Errors and warnings in the Servo Drive 9400 and the plugged communication module are sent to the Managing Node as extended diagnostic messages.

The diagnostic data is visible via the engineering software of the host (PLC).

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

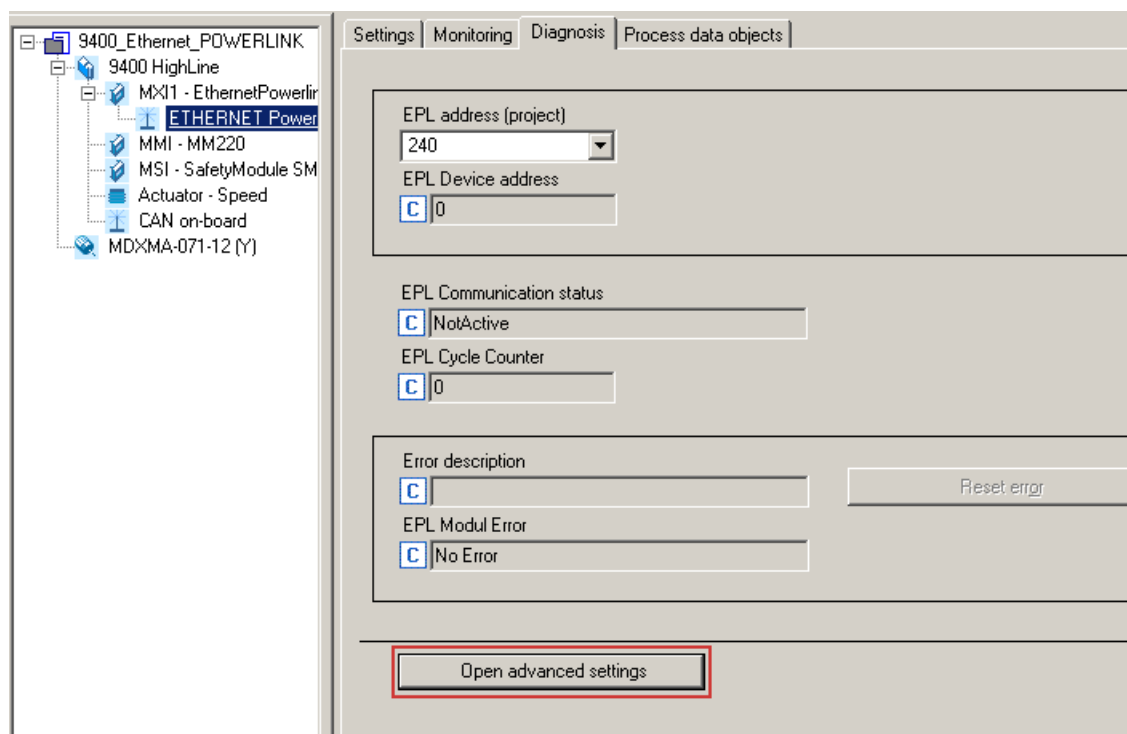


Reference manual/»Engineer« online help for Servo Drive 9400

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

9.4 Diagnosing with the »Engineer«

In the »Engineer« under the **Diagnostics** tab, you will find POWERLINK diagnostics information.



The "Open extended settings" tab serves to display further diagnostics information on the Managing Node (node ID = '240') or Controlled Node (node ID '0' ... '239').

Display of the extended settings for the Managing Node

Close advanced settings

EPL MN-collisions: sum

EPL MN-CRC error: sum

EPL Link breaks: sum

EPL MN-Cycle violation: sum

Reset counter

Counter EPL failure slave feedback...

Display of the extended settings for the Controlled Node

Close advanced settings

EPL CN: frame error (CRC)

EPL CN: frame error: sum

EPL CN: Link break: sum

EPL CN-Sync loss: sum

Reset counter

10 Error messages

This chapter supplements the error list in the reference manual and the »Engineer« online help for the Servo Drive 9400 by POWERLINK error messages of the communication module.



Reference manual/»Engineer« online help for Servo Drive 9400

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

10.1 Error messages of the communication module

This chapter describes all error messages of the communication module and their causes and remedies.

10.1.1 Short overview

The following table contains all error messages of the communication module in numerical order of the error numbers. Moreover the preset error response and - if applicable - the parameters for setting the error response are specified.



Tip!

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

Error number		Name	Response (Lenze setting)	Adjustable in
hex	dec			
0x00c83100	13119744	EPL: Lost connection to 9400 target	No response	-
0x00c85531	13129009	EPL: Memory access error	Information	-
0x00c85532	13129010	EPL: Memory: Read error	Information	-
0x00c85533	13129011	EPL: Memory: Write error	Information	-
0x00c86010	13131792	EPL: Internal watchdog activated	Fault	-
0x00c86011	13131793	EPL: Internal watchdog activated	Fault	-
0x00c86100	13132032	EPL: Internal error	Information	-
0x00c86101	13132033	EPL: Internal error	Fault	-
0x00c86110	13132048	EPL: Invalid PDO mapping detected	Warning Locked	-
0x00c8641f	13132831	EPL: Invalid parameter set	Fault	-
0x00c86420	13132832	EPL: Lenze settings loaded	Fault	-
0x00c88130	13140272	EPL: Fieldbus watchdog activated	Fault	-
0x00c88131	13140273	EPL: DataExchange exited	No response	C13883 / C14883
0x00c88261	13140577	EPL: Invalid address selected	Fault	-
0x00c88263	13140579	EPL MN: Network has not been started (bootup-1)	Warning Locked	C13891/2 / C14891/2
0x00c88264	13140580	EPL MN: Not all nodes are in the operational status (bootup-2)	Warning Locked	C13891/2 / C14891/2
0x00c88265	13140581	EPL: Synchronisation of MN lost	Warning Locked	C13891/3 / C14891/3
0x00c88266	13140582	EPL: Defective telegram (CRC) detected	Warning Locked	C13891/4 / C14891/4
0x00c88267	13140583	EPL: Failure of a network node	No response	C13891/5 / C14891/5
0x00c88281	13140609	EPL: Cycle time exceeded	Warning Locked	C13891/1 / C14891/1
0x00c88283	13140611	EPL: MN address assigned double	Fault	-
0x00c88284	13140612	EPL: Internal error	Fault	-

10.1.2 Possible causes and remedies

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

EPL: Lost connection to 9400 [0x00c83100]

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 MXI communication to the Servo Drive 9400 is interrupted. • Servo Drive 9400 is switched off. • The communication module is not connected correctly at the MXI slot of the Servo Drive 9400. • Communication module is defective.		• Switch on Servo Drive 9400. • Plug in the communication module correctly at the MXI slot of the Servo Drive 9400. • Send communication module together with a description of the fault to Lenze.	

EPL: Memory access error [0x00c85531]

Response (Lenze setting printed in bold)		Setting: not possible	
☐ None ☐ System error ☐ Error ☐ Fault ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☒ Information			
Cause		Remedy	
Access via the Servo Drive 9400 to a parameter set in the memory module failed.		Download application again (including module).	

EPL: Memory: Read error [0x00c85532]

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 in the memory module could not be read.		Download application again (including module).	

EPL: Memory: Write error [0x00c85533]

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 in the memory module could not be written.		Download application again (including module).	

EPL: Internal watchdog activated [0x00c86010]

Response (Lenze setting printed in bold)		Setting: not possible	
☐ None ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information			
Cause		Remedy	
Communication module is defective.		Send communication module together with a description of the fault to Lenze.	

EPL: Internal watchdog activated [0x00c86011]

Response (Lenze setting printed in bold)	Setting: not possible
☐ None ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	Remedy
Communication module is defective.	Send communication module together with a description of the fault to Lenze.

EPL: Internal error [0x00c86100]

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.	Send communication module together with a description of the fault to Lenze.

EPL: Internal error [0x00c86101]

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.	Send communication module together with a description of the fault to Lenze.

EPL: Invalid PDO mapping detected [0x00c86110]

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 entered PDO mapping is invalid.	Re-execute PDO mapping.

EPL: Invalid parameter set [0x00c8641f]

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.	Download application again (including module).

EPL: Lenze setting loaded [0x00c86420]

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 via the Servo Drive 9400 to a parameter set in the memory module failed.	Download application again (including module).

EPL: Fieldbus watchdog activated [0x00c88130]

Response (Lenze setting printed in bold)	Setting: not possible
☐ None ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ warning ☐ Information	
Cause	Remedy
Communication module is defective.	Send communication module together with a description of the fault to Lenze.

EPL: DataExchange exited [0x00c88131]

Response (Lenze setting printed in bold)	Setting: C13883 / C14883 (☒ Adjustable response)
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information	
Cause	Remedy
The POWERLINK data exchange has been terminated.	• Check wiring. • Plug network cable into POWERLINK terminal X211 or X212.

EPL: Invalid address selected [0x00c88261]

Response (Lenze setting printed in bold)	Setting: not possible
☐ None ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	Remedy
An invalid IP address has been assigned by the Managing Node via POWERLINK or set as node ID.	• Ensure that a valid IP address is assigned by the Managing Node via POWERLINK. • Set valid node ID. ▶ Node address setting (📖 36)

EPL MN: Network has not been started (bootup-1) [0x00c88263]

Response (Lenze setting printed in bold)	Setting: C13891/2 / C14891/2
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information	
Cause	Remedy
• The Managing Node could not start the POWERLINK network. • Not all required nodes were found.	• Check if all nodes are switched on • Check address setting and wiring. ▶ Monitoring functions of the Managing Node (📖 46)

EPL MN: Not all nodes are in the operational status (bootup-2) [0x00c88264]

Response (Lenze setting printed in bold)	Setting: C13891/2 / C14891/2
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information	
Cause	Remedy
The Managing Node could not transfer all nodes into the "NMT_CS_OPERATIONAL" status via process data exchange.	Check whether single nodes are in error status. ▶ Monitoring functions of the Managing Node (📖 46)

EPL: Synchronisation lost from MN [0x00c88265]

Response (Lenze setting printed in bold)		Setting: C13891/3 / C14891/3
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information		
Cause	Remedy	
In the Controlled Node, the synchronisation cycle of the Managing Node has failed. The Controlled Node changes automatically to the NMT_CS_PREOPERATIONAL_1 state and waits for a new run-up by the Managing Node.	• Check wiring components (failure of Managing Node, router). • Restart Managing Node if required. • Change CN monitoring thresholds via C13127 / C14127. ► Monitoring functions of the Controlled Node (48)	

EPL: Defective telegram (CRC) detected [0x00c88266]

Response (Lenze setting printed in bold)		Setting: C13891/4 / C14891/4
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information		
Cause	Remedy	
Faulty Ethernet frames (CRC error) have been detected. Possible causes: • A device on the network is not POWERLINK-compliant. • EMC interference is too strong.	• Check if a non-POWERLINK-compliant device is in the network (e.g. diagnostics PC). • Reduce EMC interference on the network or use an additional shield connection. • Change monitoring thresholds: • Managing Node: C13115/3 / C14115/3 • Controlled Node: C13131/3 / C14131/3 ► Monitoring functions of the Managing Node (46) ► Monitoring functions of the Controlled Node (48)	

EPL: Failure of a network node [0x00c88267]

Response (Lenze setting printed in bold)		Setting: C13891/5 / C14891/5
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information		
Cause	Remedy	
In case of the Managing Node, an unwanted change from the "Operational" status has occurred due to an error. Possible causes are: • Node failure • Network cables have been detached. • Servo Drive 9400 is switched off. • Communication module is defective. • Time-out with Controlled Nodes • Telegram collisions due to non-compliant POWERLINK nodes	• Check wiring. • Plug network cable into POWERLINK terminal X211 or X212. • Restart Managing Node if required. • Switch on Servo Drive 9400. • POWERLINKCheck if a non--compliant device is in the network (e.g. diagnostics PC). • Check whether collisions have occurred with the Managing Node (C13126 / C14126). • Change CN monitoring thresholds (C13124 / C14124). ► Monitoring functions of the Controlled Node (48) • Send communication module together with a description of the fault to Lenze.	

EPL: Cycle time exceeded [0x00c88281]

Response (Lenze setting printed in bold)		Setting: C13891/1 / C14891/1
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information		
Cause	Remedy	
The Managing Node has detected that the previous cycle has not yet been completed when the new cycle starts.	Select a larger POWERLINK cycle time via C13060 / C14060 .	

EPL: MN address assigned double [0x00c88283]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
The address setting of the Managing Node has been assigned several times (node ID = '240'). This node is configured as Managing Node but does not participate in the frame traffic due to double addressing.	Correct address setting. ▶ Node address setting (□ 36)

EPL: Internal error [0x00c88284]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
Internal error.	Send communication module together with a description of the fault to Lenze.

10.2 POWERLINK error messages

- The POWERLINK error messages are displayed via code [C13910](#) / [C14910](#).
- In order to distinguish between the error responses, the displayed error messages are preceded with 3 characters:

Response	Meaning
EL_...	Trouble (Fault)
QL_...	Quick stop by trouble
WL_...	Warning locked
I_...	Information (Info)

Error number		Name	Description
hex	dec		
0x1	1	EL_LeaveData Exchange	The POWERLINK data exchange has been completed (the node recognises that it does not have the "DataExchange" status anymore). Causes & remedy: • See error description EPL: DataExchange exited [0x00c88131] (64) Codes: • C13883 / C14883 (error response)
0x3	3	QL_LeaveData Exchange	
0x4	4	WL_LeaveData Exchange	
0x6	6	I_LeaveData Exchange	
0x18263	98915	EL_EPL_BOOTUP_1	The Managing Node could not start the POWERLINK network. OR: Not all required nodes were found. Causes & remedy: • See error description EPL MN: Network has not been started (bootup-1) [0x00c88263] (64) Codes: • C13891/2 / C14891/2 (error response)
0x38263	229987	QL_EPL_BOOTUP_1	
0x48263	295523	WL_EPL_BOOTUP_1	
0x68263	426595	I_EPL_BOOTUP_1	
0x18264	98916	EL_EPL_BOOTUP_2	The Managing Node could not transfer all nodes into the "NMT_CS_OPERATIONAL" status via process data exchange. Causes & remedy: • see error description EPL MN: Not all nodes are in the operational status (bootup-2) [0x00c88264] (64) Codes: • C13891/2 / C14891/2 (error response)
0x38264	229988	QL_EPL_BOOTUP_2	
0x48264	295524	WL_EPL_BOOTUP_2	
0x68264	426596	I_EPL_BOOTUP_2	
0x18265	98917	EL_EPL_CN_SYNC_LOSS	In the Controlled Node, the synchronisation cycle of the Managing Node has failed. The Controlled Node automatically changes to the "NMT_xx_PREOPERATIONAL_1" status and waits for a new run-up by the Managing Node. Causes & remedy: • see error description EPL: Synchronisation lost from MN [0x00c88265] (65) Codes: • C13127/3 / C14127/3 (monitoring threshold) • C13891/3 / C14891/3 (error response) • C13127/1 / C14127/1 (error counter)
0x38265	229989	QL_EPL_CN_SYNC_LOSS	
0x48265	295525	WL_EPL_CN_SYNC_LOSS	
0x68265	426597	I_EPL_CN_SYNC_LOSS	

Error number		Name	Description
hex	dec		
0x18266	98918	EL_EPL_COM_CRC	Faulty Ethernet frames (CRC error) have been detected. Causes & remedy: • see error description EPL: Defective telegram (CRC) detected [0x00c88266] (□ 65) Codes: • C13131/3 / C14131/3 (monitoring threshold) • C13891/4 / C14891/4 (error response) • C13131/1 / C14131/1 (error counter)
0x38266	229990	QL_EPL_COM_CRC	
0x48266	295526	WL_EPL_COM_CRC	
0x68266	426598	I__EPL_COM_CRC	
0x18267	98919	EL_EPL_MN_LOSS_CN	The MXI connection to the Servo Drive 9400 is interrupted or a node has failed. Causes & remedy: • see error description EPL: Lost connection to 9400 [0x00c83100] (□ 62) EPL: Failure of a network node [0x00c88267] (□ 65) Codes: • C13891/5 / C14891/5 (error response) • C13132 / C14132 (CN: link interruptions)
0x38267	229991	QL_EPL_MN_LOSS_CN	
0x48267	295527	WL_EPL_MN_LOSS_CN	
0x68267	426599	I__EPL_MN_LOSS_CN	
0x18283	98947	EL_EPL_ADDRESS_MN	An invalid IP address has been assigned by the Managing Node via POWERLINK or set as Node ID. OR: The address setting of the Managing Node (Node ID = '240') has been assigned several times. Causes & remedy: • see error description EPL: Invalid address selected [0x00c88261] (□ 64) EPL: MN address assigned double [0x00c88283] (□ 66) Codes: • see Node address setting (□ 36) • see Settings and displays in the »Engineer« (□ 38)
0x38283	230019	QL_EPL_ADDRESS_MN	
0x48283	295555	WL_EPL_ADDRESS_MN	
0x68283	426627	I__EPL_ADDRESS_MN	

11 Parameter reference

This chapter supplements the parameter list and the table of attributes contained in the reference manual and in the »Engineer« online help for the Servo Drive 9400 with the parameters of the E94AYCEP (POWERLINK) communication module.



Reference manual/»Engineer« online help for Servo Drive 9400

Here you will find general information on parameters.

11.1 Parameters of the standard device that are relevant to communication

In this chapter communication-relevant parameters of the Servo Drive 9400 are listed in numerically ascending order.

C00615

Parameter Name:		Data type: UNSIGNED_32 Index: 23960 = 0x5D98
C00615 Resp. to imp. device conf.		
Response to impermissible device configuration		
Selection list		
1	Fault	
3	Quick stop by trouble	
4	Warning Locked	
6	Information	
0	No response	
Subcodes	Lenze setting	Info
C00615/1	0: No Response	Reserved
C00615/2	1: No Response	Resp. to imp. module in MXI1
C00615/3	1: No Response	Resp. to imp. module in MXI2
C00615/4	0: No Response	Reserved
C00615/5	0: No Response	Reserved
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

C00636

Parameter Name:		Data type: UNSIGNED_32 Index: 23939 = 0x5D83
C00636 Resp. to new module in MXI1		
Response for the case where a new module has been plugged into slot 1 of the standard device.		
Selection list (Lenze setting printed in bold)		
1	Fault	
6	Information	
5	Warning	
4	Warning Locked	
3	Quick stop by trouble	
0	No response	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

C00637

Parameter Name: C00637 Resp. to new module in MXI2		Data type: UNSIGNED_32 Index: 23939 = 0x5D83
Response if a new module has been plugged into module slot 2 of the standard device.		
Selection list (Lenze setting printed in bold)		
1	Fault	
6	Information	
5	Warning	
4	Warning Locked	
3	Quick stop by trouble	
0	No response	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

C01501

Parameter Name: C01501 Resp. to comm. error with MXI1		Data type: UNSIGNED_32 Index: 23074 = 0x5A22
Response to a communication error between an "intelligent" module in slot 1 and the standard device		
Selection list (Lenze setting printed in bold)		
0	No response	
1	Fault	
3	Quick stop by trouble	
4	Warning Locked	
5	Warning	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

C01502

Parameter Name: C01502 Resp. to comm. error with MXI2		Data type: UNSIGNED_32 Index: 23074 = 0x5A22
Response to a communication error between an "intelligent" module in slot 2 and the standard device		
Selection list (Lenze setting printed in bold)		
0	No response	
1	Fault	
3	Quick stop by trouble	
4	Warning Locked	
5	Warning	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

11.2

Parameters of the communication module for slot MXI1

This chapter lists the parameters of the E94AYCEP communication module (POWERLINK) for slot MXI2 of the Servo Drive 9400 in numerically ascending order.

C13000

Parameter Name: C13000 EPL IP address			Data type: UNSIGNED_32 Index: 11575 = 0x2D37 EPL index: See subcodes
The code displays the IP address of the communication module. - The IP address is derived from the EPL node address (Node ID): 192.168.100.[Node ID] - The node ID is derived from the DIP switch position or from C13044. ▶ Node address setting (36)			
Setting range (min. value unit max. value)			
0.0.0.0 (0x00000000)		255.255.255.255 (0xFFFFFFFF)	
Subcodes	Lenze setting	Info	EPL index
C13000/1	3232261130 (0xC0A86401 = 192.168.100.1)	EPL IP address	0x1E40.0x02
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13001

Parameter Name: C13001 EPL IP subnet mask			Data type: UNSIGNED_32 Index: 11574 = 0x2D36 EPL index: See subcodes
The code declares the IP subnet mask which restricts the directly addressable IP address range (i.e. without a gateway in the EPL segment of the routers). The value 255.255.255.0 (0xFFFFFFFF00) is always assigned to the subnet mask in one segment.			
Setting range (min. value unit max. value)			
255.0.0.0 (0xFF000000)		255.255.255.0 (0xFFFFFFFF00)	
Subcodes	Lenze setting	Info	EPL index
C13001/1	4294967040 (0xFFFFFFFF00 = 255.255.255.0)	EPL IP-subnet mask	0x1E40.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13003

Parameter Name: C13003 EPL IP address router			Data type: UNSIGNED_32 Index: 11572 = 0x2D34 EPL index: See subcodes	
The code declares the IP address of the router which connects the EPL segment to the higher-level network. The standard entry corresponds to the standard router address of the EPL specification: → 192.168.100.254 Permissible entries replace the lowest-order byte of the standard entry with the EPL address of the node which has the function of a router.				
Setting range (min. value unit max. value)				
0.0.0.0 (0x00000000)		255.255.255.255 (0xFFFFFFFF)		
Subcodes	Lenze setting	Info	EPL index	
C13003/1	3232261374 (0xC0A864FE = 192.168.100.254)	EPL IP address router	0x1E40.0x05	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C13004

Parameter Name: C13004 EPL MAC address		Data type: OCTET_STRING Index: 11571 = 0x2D33 EPL index: See subcodes
The code indicates the physical address (MAC address) of the POWERLINK interface of the communication module. When the communication module is produced, the MAC address is assigned unequivocally worldwide and provides addressing on the lowest level.		
Subcodes	Info	EPL index
C13004/1	MAC Address (octet string[6]) 00-0A-86-xx-yy-zz • 00-0A-86 = Lenze • xx-yy-zz = consecutive number	0x1030.0x05
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☐ COM ☐ MOT		

C13027

Parameter Name: C13027 EPL MN: Boot behaviour	Data type: UNSIGNED_32 Index: 11548 = 0x2D1C EPL index: 0x1F80
The code controls the start of the EPL network by the Managing Node and the responses to errors in the network. Servo Drives 9400 have a constant value.	
Value is bit-coded:	
Bit 0 ... 31	see below
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

Description of the bits 0 ... 31

Bit	Value	Description
0	0	Reserved / No function
1	0 *)	Start CNs individually (when bit 3 = 0)
	1	Start CNs with broadcast NMTStartNode (when bit 3 = 0)
2	0	Go automatically to NMT_MS_OPERATIONAL
	1 *)	Application decides on change to NMT_MS_OPERATIONAL
3	0	Start CNs automatically, see bit 1
	1 *)	Application decides on CN start
4	0 *)	Individual reset of a CN after monitoring error
	1	Broadcast reset of all CNs after monitoring error
5	0	Reserved / No function
6	0	Response to monitoring errors after reset (bit 4)
	1 *)	Transmit broadcast "NMTStopNode" after monitoring error
7	0	Automatic change to NMT_MS_PRE_OPERATIONAL_2
	1 *)	Application decides on change to NMT_MS_PRE_OPERATIONAL_2
8	0	Automatic change to NMT_MS_READY_TO_OPERATE
	1 *)	Application decides on change to NMT_MS_READY_TO_OPERATE
9	0	Identification of the CNs only by verification of the corresponding NMT_MNDeviceTypeList_AU32-subindex
	1 *)	Extended identification
10	0	No check of the application software version of the CN
	1 *)	Check of the application software version of the CN
11	0	No check of the CN configuration
	1 *)	Check of the CN configuration
12	0	Error response: Change to NMT_MS_OPERATIONAL and NMT_MS_PREOPERATIONAL_1
	1 *)	Application-specific error response
13 ... 31	0	Reserved / No function

*) Not permissible for 9400 Servo Drives.

C13028

Parameter Name: C13028 EPL node declaration CN			Data type: UNSIGNED_32 Index: 11547 = 0x2D18 EPL index: See subcodes
The code declares the Controlled Nodes 1 ... 100 and their properties.			
Value is bit-coded:			
Bit 0 ... 31	see below		
Subcodes	Lenze setting	Info	EPL index
C13028/1	0	EPL node declaration CN	0x1F81.0x01
...	...	...	...
C13028/100	0	EPL node declaration CN	0x1F81.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

Description of the bits 0 ... 31

Bit	Relevance		Lenze	Value	Description
	MN	CN			
0 (LSB)	☒	☒	0, 1	0	EPL node with this ID does not exist.
				1	EPL node with this ID exists.
1	☒	☒	0, 1	0	EPL node with this ID is not a Controlled Node.
				1	EPL node with this ID is a Controlled Node.
2	☒	☐	1	0 ^{*)}	On detection of a booting Controlled Node, the application will not be informed.
				1	On detection of a booting Controlled Node, the application will be informed and the Controlled Node will be started.
3	☒	☒	1	0	Optional Controlled Node
				1	Obligatory Controlled Node
4	☒	☐	0	0	The Managing Node is allowed to send reset commands.
				1 ^{*)}	The Managing Node must not send any reset command.
5	☒	☐	0	0	Software version verification of the Controlled Node is not required.
				1 ^{*)}	Software version verification of the Controlled Node is required.
6	☒	☐	0, 1	0	Automatic application software update is not allowed.
				1	Automatic application software update is allowed.
7	-	-	0	0	Reserved / No function
8	☒	☒	0, 1	0	Isochronously accessed Controlled Node
				1	Asynchronously accessed Controlled Node (bit 9 is irrelevant)
9	☒	☒	0	0	Continuously accessed Controlled Node
				1	Multiplex EPL nodes are supported.
10	☒	☒	0	0	No "POWERLINK to standard Ethernet" router function.
				1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	☒	☒	0	0	No "POWERLINK to fieldbus" router function.
				1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	☒	☒	0	0	The Managing Node does not send any PRes frames
				1	The Managing Node sends PRes frames
13 ... 30	-	-	0	0	Reserved / No function
31 (MSB)	☒	☒	0, 1	0	Bits 0 ... 30 inhibited
				1	Bits 0 ... 30 enabled

^{*)} Not permissible for 9400 Servo Drives.

C13029

Parameter Name: C13029 EPL node declaration MN		Data type: UNSIGNED_32 Index: 11546 = 0x2D1A EPL index: See subcodes	
The code declares Managing Node, diagnostic device, and EPL router, and describes their properties.			
Value is bit-coded:			
Bit 0 ... 31	see below		
Subcodes	Lenze setting	Info	EPL index
C13029/1	2147483661 (0x8000000D)	EPL node assignment Managing Node	0x1F81.0xF0
C13029/2	0	EPL node assignment diagnostic device	0x1F81.0xFD
C13029/3	2147483655 (0x80000007)	EPL node assignment router	0x1F81.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

Description of the bits 0 ... 31

Bit	Relevance		Lenze	Value	Description
	MN	CN			
0 (LSB)	☒	☒	0, 1	0	EPL node with this ID does not exist.
				1	EPL node with this ID exists.
1	☒	☒	0, 1	0	EPL node with this ID is not a Controlled Node.
				1	EPL node with this ID is a Controlled Node.
2	☒	☐	1	0 ^{*)}	On detection of a booting Controlled Node, the application will not be informed.
				1	On detection of a booting Controlled Node, the application will be informed and the Controlled Node will be started.
3	☒	☒	1	0	Optional Controlled Node
				1	Obligatory Controlled Node
4	☒	☐	0	0	The Managing Node is allowed to send reset commands.
				1 ^{*)}	The Managing Node must not send any reset command.
5	☒	☐	0	0	Software version verification of the Controlled Node is not required.
				1 ^{*)}	Software version verification of the Controlled Node is required.
6	☒	☐	0, 1	0	Automatic application software update is not allowed.
				1	Automatic application software update is allowed.
7	-	-	0	0	Reserved / No function
8	☒	☒	0, 1	0	Isochronously accessed Controlled Node
				1	Asynchronously accessed Controlled Node (bit 9 is irrelevant)
9	☒	☒	0	0	Continuously accessed Controlled Node
				1	Multiplex EPL nodes are supported.
10	☒	☒	0	0	No "POWERLINK to standard Ethernet" router function.
				1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	☒	☒	0	0	No "POWERLINK to fieldbus" router function.
				1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	☒	☒	0	0	The Managing Node does not send any PRes frames
				1	The Managing Node sends PRes frames
13 ... 30	-	-	0	0	Reserved / No function
31 (MSB)	☒	☒	0, 1	0	Bits 0 ... 30 inhibited
				1	Bits 0 ... 30 enabled

^{*)} Not permissible for 9400 Servo Drives.

C13030

Parameter Name: C13030 EPL device type		Data type: UNSIGNED_32 Index: 11545 = 0x2D19 EPL index: 0x1000	
The code indicates the device type of the EPL node.			
Value is bit-coded:			
Bit 1	Bit1		
Bit 2	Bit2		
Bit 3	Bit3		
Bit 4	Bit4		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13034

Parameter Name: C13034 EPL identity object			Data type: UNSIGNED_32 Index: 11541 = 0x2D15 EPL index: See subcodes
The code indicates the Manufacturer's EPL ID no. for Lenze.			
Subcodes	Lenze setting	Info	EPL index
C13034/1	59 (0x3B)	Manufacturer's EPL ID no.	0x1018.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13035

Parameter Name: C13035 EPL device type CN		Data type: UNSIGNED_32 Index: 11540 = 0x2D14 EPL index: See subcodes	
The code contains the device type ID of the declared Controlled Nodes. Each subcode corresponds to a Controlled Node with the node ID = subcode number. When being in the configured status, the values must be identical with the device types stored locally in each node under C13030.			
Subcodes	Lenze setting	Info	EPL index
C13035/1	0	EPL device type CN	0x1F84.0x01
...	...	...	...
C13035/100	0	EPL device type CN	0x1F84.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13040

Parameter Name: C13040 EPL feature flags		Data type: UNSIGNED_32 Index: 11535 = 0x2D0F EPL index: 0x1F82
The code displays the POWERLINK functions implemented by the EPL node.		
Value is bit-coded:		
Bit 0 ... 31	see below	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Description of the bits 0 ... 31

Bit	Relevance		Value	Description
	MN	CN		
0 (LSB)	☐	☒	0	Asynchronous access
			1	Isochronous access ^{*)}
1	☒	☒	0	No SDO by UDP/IP
			1	SDO via UDP/IP ^{*)}
2	☒	☒	0	No SDO via EPL "ASnd" ^{*)}
			1	SDO by EPL "ASnd"
3	☒	☒	0	No SDO integrated in PDO ^{*)}
			1	SDO integrated in PDO
4	☒	☒	0	No "NMT Info Services"
			1	"NMT Info Services" supported
5	☒	☒	0	No extended "NMT State Commands" ^{*)}
			1	Extended "NMT State Commands" supported
6	☒	☒	0	No dynamic PDO mapping ^{*)}
			1	Dynamic PDO mapping supported
7	☒	☐	0	No dynamic PDO mapping
			1	Dynamic PDO mapping supported
8	☒	☒	0	No configuration manager function
			1	Configuration manager function
9	☒	☒	0	Only isochronous cyclic access permitted.
			1	Isochronous multiplexed access possible.
10	☐	☒	0	No address assignment via software
			1	Address assignment via software
11	☒	☐	0	No support of the "Basic Ethernet Mode" by the master
			1	Support of the "Basic Ethernet Mode" by the master
12	☒	☒	0	No "POWERLINK to standard Ethernet" router function
			1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
13	☒	☒	0	No "POWERLINK to fieldbus" router function
			1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
14...31 (MSB)	-	-	-	Reserved / No function

^{*)} Values implemented by 9400 Servo Drives (MN: 0x0087_h = 135_d, CN 0x0083_h = 131_d).

C13041

Parameter Name: C13041 EPL version	Data type: UNSIGNED_8 Index: 11534 = 0x2D0E EPL index: not available
The code describes the version of the POWERLINK communication profile implemented by the communication module. The higher-order nibble describes the major version, the lower order nibble describes the minor version. The implemented value corresponds to the POWERLINK version 2.0.	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13042

Parameter Name: C13042 Current EPL device address	Data type: UNSIGNED_8 Index: 11533 = 0x2D0D EPL index: 0x1F93.0x01
The code displays the currently valid EPL node address (Node ID). - The node ID must be unequivocal in the EPL network segment. - See also C13044.	
Display area (min. value unit max. value)	
1	240
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13043

Parameter Name: C13043 EPL device address selection	Data type: UNSIGNED_8 Index: 11532 = 0x2D0C EPL index: 0x1F93.0x02
The code indicates whether the EPL node address (node ID) has been set via DIP switches at the communication module or via the software. 0: Node ID has been set via software (C13044). 1: Node ID has been set via DIP switches at the communication module. ► Node address setting (36)	
Display area (min. value unit max. value)	
0	1
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13044

Parameter Name: C13044 EPL device address SW	Data type: UNSIGNED_8 Index: 11531 = 0x2D0B EPL index: 0x1F93.0x03
This code serves to set the EPL node address (node ID) via the software. The value "0" (Lenze setting) is not a valid node ID. It serves to activate the setting via the DIP switches. ► Node address setting (36)	
Setting range (min. value unit max. value)	
1	240
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT	

C13045

Parameter Name: C13045 EPL host name	Data type: VISIBLE_STRING Index: 11530 = 0x2D0A EPL index: 0x1F9A
The code defines a DNS-compatible device name. The length is limited to 15 characters. The device name must be unambiguous within the network domain. Naming convention: The device name • starts with a character • ends with a character or digit The device name consists of • letters ([A ... Z], [a ... z]) • digits ([0 ... 9]) • hyphen ([-])	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT	

C13060

Parameter Name: C13060 EPL cycle time	Data type: UNSIGNED_32 Index: 11515 = 0x2CFB EPL index: 0x1006																																												
The code declares the length of the EPL cycle in μs. • In the configured state, this code must have an identical value in all EPL nodes. • The selected value must correspond to the actual bus cycle time so that the internal monitoring functions work correctly.																																													
<table border="1"> <thead> <tr> <th colspan="2">Selection list (Lenze setting printed in bold)</th></tr> </thead> <tbody> <tr><td>500</td><td>0.5</td></tr> <tr><td>1000</td><td>1</td></tr> <tr><td>2000</td><td>2</td></tr> <tr><td>3000</td><td>3</td></tr> <tr><td>4000</td><td>4</td></tr> <tr><td>5000</td><td>5</td></tr> <tr><td>6000</td><td>6</td></tr> <tr><td>7000</td><td>7</td></tr> <tr><td>8000</td><td>8</td></tr> <tr><td>9000</td><td>9</td></tr> <tr><td>10000</td><td>10</td></tr> <tr><td>11000</td><td>11</td></tr> <tr><td>12000</td><td>12</td></tr> <tr><td>13000</td><td>13</td></tr> <tr><td>14000</td><td>14</td></tr> <tr><td>15000</td><td>15</td></tr> <tr><td>16000</td><td>16</td></tr> <tr><td>17000</td><td>17</td></tr> <tr><td>18000</td><td>18</td></tr> <tr><td>19000</td><td>19</td></tr> <tr><td>20000</td><td>20</td></tr> </tbody> </table>		Selection list (Lenze setting printed in bold)		500	0.5	1000	1	2000	2	3000	3	4000	4	5000	5	6000	6	7000	7	8000	8	9000	9	10000	10	11000	11	12000	12	13000	13	14000	14	15000	15	16000	16	17000	17	18000	18	19000	19	20000	20
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☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT																																													

C13062

Parameter Name: C13062 EPL MN: boot timing			Data type: UNSIGNED_32 Index: 11513 = 0x2CF9 EPL index: See subcodes	
The code defines timeouts and waiting times for the booting process of the Managing Node. • The value "0" for subcode 2, 4, 5 deactivates the time-outs. The Managing Node waits for an indefinite period of time. No error message is generated. • The value "0" for subcode 3 deactivates the waiting time. After all expected Controlled Nodes have been detected by the Managing Node, the Managing Node immediately changes to NMT_MS_PREOPERATIONAL_2. Observe the following conditions: • Subcode 1 must be lower than C13078 - values of all EPL nodes. • Subcode 3 must be lower than subcode 2.				
Setting range (min. value unit max. value)				
0	µs	4294967295		
Subcodes	Lenze setting	Info	EPL index	
C13062/1	2500000 µs	Max. time for detecting a redundant Managing Node Waiting time before changing to NMT_MS_PREOPERATIONAL_1	0x1F89.0x01	
C13062/2	60000000 µs	Max. time for device search Dwell time in NMT_MS_PREOPERATIONAL_1 Error message if not all Controlled Nodes are in NMT_CS_PREOPERATIONAL_1.	0x1F89.0x02	
C13062/3	0 µs	Waiting time in NMT_MS_PREOPERATIONAL_1	0x1F89.0x03	
C13062/4	0 µs	Max. time in NMT_MS_PREOPERATIONAL_2 Error message if not all Controlled Nodes are in NMT_CS_PREOPERATIONAL_2.	0x1F89.0x04	
C13062/5	0 µs	Max. time in NMT_MS_READY_TO_OPERATE Error message if not all Controlled Nodes are in NMT_CS_READY_TO_OPERATE.	0x1F89.0x05	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13063

Parameter Name: C13063 EPL MN cycle timing			Data type: UNSIGNED_32 Index: 11512 = 0x2CF8 EPL index: See subcodes	
The code defines time intervals for the cycle control by the Managing Node.				
Setting range (min. value unit max. value)				
0	ns	4294967295		
Subcodes	Lenze setting	Info	EPL index	
C13063/1	2000 ns	Waiting time between SoC and PReq	0x1F8A.0x01	
C13063/2	750000 ns	Time-out SDO communication	0x1F8A.0x02	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13066

Parameter Name: C13066 EPL CN: Max. user data PRes RPDO			Data type: UNSIGNED_16 Index: 11509 = 0x2CF5 EPL index: See subcodes	
The code defines the reserved user data length of the PRes telegrams for Controlled Nodes 1 ... 100. Each subcode number corresponds to one EPL node with the same node ID. The EPL node must be enabled via code C13028. The subcodes describe the PRes telegrams received. The value must be within the range of 36 ... 1490 bytes. The values are upper limit values for the entire size of the PDO mappings for received PRes telegrams. In the configured state, the values stored for the EPL nodes must be identical to the corresponding C13072 entries. C13066 must have an identical value in all EPL nodes of the network.				
Setting range (min. value unit max. value)				
0	Byte	1490		
Subcodes	Lenze setting	Info	EPL index	
C13066/1	0 byte	EPL CN: max. user data of RPDO	0x1F8D.0x01	
...	...	...	...	
C13066/100	0 byte	EPL CN: max. user data of RPDO	0x1F8D.0x64	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C13067

Parameter Name: C13067 EPL MN: time-out isochronous comm. CN			Data type: UNSIGNED_32 Index: 11508 = 0x2CF4 EPL index: See subcodes	
The code defines the reserved user data length of the PRes frames for Managing Node, diagnostic device or router. Each subcode number corresponds to one EPL node with the same node ID. The EPL node must be enabled via code C13028. The subcode describes the PRes telegrams received. The value must be within the limits of 36 ... 1490 bytes. The values are upper limit values for the entire size of the PDO mappings for received PRes telegrams. In the configured state, the values stored for the nodes must be identical to the corresponding C13072 entries. C13067 must have an identical value in all EPL nodes of the network.				
Setting range (min. value unit max. value)				
0	ns	4294967295		
Subcodes	Lenze setting	Info	EPL index	
C13067/1	5000 ns	EPL Time-out isochronous comm. CN	0x1F92.0x01	
...	...	...	...	
C13067/100	5000 ns	EPL Time-out isochronous comm. CN	0x1F92.0x64	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13071

Parameter Name: C13071 EPL Max. PDO user data RPDO PReq			Data type: UNSIGNED_16 Index: 11504 = 0x2CF0 EPL index: 0x1F98.0x04		
The code defines the maximum data volume to be received by the Controlled Node of the PDP mapping for the PReq telegram to be defined via one of the codes C13231 ... C13240. In the configured state, the value must be identical to the entry for a response valid for the EPL node. When a Servo Drive 9400 is used, the code as Managing Node is irrelevant since Servo Drives 9400 as Managing Nodes only transmit PDO data via broadcast PRes telegrams (C13071 = 36 bytes).					
Setting range (min. value unit max. value)			Lenze setting		
0	Byte	1490	36 bytes		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT					

C13072

Parameter Name: C13072 EPL Max. PDO user data TPDO PRes			Data type: UNSIGNED_16 Index: 11503 = 0x2CEF EPL index: 0x1F98.0x05
The code defines the maximum PDO data size to be sent by the EPL node for the current network configuration. The PDO mapping C13531 can assign data with a total size greater than or equal to C13072. In the configured state, C13072 must be identical to the entry in C13066 valid for the EPL node.			
Setting range (min. value unit max. value)			Lenze setting
0	Byte	1490	400 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13074

Parameter Name: C13074 EPL multi-stage cycle timing			Data type: UNSIGNED_8 Index: 11501 = 0x2CED EPL index: 0x1F98.0x07
This code serves to define the maximum number of the multiplexed cycles. If, e.g., the value "3" is entered, the multiplexed cycle is repeated every three cycles. Within one multiplexed cycle, the nodes are queried according to the values in code C13079 . If, e.g., the value "2" is entered for a node in C13079/x , it is always queried only in the second cycle of the three multiplexed cycles.			
Setting range (min. value unit max. value)			Lenze setting
0	Cycles	255	0 cycles
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13075

Parameter Name: C13075 EPL SDO channel width			Data type: UNSIGNED_16 Index: 11500 = 0x2CEC EPL index: 0x1F98.0x08
The code defines the maximum user data size of asynchronous frames. Protocol-specific headers for POWERLINK, UDP/IP and others as well as service-specific headers are to be interpreted as part of the user data. In the configured state, the C13075 values of all EPL nodes must be identical.			
Setting range (min. value unit max. value)			Lenze setting
282	Byte	1500	282 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13078

Parameter Name: C13078 EPL CN: Max. time - MN detection			Data type: UNSIGNED_32 Index: 11497 = 0x2CE9 EPL index: 0x1F99
The code defines the time interval needed for detecting a Managing Node. If a booting Controlled Node detects a Managing Node during the interval, it changes to NMT_CS_PREOPERATIONAL_1. If not, it changes to "Basic Ethernet Mode".			
Setting range (min. value unit max. value)			Lenze setting
0	µs	4294967295	10000000 µs
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13079

Parameter Name: C13079 EPL multi-stage node declaration CN			Data type: UNSIGNED_8 Index: 11496 = 0x2CE8 EPL index: See subcodes	
This code indicates in which multiplexed cycle the Controlled Node is queried. The value entered must not exceed the value in code C13074 . If, for instance, the value "3" is entered in code C13074 , the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C13079/x, it is always queried only in the second cycle of the three multiplexed cycles.				
Setting range (min. value unit max. value)				
0	Cycles	255		
Subcodes	Lenze setting	Info	EPL index	
C13079/1	0 cycles		0x1F9B.0x01	
...	...		...	
C13079/100	0 cycles		0x1F9B.0x64	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13095

Parameter Name: C13095 EPL communication status		Data type: UNSIGNED_8 Index: 11480 = 0x2CD8 EPL index: 0x1F8C
The code indicates the current NMT status of the EPL node.		
Selection list (read only)		Info
0	Off	NMT_GS_OFF
25	Initialising	NMT_GS_INITIALISING
41	ResetAppl	NMT_GS_RESET_APPLICATION
57	ResetComm	NMT_GS_RESET_COMMUNICATION
121	ResetConfig	NMT_GS_RESET_CONFIGURATION
28	NotActive	NMT_CS_NOT_ACTIVE NMT_MS_NOT_ACTIVE
29	PreOp1	NMT_CS_PRE_OPERATIONAL_1 NMT_MS_PRE_OPERATIONAL_1
93	PreOp2	NMT_CS_PRE_OPERATIONAL_2 NMT_MS_PRE_OPERATIONAL_2
109	ReadyToOp	NMT_CS_READY_TO_OPERATE NMT_MS_READY_TO_OPERATE
253	Operational	NMT_CS_OPERATIONAL NMT_MS_OPERATIONAL
77	Stopped	NMT_CS_STOPPED (only Controlled Node)
30	BasicEthernet	NMT_CS_BASIC_ETHERNET (only Controlled Node)
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13096

Parameter Name: C13096 EPL node status		Data type: UNSIGNED_8 Index: 11479 = 0x2CD7 EPL index: See subcodes	
The code indicates the NMT statuses reported by the Controlled Node to the Managing Node. Each subcode corresponds to an EPL node with node ID = subcode number. The EPL node must be enabled via C13028 .			
Selection list		Info	
0	Off	NMT_GS_OFF	
25	Initialising	NMT_GS_INITIALISING	
41	ResetAppl	NMT_GS_RESET_APPLICATION	
57	ResetComm	NMT_GS_RESET_COMMUNICATION	
121	ResetConfig	NMT_GS_RESET_CONFIGURATION	
28	NotActive	NMT_CS_NOT_ACTIVE	
29	PreOp1	NMT_CS_PRE_OPERATIONAL_1	
93	PreOp2	NMT_CS_PRE_OPERATIONAL_2	
109	ReadyToOp	NMT_CS_READY_TO_OPERATE	
253	Operational	NMT_CS_OPERATIONAL	
77	Stopped	NMT_CS_STOPPED	
30	BasicEthernet	NMT_CS_BASIC_ETHERNET	
Subcodes		Info	EPL index
C13096/1		EPL node status CN	0x1F8E.0x01
...		...	...
C13096/100		EPL node status CN	0x1F8E.0x64
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13102

Parameter Name: C13102 EPL reset command		Data type: UNSIGNED_8 Index: 11473 = 0x2CD1 EPL index: 0x1F9E	
A reset command to a single EPL node in the network can result in cycle and monitoring errors. The code initiates a reset of the EPL node. When the reset has been executed, the code is automatically set to "NMTInvalidService".			
Selection list (Lenze setting printed in bold)		Info	
40	ResetNode	Status transition → NMT_GS_RESET_APPLICATION	
41	ResetCommunication	Status transition → NMT_GS_RESET_COMMUNICATION	
42	ResetConfiguration	Status transition → NMT_GS_RESET_CONFIGURATION	
255	No command	No function	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13103

Parameter Name: C13103 EPL NMT command: Enable		Data type: UNSIGNED_8 Index: 11472 = 0x2CD0 EPL index: 0x1F9F.0x01	
The code enables the NMT command defined via C13104/C13105. The values have the following meaning: • 0: The command is inhibited. • 1: The command is enabled. After the NMT command has been executed, the code is automatically set to FALSE. NMT commands can cause serious faults in the network. Cycle and monitoring errors can occur.			
Setting range (min. value unit max. value)		Lenze setting	
0		1	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13104

Parameter Name: C13104 EPL NMT command: Command ID		Data type: UNSIGNED_8 Index: 11471 = 0x2CCF EPL index: 0x1F9F.0x02	
The code defines the command to be executed. NMT commands can cause serious faults in the network. Cycle and monitoring errors can occur.			
Selection list (Lenze setting printed in bold)			
34	StopNode		
40	ResetNode		
41	ResetCommunication		
42	ResetConfiguration		
255	No command		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13105

Parameter Name: C13105 EPL NMT command: Target address		Data type: UNSIGNED_8 Index: 11470 = 0x2CCE EPL index: 0x1F9F.0x03	
The code defines the destination node of the command via its node address. The node address "255" addresses all EPL nodes of the network. "0" is an invalid address, a command with destination node "0" is ineffective. NMT commands can cause serious faults in the network. Cycle and monitoring errors can occur.			
Setting range (min. value unit max. value)		Lenze setting	
0		255	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13110

Parameter Name: C13110 EPL fault memory	Data type: INTEGER_8 Index: 11465 = 0x2CC9 EPL index: 0x1001
The code indicates the currently pending errors (according to error classes).	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13115

Parameter Name: C13115 EPL MN: Frame error (CRC)			Data type: UNSIGNED_32 Index: 11460 = 0x2CC4 EPL index: See subcodes	
The POWERLINK telegrams of the EPL network are protected by a checksum. The Managing Node counts the checksum errors which signalise a falsification of the frame. The monitoring response is determined via C13891/4 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C13115/1	0		CumulativeCnt_U32	0x1C00.0x01
C13115/2	0		ThresholdCnt_U32	0x1C00.0x02
C13115/3	9		Threshold_U32	0x1C00.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13116

Parameter Name: C13116 EPL MN: Frame collisions			Data type: UNSIGNED_32 Index: 11459 = 0x2CC3 EPL index: See subcodes	
The code indicates the collision counter of the Managing Node. The Managing Node detects frame collisions in the EPL segment. This code contains the number of detected collisions. Each event is counted. Every single event is followed by an error message. No threshold value management is implemented. Due to extended topology options of EPL compared to the standard Ethernet according to IEEE802.3 it is not mandatory that the Managing Node recognises all collisions that occur in the segment.				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting	Info	EPL index	
C13116/1	0	CumulativeCnt_U32	0x1C01.0x01	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13117

Parameter Name: C13117 EPL MN: Cycle time violation			Data type: UNSIGNED_32 Index: 11458 = 0x2CC2 EPL index: See subcodes	
The code indicates the counters of the Managing Node for cycle time overflows. The monitoring response is determined via C13891/1 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C13117/1	0		CumulativeCnt_U32	0x1C02.0x01
C13117/2	0		ThresholdCnt_U32	0x1C02.0x02
C13117/3	9		Threshold_U32	0x1C02.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13118

Parameter Name: C13118 EPL MN: Link interruptions			Data type: UNSIGNED_32 Index: 11457 = 0x2CC1 EPL index: 0x1C03
The code displays the counter of the Managing Node for interrupted POWERLINK connections. Each event is counted. Every single event is followed by an error response. A threshold value management is not implemented.			
Setting range (min. value unit max. value)			Lenze setting
0		4294967295	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13122

Parameter Name: C13122 EPL CN response error			Data type: UNSIGNED_32 Index: 11453 = 0x2CBD EPL index: See subcodes
The subcodes of the code indicate Controlled Node-specific cumulative counters for missing PRes frames. The behaviour corresponds to a node The behaviour corresponds to subcode 1 of the single error counters (C13116). Each subcode corresponds to an EPL node with node ID = subcode number.			
Setting range (min. value unit max. value)			
0		4294967295	
Subcodes	Lenze setting	Info	EPL index
C13122/1	0	EPL CN response error	0x1C07.0x01
...	...	...	...
C13122/100	0	EPL CN response error	0x1C07.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13124

Parameter Name: C13124 EPL CN response error: monit. thresholds			Data type: UNSIGNED_32 Index: 11451 = 0x2CBB EPL index: See subcodes
Setting range (min. value unit max. value)			
0		1000	
Subcodes	Lenze setting	Info	EPL index
C13124/1	9	EPL CN response error: monit. thresholds	0x1C09.0x01
...	...	...	...
C13124/100	9	EPL CN response error: monit. thresholds	0x1C09.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13125

Parameter Name: C13125 EPL MN: Break after collisions			Data type: UNSIGNED_32 Index: 11450 = 0x2CBA EPL index: 0x1C12
The code determines the number of EPL cycles for the duration of which the Managing Node interrupts the cycle sequence after a POWERLINK collision has occurred.			
Setting range (min. value unit max. value)			Lenze setting
0	Cycles	100	1 cycles
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13126

Parameter Name: C13126 EPL CN: Frame collisions			Data type: UNSIGNED_32 Index: 11449 = 0x2CB9 EPL index: See subcodes	
The code indicates the number of POWERLINK collisions detected by the Controlled Node (C13116). Each event is counted. Every single event is followed by an error message. No threshold value management is implemented.				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C13126/1	0		CumulativeCnt_U32	0x1C0A.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13127

Parameter Name: C13127 EPL CN: Sync loss			Data type: UNSIGNED_32 Index: 11448 = 0x2CB8 EPL index: See subcodes	
The Controlled Node expects SoC frames in time intervals which correspond to the cycle time (C13060). The code indicates the error counters for missing SoC frames. The monitoring response is determined via C13891/3 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting	Info	EPL index	
C13127/1	0	CumulativeCnt_U32	0x1C0B.0x01	
C13127/2	0	ThresholdCnt_U32	0x1C0B.0x02	
C13127/3	9	Threshold_U32	0x1C0B.0x03	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13131

Parameter Name: C13131 EPL CN: Frame error (CRC)			Data type: UNSIGNED_32 Index: 11444 = 0x2CB4 EPL index: See subcodes	
The code indicates the number of frame checksum errors detected by the Controlled Nodes (C13115). The monitoring response is determined via C13891/4 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C13131/1	0		CumulativeCnt_U32	0x1C0F.0x01
C13131/2	0		ThresholdCnt_U32	0x1C0F.0x02
C13131/3	9		Threshold_U32	0x1C0F.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13132

Parameter Name: C13132 EPL CN: Link interruptions		Data type: UNSIGNED_32 Index: 11443 = 0x2CB3 EPL index: 0x1C10	
The code indicates the counter of the Controlled Node for POWERLINK connection interruptions (C13118). Each event is counted. Every single event is followed by an error message. No threshold value management is implemented.			
Display area (min. value unit max. value)			
0		4294967295	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13136

Parameter Name: C13136 EPL telegram counter			Data type: UNSIGNED_32 Index: 11439 = 0x2CAF EPL index: 0x1101.0x01		
The subcodes of the code indicate a counter for EPL cycles. The counter is started with each mains power-up of the EPL node at 0. An overflow occurs at 4.294.967.295.					
Display area (min. value unit max. value)					
0		4294967295			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C13203

Parameter Name: C13203 EPL CN response error		Data type: UNSIGNED_32 Index: 11372 = 0x2C6C EPL index: See subcodes	
The subcodes of the code indicate Controlled Node-specific cumulative counters for missing PRes frames. The behaviour corresponds to a node The behaviour corresponds to subcode 1 of the single error counters. Each subcode corresponds to an EPL node with node ID = subcode number.			
Display area (min. value unit max. value)			
0		4294967295	
Subcodes		Info	EPL index
C13203/1		Managing Node	0x1C07.0xF0
C13203/2		Diagnostics device	0x1C07.0xFD
C13203/3		router	0x1C07.0xFE
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13205

Parameter Name: C13205 EPL CN response error: Monit. thresholds		Data type: UNSIGNED_32 Index: 11370 = 0x2C6A EPL index: See subcodes	
Setting range (min. value unit max. value)			
0		1000	
Subcodes	Lenze setting	Info	EPL index
C13205/1	0	Managing Node	0x1C09.0xF0
C13205/2	0	Diagnostics device	0x1C09.0xFD
C13205/3	9	router	0x1C09.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13219

Parameter Name: C13219 EPL device type MN			Data type: UNSIGNED_32 Index: 11356 = 0x2C5C EPL index: See subcodes
The code contains the device type ID of the declared EPL nodes. Each subcode corresponds to an EPL node with node ID = subcode number. When being in the configured status, the values must be identical with the device types stored locally in each EPL node under C13030.			
Subcodes	Lenze setting	Info	EPL index
C13219/1	0	Managing Node	0x1F84.0xF0
C13219/2	0	Diagnostics device	0x1F84.0xFD
C13219/3	0	router	0x1F84.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13225

Parameter Name: C13225 EPL MN: Max. user data RPDO			Data type: UNSIGNED_16 Index: 11350 = 0x2C56 EPL index: See subcodes
The code defines the reserved user data length of the PRes frames. Each subcode number corresponds to an EPL node with the same node ID. The subcode describes the PRes frames received. The value must be within the limits of 36 ... 1490 bytes. The values are upper limit values for the total size of the PDO mappings which must be defined each one of the codes C13231 ... C13240 for PRes frames received. In the configured state, the values stored for the EPL nodes must be identical to the corresponding C13072 entries. C13066 must have an identical value in all EPL nodes of the network.			
Setting range (min. value unit max. value)			
0	Byte	1490	
Subcodes	Lenze setting	Info	EPL index
C13225/1	0 byte	Managing Node	0x1F8D.0xF0
C13225/2	0 byte	Diagnostics device	0x1F8D.0xFD
C13225/3	0 byte	router	0x1F8D.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13226

Parameter Name: C13226 EPL node status MN		Data type: UNSIGNED_8 Index: 11349 = 0x2C55 EPL index: See subcodes	
The code indicates the current NMT statuses of the Managing Node. Each subcode corresponds to an EPL node with node ID = subcode number. The EPL node must be enabled via C13029 .			
Selection list		Info	
0	Off	NMT_GS_OFF	
25	Initialising	NMT_GS_INITIALISING	
41	ResetAppl	NMT_GS_RESET_APPLICATION	
57	ResetComm	NMT_GS_RESET_COMMUNICATION	
121	ResetConfig	NMT_GS_RESET_CONFIGURATION	
28	NotActive	NMT_MS_NOT_ACTIVE	
29	PreOp1	NMT_MS_PRE_OPERATIONAL_1	
93	PreOp2	NMT_MS_PRE_OPERATIONAL_2	
109	ReadyToOp	NMT_MS_READY_TO_OPERATE	
253	Operational	NMT_MS_OPERATIONAL	
77	Stopped	Only for Controlled Node	
30	BasicEthernet	Only for Controlled Node	
Subcodes		Info	EPL index
C13226/1		Managing Node	0x1F8E.0xF0
C13226/2		Diagnostics device	0x1F8E.0xFD
C13226/3		router	0x1F8E.0xFE
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13228

Parameter Name: C13228 EPL time-out isochronous comm.			Data type: UNSIGNED_32 Index: 11347 = 0x2C53 EPL index: See subcodes	
The code defines Controlled Node-specific timeout times to answer the PReq request frames by PRes response frames. Each subcode corresponds to an EPL node with node ID = subcode number.				
Setting range (min. value unit max. value)				
0	ns	4294967295		
Subcodes	Lenze setting		Info	EPL index
C13228/1	5000 ns		Managing Node	0x1F92.0xF0
C13228/2	5000 ns		Diagnostics device	0x1F92.0xFD
C13228/3	5000 ns		router	0x1F92.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13229

Parameter Name: C13229 EPL multi-stage node declaration MN		Data type: UNSIGNED_8 Index: 11346 = 0x2C52 EPL index: See subcodes	
This code indicates in which multiplexed cycle the node is queried. The value entered must not exceed the value in code C13074. If, for instance, the value "3" is entered in code C13074, the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C13229/x, it is always queried only in the second cycle of the three multiplexed cycles.			
Setting range (min. value unit max. value)			
0	Cycles		
Subcodes	Lenze setting	Info	EPL index
C13229/1	0 cycles	Managing Node	0x1F9B.0xF0
C13229/2	0 cycles	Diagnostics device	0x1F9B.0xFD
C13229/3	0 cycles	router	0x1F9B.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13231

Parameter Name: C13231 EPL RPDO			Data type: UNSIGNED_64 Index: 11344 = 0x2C50 EPL index: See subcodes
EPL RPDO-1			
Subcodes	Lenze setting	Info	EPL index
C13231/1	0	EPL RPDO	0x1600.0x01
...	...	...	...
C13231/32	0	EPL RPDO	0x1600.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13232

Parameter Name: C13232 EPL RPDO			Data type: UNSIGNED_64 Index: 11343 = 0x2C4F EPL index: See subcodes
EPL RPDO-2			
Subcodes	Lenze setting	Info	EPL index
C13232/1	0	EPL RPDO	0x1601.0x01
...	...	...	...
C13232/32	0	EPL RPDO	0x1601.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13233

Parameter Name: C13233 EPL RPDO			Data type: UNSIGNED_64 Index: 11342 = 0x2C4E EPL index: See subcodes
EPL RPDO-3			
Subcodes	Lenze setting	Info	EPL index
C13233/1	0	EPL RPDO	0x1602.0x01
...	...	...	...
C13233/32	0	EPL RPDO	0x1602.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13234

Parameter Name: C13234 EPL RPDO			Data type: UNSIGNED_64 Index: 11341 = 0x2C4D EPL index: See subcodes
EPL RPDO-4			
Subcodes	Lenze setting	Info	EPL index
C13234/1	0	EPL RPDO	0x1603.0x01
...	...	...	...
C13234/32	0	EPL RPDO	0x1603.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13235

Parameter Name: C13235 EPL RPDO			Data type: UNSIGNED_64 Index: 11340 = 0x2C4C EPL index: See subcodes
EPL RPDO-5			
Subcodes	Lenze setting	Info	EPL index
C13235/1	0	EPL RPDO	0x1604.0x01
...	...	...	...
C13235/32	0	EPL RPDO	0x1604.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13236

Parameter Name: C13236 EPL RPDO			Data type: UNSIGNED_64 Index: 11339 = 0x2C4B EPL index: See subcodes
EPL RPDO-6			
Subcodes	Lenze setting	Info	EPL index
C13236/1	0	EPL RPDO	0x1605.0x01
...	...	...	...
C13236/32	0	EPL RPDO	0x1605.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13237

Parameter Name: C13237 EPL RPDO			Data type: UNSIGNED_64 Index: 11338 = 0x2C4A EPL index: See subcodes
EPL RPDO-7			
Subcodes	Lenze setting	Info	EPL index
C13237/1	0	EPL RPDO	0x1606.0x01
...	...	...	...
C13237/32	0	EPL RPDO	0x1606.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13238

Parameter Name: C13238 EPL RPDO			Data type: UNSIGNED_64 Index: 11337 = 0x2C49 EPL index: See subcodes
EPL RPDO-8			
Subcodes	Lenze setting	Info	EPL index
C13238/1	0	EPL RPDO	0x1607.0x01
...	...	...	...
C13238/32	0	EPL RPDO	0x1607.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13239

Parameter Name: C13239 EPL RPDO			Data type: UNSIGNED_64 Index: 11336 = 0x2C48 EPL index: See subcodes
EPL RPDO-9			
Subcodes	Lenze setting	Info	EPL index
C13239/1	0	EPL RPDO	0x1608.0x01
...	...	...	...
C13239/32	0	EPL RPDO	0x1608.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13240

Parameter Name: C13240 EPL RPDO			Data type: UNSIGNED_64 Index: 11335 = 0x2C47 EPL index: See subcodes
EPL RPDO-10			
Subcodes	Lenze setting	Info	EPL index
C13240/1	0	EPL RPDO	0x1609.0x01
...	...	...	...
C13240/32	0	EPL RPDO	0x1609.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13484

Parameter Name: C13484 EPL address: RPDO			Data type: UNSIGNED_8 Index: 11091 = 0x2B53 EPL index: See subcodes	
The subcodes 1 ... 10 describe the node address of the transmitting EPL node for the PDO channels 1 ... 10 (mapping see C13231 ... C13240). Values > "0" describe the origin of a PRes frame. The value "0" is reserved for PReq (must not be used in systems with a Servo Drive 9400 as Managing Node). The subcodes 1 ... 10 are only valid if the corresponding subcode of C13489 has a value > "0". Before writing the EPL node address in a subcode of C13484, the corresponding subcode of C13489 must be set to the value "0". Renewed writing of the number of mapping entries in the subcode of C13489 enables the node address.				
Setting range (min. value unit max. value)				
0		255		
Subcodes	Lenze setting	Info		
C13484/1	0	EPL address: RPDO	0x1400.0x01	
...	...	...	...	
C13484/10	0	EPL address: RPDO	0x1409.0x01	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C13489

Parameter Name: C13489 EPL number RPDO			Data type: UNSIGNED_8 Index: 11086 = 0x2B4E EPL index: See subcodes	
The subcodes 1 ... 10 describe the number of valid mapping entries of the PDO channels 1 ... 10 (valid subcodes in C13231 ... C13240). The value "0" inhibits the corresponding PDO channel. Before writing the mapping entries in C13231 ... C13240 or the EPL address of the SDO transmitter in the corresponding subcode of C13484, the corresponding subcode of code C13489 must be set to the value "0". A renewed writing of the number of mapping entries in the subcode of C13489 enables the mapping and the transmission EPL address for the PDO channel. The sum of all mapping entries enabled via the subcodes of C13489 must not exceed the value "64". Make sure that the sum of memory requirements of all objects mapped in C13231 ... C13240 does not exceed 64 bytes.				
Setting range (min. value unit max. value)				
0		32		
Subcodes	Lenze setting	Info	EPL index	
C13489/1	0	EPL RPDO: object count	0x1600.0x00	
...	...	...	...	
C13489/10	0	EPL RPDO: object count	0x1609.0x00	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C13531

Parameter Name: C13531 EPL TPDO			Data type: UNSIGNED_64 Index: 11044 = 0x2B24 EPL index: See subcodes
The code describes the mapping for the TPDO channel. C13789.1 describes the number of valid mapping object entries in this code. Subcodes 1 ... 32 describe the mapping of the single objects. Servo Drives 9400 exclusively support mapping objects with a data length of 8 bits (1 byte) or a multiple of this value. Incompatible objects must be mapped on variables with a compatible data length. The "Offset" (bytes 4 and 5) and "Length" (bytes 6 and 7) of the mapping object description must be a multiple of 8. Before changing the mapping object entries in C13531, C13789/1 must be set to "0". This deactivates the mapping. Writing into C13789/1 with a value unequal "0" re-enables the mapping. Offset and length of the data object relevant for the receiving EPL node must be identical with the corresponding values of the entry in C13531.			
Subcodes	Lenze setting	Info	EPL index
C13531/1	0	EPL TPDO	0x1A00.0x01
...	...	...	...
C13531/32	0	EPL TPDO	0x1A00.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13789

Parameter Name: C13789 EPL number TPDO			Data type: UNSIGNED_8 Index: 10786 = 0x2A22 EPL index: See subcodes
The subcode 1 describes the number of valid mapping object entries (subcodes) in code C13531. The value "0" inhibits the TPDO. Before writing a subcode of C13531, set C13789 subcode 1 to the value "0". Renewed writing of the number of mapping object entries in C13789 subcode 1 enables the TPDO mapping.			
Setting range (min. value unit max. value)			
0		32	
Subcodes	Lenze setting	Info	EPL index
C13789/1	0	EPL TPDO: object count	0x1A00.0x00
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13880

Parameter Name: C13880 EPL quality lights			Data type: UNSIGNED_8 Index: 10695 = 0x29C7 EPL index: not available
The code indicates the current quality status (values: 1, 2 or 4) of the network functions of the communication module.			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☒ PDO_MAP_TX ☐ COM ☐ MOT			

C13881

Parameter Name: C13881 EPL reset error counter			Data type: UNSIGNED_8 Index: 10694 = 0x29C6 EPL index: not available
The value "1" (TRUE) enables the code to reset the cycle counter. After reset termination the code automatically assumes the value "0" (FALSE).			
Setting range (min. value unit max. value)		Lenze setting	
0		1	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13882

Parameter Name: C13882 EPL reset cycle counter			Data type: UNSIGNED_8 Index: 10693 = 0x29C5 EPL index: not available		
The value "1" (TRUE) enables the code to reset the cycle counter (C13136). After reset termination the code automatically assumes the value "0" (FALSE).					
Setting range (min. value unit max. value)			Lenze setting		
0			1		0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C13883

Parameter Name: C13883 EPL response when "DataExchange" is quit		Data type: UNSIGNED_8 Index: 10692 = 0x29C4 EPL index: not available	
Setting of the response when the "DataExchange" state is quit. A change in the monitoring response becomes immediately effective.			
Selection list (Lenze setting printed in bold)			
0	No response		
1	Trouble		
3	Quick stop by trouble		
4	Warning Locked		
6	Information		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13885

Parameter Name: C13885 EPL data RPDO: error response		Data type: UNSIGNED_8 Index: 10690 = 0x29C2 EPL index: not available	
The code controls the error response to failing PDO communication with a node. The failure is detected because expected PDO data are missing.			
Selection list (Lenze setting printed in bold)		Info	
0	Process data received	The data received last is continued to be used.	
1	Clear process data	The data of all reception PDO channels is set to "0".	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13891

Parameter Name: C13891 EPL module error responses			Data type: UNSIGNED_8 Index: 10684 = 0x29BC EPL index: See subcodes
The subcodes of C13891 determine the response to errors (e.g. communication errors) of the EPL stack.			
Selection list			
0	No response		
1	Trouble		
3	Quick stop by trouble		
4	Warning Locked		
6	Information		
Subcodes	Lenze setting	Info	EPL index
C13891/1	4: Warning locked	Monitoring response - EPL cycle time violation	
C13891/2	4: Warning locked	Monitoring response - EPL boot-up error	
C13891/3	4: Warning locked	Monitoring response - EPL synchronisation loss	
C13891/4	4: Warning locked	Monitoring response - EPL frame error (CRC)	
C13891/5	0: No Response	Monitoring response EPL Controlled Node response error	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13900

Parameter Name: C13900 EPL firmware type			Data type: VISIBLE_STRING Index: 10675 = 0x29B3 EPL index: not available
Display of the Lenze firmware type of the communication module (product designation).			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13901

Parameter Name: C13901 EPL firmware date			Data type: VISIBLE_STRING Index: 10674 = 0x29B2 EPL index: not available
Display of the date the firmware of the communication module was created			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13902

Parameter Name: C13902 EPL firmware version			Data type: VISIBLE_STRING Index: 10673 = 0x29B1 EPL index: not available
Display of the version number of the communication module firmware			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13910

Parameter Name: C13910 EPL error code last error		Data type: UNSIGNED_32 Index: 10665 = 0x29A9 EPL index: not available
Display of the error code of the last occurred POWERLINK error message ▶ POWERLINK error messages (67)		
Selection list (read only)		
0	No error	
98915	EL_EPL_BOOTUP_1	
229987	QL_EPL_BOOTUP_1	
295523	WL_EPL_BOOTUP_1	
426595	I__EPL_BOOTUP_1	
98916	EL_EPL_BOOTUP_2	
229988	QL_EPL_BOOTUP_2	
295524	WL_EPL_BOOTUP_2	
426596	I__EPL_BOOTUP_2	
98947	EL_EPL_ADDRESS_MN	
230019	QL_EPL_ADDRESS_MN	
295555	WL_EPL_ADDRESS_MN	
426627	I__EPL_ADDRESS_MN	
98918	EL_EPL_COM_CRC	
229990	QL_EPL_COM_CRC	
295526	WL_EPL_COM_CRC	
426598	I__EPL_COM_CRC	
98919	EL_EPL_MN_LOSS_CN	
229991	QL_EPL_MN_LOSS_CN	
295527	WL_EPL_MN_LOSS_CN	
426599	I__EPL_MN_LOSS_CN	
98917	EL_EPL_CN_SYNC_LOSS	
229989	QL_EPL_CN_SYNC_LOSS	
295525	WL_EPL_CN_SYNC_LOSS	
426597	I__EPL_CN_SYNC_LOSS	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13911

Parameter Name: C13911 EPL module warning		Data type: UNSIGNED_32 Index: 10664 = 0x29A8 EPL index: not available
Display of pending warnings		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13919

Parameter Name: C13919 EPL additional error info		Data type: UNSIGNED_32 Index: 10656 = 0x29A0 EPL index: not available
Display of coded additional information on a pending error		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13920

Parameter Name: C13920 EPL DIP switch	Data type: UNSIGNED_8 Index: 10655 = 0x299F EPL index: not available
The code outputs the current DIP switch setting of the communication module. • The switch with the labelling "128" is displayed on the most significant bit, the switch "1" on the least significant bit. • The numerical value of C13920 corresponds to the node ID of the communication module. ► Node address setting (📖 36)	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

11.3

Parameters of the communication module for slot MXI2

This chapter lists the parameters of the E94AYCEP communication module (POWERLINK) for slot MXI2 of the Servo Drive 9400 in numerically ascending order.

C14000

Parameter Name: C14000 EPL IP address			Data type: UNSIGNED_32 Index: 10575 = 0x294F EPL index: See subcodes
The code displays the IP address of the communication module. - The IP address is derived from the EPL node address (Node ID): 192.168.100.[Node ID] - The node ID is derived from the DIP switch position or from C14044. ▶ Node address setting (36)			
Setting range (min. value unit max. value)			
0.0.0.0 (0x00000000)		255.255.255.255 (0xFFFFFFFF)	
Subcodes	Lenze setting	Info	EPL index
C14000/1	3232261130 (0xC0A86401 = 192.168.100.1)	EPL IP address	0x1E40.0x02
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14001

Parameter Name: C14001 EPL IP subnet mask			Data type: UNSIGNED_32 Index: 10574 = 0x294E EPL index: See subcodes
The code declares the IP subnet mask which restricts the directly addressable IP address range (i.e. without a gateway in the EPL segment of the routers). The value 255.255.255.0 (0xFFFFFFFF00) is always assigned to the subnet mask in one segment.			
Setting range (min. value unit max. value)			
255.0.0.0 (0xFF000000)		255.255.255.0 (0xFFFFFFFF00)	
Subcodes	Lenze setting	Info	EPL index
C14001/1	4294967040 (0xFFFFFFFF00 = 255.255.255.0)	EPL IP-subnet mask	0x1E40.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14003

Parameter Name: C14003 EPL IP address router			Data type: UNSIGNED_32 Index: 10572 = 0x294C EPL index: See subcodes	
The code declares the IP address of the router which connects the EPL segment to the higher-level network. The standard entry corresponds to the standard router address of the EPL specification: → 192.168.100.254 Permissible entries replace the lowest-order byte of the standard entry with the EPL address of the node which has the function of a router.				
Setting range (min. value unit max. value)				
0.0.0.0 (0x00000000)		255.255.255.255 (0xFFFFFFFF)		
Subcodes	Lenze setting	Info	EPL index	
C14003/1	3232261374 (0xC0A864FE = 192.168.100.254)	EPL IP address router	0x1E40.0x05	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C14004

Parameter Name: C14004 EPL MAC address		Data type: OCTET_STRING Index: 10571 = 0x294B EPL index: See subcodes
The code indicates the physical address (MAC address) of the POWERLINK interface of the communication module. When the communication module is produced, the MAC address is assigned unequivocally worldwide and provides addressing on the lowest level.		
Subcodes	Info	EPL index
C14004/1	MAC Address (octet string[6]) 00-0A-86-xx-yy-zz • 00-0A-86 = Lenze • xx-yy-zz = consecutive number	0x1030.0x05
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14027

Parameter Name: C14027 EPL MN: Boot behaviour		Data type: UNSIGNED_32 Index: 10548 = 0x2934 EPL index: 0x1F80
The code controls the start of the EPL network by the Managing Node and the responses to errors in the network. Servo Drives 9400 have a constant value 274 (0x112).		
Value is bit-coded:		
Bit 0 ... 31	see below	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Description of the bits 0 ... 31

Bit	Value	Description
0	0	Reserved / No function
1	0 *)	Start CNs individually (when bit 3 = 0)
	1	Start CNs with broadcast NMTStartNode (when bit 3 = 0)
2	0	Go automatically to NMT_MS_OPERATIONAL
	1 *)	Application decides on change to NMT_MS_OPERATIONAL
3	0	Start CNs automatically, see bit 1
	1 *)	Application decides on CN start
4	0 *)	Individual reset of a CN after monitoring error
	1	Broadcast reset of all CNs after monitoring error
5	0	Reserved / No function
6	0	Response to monitoring errors after reset (bit 4)
	1 *)	Transmit broadcast "NMTStopNode" after monitoring error
7	0	Automatic change to NMT_MS_PRE_OPERATIONAL_2
	1 *)	Application decides on change to NMT_MS_PRE_OPERATIONAL_2
8	0	Automatic change to NMT_MS_READY_TO_OPERATE
	1 *)	Application decides on change to NMT_MS_READY_TO_OPERATE
9	0	Identification of the CNs only by verification of the corresponding NMT_MNDeviceTypeList_AU32-subindex
	1 *)	Extended identification
10	0	No check of the application software version of the CN
	1 *)	Check of the application software version of the CN
11	0	No check of the CN configuration
	1 *)	Check of the CN configuration
12	0	Error response: Change to NMT_MS_OPERATIONAL and NMT_MS_PREOPERATIONAL_1
	1 *)	Application-specific error response
13 ... 31	0	Reserved / No function

*) Not permissible for 9400 Servo Drives.

C14028

Parameter Name: C14028 EPL node declaration CN			Data type: UNSIGNED_32 Index: 10547 = 0x2933 EPL index: See subcodes
The code declares the Controlled Nodes 1 ... 100 and their properties.			
Value is bit-coded:			
Bit 0 ... 31	see below		
Subcodes	Lenze setting	Info	EPL index
C14028/1	0	EPL node declaration CN	0x1F81.0x01
...	...	...	...
C14028/100	0	EPL node declaration CN	0x1F81.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

Description of the bits 0 ... 31

Bit	Relevance		Lenze	Value	Description
	MN	CN			
0 (LSB)	☒	☒	0, 1	0	EPL node with this ID does not exist.
				1	EPL node with this ID exists.
1	☒	☒	0, 1	0	EPL node with this ID is not a Controlled Node.
				1	EPL node with this ID is a Controlled Node.
2	☒	☐	1	0 ^{*)}	On detection of a booting Controlled Node, the application will not be informed.
				1	On detection of a booting Controlled Node, the application will be informed and the Controlled Node will be started.
3	☒	☒	1	0	Optional Controlled Node
				1	Obligatory Controlled Node
4	☒	☐	0	0	The Managing Node is allowed to send reset commands.
				1 ^{*)}	The Managing Node must not send any reset command.
5	☒	☐	0	0	Software version verification of the Controlled Node is not required.
				1 ^{*)}	Software version verification of the Controlled Node is required.
6	☒	☐	0, 1	0	Automatic application software update is not allowed.
				1	Automatic application software update is allowed.
7	-	-	0	0	Reserved / No function
8	☒	☒	0, 1	0	Isochronously accessed Controlled Node
				1	Asynchronously accessed Controlled Node (bit 9 is irrelevant)
9	☒	☒	0	0	Continuously accessed Controlled Node
				1	Multiplex EPL nodes are supported.
10	☒	☒	0	0	No "POWERLINK to standard Ethernet" router function.
				1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	☒	☒	0	0	No "POWERLINK to fieldbus" router function.
				1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	☒	☒	0	0	The Managing Node does not send any PRes frames
				1	The Managing Node sends PRes frames
13 ... 30	-	-	0	0	Reserved / No function
31 (MSB)	☒	☒	0, 1	0	Bits 0 ... 30 inhibited
				1	Bits 0 ... 30 enabled

^{*)} Not permissible for 9400 Servo Drives.

C14029

Parameter Name: C14029 EPL node declaration MN		Data type: UNSIGNED_32 Index: 10546 = 0x2932 EPL index: See subcodes	
The code declares Managing Node, diagnostic device, and EPL router, and describes their properties.			
Value is bit-coded:			
Bit 0 ... 31	see below		
Subcodes	Lenze setting	Info	EPL index
C14029/1	2147483661 (0x8000000D)	EPL node assignment Managing Node	0x1F81.0xF0
C14029/2	0	EPL node assignment diagnostic device	0x1F81.0xFD
C14029/3	2147483655 (0x80000007)	EPL node assignment router	0x1F81.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

Description of the bits 0 ... 31

Bit	Relevance		Lenze	Value	Description
	MN	CN			
0 (LSB)	☒	☒	0, 1	0	EPL node with this ID does not exist.
				1	EPL node with this ID exists.
1	☒	☒	0, 1	0	EPL node with this ID is not a Controlled Node.
				1	EPL node with this ID is a Controlled Node.
2	☒	☐	1	0 ^{*)}	On detection of a booting Controlled Node, the application will not be informed.
				1	On detection of a booting Controlled Node, the application will be informed and the Controlled Node will be started.
3	☒	☒	1	0	Optional Controlled Node
				1	Obligatory Controlled Node
4	☒	☐	0	0	The Managing Node is allowed to send reset commands.
				1 ^{*)}	The Managing Node must not send any reset command.
5	☒	☐	0	0	Software version verification of the Controlled Node is not required.
				1 ^{*)}	Software version verification of the Controlled Node is required.
6	☒	☐	0, 1	0	Automatic application software update is not allowed.
				1	Automatic application software update is allowed.
7	-	-	0	0	Reserved / No function
8	☒	☒	0, 1	0	Isochronously accessed Controlled Node
				1	Asynchronously accessed Controlled Node (bit 9 is irrelevant)
9	☒	☒	0	0	Continuously accessed Controlled Node
				1	Multiplex EPL nodes are supported.
10	☒	☒	0	0	No "POWERLINK to standard Ethernet" router function.
				1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	☒	☒	0	0	No "POWERLINK to fieldbus" router function.
				1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	☒	☒	0	0	The Managing Node does not send any PRes frames
				1	The Managing Node sends PRes frames
13 ... 30	-	-	0	0	Reserved / No function
31 (MSB)	☒	☒	0, 1	0	Bits 0 ... 30 inhibited
				1	Bits 0 ... 30 enabled

*) Not permissible for 9400 Servo Drives.

C14030

Parameter Name: C14030 EPL device type		Data type: UNSIGNED_32 Index: 10545 = 0x2931 EPL index: 0x1000
The code indicates the device type of the EPL node.		
Value is bit-coded:		
Bit 1	Bit1	
Bit 2	Bit2	
Bit 3	Bit3	
Bit 4	Bit4	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14034

Parameter Name: C14034 EPL identity object			Data type: UNSIGNED_32 Index: 10541 = 0x292D EPL index: See subcodes
The code indicates the Manufacturer's EPL ID no. for Lenze.			
Subcodes	Lenze setting	Info	EPL index
C14034/1	59 (0x3B)	Manufacturer's EPL ID no.	0x1018.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14035

Parameter Name: C14035 EPL device type CN		Data type: UNSIGNED_32 Index: 10540 = 0x292C EPL index: See subcodes	
The code contains the device type ID of the declared Controlled Nodes. Each subcode corresponds to a Controlled Node with the node ID = subcode number. When being in the configured status, the values must be identical with the device types stored locally in each node under C14030.			
Subcodes	Lenze setting	Info	EPL index
C14035/1	0	EPL device type CN	0x1F84.0x01
...	...	...	...
C14035/100	0	EPL device type CN	0x1F84.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14040

Parameter Name: C14040 EPL feature flags	Data type: UNSIGNED_32 Index: 10535 = 0x2927 EPL index: 0x1F82
The code displays the POWERLINK functions implemented by the EPL node.	
Value is bit-coded:	
Bit 0 ... 31	see below
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

Description of the bits 0 ... 31

Bit	Relevance		Value	Description
	MN	CN		
0 (LSB)	☐	☒	0	Asynchronous access
			1	Isochronous access ^{*)}
1	☒	☒	0	No SDO by UDP/IP
			1	SDO via UDP/IP ^{*)}
2	☒	☒	0	No SDO via EPL "ASnd" ^{*)}
			1	SDO by EPL "ASnd"
3	☒	☒	0	No SDO integrated in PDO ^{*)}
			1	SDO integrated in PDO
4	☒	☒	0	No "NMT Info Services"
			1	"NMT Info Services" supported
5	☒	☒	0	No extended "NMT State Commands" ^{*)}
			1	Extended "NMT State Commands" supported
6	☒	☒	0	No dynamic PDO mapping ^{*)}
			1	Dynamic PDO mapping supported
7	☒	☐	0	No dynamic PDO mapping
			1	Dynamic PDO mapping supported
8	☒	☒	0	No configuration manager function
			1	Configuration manager function
9	☒	☒	0	Only isochronous cyclic access permitted.
			1	Isochronous multiplexed access possible.
10	☐	☒	0	No address assignment via software
			1	Address assignment via software
11	☒	☐	0	No support of the "Basic Ethernet Mode" by the master
			1	Support of the "Basic Ethernet Mode" by the master
12	☒	☒	0	No "POWERLINK to standard Ethernet" router function
			1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
13	☒	☒	0	No "POWERLINK to fieldbus" router function
			1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
14...31 (MSB)	-	-	-	Reserved / No function

^{*)} Values implemented by 9400 Servo Drives (MN: 0x0087_h = 135_d, CN 0x0083_h = 131_d).

C14041

Parameter Name: C14041 EPL version	Data type: UNSIGNED_8 Index: 10534 = 0x2926 EPL index: not available
The code describes the version of the POWERLINK communication profile implemented by the communication module. The higher-order nibble describes the major version, the lower order nibble describes the minor version. The implemented value corresponds to the POWERLINK version 2.0.	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C14042

Parameter Name: C14042 Current EPL device address	Data type: UNSIGNED_8 Index: 10533 = 0x2925 EPL index: 0x1F93.0x01
The code displays the currently valid EPL node address (Node ID). • The node ID must be unequivocal in the EPL network segment. • See also C14044.	
Display area (min. value unit max. value)	
1	240
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C14043

Parameter Name: C14043 EPL device address selection	Data type: UNSIGNED_8 Index: 10532 = 0x2924 EPL index: 0x1F93.0x02
The code indicates whether the EPL node address (node ID) has been set via DIP switches at the communication module or via the software. • 0: Node ID has been set via software (C14044). • 1: Node ID has been set via DIP switches at the communication module. ► Node address setting (36)	
Display area (min. value unit max. value)	
0	1
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C14044

Parameter Name: C14044 EPL device address SW	Data type: UNSIGNED_8 Index: 10531 = 0x2923 EPL index: 0x1F93.0x03
This code serves to set the EPL node address (node ID) via the software. The value "0" (Lenze setting) is not a valid node ID. It serves to activate the setting via the DIP switches. ► Node address setting (36)	
Setting range (min. value unit max. value)	
1	240
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT	

C14045

Parameter Name: C14045 EPL host name	Data type: VISIBLE_STRING Index: 10530 = 0x2922 EPL index: 0x1F9A
The code defines a DNS-compatible device name. The length is limited to 15 characters. The device name must be unambiguous within the network domain. Naming convention: The device name • starts with a character • ends with a character or digit The device name consists of • letters ([A ... Z], [a ... z]) • digits ([0 ... 9]) • hyphen ([-])	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT	

C14060

Parameter Name: C14060 EPL cycle time	Data type: UNSIGNED_32 Index: 10515 = 0x2913 EPL index: 0x1006																																												
The code declares the length of the EPL cycle in μs. • In the configured state, this code must have an identical value in all EPL nodes. • The selected value must correspond to the actual bus cycle time so that the internal monitoring functions work correctly.																																													
<table border="1"> <thead> <tr> <th colspan="2">Selection list (Lenze setting printed in bold)</th></tr> </thead> <tbody> <tr><td>500</td><td>0.5</td></tr> <tr><td>1000</td><td>1</td></tr> <tr><td>2000</td><td>2</td></tr> <tr><td>3000</td><td>3</td></tr> <tr><td>4000</td><td>4</td></tr> <tr><td>5000</td><td>5</td></tr> <tr><td>6000</td><td>6</td></tr> <tr><td>7000</td><td>7</td></tr> <tr><td>8000</td><td>8</td></tr> <tr><td>9000</td><td>9</td></tr> <tr><td>10000</td><td>10</td></tr> <tr><td>11000</td><td>11</td></tr> <tr><td>12000</td><td>12</td></tr> <tr><td>13000</td><td>13</td></tr> <tr><td>14000</td><td>14</td></tr> <tr><td>15000</td><td>15</td></tr> <tr><td>16000</td><td>16</td></tr> <tr><td>17000</td><td>17</td></tr> <tr><td>18000</td><td>18</td></tr> <tr><td>19000</td><td>19</td></tr> <tr><td>20000</td><td>20</td></tr> </tbody> </table>		Selection list (Lenze setting printed in bold)		500	0.5	1000	1	2000	2	3000	3	4000	4	5000	5	6000	6	7000	7	8000	8	9000	9	10000	10	11000	11	12000	12	13000	13	14000	14	15000	15	16000	16	17000	17	18000	18	19000	19	20000	20
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☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT																																													

C14062

Parameter Name: C14062 EPL MN: boot timing			Data type: UNSIGNED_32 Index: 10513 = 0x2911 EPL index: See subcodes	
The code defines timeouts and waiting times for the booting process of the Managing Node. • The value "0" for subcode 2, 4, 5 deactivates the time-outs. The Managing Node waits for an indefinite period of time. No error message is generated. • The value "0" for subcode 3 deactivates the waiting time. After all expected Controlled Nodes have been detected by the Managing Node, the Managing Node immediately changes to NMT_MS_PREOPERATIONAL_2. Observe the following conditions: • Subcode 1 must be lower than C14078 - values of all EPL nodes. • Subcode 3 must be lower than subcode 2.				
Setting range (min. value unit max. value)				
0	µs	4294967295		
Subcodes	Lenze setting	Info	EPL index	
C14062/1	2500000 µs	Max. time for detecting a redundant Managing Node Waiting time before changing to NMT_MS_PREOPERATIONAL_1	0x1F89.0x01	
C14062/2	60000000 µs	Max. time for device search Dwell time in NMT_MS_PREOPERATIONAL_1 Error message if not all Controlled Nodes are in NMT_CS_PREOPERATIONAL_1.	0x1F89.0x02	
C14062/3	0 µs	Waiting time in NMT_MS_PREOPERATIONAL_1	0x1F89.0x03	
C14062/4	0 µs	Max. time in NMT_MS_PREOPERATIONAL_2 Error message if not all Controlled Nodes are in NMT_CS_PREOPERATIONAL_2.	0x1F89.0x04	
C14062/5	0 µs	Max. time in NMT_MS_READY_TO_OPERATE Error message if not all Controlled Nodes are in NMT_CS_READY_TO_OPERATE.	0x1F89.0x05	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14063

Parameter Name: C14063 EPL MN cycle timing			Data type: UNSIGNED_32 Index: 10512 = 0x2910 EPL index: See subcodes	
The code defines time intervals for the cycle control by the Managing Node.				
Setting range (min. value unit max. value)				
0	ns	4294967295		
Subcodes	Lenze setting		Info	EPL index
C14063/1	2000 ns		Waiting time between SoC and PReq	0x1F8A.0x01
C14063/2	750000 ns		Time-out SDO communication	0x1F8A.0x02
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☐ COM ☐ MOT				

C14066

Parameter Name: C14066 EPL CN: Max. user data PRes RPDO			Data type: UNSIGNED_16 Index: 10509 = 0x290D EPL index: See subcodes	
The code defines the reserved user data length of the PRes telegrams for Controlled Nodes 1 ... 100. Each subcode number corresponds to one EPL node with the same node ID. The EPL node must be enabled via code C14028. The subcodes describe the PRes telegrams received. The value must be within the range of 36 ... 1490 bytes. The values are upper limit values for the entire size of the PDO mappings for received PRes telegrams. In the configured state, the values stored for the nodes must be identical to the corresponding C14072 entries. C14066 must have an identical value in all EPL nodes of the network.				
Setting range (min. value unit max. value)				
0	Byte	1490		
Subcodes	Lenze setting	Info	EPL index	
C14066/1	0 byte	EPL CN: max. user data of RPDO	0x1F8D.0x01	
...	...	...	...	
C14066/100	0 byte	EPL CN: max. user data of RPDO	0x1F8D.0x64	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C14067

Parameter Name: C14067 EPL MN: time-out isochronous comm. CN			Data type: UNSIGNED_32 Index: 10508 = 0x290C EPL index: See subcodes	
The code defines the reserved user data length of the PRes frames for Managing Node, diagnostic device or router. Each subcode number corresponds to one EPL node with the same node ID. The EPL node must be enabled via code C14028. The subcode describes the PRes telegrams received. The value must be within the limits of 36 ... 1490 bytes. The values are upper limit values for the entire size of the PDO mappings for received PRes telegrams. In the configured state, the values stored for the nodes must be identical to the corresponding C14072 entries. C14067 must have an identical value in all EPL nodes of the network.				
Setting range (min. value unit max. value)				
0	ns	4294967295		
Subcodes	Lenze setting	Info	EPL index	
C14067/1	5000 ns	EPL Time-out isochronous comm. CN	0x1F92.0x01	
...	...	...	...	
C14067/100	5000 ns	EPL Time-out isochronous comm. CN	0x1F92.0x64	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14071

Parameter Name: C14071 EPL Max. PDO user data RPDO PReq		Data type: UNSIGNED_16 Index: 10504 = 0x2908 EPL index: 0x1F98.0x04	
The code defines the maximum data volume to be received by the Controlled Node of the PDP mapping for the PReq telegram to be defined via one of the codes C14231 ... C14240. In the configured state, the value must be identical to the entry for a response valid for the EPL node. When a Servo Drive 9400 is used, the code as Managing Node is irrelevant since Servo Drives 9400 as Managing Nodes only transmit PDO data via broadcast PRes telegrams (C14071 = 36 bytes).			
Setting range (min. value unit max. value)		Lenze setting	
0	Byte	1490	36 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14072

Parameter Name: C14072 EPL Max. PDO user data TPDO PRes			Data type: UNSIGNED_16 Index: 10503 = 0x2907 EPL index: 0x1F98.0x05
The code defines the maximum PDO data size to be sent by the EPL node for the current network configuration. The PDO mapping C14531 can assign data with a total size greater than or equal to C14072. In the configured state, C14072 must be identical to the entry in C14066 valid for the EPL node.			
Setting range (min. value unit max. value)			Lenze setting
0	Byte	1490	400 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14074

Parameter Name: C14074 EPL multi-stage cycle timing			Data type: UNSIGNED_8 Index: 10501 = 0x2905 EPL index: 0x1F98.0x07
This code serves to define the maximum number of the multiplexed cycles. If, e.g., the value "3" is entered, the multiplexed cycle is repeated every three cycles. Within one multiplexed cycle, the nodes are queried according to the values in code C14079 . If, e.g., the value "2" is entered for a node in C14079/x , it is always queried only in the second cycle of the three multiplexed cycles.			
Setting range (min. value unit max. value)			Lenze setting
0	Cycles	255	0 cycles
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14075

Parameter Name: C14075 EPL SDO channel width			Data type: UNSIGNED_16 Index: 10500 = 0x2904 EPL index: 0x1F98.0x08
The code defines the maximum user data size of asynchronous frames. Protocol-specific headers for POWERLINK, UDP/IP and others as well as service-specific headers are to be interpreted as part of the user data. In the configured state, the C14075 values of all EPL nodes must be identical.			
Setting range (min. value unit max. value)			Lenze setting
282	Byte	1500	282 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14078

Parameter Name: C14078 EPL CN: Max. time - MN detection			Data type: UNSIGNED_32 Index: 10497 = 0x2901 EPL index: 0x1F99
The code defines the time interval needed for detecting a Managing Node. If a booting Controlled Node detects a Managing Node during the interval, it changes to NMT_CS_PREOPERATIONAL_1. If not, it changes to "Basic Ethernet Mode".			
Setting range (min. value unit max. value)			Lenze setting
0	µs	4294967295	10000000 µs
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14079

Parameter Name: C14079 EPL multi-stage node declaration CN			Data type: UNSIGNED_8 Index: 10496 = 0x2900 EPL index: See subcodes	
This code indicates in which multiplexed cycle the Controlled Node is queried. The value entered must not exceed the value in code C14074. If, for instance, the value "3" is entered in code C14074, the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C14079/x, it is always queried only in the second cycle of the three multiplexed cycles.				
Setting range (min. value unit max. value)				
0	Cycles	255		
Subcodes	Lenze setting	Info	EPL index	
C14079/1	0 cycles		0x1F9B.0x01	
...	...		...	
C14079/100	0 cycles		0x1F9B.0x64	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14095

Parameter Name: C14095 EPL communication status		Data type: UNSIGNED_8 Index: 10480 = 0x28F0 EPL index: 0x1F8C	
The code indicates the current NMT status of the EPL node.			
Selection list (read only)		Info	
0	Off	NMT_GS_OFF	
25	Initialising	NMT_GS_INITIALISING	
41	ResetAppl	NMT_GS_RESET_APPLICATION	
57	ResetComm	NMT_GS_RESET_COMMUNICATION	
121	ResetConfig	NMT_GS_RESET_CONFIGURATION	
28	NotActive	NMT_CS_NOT_ACTIVE NMT_MS_NOT_ACTIVE	
29	PreOp1	NMT_CS_PRE_OPERATIONAL_1 NMT_MS_PRE_OPERATIONAL_1	
93	PreOp2	NMT_CS_PRE_OPERATIONAL_2 NMT_MS_PRE_OPERATIONAL_2	
109	ReadyToOp	NMT_CS_READY_TO_OPERATE NMT_MS_READY_TO_OPERATE	
253	Operational	NMT_CS_OPERATIONAL NMT_MS_OPERATIONAL	
77	Stopped	NMT_CS_STOPPED (only Controlled Node)	
30	BasicEthernet	NMT_CS_BASIC_ETHERNET (only Controlled Node)	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14096

Parameter Name: C14096 EPL node status CN		Data type: UNSIGNED_8 Index: 10479 = 0x28EF EPL index: See subcodes	
The code indicates the NMT statuses reported by the Controlled Node to the Managing Node. Each subcode corresponds to an EPL node with node ID = subcode number. The EPL node must be enabled via C14028 .			
Selection list		Info	
0	Off	NMT_GS_OFF	
25	Initialising	NMT_GS_INITIALISING	
41	ResetAppl	NMT_GS_RESET_APPLICATION	
57	ResetComm	NMT_GS_RESET_COMMUNICATION	
121	ResetConfig	NMT_GS_RESET_CONFIGURATION	
28	NotActive	NMT_CS_NOT_ACTIVE	
29	PreOp1	NMT_CS_PRE_OPERATIONAL_1	
93	PreOp2	NMT_CS_PRE_OPERATIONAL_2	
109	ReadyToOp	NMT_CS_READY_TO_OPERATE	
253	Operational	NMT_CS_OPERATIONAL	
77	Stopped	NMT_CS_STOPPED	
30	BasicEthernet	NMT_CS_BASIC_ETHERNET	
Subcodes		Info	EPL index
C14096/1		EPL status list CN	0x1F8E.0x01
...			...
C14096/100			0x1F8E.0x64
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14102

Parameter Name: C14102 EPL reset command		Data type: UNSIGNED_8 Index: 10473 = 0x28E9 EPL index: 0x1F9E	
A reset command to a single EPL node in the network can result in cycle and monitoring errors. The code initiates a reset of the EPL node. When the reset has been executed, the code is automatically set to "NMTInvalidService".			
Selection list (Lenze setting printed in bold)		Info	
40	ResetNode	Status transition → NMT_GS_RESET_APPLICATION	
41	ResetCommunication	Status transition → NMT_GS_RESET_COMMUNICATION	
42	ResetConfiguration	Status transition → NMT_GS_RESET_CONFIGURATION	
255	No command	No function	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14103

Parameter Name: C14103 EPL NMT command: Enable		Data type: UNSIGNED_8 Index: 10472 = 0x28E8 EPL index: 0x1F9F.0x01	
The code enables the NMT command defined via C14104/C14105. The values have the following meaning: • 0: The command is inhibited. • 1: The command is enabled. After the NMT command has been executed, the code is automatically set to FALSE. NMT commands can cause serious faults in the network. Cycle and monitoring errors can occur.			
Setting range (min. value unit max. value)		Lenze setting	
0		1	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14104

Parameter Name: C14104 EPL NMT command: Command ID		Data type: UNSIGNED_8 Index: 10471 = 0x28E7 EPL index: 0x1F9F.0x02	
The code defines the command to be executed. NMT commands can cause serious faults in the network. Cycle and monitoring errors can occur.			
Selection list (Lenze setting printed in bold)			
34	StopNode		
40	ResetNode		
41	ResetCommunication		
42	ResetConfiguration		
255	No command		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14105

Parameter Name: C14105 EPL NMT command: Target address			Data type: UNSIGNED_8 Index: 10470 = 0x28E6 EPL index: 0x1F9F.0x03
The code defines the destination node of the command via its node address. The node address "255" addresses all EPL nodes of the network. "0" is an invalid address, a command with destination node "0" is ineffective. NMT commands can cause serious faults in the network. Cycle and monitoring errors can occur.			
Setting range (min. value unit max. value)			Lenze setting
0		255	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14110

Parameter Name: C14110 EPL fault memory	Data type: INTEGER_8 Index: 10465 = 0x28E1 EPL index: 0x1001
The code indicates the currently pending errors (according to error classes).	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C14115

Parameter Name: C14115 EPL MN: Frame error (CRC)			Data type: UNSIGNED_32 Index: 10460 = 0x28DC EPL index: See subcodes	
The POWERLINK telegrams of the EPL network are protected by a checksum. The Managing Node counts the checksum errors which signalise a falsification of the frame. The monitoring response is determined via C14891/4 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting	Info	EPL index	
C14115/1	0	CumulativeCnt_U32	0x1C00.0x01	
C14115/2	0	ThresholdCnt_U32	0x1C00.0x02	
C14115/3	9	Threshold_U32	0x1C00.0x03	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14116

Parameter Name: C14116 EPL MN: Frame collisions			Data type: UNSIGNED_32 Index: 10459 = 0x28DB EPL index: See subcodes	
The code indicates the collision counter of the Managing Node. The Managing Node detects frame collisions in the EPL segment. This code contains the number of detected collisions. Each event is counted. Every single event is followed by an error message. No threshold value management is implemented. Due to extended topology options of EPL compared to the standard Ethernet according to IEEE802.3 it is not mandatory that the Managing Node recognises all collisions that occur in the segment.				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting	Info	EPL index	
C14116/1	0	CumulativeCnt_U32	0x1C01.0x01	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14117

Parameter Name: C14117 EPL MN: Cycle time violation			Data type: UNSIGNED_32 Index: 10458 = 0x28DA EPL index: See subcodes	
The code indicates the counters of the Managing Node for cycle time overflows. The monitoring response is determined via C14891/1 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C14117/1	0		CumulativeCnt_U32	0x1C02.0x01
C14117/2	0		ThresholdCnt_U32	0x1C02.0x02
C14117/3	9		Threshold_U32	0x1C02.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14118

Parameter Name: C14118 EPL MN: Link interruptions			Data type: UNSIGNED_32 Index: 10457 = 0x28D9 EPL index: 0x1C03
The code displays the counter of the Managing Node for interrupted POWERLINK connections. Each event is counted. Every single event is followed by an error response. A threshold value management is not implemented.			
Setting range (min. value unit max. value)			Lenze setting
0		4294967295	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14122

Parameter Name: C14122 EPL CN response error			Data type: UNSIGNED_32 Index: 10453 = 0x28D5 EPL index: See subcodes
The subcodes of the code indicate Controlled Node-specific cumulative counters for missing PRes frames. The behaviour corresponds to a node The behaviour corresponds to subcode 1 of the single error counters (C14116). Each subcode corresponds to an EPL node with node ID = subcode number.			
Setting range (min. value unit max. value)			
0		4294967295	
Subcodes	Lenze setting	Info	EPL index
C14122/1	0	EPL CN response error	0x1C07.0x01
...	...	...	...
C14122/100	0	EPL CN response error	0x1C07.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14124

Parameter Name: C14124 EPL CN response error: monit. thresholds			Data type: UNSIGNED_32 Index: 10451 = 0x28D3 EPL index: See subcodes
Setting range (min. value unit max. value)			
0		1000	
Subcodes	Lenze setting	Info	EPL index
C14124/1	9	EPL CN response error: monit. thresholds	0x1C09.0x01
...	...	...	...
C14124/100	9	EPL CN response error: monit. thresholds	0x1C09.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14125

Parameter Name: C14125 EPL MN: Break after collisions			Data type: UNSIGNED_32 Index: 10450 = 0x28D2 EPL index: 0x1C12
The code determines the number of EPL cycles for the duration of which the Managing Node interrupts the cycle sequence after a POWERLINK collision has occurred.			
Setting range (min. value unit max. value)			Lenze setting
0	Cycles	100	1 cycles
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14126

Parameter Name: C14126 EPL CN: Frame collisions			Data type: UNSIGNED_32 Index: 10449 = 0x28D1 EPL index: See subcodes	
The code indicates the number of POWERLINK collisions detected by the Controlled Node (C14116). Each event is counted. Every single event is followed by an error message. No threshold value management is implemented.				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C14126/1	0		CumulativeCnt_U32	0x1C0A.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14127

Parameter Name: C14127 EPL CN: Sync loss			Data type: UNSIGNED_32 Index: 10448 = 0x28D0 EPL index: See subcodes	
The Controlled Node expects SoC frames in time intervals which correspond to the cycle time (C14060). The code indicates the error counters for missing SoC frames. The monitoring response is determined via C14891/3 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting	Info	EPL index	
C14127/1	0	CumulativeCnt_U32	0x1C0B.0x01	
C14127/2	0	ThresholdCnt_U32	0x1C0B.0x02	
C14127/3	9	Threshold_U32	0x1C0B.0x03	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14131

Parameter Name: C14131 EPL CN: Frame error (CRC)			Data type: UNSIGNED_32 Index: 10444 = 0x28CC EPL index: See subcodes	
The code indicates the number of frame checksum errors detected by the Controlled Nodes (C14115). The monitoring response is determined via C14891/4 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C14131/1	0		CumulativeCnt_U32	0x1C0F.0x01
C14131/2	0		ThresholdCnt_U32	0x1C0F.0x02
C14131/3	9		Threshold_U32	0x1C0F.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14132

Parameter Name: C14132 EPL CN: Link interruptions		Data type: UNSIGNED_32 Index: 10443 = 0x28CB EPL index: 0x1C10	
The code indicates the counter of the Controlled Node for POWERLINK connection interruptions (C14118). Each event is counted. Every single event is followed by an error message. No threshold value management is implemented.			
Display area (min. value unit max. value)			
0			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14136

Parameter Name: C14136 EPL telegram counter		Data type: UNSIGNED_32 Index: 10439 = 0x28C7 EPL index: 0x1101.0x01	
The subcodes of the code indicate a counter for EPL cycles. The counter is started with each mains power-up of the EPL node at 0. An overflow occurs at 4.294.967.295.			
Display area (min. value unit max. value)			
0			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14203

Parameter Name: C14203 EPL CN response error			Data type: UNSIGNED_32 Index: 10372 = 0x2884 EPL index: See subcodes
The subcodes of the code indicate Controlled Node-specific cumulative counters for missing PRes frames. The behaviour corresponds to a node The behaviour corresponds to subcode 1 of the single error counters. Each subcode corresponds to an EPL node with node ID = subcode number.			
Display area (min. value unit max. value)			
0		4294967295	
Subcodes		Info	EPL index
C14203/1		Managing Node	0x1C07.0xF0
C14203/2		Diagnostics device	0x1C07.0xFD
C14203/3		router	0x1C07.0xFE
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14205

Parameter Name: C14205 EPL CN response error: Monit. thresholds		Data type: UNSIGNED_32 Index: 10370 = 0x2882 EPL index: See subcodes	
Setting range (min. value unit max. value)			
0		1000	
Subcodes	Lenze setting	Info	EPL index
C14205/1	0	Managing Node	0x1C09.0xF0
C14205/2	0	Diagnostics device	0x1C09.0xFD
C14205/3	9	router	0x1C09.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14219

Parameter Name: C14219 EPL device type MN			Data type: UNSIGNED_32 Index: 10356 = 0x2874 EPL index: See subcodes
The code contains the device type ID of the declared EPL nodes. Each subcode corresponds to an EPL node with node ID = subcode number. When being in the configured status, the values must be identical with the device types stored locally in each EPL node under C14030.			
Subcodes	Lenze setting	Info	EPL index
C14219/1	0	Managing Node	0x1F84.0xF0
C14219/2	0	Diagnostics device	0x1F84.0xFD
C14219/3	0	router	0x1F84.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14225

Parameter Name: C14225 EPL MN: Max. user data RPDO			Data type: UNSIGNED_16 Index: 10350 = 0x286E EPL index: See subcodes
The code defines the reserved user data length of the PRes frames. Each subcode number corresponds to an EPL node with the same node ID. The subcode describes the PRes frames received. The value must be within the limits of 36 ... 1490 bytes. The values are upper limit values for the total size of the PDO mappings which must be defined each one of the codes C14231 ... C14240 for PRes frames received. In the configured state, the values stored for the EPL nodes must be identical to the corresponding C14072 entries. C14066 must have an identical value in all EPL nodes of the network.			
Setting range (min. value unit max. value)			
0	Byte	1490	
Subcodes	Lenze setting	Info	EPL index
C14225/1	0 byte	Managing Node	0x1F8D.0xF0
C14225/2	0 byte	Diagnostics device	0x1F8D.0xFD
C14225/3	0 byte	router	0x1F8D.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14226

Parameter Name: C14226 EPL node status MN		Data type: UNSIGNED_8 Index: 10349 = 0x286D EPL index: See subcodes	
The code indicates the current NMT statuses of the Managing Node. Each subcode corresponds to an EPL node with node ID = subcode number. The EPL node must be enabled via C14029 .			
Selection list		Info	
0	Off	NMT_GS_OFF	
25	Initialising	NMT_GS_INITIALISING	
41	ResetAppl	NMT_GS_RESET_APPLICATION	
57	ResetComm	NMT_GS_RESET_COMMUNICATION	
121	ResetConfig	NMT_GS_RESET_CONFIGURATION	
28	NotActive	NMT_MS_NOT_ACTIVE	
29	PreOp1	NMT_MS_PRE_OPERATIONAL_1	
93	PreOp2	NMT_MS_PRE_OPERATIONAL_2	
109	ReadyToOp	NMT_MS_READY_TO_OPERATE	
253	Operational	NMT_MS_OPERATIONAL	
77	Stopped	Only for Controlled Node	
30	BasicEthernet	Only for Controlled Node	
Subcodes		Info	EPL index
C14226/1		Managing Node	0x1F8E.0xF0
C14226/2		Diagnostics device	0x1F8E.0xFD
C14226/3		router	0x1F8E.0xFE
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14228

Parameter Name: C14228 EPL time-out isochronous comm.			Data type: UNSIGNED_32 Index: 10347 = 0x286B EPL index: See subcodes	
The code defines Controlled Node-specific timeout times to answer the PReq request frames by PRes response frames. Each subcode corresponds to an EPL node with node ID = subcode number.				
Setting range (min. value unit max. value)				
0	ns	4294967295		
Subcodes	Lenze setting		Info	EPL index
C14228/1	5000 ns		Managing Node	0x1F92.0xF0
C14228/2	5000 ns		Diagnostics device	0x1F92.0xFD
C14228/3	5000 ns		router	0x1F92.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14229

Parameter Name: C14229 EPL multi-stage node declaration MN			Data type: UNSIGNED_8 Index: 10346 = 0x286A EPL index: See subcodes	
This code indicates in which multiplexed cycle the node is queried. The value entered must not exceed the value in code C14074. If, for instance, the value "3" is entered in code C14074, the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C14229/x, it is always queried only in the second cycle of the three multiplexed cycles.				
Setting range (min. value unit max. value)				
0	Cycles	255		
Subcodes	Lenze setting	Info	EPL index	
C14229/1	0 cycles	Managing Node	0x1F9B.0xF0	
C14229/2	0 cycles	Diagnostics device	0x1F9B.0xFD	
C14229/3	0 cycles	router	0x1F9B.0xFE	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C14231

Parameter Name: C14231 EPL RPDO			Data type: UNSIGNED_64 Index: 10344 = 0x2868 EPL index: See subcodes	
EPL RPDO-1				
Subcodes	Lenze setting		Info	EPL index
C14231/1	0		EPL RPDO	0x1600.0x01
...	...		...	...
C14231/32	0		EPL RPDO	0x1600.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☒ COM ☐ MOT				

C14232

Parameter Name: C14232 EPL RPDO			Data type: UNSIGNED_64 Index: 10343 = 0x2867 EPL index: See subcodes
EPL RPDO-2			
Subcodes	Lenze setting	Info	EPL index
C14232/1	0	EPL RPDO	0x1601.0x01
...	...	...	...
C14232/32	0	EPL RPDO	0x1601.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14233

Parameter Name: C14233 EPL RPDO			Data type: UNSIGNED_64 Index: 10342 = 0x2866 EPL index: See subcodes
EPL RPDO-3			
Subcodes	Lenze setting	Info	EPL index
C14233/1	0	EPL RPDO	0x1602.0x01
...	...	...	...
C14233/32	0	EPL RPDO	0x1602.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14234

Parameter Name: C14234 EPL RPDO			Data type: UNSIGNED_64 Index: 10341 = 0x2865 EPL index: See subcodes
EPL RPDO-4			
Subcodes	Lenze setting	Info	EPL index
C14234/1	0	EPL RPDO	0x1603.0x01
...	...	...	...
C14234/32	0	EPL RPDO	0x1603.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14235

Parameter Name: C14235 EPL RPDO			Data type: UNSIGNED_64 Index: 10340 = 0x2864 EPL index: See subcodes
EPL RPDO-5			
Subcodes	Lenze setting	Info	EPL index
C14235/1	0	EPL RPDO	0x1604.0x01
...	...	...	...
C14235/32	0	EPL RPDO	0x1604.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14236

Parameter Name: C14236 EPL RPDO			Data type: UNSIGNED_64 Index: 10339 = 0x2863 EPL index: See subcodes
EPL RPDO-6			
Subcodes	Lenze setting	Info	EPL index
C14236/1	0	EPL RPDO	0x1605.0x01
...	...	...	...
C14236/32	0	EPL RPDO	0x1605.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14237

Parameter Name: C14237 EPL RPDO			Data type: UNSIGNED_64 Index: 10338 = 0x2862 EPL index: See subcodes
EPL RPDO-7			
Subcodes	Lenze setting	Info	EPL index
C14237/1	0	EPL RPDO	0x1606.0x01
...	...	...	...
C14237/32	0	EPL RPDO	0x1606.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14238

Parameter Name: C14238 EPL RPDO			Data type: UNSIGNED_64 Index: 10337 = 0x2861 EPL index: See subcodes
EPL RPDO-8			
Subcodes	Lenze setting	Info	EPL index
C14238/1	0	EPL RPDO	0x1607.0x01
...	...	...	...
C14238/32	0	EPL RPDO	0x1607.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14239

Parameter Name: C14239 EPL RPDO			Data type: UNSIGNED_64 Index: 10336 = 0x2860 EPL index: See subcodes
EPL RPDO-9			
Subcodes	Lenze setting	Info	EPL index
C14239/1	0	EPL RPDO	0x1608.0x01
...	...	...	...
C14239/32	0	EPL RPDO	0x1608.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14240

Parameter Name: C14240 EPL RPDO			Data type: UNSIGNED_64 Index: 10335 = 0x285F EPL index: See subcodes
EPL RPDO-10			
Subcodes	Lenze setting	Info	EPL index
C14240/1	0	EPL RPDO	0x1609.0x01
...	...	...	...
C14240/32	0	EPL RPDO	0x1609.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14484

Parameter Name: C14484 EPL address: RPDO			Data type: UNSIGNED_8 Index: 10091 = 0x276B EPL index: See subcodes	
The subcodes 1 ... 10 describe the node address of the transmitting EPL node for the PDO channels 1 ... 10 (mapping see C14231 ... C14240). Values > "0" describe the origin of a PRes frame. The value "0" is reserved for PReq (must not be used in systems with a Servo Drive 9400 as Managing Node). The subcodes 1 ... 10 are only valid if the corresponding subcode of C14489 has a value > "0". Before writing the EPL node address in a subcode of C14484, the corresponding subcode of C14489 must be set to the value "0". Renewed writing of the number of mapping entries in the subcode of C14489 enables the node address.				
Setting range (min. value unit max. value)				
0		255		
Subcodes	Lenze setting	Info		
C14484/1	0	EPL address: RPDO	0x1400.0x01	
...	...	...	...	
C14484/10	0	EPL address: RPDO	0x1409.0x01	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C14489

Parameter Name: C14489 EPL number RPDO		Data type: UNSIGNED_8 Index: 10086 = 0x2766 EPL index: See subcodes	
The subcodes 1 ... 10 describe the number of valid mapping entries of the PDO channels 1 ... 10 (valid subcodes in C14231 ... C14240). The value "0" inhibits the corresponding PDO channel. Before writing the mapping entries in C14231 ... C14240 or the EPL address of the SDO transmitter in the corresponding subcode of C14484, the corresponding subcode of code C14489 must be set to the value "0". A renewed writing of the number of mapping entries in the subcode of C14489 enables the mapping and the transmission EPL address for the PDO channel. The sum of all mapping entries enabled via the subcodes of C14489 must not exceed the value "64". Make sure that the sum of memory requirements of all objects mapped in C14231 ... C14240 does not exceed 64 bytes.			
Setting range (min. value unit max. value)			
0		32	
Subcodes	Lenze setting	Info	EPL index
C14489/1	0	EPL RPDO: object count	0x1600.0x00
...	...	...	...
C14489/10	0	EPL RPDO: object count	0x1609.0x00
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14531

Parameter Name: C14531 EPL TPDO			Data type: UNSIGNED_64 Index: 10044 = 0x273C EPL index: See subcodes
The code describes the mapping for the TPDO channel. C14789.1 describes the number of valid mapping object entries in this code. Subcodes 1 ... 32 describe the mapping of the single objects. Servo Drives 9400 exclusively support mapping objects with a data length of 8 bits (1 byte) or a multiple of this value. Incompatible objects must be mapped on variables with a compatible data length. The "Offset" (bytes 4 and 5) and "Length" (bytes 6 and 7) of the mapping object description must be a multiple of 8. Before changing the mapping object entries in C14531, C14789/1 must be set to "0". This deactivates the mapping. Writing into C14789/1 with a value unequal "0" re-enables the mapping. Offset and length of the data object relevant for the receiving EPL node must be identical with the corresponding values of the entry in C14531.			
Subcodes	Lenze setting	Info	EPL index
C14531/1	0	EPL TPDO	0x1A00.0x01
...	...	...	...
C14531/32	0	EPL TPDO	0x1A00.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14789

Parameter Name: C14789 EPL number TPDO			Data type: UNSIGNED_8 Index: 9786 = 0x263A EPL index: See subcodes
The subcode 1 describes the number of valid mapping object entries (subcodes) in code C14531. The value "0" inhibits the TPDO. Before writing a subcode of C14531, set C14789 subcode 1 to the value "0". Renewed writing of the number of mapping object entries in C14789 subcode 1 enables the TPDO mapping.			
Setting range (min. value unit max. value)			
0		32	
Subcodes	Lenze setting	Info	EPL index
C14789/1	0	EPL TPDO: object count	0x1A00.0x00
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14880

Parameter Name: C14880 EPL quality lights			Data type: UNSIGNED_8 Index: 9695 = 0x25DF EPL index: not available
The code indicates the current quality status (values: 1, 2 or 4) of the network functions of the communication module.			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☒ PDO_MAP_TX ☐ COM ☐ MOT			

C14881

Parameter Name: C14881 EPL reset error counter			Data type: UNSIGNED_8 Index: 9694 = 0x25DE EPL index: not available
The value "1" (TRUE) enables the code to reset the cycle counter. After reset termination the code automatically assumes the value "0" (FALSE).			
Setting range (min. value unit max. value)		Lenze setting	
0		1	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14882

Parameter Name: C14882 EPL reset cycle counter			Data type: UNSIGNED_8 Index: 9693 = 0x25DD EPL index: not available		
The value "1" (TRUE) enables the code to reset the cycle counter (C14136). After reset termination the code automatically assumes the value "0" (FALSE).					
Setting range (min. value unit max. value)			Lenze setting		
0			1		0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C14883

Parameter Name: C14883 EPL response when "DataExchange" is quit		Data type: UNSIGNED_8 Index: 9692 = 0x25DC EPL index: not available	
Setting of the response when the "DataExchange" state is quit. A change in the monitoring response becomes immediately effective.			
Selection list (Lenze setting printed in bold)			
0	No response		
1	Trouble		
3	Quick stop by trouble		
4	Warning Locked		
6	Information		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14885

Parameter Name: C14885 EPL data RPDO: error response		Data type: UNSIGNED_8 Index: 9690 = 0x25DA EPL index: not available	
The code controls the error response to failing PDO communication with a node. The failure is detected because expected PDO data are missing.			
Selection list (Lenze setting printed in bold)		Info	
0	Process data received	The data received last is continued to be used.	
1	Clear process data	The data of all reception PDO channels is set to "0".	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14891

Parameter Name: C14891 EPL module error responses			Data type: UNSIGNED_8 Index: 9684 = 0x25D4 EPL index: See subcodes
The subcodes of C14891 determine the response to errors (e.g. communication errors) of the EPL stack.			
Selection list			
0	No response		
1	Trouble		
3	Quick stop by trouble		
4	Warning Locked		
6	Information		
Subcodes	Lenze setting	Info	EPL index
C14891/1	4: Warning locked	Monitoring response - EPL cycle time violation	
C14891/2	4: Warning locked	Monitoring response - EPL boot-up error	
C14891/3	4: Warning locked	Monitoring response - EPL synchronisation loss	
C14891/4	4: Warning locked	Monitoring response - EPL frame error (CRC)	
C14891/5	0: No Response	Monitoring response EPL Controlled Node response error	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14900

Parameter Name: C14900 EPL firmware type			Data type: VISIBLE_STRING Index: 9675 = 0x25CB EPL index: not available
Display of the Lenze firmware type of the communication module (product designation).			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14901

Parameter Name: C14901 EPL firmware date			Data type: VISIBLE_STRING Index: 9674 = 0x25CA EPL index: not available
Display of the date the firmware of the communication module was created			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14902

Parameter Name: C14902 EPL firmware version			Data type: VISIBLE_STRING Index: 9673 = 0x25C9 EPL index: not available
Display of the version number of the communication module firmware			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14910

Parameter Name: C14910 EPL error code last error		Data type: UNSIGNED_32 Index: 9665 = 0x25C1 EPL index: not available
Display of the error code of the last occurred POWERLINK error message ▶ POWERLINK error messages (67)		
Selection list (read only)		
0	No error	
98915	EL_EPL_BOOTUP_1	
229987	QL_EPL_BOOTUP_1	
295523	WL_EPL_BOOTUP_1	
426595	I__EPL_BOOTUP_1	
98916	EL_EPL_BOOTUP_2	
229988	QL_EPL_BOOTUP_2	
295524	WL_EPL_BOOTUP_2	
426596	I__EPL_BOOTUP_2	
98947	EL_EPL_ADDRESS_MN	
230019	QL_EPL_ADDRESS_MN	
295555	WL_EPL_ADDRESS_MN	
426627	I__EPL_ADDRESS_MN	
98918	EL_EPL_COM_CRC	
229990	QL_EPL_COM_CRC	
295526	WL_EPL_COM_CRC	
426598	I__EPL_COM_CRC	
98919	EL_EPL_MN_LOSS_CN	
229991	QL_EPL_MN_LOSS_CN	
295527	WL_EPL_MN_LOSS_CN	
426599	I__EPL_MN_LOSS_CN	
98917	EL_EPL_CN_SYNC_LOSS	
229989	QL_EPL_CN_SYNC_LOSS	
295525	WL_EPL_CN_SYNC_LOSS	
426597	I__EPL_CN_SYNC_LOSS	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14911

Parameter Name: C14911 EPL module warning		Data type: UNSIGNED_32 Index: 9664 = 0x25C0 EPL index: not available
Display of pending warnings		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14919

Parameter Name: C14919 EPL additional error info		Data type: UNSIGNED_32 Index: 9656 = 0x25B8 EPL index: not available
Display of coded additional information on a pending error		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14920

Parameter Name: C14920 EPL DIP switch	Data type: UNSIGNED_8 Index: 9655 = 0x25B7 EPL index: not available
The code outputs the current DIP switch setting of the communication module. • The switch with the labelling "128" is displayed on the most significant bit, the switch "1" on the least significant bit. • The numerical value of C14920 corresponds to the node ID of the communication module. ► Node address setting (📖 36)	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

11.4 Table of attributes

The table of attributes contains information required for communicating with the Servo Drive 9400 via parameters.

How to read the table of attributes:

Column		Meaning	Entry	
Code		Parameter name	Cxxxxx	
Name		Parameter short text (display text)	Text	
Index	dec	Index under 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		0x5FFF - 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 (CINH) required	☒ Writing is only possible when the controller is inhibited (CINH)	

Table of attributes

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	Data type	Factor	R	W	CINH
C13000	EPL IP address	11575	0x2D37	A	1	UNSIGNED_32		☑	☑	
C13001	EPL IP subnet mask	11574	0x2D36	A	1	UNSIGNED_32		☑	☑	
C13003	EPL IP router address	11572	0x2D34	A	1	UNSIGNED_32		☑	☑	
C13004	EPL MAC address	11571	0x2D33	A	1	OCTET_STRING		☑		
C13027	EPL MN start-up	11548	0x2D1C	E	1	UNSIGNED_32		☑		
C13028	EPL node declaration CN	11547	0x2D1B	A	100	UNSIGNED_32		☑	☑	
C13029	EPL node declaration MN	11546	0x2D1A	A	3	UNSIGNED_32		☑	☑	
C13030	EPL device type	11545	0x2D19	E	1	UNSIGNED_32		☑		
C13034	EPL identity object	11541	0x2D15	A	1	UNSIGNED_32		☑	☑	
C13035	EPL device type CN	11540	0x2D14	A	100	UNSIGNED_32		☑	☑	
C13040	EPL Feature Flags	11535	0x2D0F	E	1	UNSIGNED_32		☑		
C13041	EPL version	11534	0x2D0E	E	1	UNSIGNED_8		☑		
C13042	Current EPL device address	11533	0x2D0D	E	1	UNSIGNED_8	1	☑		
C13043	EPL device address selection	11532	0x2D0C	E	1	UNSIGNED_8	1	☑		
C13044	EPL device address SW	11531	0x2D0B	E	1	UNSIGNED_8	1	☑	☑	
C13045	EPL host name	11530	0x2D0A	E	1	VISIBLE_STRING		☑	☑	
C13060	EPL cycle time	11515	0x2CFB	E	1	UNSIGNED_32		☑	☑	
C13062	EPL MN: boot timing	11513	0x2CF9	A	5	UNSIGNED_32	1	☑	☑	
C13063	EPL MN cycle timing	11512	0x2CF8	A	2	UNSIGNED_32	1	☑	☑	
C13066	EPL CN: max. data PRes RPDO	11509	0x2CF5	A	100	UNSIGNED_16	1	☑	☑	
C13067	EPL MN: time-out iso. comm. CN	11508	0x2CF4	A	100	UNSIGNED_32	1	☑	☑	
C13071	EPL max. PDO data RPDO PReq	11504	0x2CF0	E	1	UNSIGNED_16	1	☑	☑	
C13072	EPL max. PDO data TPDO PRes	11503	0x2CEF	E	1	UNSIGNED_16	1	☑	☑	
C13074	EPL multi-stage cycle timing	11501	0x2CED	E	1	UNSIGNED_8	1	☑	☑	
C13075	EPL SDO channel width	11500	0x2CEC	E	1	UNSIGNED_16	1	☑	☑	
C13078	EPL CN: max. time - MN detection	11497	0x2CE9	E	1	UNSIGNED_32	1	☑	☑	
C13079	EPL multi-stage node declaration CN	11496	0x2CE8	A	100	UNSIGNED_8	1	☑	☑	
C13095	EPL communication status	11480	0x2CD8	E	1	UNSIGNED_8		☑		
C13096	EPL status list CN	11479	0x2CD7	A	100	UNSIGNED_8		☑		
C13102	EPL reset command	11473	0x2CD1	E	1	UNSIGNED_8	1	☑	☑	
C13103	EPL NMT command: release	11472	0x2CD0	E	1	UNSIGNED_8	1	☑	☑	
C13104	EPL NMT command: command ID	11471	0x2CCF	E	1	UNSIGNED_8	1	☑	☑	
C13105	EPL NMT command: target address	11470	0x2CCE	E	1	UNSIGNED_8	1	☑	☑	
C13110	EPL fault register	11465	0x2CC9	E	1	INTEGER_8		☑		
C13115	EPL MN: frame error (CRC)	11460	0x2CC4	A	3	UNSIGNED_32	1	☑	☑	
C13116	EPL MN: collision error	11459	0x2CC3	A	1	UNSIGNED_32	1	☑	☑	
C13117	EPL MN: cycle time violation	11458	0x2CC2	A	3	UNSIGNED_32	1	☑	☑	
C13118	EPL MN: link interruptions	11457	0x2CC1	E	1	UNSIGNED_32	1	☑	☑	
C13122	EPL CN response error	11453	0x2CBD	A	100	UNSIGNED_32	1	☑	☑	
C13124	EPL CN response error: monit. thresholds	11451	0x2CBB	A	100	UNSIGNED_32	1	☑	☑	
C13125	EPL MN: break after collision	11450	0x2CBA	E	1	UNSIGNED_32	1	☑	☑	
C13126	EPL CN: collision error	11449	0x2CB9	A	1	UNSIGNED_32	1	☑	☑	
C13127	EPL CN: sync loss	11448	0x2CB8	A	3	UNSIGNED_32	1	☑	☑	
C13131	EPL CN: frame error (CRC)	11444	0x2CB4	A	3	UNSIGNED_32	1	☑	☑	
C13132	EPL CN: link interruptions	11443	0x2CB3	E	1	UNSIGNED_32	1	☑		
C13136	EPL cycle counter	11439	0x2CAF	E	1	UNSIGNED_32	1	☑		
C13203	EPL CN response error	11372	0x2C6C	A	3	UNSIGNED_32	1	☑		
C13205	EPL CN response error: monit. thresholds	11370	0x2C6A	A	3	UNSIGNED_32	1	☑	☑	

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	Data type	Factor	R	W	CINH
C13219	EPL device type MN	11356	0x2C5C	A	3	UNSIGNED_32		☑	☑	
C13225	EPL MN: max. data RPDO	11350	0x2C56	A	3	UNSIGNED_16	1	☑	☑	
C13226	EPL status list MN	11349	0x2C55	A	3	UNSIGNED_8		☑		
C13228	EPL Time-out isochronous comm.	11347	0x2C53	A	3	UNSIGNED_32	1	☑	☑	
C13229	EPL multi-stage node declaration MN	11346	0x2C52	A	3	UNSIGNED_8	1	☑	☑	
C13231	EPL RPDO	11344	0x2C50	A	32	UNSIGNED_64		☑	☑	
C13232	EPL RPDO	11343	0x2C4F	A	32	UNSIGNED_64		☑	☑	
C13233	EPL RPDO	11342	0x2C4E	A	32	UNSIGNED_64		☑	☑	
C13234	EPL RPDO	11341	0x2C4D	A	32	UNSIGNED_64		☑	☑	
C13235	EPL RPDO	11340	0x2C4C	A	32	UNSIGNED_64		☑	☑	
C13236	EPL RPDO	11339	0x2C4B	A	32	UNSIGNED_64		☑	☑	
C13237	EPL RPDO	11338	0x2C4A	A	32	UNSIGNED_64		☑	☑	
C13238	EPL RPDO	11337	0x2C49	A	32	UNSIGNED_64		☑	☑	
C13239	EPL RPDO	11336	0x2C48	A	32	UNSIGNED_64		☑	☑	
C13240	EPL RPDO	11335	0x2C47	A	32	UNSIGNED_64		☑	☑	
C13484	EPL address: RPDO	11091	0x2B53	A	10	UNSIGNED_8	1	☑	☑	
C13489	EPL RPDO: object count	11086	0x2B4E	A	10	UNSIGNED_8	1	☑	☑	
C13531	EPL TPDO	11044	0x2B24	A	32	UNSIGNED_64		☑	☑	
C13789	EPL TPDO: object count	10786	0x2A22	A	1	UNSIGNED_8	1	☑	☑	
C13880	EPL quality lights	10695	0x29C7	E	1	UNSIGNED_8		☑		
C13881	EPL reset error counter	10694	0x29C6	E	1	UNSIGNED_8	1	☑	☑	
C13882	EPL reset cycle counter	10693	0x29C5	E	1	UNSIGNED_8	1	☑	☑	
C13883	EPL response when "DataExchange" is quit	10692	0x29C4	E	1	UNSIGNED_8	1	☑	☑	
C13885	EPL data RPDO: error response	10690	0x29C2	E	1	UNSIGNED_8	1	☑	☑	
C13891	EPL module error response	10684	0x29BC	A	5	UNSIGNED_8	1	☑	☑	
C13900	EPL firmware type	10675	0x29B3	E	1	VISIBLE_STRING		☑		
C13901	EPL firmware date	10674	0x29B2	E	1	VISIBLE_STRING		☑		
C13902	EPL firmware version	10673	0x29B1	E	1	VISIBLE_STRING		☑		
C13910	EPL module error	10665	0x29A9	E	1	UNSIGNED_32		☑		
C13911	EPL module warning	10664	0x29A8	E	1	UNSIGNED_32		☑		
C13919	EPL additional error info	10656	0x29A0	E	1	UNSIGNED_32		☑		
C13920	EPL DIP switch	10655	0x299F	E	1	UNSIGNED_8		☑		
C14000	EPL IP address	10575	0x294F	A	1	UNSIGNED_32		☑	☑	
C14001	EPL IP subnet mask	10574	0x294E	A	1	UNSIGNED_32		☑	☑	
C14003	EPL IP router address	10572	0x294C	A	1	UNSIGNED_32		☑	☑	
C14004	EPL MAC address	10571	0x294B	A	1	OCTET_STRING		☑		
C14027	EPL MN start-up	10548	0x2934	E	1	UNSIGNED_32		☑		
C14028	EPL node declaration CN	10547	0x2933	A	100	UNSIGNED_32		☑	☑	
C14029	EPL node declaration MN	10546	0x2932	A	3	UNSIGNED_32		☑	☑	
C14030	EPL device type	10545	0x2931	E	1	UNSIGNED_32		☑		
C14034	EPL identity object	10541	0x292D	A	1	UNSIGNED_32		☑	☑	
C14035	EPL device type CN	10540	0x292C	A	100	UNSIGNED_32		☑	☑	
C14040	EPL Feature Flags	10535	0x2927	E	1	UNSIGNED_32		☑		
C14041	EPL version	10534	0x2926	E	1	UNSIGNED_8		☑		
C14042	Current EPL device address	10533	0x2925	E	1	UNSIGNED_8	1	☑		
C14043	EPL device address selection	10532	0x2924	E	1	UNSIGNED_8	1	☑		
C14044	EPL device address SW	10531	0x2923	E	1	UNSIGNED_8	1	☑	☑	
C14045	EPL host name	10530	0x2922	E	1	VISIBLE_STRING		☑	☑	
C14060	EPL cycle time	10515	0x2913	E	1	UNSIGNED_32		☑	☑	
C14062	EPL MN: boot timing	10513	0x2911	A	5	UNSIGNED_32	1	☑	☑	

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	Data type	Factor	R	W	CINH
C14063	EPL MN cycle timing	10512	0x2910	A	2	UNSIGNED_32	1	☒	☒	
C14066	EPL CN: max. data PRes RPDO	10509	0x290D	A	100	UNSIGNED_16	1	☒	☒	
C14067	EPL MN: time-out iso. comm. CN	10508	0x290C	A	100	UNSIGNED_32	1	☒	☒	
C14071	EPL max. PDO data RPDO PReq	10504	0x2908	E	1	UNSIGNED_16	1	☒	☒	
C14072	EPL max. PDO data TPDO PRes	10503	0x2907	E	1	UNSIGNED_16	1	☒	☒	
C14074	EPL multi-stage cycle timing	10501	0x2905	E	1	UNSIGNED_8	1	☒	☒	
C14075	EPL SDO channel width	10500	0x2904	E	1	UNSIGNED_16	1	☒	☒	
C14078	EPL CN: max. time - MN detection	10497	0x2901	E	1	UNSIGNED_32	1	☒	☒	
C14079	EPL multi-stage node declaration CN	10496	0x2900	A	100	UNSIGNED_8	1	☒	☒	
C14095	EPL communication status	10480	0x28F0	E	1	UNSIGNED_8		☒		
C14096	EPL status list CN	10479	0x28EF	A	100	UNSIGNED_8		☒		
C14102	EPL reset command	10473	0x28E9	E	1	UNSIGNED_8	1	☒	☒	
C14103	EPL NMT command: release	10472	0x28E8	E	1	UNSIGNED_8	1	☒	☒	
C14104	EPL NMT command: command ID	10471	0x28E7	E	1	UNSIGNED_8	1	☒	☒	
C14105	EPL NMT command: target address	10470	0x28E6	E	1	UNSIGNED_8	1	☒	☒	
C14110	EPL fault register	10465	0x28E1	E	1	INTEGER_8		☒		
C14115	EPL MN: frame error (CRC)	10460	0x28DC	A	3	UNSIGNED_32	1	☒	☒	
C14116	EPL MN: collision error	10459	0x28DB	A	1	UNSIGNED_32	1	☒	☒	
C14117	EPL MN: cycle time violation	10458	0x28DA	A	3	UNSIGNED_32	1	☒	☒	
C14118	EPL MN: link interruptions	10457	0x28D9	E	1	UNSIGNED_32	1	☒	☒	
C14122	EPL CN response error	10453	0x28D5	A	100	UNSIGNED_32	1	☒	☒	
C14124	EPL CN response error: monit. thresholds	10451	0x28D3	A	100	UNSIGNED_32	1	☒	☒	
C14125	EPL MN: break after collision	10450	0x28D2	E	1	UNSIGNED_32	1	☒	☒	
C14126	EPL CN: collision error	10449	0x28D1	A	1	UNSIGNED_32	1	☒	☒	
C14127	EPL CN: sync loss	10448	0x28D0	A	3	UNSIGNED_32	1	☒	☒	
C14131	EPL CN: frame error (CRC)	10444	0x28CC	A	3	UNSIGNED_32	1	☒	☒	
C14132	EPL CN: link interruptions	10443	0x28CB	E	1	UNSIGNED_32	1	☒		
C14136	EPL cycle counter	10439	0x28C7	E	1	UNSIGNED_32	1	☒		
C14203	EPL CN response error	10372	0x2884	A	3	UNSIGNED_32	1	☒		
C14205	EPL CN response error: monit. thresholds	10370	0x2882	A	3	UNSIGNED_32	1	☒	☒	
C14219	EPL device type MN	10356	0x2874	A	3	UNSIGNED_32		☒	☒	
C14225	EPL MN: max. data RPDO	10350	0x286E	A	3	UNSIGNED_16	1	☒	☒	
C14226	EPL status list MN	10349	0x286D	A	3	UNSIGNED_8		☒		
C14228	EPL Time-out isochronous comm.	10347	0x286B	A	3	UNSIGNED_32	1	☒	☒	
C14229	EPL multi-stage node declaration MN	10346	0x286A	A	3	UNSIGNED_8	1	☒	☒	
C14231	EPL RPDO	10344	0x2868	A	32	UNSIGNED_64		☒	☒	
C14232	EPL RPDO	10343	0x2867	A	32	UNSIGNED_64		☒	☒	
C14233	EPL RPDO	10342	0x2866	A	32	UNSIGNED_64		☒	☒	
C14234	EPL RPDO	10341	0x2865	A	32	UNSIGNED_64		☒	☒	
C14235	EPL RPDO	10340	0x2864	A	32	UNSIGNED_64		☒	☒	
C14236	EPL RPDO	10339	0x2863	A	32	UNSIGNED_64		☒	☒	
C14237	EPL RPDO	10338	0x2862	A	32	UNSIGNED_64		☒	☒	
C14238	EPL RPDO	10337	0x2861	A	32	UNSIGNED_64		☒	☒	
C14239	EPL RPDO	10336	0x2860	A	32	UNSIGNED_64		☒	☒	
C14240	EPL RPDO	10335	0x285F	A	32	UNSIGNED_64		☒	☒	
C14484	EPL address: RPDO	10091	0x276B	A	10	UNSIGNED_8	1	☒	☒	
C14489	EPL RPDO: object count	10086	0x2766	A	10	UNSIGNED_8	1	☒	☒	
C14531	EPL TPDO	10044	0x273C	A	32	UNSIGNED_64		☒	☒	
C14789	EPL TPDO: object count	9786	0x263A	A	1	UNSIGNED_8	1	☒	☒	
C14880	EPL quality lights	9695	0x25DF	E	1	UNSIGNED_8		☒		

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	Data type	Factor	R	W	CINH
C14881	EPL reset error counter	9694	0x25DE	E	1	UNSIGNED_8	1	☒	☒	
C14882	EPL reset cycle counter	9693	0x25DD	E	1	UNSIGNED_8	1	☒	☒	
C14883	EPL response when "DataExchange" is quit	9692	0x25DC	E	1	UNSIGNED_8	1	☒	☒	
C14885	EPL data RPDO: error response	9690	0x25DA	E	1	UNSIGNED_8	1	☒	☒	
C14891	EPL module error response	9684	0x25D4	A	5	UNSIGNED_8	1	☒	☒	
C14900	EPL firmware type	9675	0x25CB	E	1	VISIBLE_STRING		☒		
C14901	EPL firmware date	9674	0x25CA	E	1	VISIBLE_STRING		☒		
C14902	EPL firmware version	9673	0x25C9	E	1	VISIBLE_STRING		☒		
C14910	EPL module error	9665	0x25C1	E	1	UNSIGNED_32		☒		
C14911	EPL module warning	9664	0x25C0	E	1	UNSIGNED_32		☒		
C14919	EPL additional error info	9656	0x25B8	E	1	UNSIGNED_32		☒		
C14920	EPL DIP switch	9655	0x25B7	E	1	UNSIGNED_8		☒		

12 POWERLINK objects

The following objects specified by the POWERLINK communication profile are supported:

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1000	NMT_DeviceType_U32	-	U32	R	R	C13030 / C14030		
0x1001	ERR_ErrorRegister_U8	-	I8	R	R	C13110 / C14110		
0x1006	NMT_CycleLen_U32	-	U32	RW	RW	C13060 / C14060		
0x1018.0x00	NMT_IdentityObject_REC	NumberOfEntries	U8	R	R	-	1	1
0x1018.0x01	NMT_IdentityObject_REC	VendorId_U32	U32	R	R	C13034/1 / C14034/1		
0x1030.0x00	NMT_InterfaceGroup_0h_REC	NumberOfEntries	U8	R	R	-	9	9
0x1030.0x01	NMT_InterfaceGroup_0h_REC	InterfaceIndex_U16	U16	R	R	Interface no. of the POWERLINK interface	0	0
0x1030.0x02	NMT_InterfaceGroup_0h_REC	InterfaceDescription_VSTR	VS3	R	R	Description of the POWERLINK interface	EPL	EPL
0x1030.0x03	NMT_InterfaceGroup_0h_REC	InterfaceType_U8	U8	R	R	Interface type	6	6: ethernet-csmacd
0x1030.0x04	NMT_InterfaceGroup_0h_REC	InterfaceMtu_U32	U32	R	R	Maximum frame size [byte]	1518	1518
0x1030.0x05	NMT_InterfaceGroup_0h_REC	InterfacePhysAddress_OSTR	OS6	R	R	C13004/1 / C14004/1		
0x1030.0x06	NMT_InterfaceGroup_0h_REC	InterfaceName_VSTR	VS16	RW	RW	Symb. name of the POWERLINK interface	EPL	-
0x1030.0x07	NMT_InterfaceGroup_0h_REC	InterfaceOperState_U8	U8	R	R	Operation status of the POWERLINK interface	-	0: down 1: up
0x1030.0x08	NMT_InterfaceGroup_0h_REC	InterfaceAdminState_U8	U8	RW	RW	Administration status of the POWERLINK interface	1	0: down 1: up
0x1030.0x09	NMT_InterfaceGroup_0h_REC	Valid_BOOL	BOOL	RW	RW	Release of the interface description	1	0: FALSE, 1: TRUE
0x1101.0x00	Dia_NMTTelegramCount_REC	NumberOfEntries	U8	R	R	-	1	1
0x1101.0x01	Dia_NMTTelegramCount_REC	IsochrCyc_U32	U32	R	R	C13136/1 / C14136/1		
0x1400.0x00	PDO_RxCommParam_00h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1400.0x01	PDO_RxCommParam_00h_REC	NodeId_U8	U8	RW	RW	C13484/1 / C14484/1		
0x1400.0x02	PDO_RxCommParam_00h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1401.0x00	PDO_RxCommParam_01h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1401.0x01	PDO_RxCommParam_01h_REC	NodeId_U8	U8	RW	RW	C13484/2 / C14484/2		
0x1401.0x02	PDO_RxCommParam_01h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1402.0x00	PDO_RxCommParam_02h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1402.0x01	PDO_RxCommParam_02h_REC	NodeId_U8	U8	RW	RW	C13484/3 / C14484/3		
0x1402.0x02	PDO_RxCommParam_02h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1403.0x00	PDO_RxCommParam_03h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1403.0x01	PDO_RxCommParam_03h_REC	NodeId_U8	U8	RW	RW	C13484/4 / C14484/4		
0x1403.0x02	PDO_RxCommParam_03h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1404.0x00	PDO_RxCommParam_04h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1404.0x01	PDO_RxCommParam_04h_REC	NodeId_U8	U8	RW	RW	C13484/5 / C14484/5		
0x1404.0x02	PDO_RxCommParam_04h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x14050x0.0	PDO_RxCommParam_05h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1405.0x01	PDO_RxCommParam_05h_REC	NodeId_U8	U8	RW	RW	C13484/6 / C14484/6		
0x1405.0x02	PDO_RxCommParam_05h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1406.0x00	PDO_RxCommParam_06h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1406.0x01	PDO_RxCommParam_06h_REC	NodeId_U8	U8	RW	RW	C13484/7 / C14484/7		

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1406.0x02	PDO_RxCommParam_06h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1407.0x00	PDO_RxCommParam_07h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1407.0x01	PDO_RxCommParam_07h_REC	NodeID_U8	U8	RW	RW	C13484/8 / C14484/8		
0x1407.0x02	PDO_RxCommParam_07h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1408.0x00	PDO_RxCommParam_08h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1408.0x01	PDO_RxCommParam_08h_REC	NodeID_U8	U8	RW	RW	C13484/9 / C14484/9		
0x1408.0x02	PDO_RxCommParam_08h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1409.0x00	PDO_RxCommParam_09h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1409.0x01	PDO_RxCommParam_09h_REC	NodeID_U8	U8	RW	RW	C13484/10 / C14484/10		
0x1409.0x02	PDO_RxCommParam_09h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1600.0x00	PDO_RxMappParam_00h_REC	NumberOfEntries	U8	RW	RW	C13489/1 / C14489/1		
0x1600.0x01...0x20	PDO_RxMappParam_00h_REC	ObjectMapping_U64	U64	RW	RW	C13231/1...32 / C14231/1...32		
0x1601.0x00	PDO_RxMappParam_01h_REC	NumberOfEntries	U8	RW	RW	C13489/2 / C14489/2		
0x1601.0x01...0x20	PDO_RxMappParam_01h_REC	ObjectMapping_U64	U64	RW	RW	C13232/1...32 / C14232/1...32		
0x1602.0x00	PDO_RxMappParam_02h_REC	NumberOfEntries	U8	RW	RW	C13489/3 / C14489/3		
0x1602.0x01...0x20	PDO_RxMappParam_02h_REC	ObjectMapping_U64	U64	RW	RW	C13233/1...32 / C14233/1...32		
0x1603.0x00	PDO_RxMappParam_03h_REC	NumberOfEntries	U8	RW	RW	C13489/4 / C14489/4		
0x1603.0x01...0x20	PDO_RxMappParam_03h_REC	ObjectMapping_U64	U64	RW	RW	C13234/1...32 / C14234/1...32		
0x1604.0x00	PDO_RxMappParam_04h_REC	NumberOfEntries	U8	RW	RW	C13489/5 / C14489/5		
0x1604.0x01...0x20	PDO_RxMappParam_04h_REC	ObjectMapping_U64	U64	RW	RW	C13235/1...32 / C14235/1...32		
0x1605.0x00	PDO_RxMappParam_05h_REC	NumberOfEntries	U8	RW	RW	C13489/6 / C14489/6		
0x1605.0x01...0x20	PDO_RxMappParam_05h_REC	ObjectMapping_U64	U64	RW	RW	C13236/1...32 / C14236/1...32		
0x1606.0x00	PDO_RxMappParam_06h_REC	NumberOfEntries	U8	RW	RW	C13489/7 / C14489/7		
0x1606.0x01...0x20	PDO_RxMappParam_06h_REC	ObjectMapping_U64	U64	RW	RW	C13237/1...32 / C14237/1...32		
0x1607.0x00	PDO_RxMappParam_07h_REC	NumberOfEntries	U8	RW	RW	C13489/8 / C14489/8		
0x1607.0x01...0x20	PDO_RxMappParam_07h_REC	ObjectMapping_U64	U64	RW	RW	C13238/1...32 / C14238/1...32		
0x1608.0x00	PDO_RxMappParam_08h_REC	NumberOfEntries	U8	RW	RW	C13489/9 / C14489/9		
0x1608.0x01...0x20	PDO_RxMappParam_08h_REC	ObjectMapping_U64	U64	RW	RW	C13239/1...32 / C14239/1...32		
0x1609.0x00	PDO_RxMappParam_09h_REC	NumberOfEntries	U8	RW	RW	C13489/10 / C14489/10		
0x1609.0x01...0x20	PDO_RxMappParam_09h_REC	ObjectMapping_U64	U64	RW	RW	C13240/1...32 / C14240/1...32		
0x1800.0x00	PDO_TxCommParam_00h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1800.0x01	PDO_TxCommParam_00h_REC	NodeID_U8	U8	R	R	Node ID of the receiver	0	0 (pseudo node ID for PRes-Tx)
0x1800.0x02	PDO_TxCommParam_00h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1A00.0x00	PDO_RxMappParam_00h_REC	NumberOfEntries	U8	RW	RW	C13789/1 / C14789/1		
0x1A00.0x01...0x20	PDO_TxMappParam_00h_REC	ObjectMapping_U64	U64	RW	RW	C13531/1...32 / C14531/1...32		
0x1C00.0x00	DLL_MNCRCErrREC	NumberOfEntries	U8	R	-	-	1	1
0x1C00.0x01	DLL_MNCRCErrREC	CumulativeCnt_U32	U32	R	-	C13115/1 / C14115/1		
0x1C00.0x02	DLL_MNCRCErrREC	ThresholdCnt_U32	U32	R	-	C13115/2 / C14115/2		
0x1C00.0x03	DLL_MNCRCErrREC	Threshold_U32	U32	RW	-	C13115/3 / C14115/3		
0x1C01.0x00	DLL_MNCCollision_REC	NumberOfEntries	U8	R	-	-	1	1

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1C01.0x01	DLL_MNCollision_REC	CumulativeCnt_U32	U32	R	-	C13116/1 / C14116/1		
0x1C02.0x00	DLL_MNCycTimeExceed_REC	NumberOfEntries	U8	R	-	-	3	3
0x1C02.0x01	DLL_MNCycTimeExceed_REC	CumulativeCnt_U32	U32	R	-	C13117/1 / C14117/1		
0x1C02.0x02	DLL_MNCycTimeExceed_REC	ThresholdCnt_U32	U32	R	-	C13117/2 / C14117/2		
0x1C02.0x03	DLL_MNCycTimeExceed_REC	Threshold_U32	U32	RW	-	C13117/3 / C14117/3		
0x1C03	DLL_MNLossOfLinkCum_U32	-	U32	R	-	C13118 / C14118		
0x1C07.0x00	DLL_CNLossPResCumCnt_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1C07.0x01 ...0x64	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	R	-	C13122/1...100 / C14122/1...100		
0x1C07.0x65 ...0xEF	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	-	-	not supported		
0x1C07.0xF0	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	R	-	C13117/1 / C14117/1		
0x1C07.0xF1 ...0xFC	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	-	-	not supported		
0x1C07.0xFD	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	R	-	C13117/2 / C14117/2		
0x1C07.0xFE	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	R	-	C13117/3 / C14117/3		
0x1C08.0x00	DLL_CNLossPResThrCnt_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1C08.0x01 ...0x64	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	R	-	not supported		
0x1C08.0x65 ...0xEF	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	-	-	not supported		
0x1C08.0xF0	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	R	-	not supported		
0x1C08.0xF1 ...0xFC	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	-	-	not supported		
0x1C08.0xFD	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	R	-	not supported		
0x1C08.0xFE	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	R	-	not supported		
0x1C09.0x00	DLL_CNLossPResThreshold_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1C09.0x01 ...0x64	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	C13124/1...100 / C14124/1...100		
0x1C09.0x65 ...0xEF	DLL_CNLossPResThreshold_AU32	Threshold	U32	-	-	not supported		
0x1C09.0xF0	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	C13205/1 / C14205/1		
0x1C09.0xF1 ...0xFC	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	not supported		
0x1C09.0xFD	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	C13205/2 / C14205/2		
0x1C09.0xFE	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	C13205/3 / C14205/3		
0x1C0A.0x00	DLL_CNCollision_REC	NumberOfEntries	U8	-	R	-	1	1
0x1C0A.0x01	DLL_CNCollision_REC	CumulativeCnt_U32	U32	-	R	C13126/1 / C14126/1		
0x1C0B.0x00	DLL_CNLossSoC_REC	NumberOfEntries	U8	-	R	-	3	3
0x1C0B.0x01	DLL_CNLossSoC_REC	CumulativeCnt_U32	U32	-	R	C13127/1 / C14127/1		
0x1C0B.0x02	DLL_CNLossSoC_REC	ThresholdCnt_U32	U32	-	R	C13127/2 / C14127/2		
0x1C0B.0x03	DLL_CNLossSoC_REC	Threshold_U32	U32	-	RW	C13127/3 / C14127/3		
0x1C0F.0x00	DLL_CNCRCErrRec_REC	NumberOfEntries	U8	-	R	-	1	1
0x1C0F.0x01	DLL_CNCRCErrRec_REC	CumulativeCnt_U32	U32	-	R	C13131/1 / C14131/1		
0x1C0F.0x02	DLL_CNCRCErrRec_REC	ThresholdCnt_U32	U32	-	R	C13131/2 / C14131/2		
0x1C0F.0x03	DLL_CNCRCErrRec_REC	Threshold_U32	U32	-	RW	C13131/3 / C14131/3		
0x1C10	DLL_CNLossOfLinkCum_U32	-	U32	-	R	C13132 / C14132		
0x1C12	DLL_MNCycleSuspendNumber_U32	-	U32	RW	-	C13125 / C14125		
0x1E40.0x00	NWL_IpAddrTable_0h_REC	NumberOfEntries	U8	R	R	-	5	5
0x1E40.0x01	NWL_IpAddrTable_0h_REC	IflIndex_U16	U16	R	R	-	0	0
0x1E40.0x02	NWL_IpAddrTable_0h_REC	Addr_IPAD	U32	R	R	C13000/1 / C14000/1		
0x1E40.0x03	NWL_IpAddrTable_0h_REC	NetMask_IPAD	U32	R	R	C13001/1 / C14001/1		

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1E40.0x04	NWL_IpAddrTable_0h_REC	ReasmMaxSize_U16	U16	R	R	Maximum frame size which can be reconstructed from frames arriving in fragments [byte].	1518	1518
0x1E40.0x05	NWL_IpAddrTable_0h_REC	DefaultGateway_IPAD	U32	RW	RW	C13003/1 / C14003/1		
0x1E4A.0x00	NWL_IpGroup_REC	NumberOfEntries	U8	R	R	-	3	3
0x1E4A.0x01	NWL_IpGroup_REC	Forwarding_BOOL	BOOL	R	R	Release for IP router function	0	0 - FALSE
0x1E4A.0x02	NWL_IpGroup_REC	DefaultTTL_U16	U16	RW	RW	TimeToLive value for transmitted IP frames Limits the range with regard to router stations passed.	255	0 ... 255
0x1E4A.0x03	NWL_IpGroup_REC	ForwardingDatagrams_U32	U32	R	R	Counter for routed frames	-	-
0x1F80	NMT_StartUp_U32	-	U32	RW	-	C13027 / C14027		
0x1F81.0x00	NMT_NodeAssignment_AU32	NumberOfEntries	U8	R	R	-	254	254
0x1F81.0x01 ... 0x64	NMT_NodeAssignment_AU32	NodeAssignment	U32	RW	RW	C13028/1...100 / C14028/1...100		
0x1F81.0x65 ... 0xEF	NMT_NodeAssignment_AU32	NodeAssignment	U32	-	-	not supported		
0x1F81.0xF0	NMT_NodeAssignment_AU32	NodeAssignment	U32	RW	RW	C13029/1 / C14029/1		
0x1F81.0xF1 ... 0xFC	NMT_NodeAssignment_AU32	NodeAssignment	U32	-	-	not supported		
0x1F81.0xFD	NMT_NodeAssignment_AU32	NodeAssignment	U32	RW	RW	C13029/2 / C14029/2		
0x1F81.0xFE	NMT_NodeAssignment_AU32	NodeAssignment	U32	RW	RW	C13029/3 / C14029/3		
0x1F82	NMT_FeatureFlags_U32	-	U32	R	R	C13040 / C14040		
0x1F83	NMT_EPLVers_U8	-	U8	R	R	C13041 / C14041		
0x1F84.0x00	NMT_MNDeviceTypeList_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1F84.0x01 ... 0x64	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	RW	-	C13035/1...100 / C14035/1...100		
0x1F84.0x65 ... 0xEF	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	-	-	not supported		
0x1F84.0xF0	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	RW	-	C13219/1 / C14219/1		
0x1F84.0xF1 ... 0xFC	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	-	-	not supported		
0x1F84.0xFD	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	RW	-	C13219/2 / C14219/2		
0x1F84.0xFE	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	RW	-	C13219/3 / C14219/3		
0x1F89.0x00	NMT_BootTime_REC	NumberOfEntries	U8	R	-	-	5	5
0x1F89.0x01	NMT_BootTime_REC	MNWaitNotAct_U32	U32	RW	-	C13062/1 / C14062/1		
0x1F89.0x02	NMT_BootTime_REC	MNTimeoutPreOp1_U32	U32	RW	-	C13062/2 / C14062/2		
0x1F89.0x03	NMT_BootTime_REC	MNWaitPreOp1_U32	U32	RW	-	C13062/3 / C14062/3		
0x1F89.0x04	NMT_BootTime_REC	MNTimeoutPreOp2_U32	U32	RW	-	C13062/4 / C14062/4		
0x1F89.0x05	NMT_BootTime_REC	MNTimeoutReadyToOp_U32	U32	RW	-	C13062/5 / C14062/5		
0x1F8A.0x00	NMT_MNCycleTiming_REC	NumberOfEntries	U8	R	-	-	2	2
0x1F8A.0x01	NMT_MNCycleTiming_REC	WaitSoCPReq_U32	U32	RW	-	C13063/1 / C14063/1		
0x1F8A.0x02	NMT_MNCycleTiming_REC	AsyncSlotTimeout_U32	U32	RW	-	C13063/2 / C14063/2		
0x1F8B.0x00	NMT_MNPreReqPayloadList_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1F8B.0x01 ... 0x64	NMT_MNPreReqPayloadList_AU32	CNPreReqPayload	U32	RW	-	Maximum user data size in the CN-addressing PReq frame [byte], Node ID = subcode no.	36	36
0x1F8B.0x65 ... 0xEF	NMT_MNPreReqPayloadList_AU32	CNPreReqPayload	U32	-	-	not supported	36	36
0x1F8B.0xF0	NMT_MNPreReqPayloadList_AU32	CNPreReqPayload	U32	RW	-	Maximum user data size in the CN-addressing PReq frame [byte], Node ID = subcode no.	36	36

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1F8B.0xF1 ...0xFC	NMT_MNPReqPayloadList_ AU32	CNPReqPayload	U32	-	-	not supported	36	36
0x1F8B.0xFD ...0xFE	NMT_MNPReqPayloadList_ AU32	CNPReqPayload	U32	RW	-	Maximum user data size in the CN- addressing PReq frame [byte], Node ID = subcode no.	36	36
0x1F8C	NMT_CurrState_U8	-	U8	R	R	C13095 / C14095		
0x1F8D.0x00	NMT_MNPResPayloadList_ AU32	NumberOfEntries	U8	R	R	-	254	254
0x1F8D.0x01 ...0x64	NMT_MNPResPayloadList_ AU32	PResPayload	U16	RW	RW	C13066/1...100 / C14066/1...100		
0x1F8D.0x65 ...0xEF	NMT_MNPResPayloadList_ AU32	PResPayload	U16	-	-	not supported		
0x1F8D.0xF0	NMT_MNPResPayloadList_ AU32	PResPayload	U16	RW	RW	C13225/1 / C14225/1		
0x1F8D.0xF1 ...0xFC	NMT_MNPResPayloadList_ AU32	PResPayload	U16	-	-	not supported		
0x1F8D.0xFD	NMT_MNPResPayloadList_ AU32	PResPayload	U16	RW	RW	C13225/2 / C14225/2		
0x1F8D.0xFE	NMT_MNPResPayloadList_ AU32	PResPayload	U16	RW	RW	C13225/3 / C14225/3		
0x1F8E.0x00	NMT_MNCNCurrState_AU8	NumberOfEntries	U8	R	-	-	254	254
0x1F8E.0x01 ...0x64	NMT_MNCNCurrState_AU8	CNCurrState	U8	R	-	C13096/1...100 / C14096/1...100		
0x1F8E.0x65 ...0xEF	NMT_MNCNCurrState_AU8	CNCurrState	U8	-	-	not supported		
0x1F8E.0xF0	NMT_MNCNCurrState_AU8	CNCurrState	U8	R	-	C13226/1 / C14226/1		
0x1F8E.0xF1 ...0xFC	NMT_MNCNCurrState_AU8	CNCurrState	U8	-	-	not supported		
0x1F8E.0xFD	NMT_MNCNCurrState_AU8	CNCurrState	U8	R	-	C13226/2 / C14226/2		
0x1F8E.0xFE	NMT_MNCNCurrState_AU8	CNCurrState	U8	R	-	C13226/3 / C14226/3		
0x1F92.0x00	NMT_MNCNResTimeout_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1F92.0x01 ...0x64	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	RW	-	C13067/1...100 / C14067/1...100		
0x1F92.0x65 ...0xEF	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	-	-	not supported		
0x1F92.0xF0	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	RW	-	C13228/1 / C14228/1		
0x1F92.0xF1 ...0xFC	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	-	-	not supported		
0x1F92.0xFD	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	RW	-	C13228/2 / C14228/2		
0x1F92.0xFE	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	RW	-	C13228/3 / C14228/3		
0x1F93.0x00	NMT_EPLNodeID_REC	NumberOfEntries	U8	R	R	-	3	3
0x1F93.0x01	NMT_EPLNodeID_REC	NodeID_U8	U8	R	R	C13042 / C14042		
0x1F93.0x02	NMT_EPLNodeID_REC	NodeIDByHW_BOOL	BOOL	R	R	C13043 / C14043		
0x1F93.0x03	NMT_EPLNodeID_REC	SWNodeID_U8	U8	RW	RW	C13044 / C14044		
0x1F98.0x00	NMT_CycleTiming_REC	NumberOfEntries	U8	R	R	-	9	9
0x1F98.0x01	NMT_CycleTiming_REC	IsochrTxMaxPayload_ U16	U16	R	R	Size of the isochronous transmit memory	1490	1490
0x1F98.0x02	NMT_CycleTiming_REC	IsochrRxMaxPayload_ U16	U16	R	R	Size of the isochronous receive memory	1490	1490
0x1F98.0x03	NMT_CycleTiming_REC	PResMaxLatency_U32	U32	-	R	Isochronous response delay [ns]	2000	2000
0x1F98.0x04	NMT_CycleTiming_REC	PReqActPayload_U16	U16	-	RW	C13071 / C14071		
0x1F98.0x05	NMT_CycleTiming_REC	PResActPayload_U16	U16	RW	RW	C13072 / C14072		
0x1F98.0x06	NMT_CycleTiming_REC	ASndMaxLatency_U32	U32	-	R	Asynchronous response delay [ns]	80000	80000
0x1F98.0x07	NMT_CycleTiming_REC	MultipleCycleCnt_U8	U8	RW	RW	C13074 / C14074	0	0
0x1F98.0x08	NMT_CycleTiming_REC	AsyncMTUSize_U16	U16	RW	RW	C13075 / C14075		
0x1F98.0x09	NMT_CycleTiming_REC	Prescaler_U16	U16	RW	RW	not supported		

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1F99	NMT_CNBasicEthernetTimeout_U32	-	U32	-	RW	C13078 / C14078		
0x1F9A	NMT_HostName_VSTR	-	VS32	RW	RW	C13045 / C14045		
0x1F9B.0x01 ...0x64	NMT_MultiplCycleAssign_AU8	CycleNo	U8	RW	RW	C13079 / C14079	0	0 ... value of index 0x1F98. 0x07
0x1F9B.0xF0	NMT_MultiplCycleAssign_AU8	CycleNo	U8	RW	RW	C13229/1 / C14229/1	0	
0x1F9B.0xFD	NMT_MultiplCycleAssign_AU8	CycleNo	U8	RW	RW	C13229/2 / C14229/2	0	
0x1F9B.0xFE	NMT_MultiplCycleAssign_AU8	CycleNo	U8	RW	RW	C13229/3 / C14229/3	0	
0x1F9E	NMT_ResetCmd_U8	-	U8	W	W	C13102 / C14102		
0x1F9F.0x00	NMT_RequestCmd_REC	NumberOfEntries	U8	R	-	-	4	4
0x1F9F.0x01	NMT_RequestCmd_REC	Release_BOOL	BOOL	RW	-	C13103 / C14103		
0x1F9F.0x02	NMT_RequestCmd_REC	CmdID_U8	U8	RW	-	C13104 / C14104		
0x1F9F.0x03	NMT_RequestCmd_REC	CmdTarget_U8	U8	RW	-	C13105 / C14105		
0x1F9F.0x04	NMT_RequestCmd_REC	CmdData_DOM	DOM	R	-	User data to command from subcode 2	blank	blank

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Your opinion is important to us

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

Perhaps we have not succeeded in achieving this objective in every respect. If you have suggestions for improvement, please e-mail us to:

feedback-docu@lenze.com

Thank you very much for your support.

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E94AYCEC

POWERLINK CN

Servo Drives 9400 -----

Communication Manual

EN



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1 About this documentation

Contents

This documentation exclusively describes the E94AYCEC communication module (POWERLINK).



Note!

This documentation supplements the **mounting instructions** supplied with the drive and the **"Servo Drives 9400" hardware manual**.

The mounting instructions contain safety instructions which must be observed!

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

Examples illustrate typical applications.

The theoretical context is only explained as far as it is required for understanding 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 host (PLC).

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



Tip!

Detailed information on POWERLINK can be found on the website of the "Ethernet POWERLINK Standardization Group":

www.ethernet-powerlink.org

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

Information regarding the validity

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

Extension module	Type designation	From hardware version	From software version
Communication module POWERLINK	E94AYCEC	VB	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 installed engineering tools (e.g. »Engineer«), the screenshots in this documentation may differ from the screen representation.

1 About this documentation

1.1 Document history

1.1 Document history

Version			Description
1.0	11/2007	TD17	First edition
2.0	09/2012	TD17	General revision
3.0	08/2014	TD17	• New layout • General updates

1 About this documentation

1.2 Conventions used

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

Type of information	Writing	Examples/notes
Spelling of numbers		
Decimal	Standard notation	Example: 1234
Decimal separator	Point	The decimal point is always used. For 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	Blue text colour	All information that applies to from a certain software version of the device onwards are marked accordingly in this documentation. Example: This function extension is available from software version V3.0 onwards!
Program name	» «	The Lenze PC software »Engineer«...
Control element	bold	The OK button ... / The Copy command ... / The Properties tab ... / The Name input field ...
Sequence of menu commands		If several commands are required to execute one function, the single commands are separated by an arrow: Select the File → Open command to...
Hyperlink	Underlined	Optically highlighted reference to another topic. It is activated with a mouse-click in this online documentation.
Icons		
Page reference	(8)	Optically highlighted reference to another page. In this online documentation activated via mouse-click.
Step-by-step instructions		Step-by-step instructions are indicated by a pictograph.

1.3

Terminology used

Term	Meaning
Inverter	Lenze controller of the "Servo Drives 9400" product series for which the communication module can be used. ► Application as directed (□ 12)
Standard device	
CN	Controlled node (POWERLINK slave)
Code	Parameter which serves to parameterise and monitor the drive. In normal usage, the term is usually referred to as "Index".
Subcode	If a code contains several parameters, they are stored in "subcodes". In the documentation, the slash "/" is used as a separator between the code and the subcode (e.g. "C00118/3"). In everyday language, the term is also referred to as "subindex".
»Engineer«	Lenze PC software which supports you during the "Engineering" process (parameterisation, diagnostics, and configuration) throughout the whole life cycle, i. e. from planning to maintenance of the machine commissioned.
EPL	Abbreviation for "Ethernet POWERLINK"
(EPL) nodes	POWERLINK nodes (Managing Node, Controlled Nodes)
	POWERLINK is a real-time capable fieldbus system based on Ethernet. For user data exchange, POWERLINK specifies a communication protocol based on CANopen. POWERLINK is a patented technology, licenced by the Ethernet POWERLINK Standardization Group (EPSG), Germany.
HW	Hardware
Host	SPS, Managing Node (POWERLINK master)
Lenze setting	Default settings of the device, preconfigured ex works.
Basic setting	
MN	Managing node (POWERLINK master) The managing node accepts the control function for the data communication of the decentralised field devices. Typically, the managing node is the communication interface of a PLC.
Node ID	POWERLINK node address
SW	Software

1.4

Notes used

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

Safety instructions

Layout of the safety instructions:



Pictograph and signal word!

(characterise the type and severity of danger)

Note

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

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

2

Safety instructions

**Note!**

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

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

2.1

General safety and application notes

**Danger!**

If the following basic safety measures are disregarded, severe injuries to persons and damage to material assets may result.

Lenze drive and automation components ...

- must only be used as directed.
 - [Application as directed](#) (12)
- must never be commissioned if they display signs of damage.
- must never be technically modified.
- must never be commissioned if they are not fully mounted.
- must never be operated without required covers.
- during and after operation can have live, moving and rotating parts, depending on their degree of protection. Surfaces can be hot.

The following applies to Lenze drive components ...

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

Observe all specifications contained in the enclosed documentation and related documentation.

- This is the precondition for safe and trouble-free operation and for achieving the product features specified.
 - [Product features](#) (13)
- The specifications, processes, and circuitry described in this document are for guidance only and must be adapted to your own specific application. Lenze does not take responsibility for the suitability of the process and circuit proposals.

All works on and with Lenze drive and automation components must only be carried out by qualified personnel. According to IEC 60364 or CENELEC HD 384 these are persons who ...

- are familiar with installing, mounting, commissioning, and operating the product.
- who have the corresponding qualifications for their work.
- who know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

2.2**Device and application-specific safety instructions**

- During operation, the communication module must be securely connected to the standard device.
- With external voltage supply, always use a separate power supply unit, safely separated to EN 61800-5-1 in every control cabinet (SELV/PELV).
- Only use cables corresponding to the given specifications.
 - ▶ [Ethernet cable specification](#) (📖 31)

**Documentation on standard device, host (PLC), system/machine**

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

2.3**Residual hazards****Protection of persons**

If Servo Drives 9400 are used on a phase earthed mains with a rated mains voltage ≥ 400 V, protection against accidental contact is not guaranteed without external measures.

- ▶ [Protective insulation](#) (📖 18)

Device protection

The communication module contains electronic components which may be damaged or destroyed by electrostatic discharge.

- ▶ [Installation](#) (📖 22)

3 Product description

3.1 Application as directed

The communication module ...

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

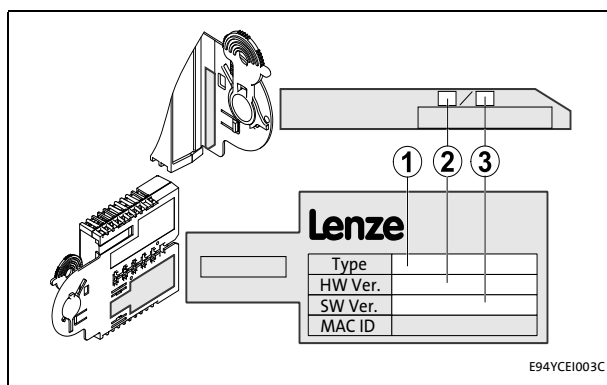
Product series	Type designation	From hardware version	From software version
Servo Drives 9400 HighLine	E94AxHExxx	VB	01.50
Servo Drives 9400 PLC	E94AxPExxx	VA	02.00
Regenerative power supply module	E94ARNxxxx	VA	01.00

- is a device intended for use in industrial power systems.
- should only be used under the operating conditions prescribed in this documentation.
- can only be used in POWERLINK networks.

Any other use shall be deemed inappropriate!

3.2 Identification

The type designation and hardware and software version of the communication module are specified on the nameplate:



1 Type designation (type)

E94 Product series
A Version
Y Module identification: Extension module
C Module type: Communication module
EC POWERLINK CN

2 Hardware version (HW)

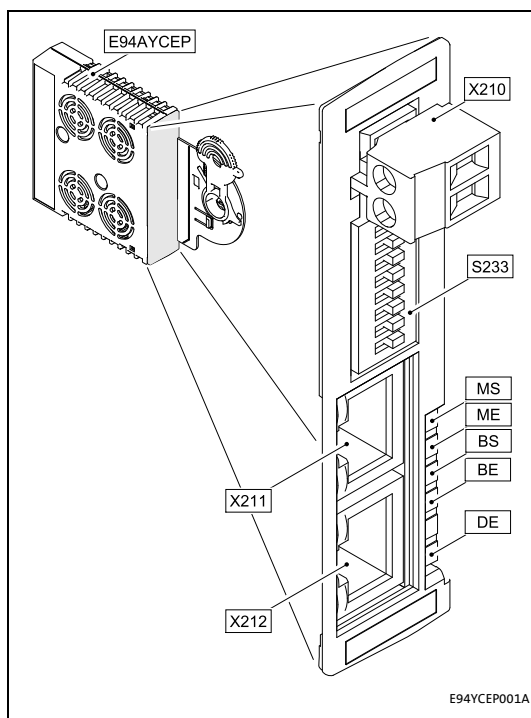
3 Software version (SW)

[3-1] Identification data

3.3**Product features**

- Interface module for the POWERLINK communication system to be connected to the expansion slots of the Servo Drives 9400
- The communication module can either be supplied internally by the standard device or externally by a separate voltage source.
- Real time Ethernet with the POWERLINK V2 communication profile for motion and general applications
- A line topology can be implemented by means of the integrated 2-port hub.
- Supported functionality: POWERLINK CN (controlled node)
- Use of max. 10 PDO crosslinks for the Managing Node or the Controlled Node to create systems with "distributed intelligence"
- Very short CN response times for optimal network performance
- Parallel Ethernet communication between the Lenze »Engineer« and the Servo Drive 9400 if a POWERLINK router is used.
- Access to all Lenze parameters

3.4 Terminals and interfaces



[3-2] Communication module E94AYCEC (POWERLINK CN)

X250 External voltage supply of the communication module

- 2-pole connector with screw connection
- ▶ [External voltage supply](#) (43)

X251 POWERLINK port 1

X252 POWERLINK port 2

- RJ45-sockets
- each with 2 LED status displays for diagnostics
- ▶ [POWERLINK connection](#) (29)
- ▶ [Status displays at the RJ45 sockets \(X251, X252\)](#) (48)

S233 DIP switch for setting the node address (Node ID)

- ▶ [Node address setting](#) (35)

MS LED status displays for diagnostic purposes

ME ▶ [Module status displays](#) (46)

BS ▶ [Fieldbus status displays](#) (47)

BE

DE

4

Technical data

4.1

General data and operating conditions

Range	Values	
Order designation	E94AYCEC	
Communication profile	POWERLINK V2	
Communication medium	S/FTP (Screened Foiled Twisted Pair, ISO/IEC 11801 or EN 50173), CAT 5e	
Interface for communication	RJ45, Standard Ethernet (according to IEEE 802.3), 100Base-TX (Fast Ethernet)	
Network topology	Tree, star, line	
Max. cable length	Number of nodes x 100 m	
Cable length between 2 nodes/hubs	max. 100 m	
Baud rate	100 Mbps	
Type of node	Controlled node	
Node addresses (Node IDs)	1 ... 100	E94AYCEC is controlled node with Lenze module E94AYCEP as managing node.
	1 ... 239	E94AYCEC is Controlled Node with Managing Node of another manufacturer.
Voltage supply	External supply via separate power supply unit +: U = 24 V DC (20.4 V ... 28.8 V), I = 140 mA -: Reference potential for external voltage supply	
Conformities, approvals	CE	2004/108/EC, EMC Directive 2006/95/EC, Low-Voltage Directive
	EAC	Eurasian conformity TR CU: Technical Regulations of Customs Union
		TP TC 004/2011 (TR CU 004/2011) About the safety of low voltage equipment
		TP TC 020/2011 (TR CU 020/2011) Electromagnetic compatibility of technical products
	UL	UL 508C, Power Conversion Equipment (File-No. E132659)



Servo Drives 9400 hardware manual

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

4.2

POWERLINK communication data

Range	Values
Jitter synchronisation information	approx. 1 µs
Minimum cycle time	Controlled Node: 0.5 ms
Total cycle times	Controlled Node: 0.5 / 1.0 / 2.0 / 3.0 ... 20.0 ms
Buffer size	Tx-iso: max. 92 bytes (64 bytes of PDO user data)
	Rx-iso: max. 328 Bytes (300 bytes of PDO user data)
Delay times (Controlled Node)	$T_{\text{Preq}} - T_{\text{Res}}$: approx. 1 µs
	$T_{\text{SoA}} - T_{\text{ASnd}}$: approx. 20 µs
Dead times for Managing Node	Between 2 transmission messages: min. 1 µs
	Between receive and transmit frame: min. 1 µs
Frame size	Max. asynchronous frame size (MTU): 1518 bytes
SDO communication method	UDP/IP
Number of RPDOs	Max. 10 channels (max. 300 bytes of PDO user data per channel)
RPDO user data per application (all RPDOs)	Max. 32 objects (max. 64 bytes)
Number of TPDOs	1 channel (data access of all nodes by broadcasting)
TPDO user data per application	Max. 32 objects (max. 64 bytes)

4.2.1

Operating mode "Controlled Node"

- Support of multiplexed CNs
- Support of optional CNs

4.2.2 Communication time

Parameter data (SDO)

The communication time for parameter data is the time between the transmission of an SDO request and the arrival of the corresponding response.

- The processing time in the Servo Drive 9400 is approx. 30 ms + 20 ms tolerance (typical)
- For some codes, the processing time may be longer (see reference manual/»Engineer« online help for the Servo Drive 9400).

Process data (PDO)

The communication time for process data is the time between the reception of a PDO with setpoints and the return of a PDO with the current actual values.

The communication times for process data depend on ...

- processing time in the Servo Drive 9400 (interval time of the application task, process data mode);
- Telegram runtime on the fieldbus (telegram length, number of nodes, PDO update time, instant of transmission of the POWERLINK telegram);
- Use of the synchronisation to the POWERLINK cycles.

Processing time

The basic conditions mentioned above cause the following processing times for the process data in the Servo Drive 9400:

- Process data for synchronised operation: approx. 1.2 ms
- Process data for non-synchronised operation: approx. 3.0 ms

4.3

Protective insulation

**Danger!****Dangerous voltage**

If the Servo Drives 9400 are operated on a phase earthed mains with a rated mains voltage ≥ 400 V, external measures need to be implemented in order to ensure protection against accidental contact.

Possible consequences:

Death or severe injuries

Protective measures:

If protection against accidental contact is required for the control terminals of the Servo Drive 9400 and the connections of the plugged device modules, ...

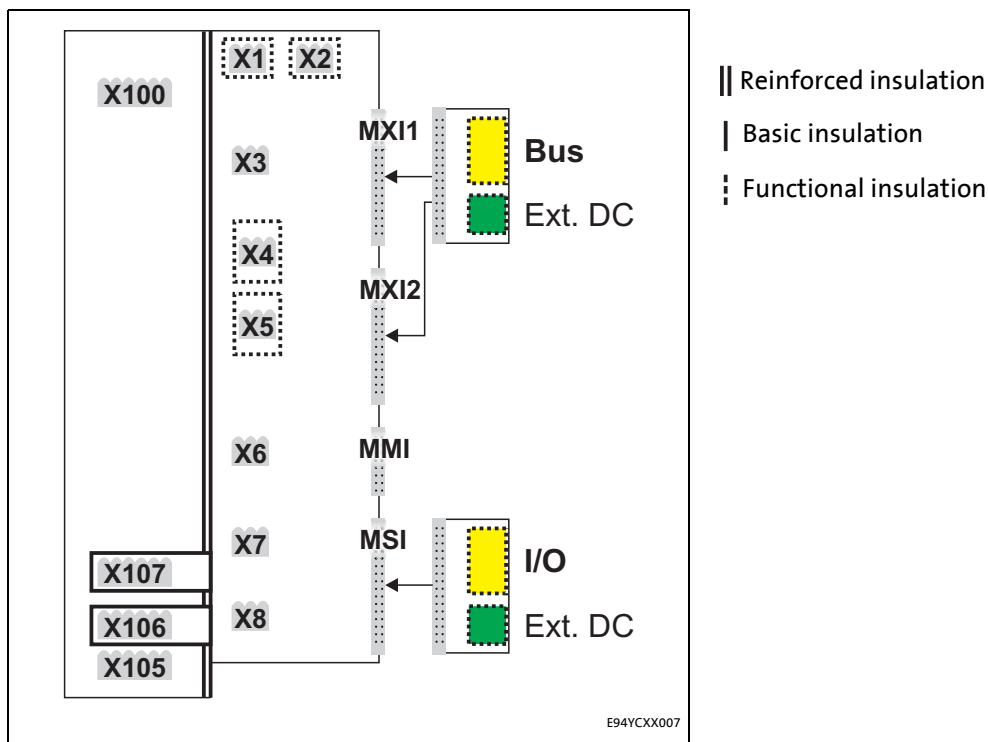
- a double isolating distance must exist.
- the components to be connected must be provided with the second isolating distance.

**Note!**

The protective insulation provided in Servo Drives 9400 is implemented in accordance with EN 61800-5-1.

The following illustration ...

- shows the arrangement of the terminal strips and the separate potential areas of the Servo Drive 9400.
- 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	Terminal strip	Connection
X100	L1, L2, L3 (Single Drive only)	X1	CAN on board 9400
	+UG, -UG	X2	State bus
X105	U, V, W		24 V (ext.)
	Rb1, Rb2 (Single Drive only)	X3	Analog inputs/outputs
X106	Motor PTC	X4	Digital outputs
X107	Control of the motor holding brake	X5	Digital inputs
		X6	Diagnostics
		X7	Resolver
		X8	Encoder
		MXI1, MXI2	Extension module
		MMI	Memory module
		MSI	Safety module

Example

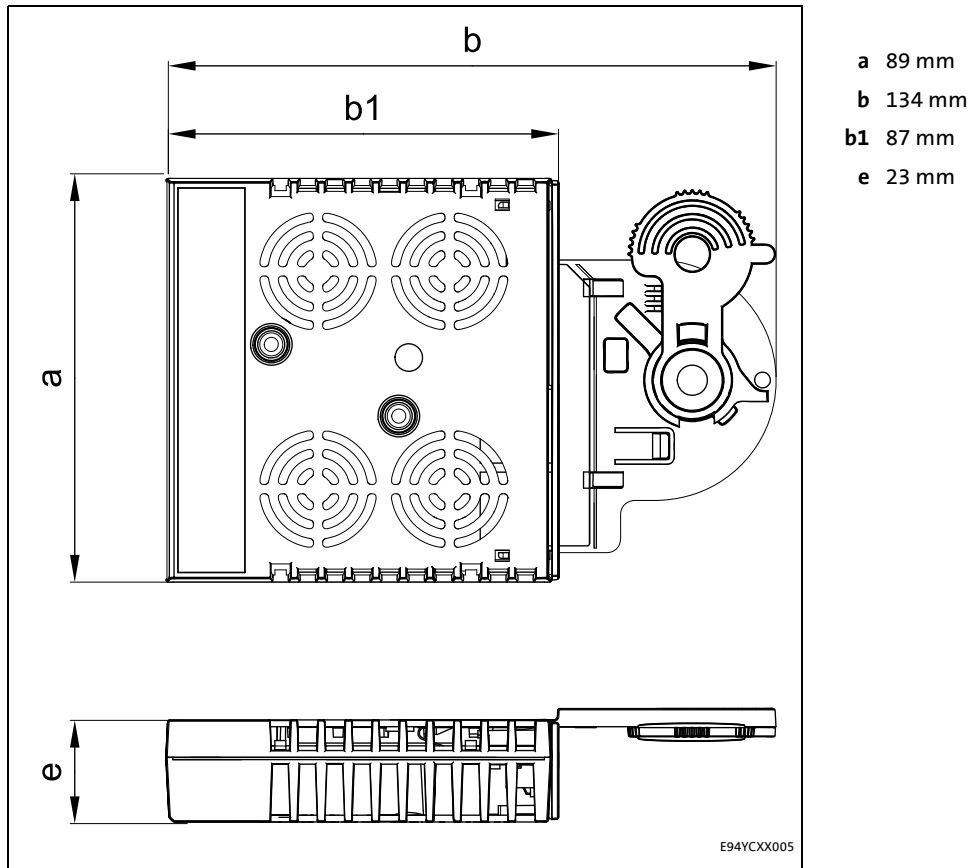
Which type of protective insulation is used between the bus terminal of the device module in slot MXI1 or MXI2 and the mains terminal X100?

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

- The separate potential area of the bus terminal of the device module has a "functional insulation".
- The separate potential area of the mains terminal has a "reinforced insulation".

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

4.4 Dimensions



[4-2] Dimensions

5 Installation



Stop!

Electrostatic discharge

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

Possible consequences:

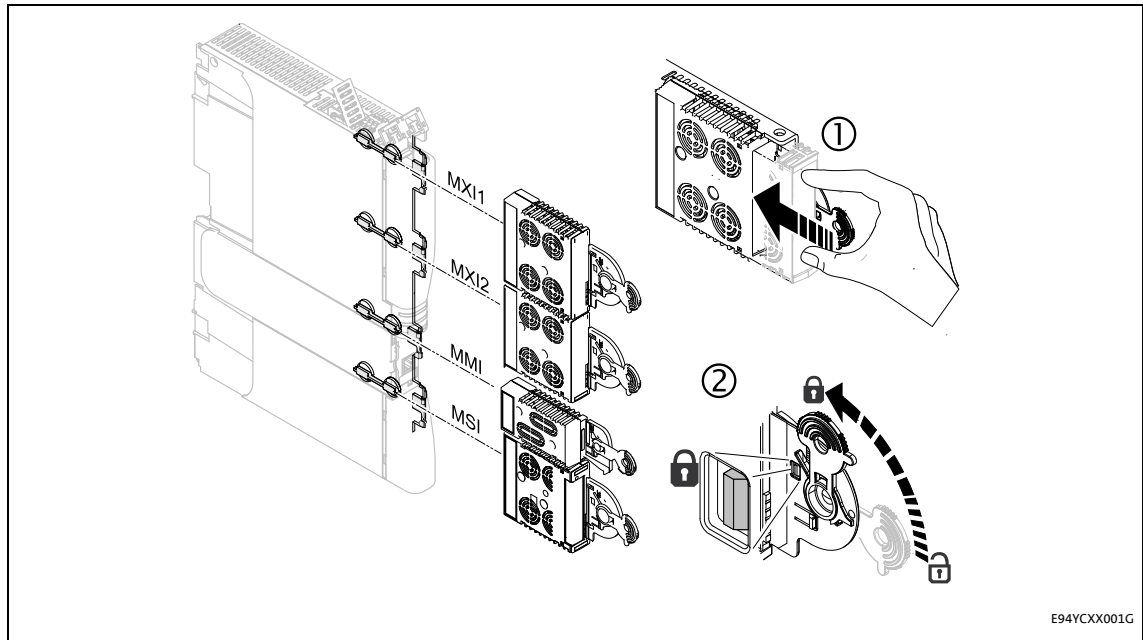
- The communication module is defective.
- Fieldbus communication is not possible or faulty.

Protective measures

- Before touching the module, be sure that you are free of electrostatic charge.

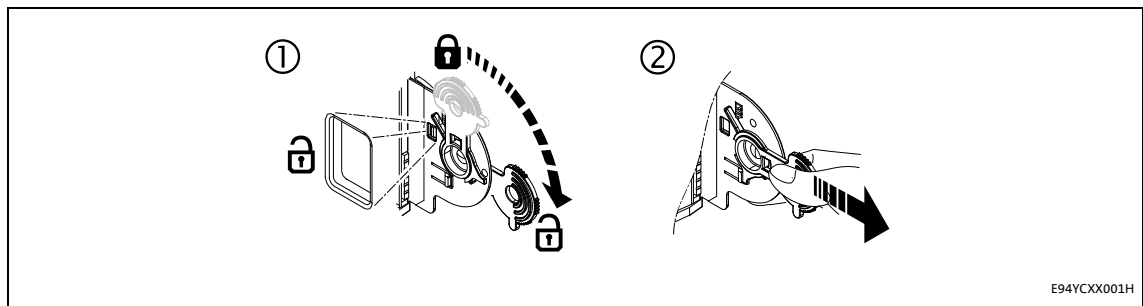
5.1 Mechanical installation

5.1.1 Assembly



[5-1] Assembly

5.1.2 Disassembly



[5-2] Disassembly

5.2

Electrical installation

**Documentation on standard device, host (PLC), system/machine**

Observe the notes and wiring instructions contained in this documentation.

5.2.1

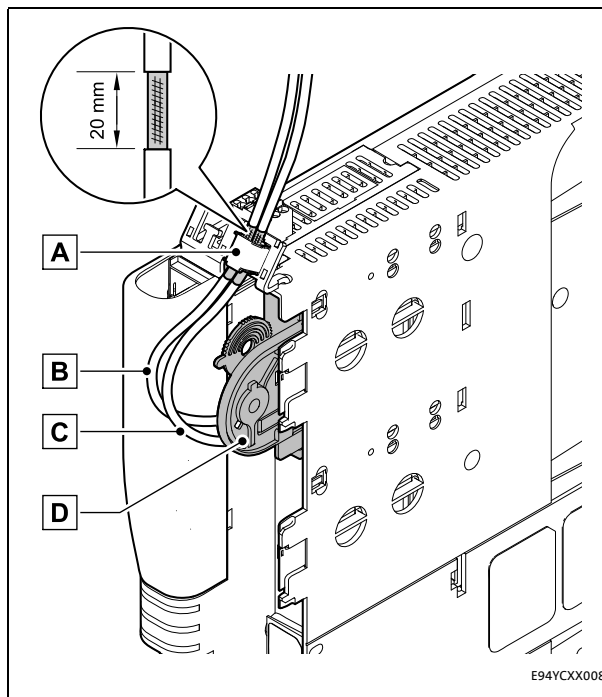
Wiring according to EMC guidelines

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

However, in environments with a very high level of interference, EMC resistance can be improved by additionally earthing the cable shield on both sides.

For this observe the following notes:

1. The distance between the additional earthing and the Ethernet plug depends on the module slot and is as follows:
 - approx. 10 cm for the upper slot (MXI1)
 - approx. 20 cm for the lower slot (MXI2)
2. Measure the appropriate distance along the cable and, starting from this point, remove 2 cm of the cable's plastic sheath.
3. Connect the cable shield to the shield sheet of the Servo Drive 9400.



A Connection to the shield sheet of the Servo Drive 9400

B Ethernet cable to X251

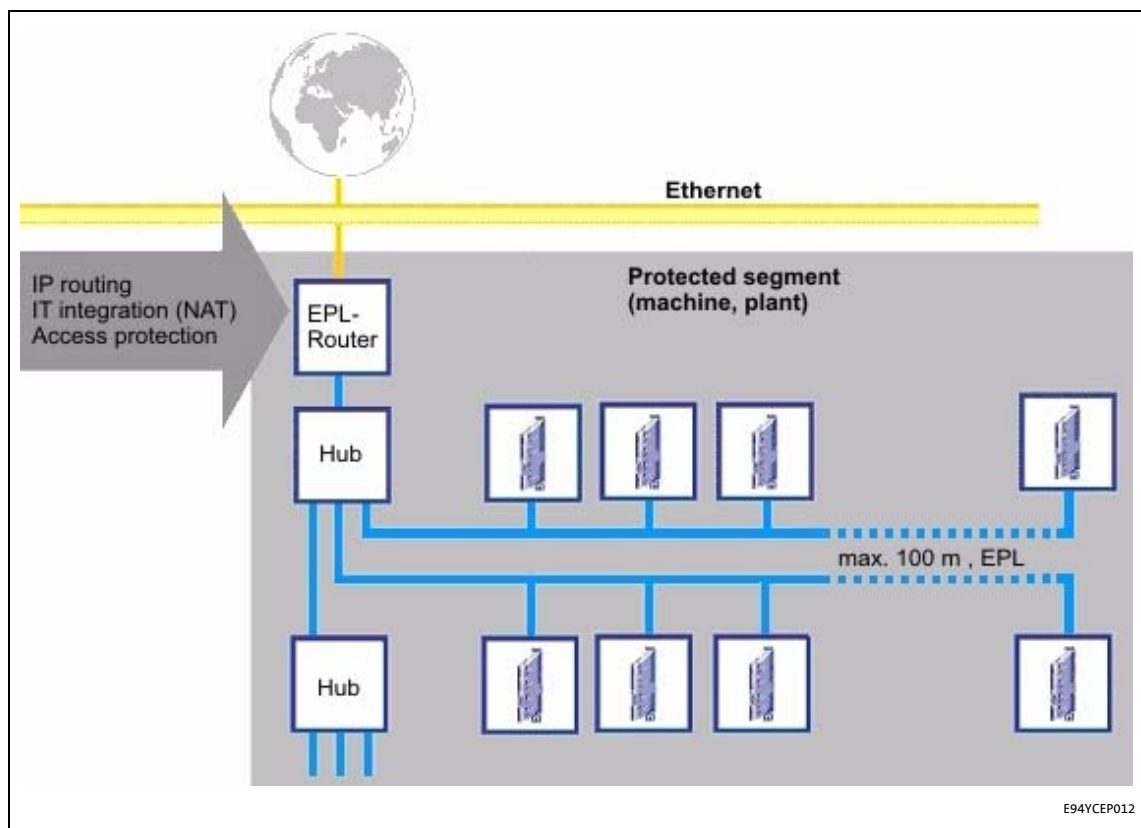
C Ethernet cable to X252

D Communication module in slot MXI1 of the Servo Drive 9400

[5-3] Wiring according to EMC guidelines

5.2.2

Network topology



[5-4] Network topology for POWERLINK

**Note!**

The use of class I hubs and switches inside the POWERLINK network segment is not permitted.

Inside the segment only Ethernet hubs may be used as infrastructure elements. The hubs must meet the requirements on class II repeaters acc. to IEEE 802.3u.

For this purpose Lenze offers the dual hub integrated into the communication module and the separate eight-fold hub, type E94AZCEH.

Class I hubs and switches are not permissible since they have considerably longer delay times for the frame forwarding and a bigger jitter. Both sizes reduce the real-time capability and dynamics.

The cable length between two POWERLINK nodes is limited to 100 m.

The topology rules (IEEE 802.3u) required for controlling the collisions may be violated in the POWERLINK network segment since according to the POWERLINK access order, telegram collisions are prevented. This enables a structure of lines and any hybrid forms between star and line topology.

Recommended topology

For an easy configuration and due to many possible topology variants we recommend to create networks according to the following rules:

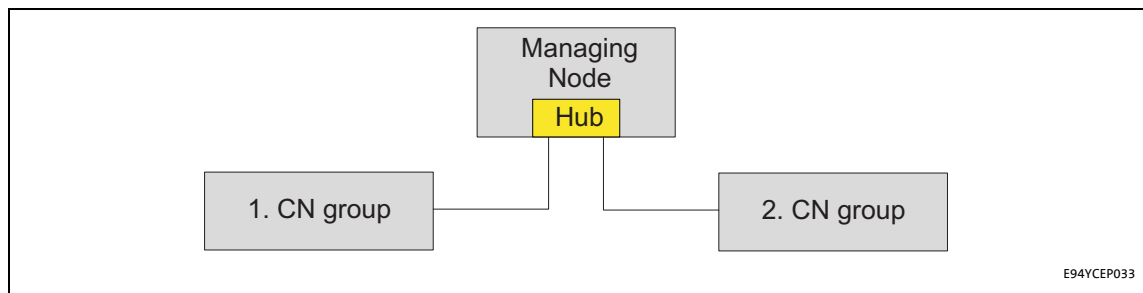
1. Create CN groups with up to 10 nodes.
2. Connect CN groups in star shape to the managing node.
3. Connect CN groups to the managing node via one external hub each.
 - For more than 2 CN groups, use an external 8-port hub (e.g. Lenze hub E94AZCEH).
 - For max. 7 CN groups one hub is sufficient.
 - For more than 7 CN groups, use further hubs.
 - The groups can be distributed on the hubs just as you like.
 - Observe the restrictions of the used managing node.



Note!

E94AYCEP communication module als Managing Node

With maximally 2 CN groups and the use of an E94AYCEP communication module as Managing Node, connect the CN group(s) directly to the POWERLINK terminals X211 and X212 of the E94AYCEP communication module.



[5-5] Star topology for 1 to 2 CN groups

5.2.3

Ethernet POWERLINK

**Note!**

Standard Ethernet nodes are not permitted in the POWERLINK network segment.

In order to use the real-time capability of the POWERLINK technology, POWERLINK nodes must be interconnected in a separate network segment.

In accordance with the POWERLINK rules, only the Managing Node controls the access of POWERLINK nodes to the network. The Managing Node is the only node that transmits autonomously. The slave nodes (i.e. all Controlled Nodes) only transmit when they are entitled to transmit by the Managing Node.

Non-POWERLINK nodes (e.g. PCs) typically violate these rules by sending telegrams independently from the Managing Node. The telegrams interfere with the cyclic telegram exchange of the POWERLINK-nodes and impede the real-time capability of POWERLINK.

Connection to the standard Ethernet network

The connection to an external standard Ethernet network is carried out via an POWERLINK router or an POWERLINK gateway.

These infrastructure components separate the network traffic in the POWERLINK network segment from the one in the standard Ethernet. The handling of the frames depends on their direction:

- Standard Ethernet ---> POWERLINK network segment:
Only telegrams that are addressed to nodes in the network segment are forwarded. The forwarding takes place in the asynchronous area of the POWERLINK cycle.
- POWERLINK network segment ---> standard Ethernet:
Only asynchronous telegrams that are not addressed to nodes in the POWERLINK network segment are forwarded.

**Tip!**

Detailed information on the function and setting of the router or gateway can be obtained from the documentation of the component manufacturer.

5.2.4

Basic Ethernet Mode

**Note!**

Operation in the "Basic Ethernet Mode" does not permit any real-time communication.

The communication module can be operated in the "Basic Ethernet Mode" for a basic parameter setting provided that the following applies:

1. Operation of the module with network address ≤ 239 .
 - IP address: 192.168.100.[Node ID]
 - see [Node address setting](#) (35)
2. Operation with real time POWERLINK must not be carried out.
3. No integration of a Managing Node (node ID = 240) into the standard Ethernet network.

5.2.5

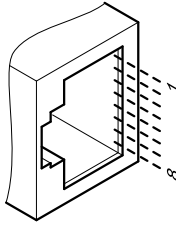
POWERLINK connection

- The POWERLINK is wired using the two RJ45 sockets **X251** and **X252**.
- If possible, do not wire more than 10 nodes in a row in a network line.
- In case of more than 10 nodes you should deactivate the automatic calculation of the hub level in the »Engineer« and enter it manually to increase the performance.
- With a cycle time of 1 ms, 25 nodes can be operated.
The number of nodes can be increased if the POWERLINK cycle time is increased as well.
- You can use a standard Ethernet patch cable to connect the communication module to the POWERLINK fieldbus.
▶ [Ethernet cable specification](#) (31)
- The installation and removal of the Ethernet cables is optimised for the use of connectors in accordance with the "Automation Initiative of German Domestic Automobile Manufacturers" (AIDA).

**Note!**

To prevent the RJ45 socket from being damaged, insert or remove the Ethernet cable connector straight (at a right angle) into or from the socket.

Pin assignment of the RJ45 sockets

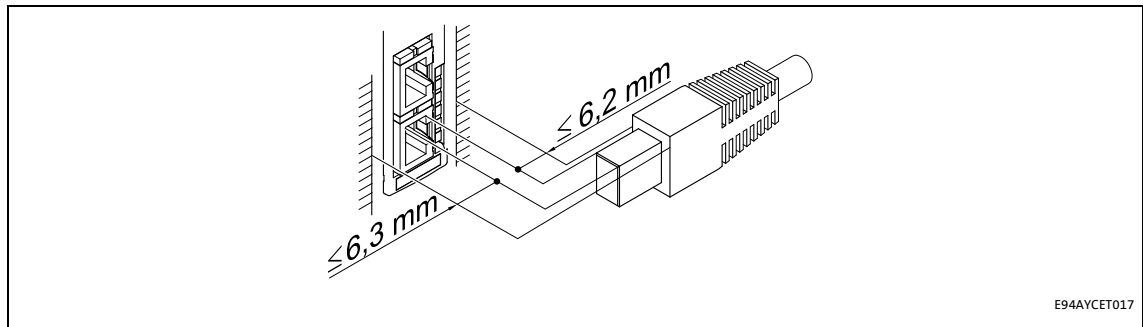
RJ45 socket	Pin	Signal
 E94AYCXX004C	1	Tx +
	2	Tx -
	3	Rx +
	4	-
	5	-
	6	Rx -
	7	-
	8	-

**Tip!**

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

Mounting clearance

When ordering and using your Ethernet cable, note the amount of free space available.



[5-6] Mounting clearance

5.2.6 Ethernet cable specification

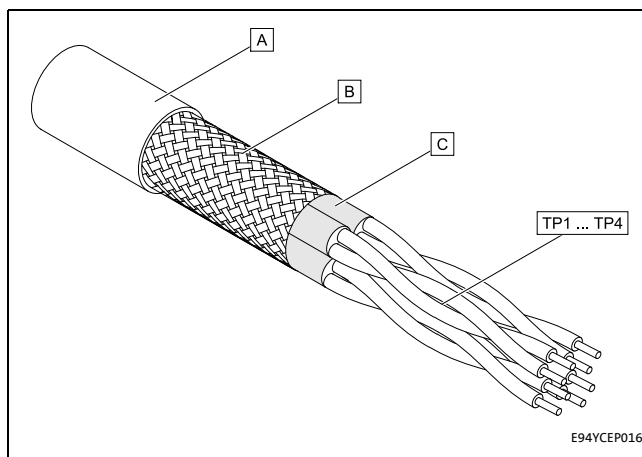


Note!

Only use cables that meet the listed specifications.

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

Structure of the Ethernet cable



A Cable insulation

B Braid

C Foil shielding

TP1 Twisted core pairs 1 ... 4

...

TP4

[5-7] Structure of the Ethernet cable (S/FTP, CAT 5e)

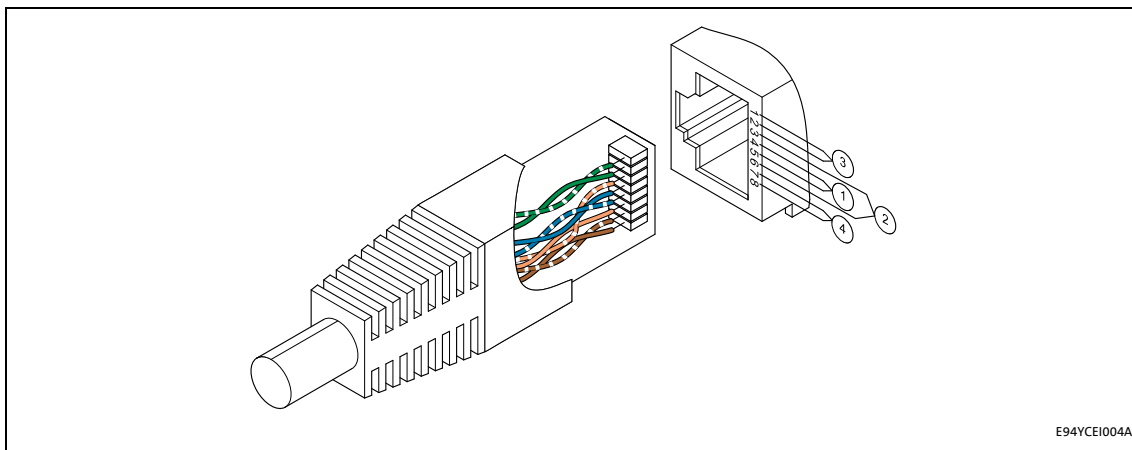
Colour code of the Ethernet cable



Note!

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

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



E94YCEI004A

[5-8] Ethernet plug in accordance with EIA/TIA 568A/568B

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

5.2.7 External voltage supply

The communication module can be externally supplied with voltage via separate supply cables at the 2-pin plug connector **X250**.



Note!

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

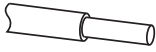
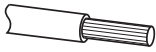
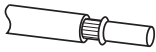
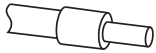
The external voltage supply of the communication module is necessary if the power supply for the basic device fails but communication via the fieldbus is to be maintained.

Access to parameters of a standard device disconnected from the mains is not possible.

Assignment of the X250 plug connector

Name	Explanation
+	U = 24 V DC (20.4 ... 28.8 V) I = 140 mA
-	Reference potential for external voltage supply

Data of the terminals

Range	Values
Electrical connection	2-pole connector with screw connection
Possible connections	Rigid:
	 1.5 mm ² (AWG 16)
	Flexible:
	 Without wire end ferrule 1.5 mm ² (AWG 16)
	 With wire end ferrule, without plastic sleeve 1.5 mm ² (AWG 16)
	 With wire end ferrule, with plastic sleeve 1.5 mm ² (AWG 16)
Starting torque	0.5 ... 0.6 Nm (4.4 ... 5.3 lb-in)
Stripping length	6 mm

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.

**Note!**

When parameterising the communication module, please note that the code number depends on the slot of the Servo Drive 9400 into which the communication module is plugged.

The first two digits of the code number indicate the slot:

- C13nnn for slot MXI1
▶ [Parameters of the communication module for slot MXI1](#) (📖 65)
- C14nnn for slot MXI2
▶ [Parameters of the communication module for slot MXI2](#) (📖 87)

You also have to set the [Parameters of the standard device that are relevant to communication](#) (📖 63).

6.1

Before initial switch-on

**Stop!**

Before switching on the Servo Drive 9400 and the communication module for the first time, check the entire wiring for completeness, short circuit and earth fault.

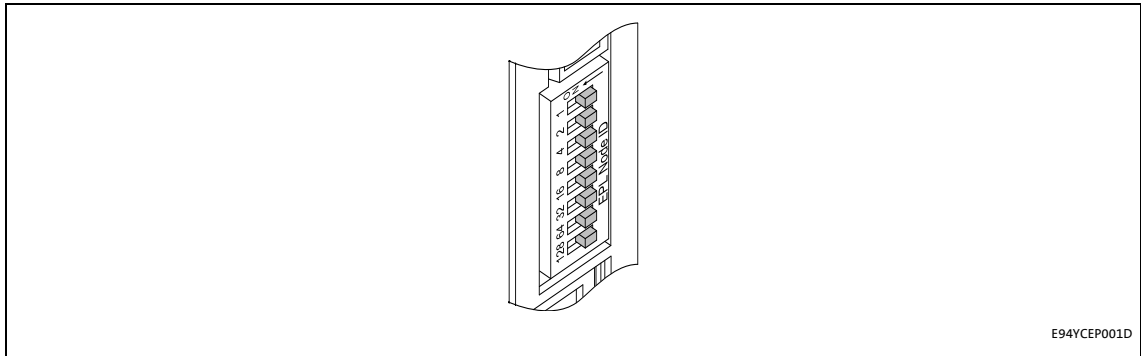
6.2

Node address setting

**Note!**

- Each network node address must only be used once.
- The node address setting in the configuration software (e.g. »Engineer«) and the DIP switches must be identical for each node.
- Switch the voltage supply of the communication module off and on again to activate changed settings.

The POWERLINK node address (node ID) is set via the front DIP switches.



[6-1] DIP switch

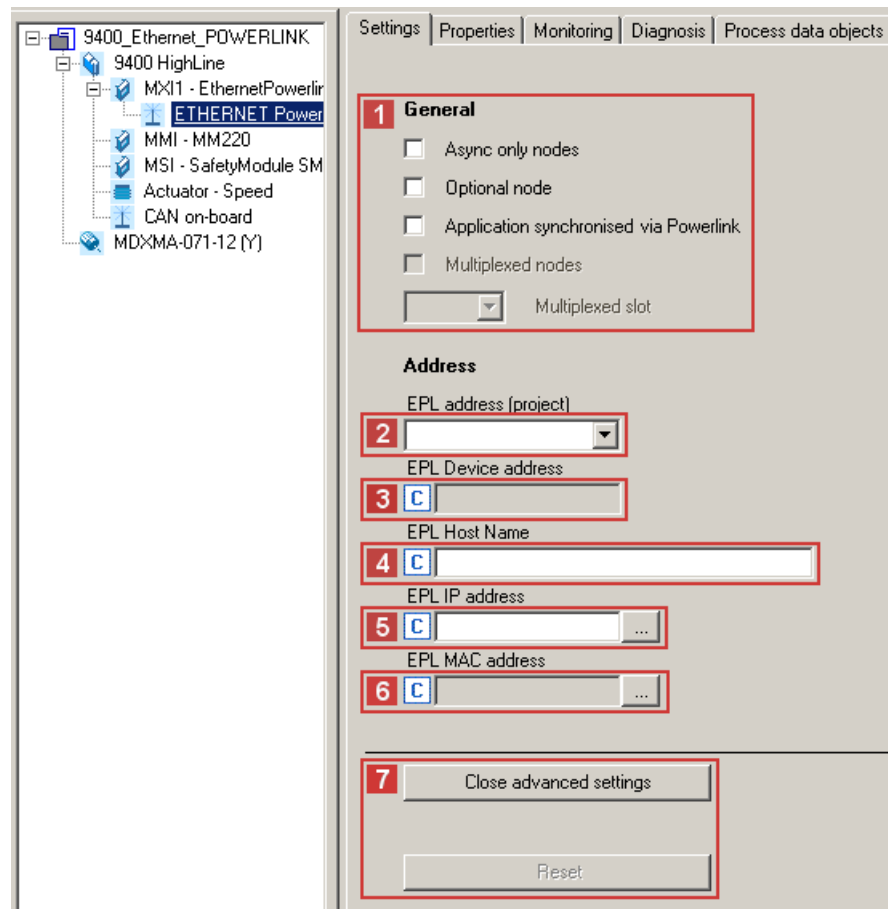
- The labelling on the housing corresponds to the valencies of the individual DIP switches for determining the node address (Node ID).
- Lenze setting for DIP switches 1 ... 128 = OFF (invalid value "0")
- Valid addresses in the POWERLINK network for the communication module:
 - 1 ... 100: Controlled node with Lenze module E94AYCEP as managing node
 - 1 ... 239: Controlled node with managing node of another manufacturer
- The corresponding Ethernet IP address of the communication module results from the address setting of the DIP switches:
IP address: 192.168.100.[Node ID]

Examples for address setting with the DIP switches

Address setting	DIP switch							
	128	64	32	16	8	4	2	1
1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
2	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
3	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON
4	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
5	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON
6	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
7	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
8	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
9	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
10	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
...	...	...	...	...	...	...	...	...
239	ON	ON	ON	OFF	ON	ON	ON	ON

6.3

Settings and displays in the »Engineer«



Setting / display	Description
1 General	General information on the node type or the synchronisation of the application
2 EPL address (project)	Setting of the POWERLINK address (node ID: C13044 / C14044) You can set the address '1' ... '100' for the communication module.
3 Current EPL device address	Display of the current POWERLINK device address (C13042 / C14042)
4 EPL host name	The DNS-compatible host name (C13045 / C14045) has to be non-ambiguous within the network domain. The device name ... • consists of max. 15 characters ([A ... Z], [a ... z], [0 ... 9], [-]); • starts with a letter; • ends with a letter or a digit.
5 EPL IP address	The IP address (C13000 / C14000) is created from the POWERLINK address (Node ID): 192.168.100.[C13044 / C14044] Example: 192.168.100.1 = 0xC0.A8.64.01
6 EPL MAC address	Display of the MAC address (C13004 / C14004)
7 Open/close advanced settings	Here, the POWERLINK communication can be reset.

6.4

Initial switch-on

**Documentation for the Servo Drive 9400**

Observe the safety instructions and information on residual hazards.

**Note!****Establishing communication**

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

For further communication of the externally supplied module it is not relevant whether the standard device is switched on or not.

Activating changed setting

In order to activate any changed settings, ...

- execute the device command "11: Save start parameter" via the standard device code **C00002** and ...
- then reset the bus node or switch off and on again the voltage supply of the communication module.

Protection against uncontrolled restart

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

In the Lenze setting of Servo Drives 9400, the restart protection is activated.

Via the standard device code **C00142** ("Auto restart after mains connection") you can set the restart behaviour of the inverter:

C00142 = "0: Inhibited" (Lenze setting)

- The inverter remains inhibited (even if the fault is no longer active).
- An explicit controller enable causes the drive to start up in a controlled manner: LOW-HIGH edge at digital input X5/RFR.

C00142 = "1: Enabled"

- An uncontrolled restart of the drive is possible.



Initial switch-on and diagnosing

1. Switch on the Servo Drive 9400 and check whether it is ready for operation using the diagnostic LEDs of the communication module.
 - Red diagnostic LEDs must not be on.
 - The following signalling should be visible:

LED	Colour	Status	Meaning
MS	Green	On	Module Status
DE	-	Off	Device Error
X251	Green	On	LED is lit if a connection to the node has been established.
X252	Green	On	

2. If not already done, load the POWERLINK configuration into the Servo Drive 9400.
3. Repeat steps 1. and 2. for all POWERLINK nodes.
4. Start the POWERLINK network.

The network starts automatically if you set the managing node last.

Otherwise there are two options:

- Switch off the network nodes and switch them on together or
 - execute a fault reset at the Managing Node (Node ID = '240').
5. Check the POWERLINK network again using the diagnostic LEDs of the communication module.

The following signalling should be visible:

LED	Colour	Status	Meaning
MS	Green	On	Module Status
ME	-	Off	Module Error
BE	-	Off	Bus Error
DE	-	Off	Device Error
BS	Green	On	Bus Status
X251	Green	On	LED is lit if a connection to the node has been established.
X252	Green	On	

6.5 Drive synchronisation

Examples of the use of drive synchronisation via POWERLINK:

- Implementation of the "electrical shaft"
- Specification of cyclic position information
- Exactly simultaneous data processing of several drives
- Optimisation of the processing times of cyclic process data (PDO).

Settings in the »Engineer«

Application Parameters FB Editor Terminal assignment Ports User menu Diagnostics Data logger Oscilloscope All parameters						
Parameter list		Parameter list -> Parameter list				
Parameter list						
Stellantrieb - Drehzahl		1120	0	Sync source	Module in MX11	
Diagnostics		1121	0	Sync cycle time	1000	µs
Control terminals/TP(Tou...		1122	0	Sync phase position	400	µs
Controller settings		1123	0	Sync tolerance	0	µs
VFC/SLVC - Settings		1124	0	Sync-PLL increment	109 ns	

- Set the MXI slot of the communication module as synchronisation source in code **C01120** of the Servo Drive 9400.
- The sync cycle time **C01121** and the sync phase position **C01122** are automatically calculated from the communication module. Default settings of these parameters are ignored.
- It is not necessary to adjust the sync tolerance **C01123** and the sync increment **C01124**.



Reference manual/»Engineer« online help for Servo Drive 9400

Here you can find detailed information on drive synchronisation and the corresponding parameters.

6.6 Optimising the POWERLINK communication

SDO bandwidth



Note!

The channel bandwidth should only be increased if the network is below capacity limit.

The SDO channel width ([C13075](#) / [C14075](#)) is the size of the asynchronous channel used for parameter setting and diagnostics. A higher value improves the transmission of large amounts of data (e.g. parameter downloads) and at the same time reduces the number of possible nodes.

Maximum time for device search

During the device search, the managing node has to wait until all controlled nodes have been found.

- Unless all Controlled Nodes are available in the defined POWERLINK cycle time, the "EPL_BOOTUP_1" error message is generated. The Managing Node remains in this status.
- If the managing node has found all controlled nodes, it starts the network.

Due to machine or system-specific switch-on sequences, it may be required to adapt the following POWERLINK objects:

- CN object **0x1F99**: NMT_CNBasicEthernetTimeout_U32 ([C13078](#) / [C14078](#))



Note!

In order to avoid a too quick change to the [Basic Ethernet Mode](#) ([113](#) 28), the value of the **0x1F99** object (NMT_CNBasicEthernetTimeout_U32) must be higher than the value of the **0x1F89** object (NMT_BootTime_REC) which is the case by default.

► [POWERLINK objects](#) ([113](#))

7 Monitoring

The communication module provides several monitoring functions. The standard settings can be changed in the »Engineer« under the **Monitoring** tab.

For the settings, monitoring responses and monitoring thresholds can be specified. When the monitoring thresholds are exceeded, the response of the Servo Drive 9400 is specified together with the POWERLINK-specific monitoring response. The required status is adopted which is additionally entered into the logbook of the Servo Drive 9400. The setting 'No response' deactivates the monitoring function.



Note!

Generally, all set monitoring functions must be reset after they occurred and before they can be transmitted again since they affect the fieldbus behaviour and the behaviour of the communication module.

Weighted process

The monitoring threshold, for instance, serves to define the number of errors which may occur in succession. Here, the POWERLINK uses a weighted process which must be considered when the monitoring threshold is entered:

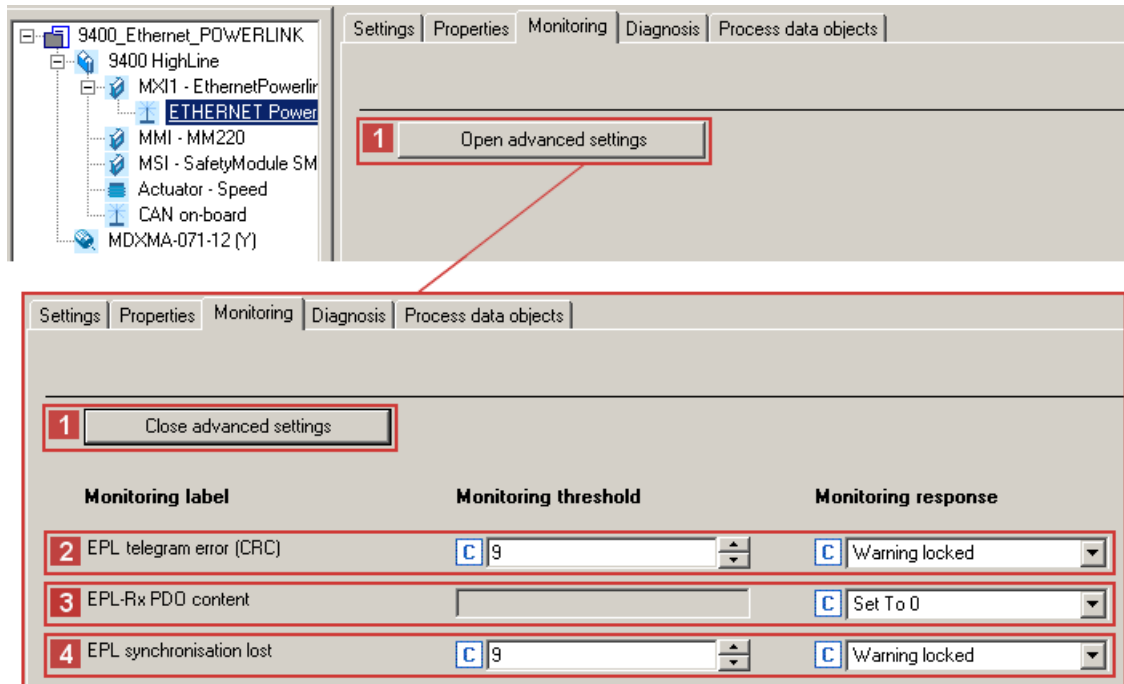
- As soon as an error occurs, an internal error counter is increased by the value "8".
- As soon as a POWERLINK cycle was successful, the error counter is reduced by the value '1'.
- Thus 8 faultless transmissions are required after an error has been detected, in order that the error counter assumes the value "0" again.

7.1

Monitoring functions of the controlled node

**Note!**

The E94AYCEC communication module only supports monitoring for the "LeaveDataExchange" status.



In order to change the standard settings of the monitoring functions, press the **1** "Open advanced settings" button.

- The input fields for monitoring thresholds and monitoring responses are shown.
- The **1** "Close advanced settings" serves to mask out the input fields again.

Settings

Monitoring function	Description
2 EPL frame error (CRC)	Weighted number of received faulty frames • This error can occur due to very strong EMC interferences or by non-POWERLINK-compliant nodes. • Monitoring threshold: C13131/3 / C14131/3 • Monitoring response: C13891/4 / C14891/4
3 EPL-Rx PDO contents	This monitoring response defines the way the cyclic process data (PDO) are forwarded from the POWERLINKnetwork to the standard device/application in the event of an error. An error has occurred if no valid process data is received and the "POWERLINK synchronisation loss" monitoring function is activated. The following settings are possible with C13885 / C14885 : • 0: The valid data received last remains. • 1: All data is set to the value "0".
4 EPL synchronisation loss	This monitoring detects a failure of the Managing Node by means of the number of POWERLINK cycles failed. This monitoring is independent of the setting for the Drive synchronisation (40). • Monitoring threshold: C13127/3 / C14127/3 • Monitoring response: C13891/3 / C14891/3

8 Diagnostics

8.1 LED status displays

8 Diagnostics

For fault diagnostics, the communication module is provided with the LEDs on the front. Furthermore, you can carry out a comprehensive diagnostics of the entire POWERLINK network using the »Engineer«.

8.1 LED status displays



Note!

LED status displays for trouble-free operation:

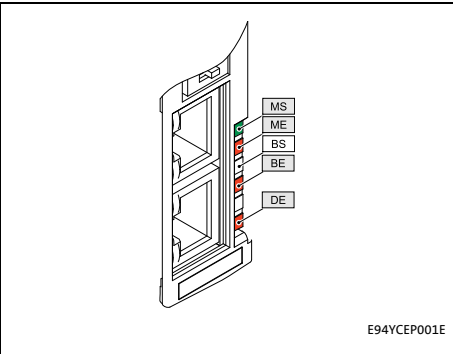
- The LEDs **MS** (46) and **BS** (47) are permanently lit.
- The green LED at the RJ45 sockets **X251** and **X252** is permanently lit or blinking (48).

The following status displays are distinguished:

- [Module status displays](#) (46)
- [Fieldbus status displays](#) (47)
- [Status displays at the RJ45 sockets \(X251, X252\)](#) (48)

8.1.1 Module status displays

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



MS: Module Status

ME: Module Error

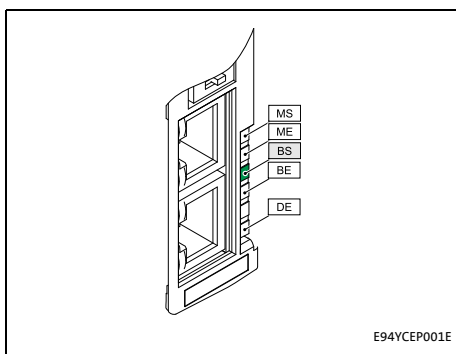
BE: Bus Error

DE: Device Error

LED	Colour	Status	Description
MS	Green	On	 The communication module is supplied with voltage and is connected to the standard device.
		Blinking	 The communication module is supplied with voltage, but has no connection to the standard device. (The standard device is either switched off, in the initialisation phase, or not available).
ME	Red	On	 An error has occurred in the communication module.
BE	Red	On	 A fieldbus error has occurred.
DE	Red	On	 The communication module is not accepted by the standard device. See notes given in the documentation for the standard device.

8.1.2 Fieldbus status displays

The **BS** LED indicates the fieldbus status.



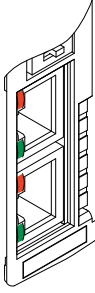
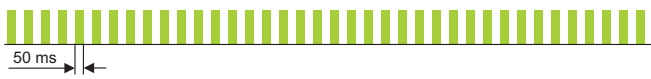
BS: Bus Status

LED	Colour	Status	Description
BS	Green	Off	The communication module is not active on the fieldbus or is in the INIT state.
		Blinking	 The POWERLINK network is in the initialisation phase. NMT_MS_PREOPERATIONAL_1 / NMT_CS_PREOPERATIONAL_1
		Blinking	 The POWERLINK network is in the initialisation phase with cyclic traffic. NMT_MS_PREOPERATIONAL_2 / NMT_CS_PREOPERATIONAL_2
		Blinking	 The POWERLINK node is waiting for the start signal. NMT_MS_READY_TO_OPERATE / NMT_CS_READY_TO_OPERATE
		Blinking	 The POWERLINK node has not found a Managing Node and is in Basic Ethernet Mode (28). NMT_CS_BASIC_ETHERNET
		Blinking	 The POWERLINK node is in the "Stopped" status (waiting for disconnection). NMT_CS_STOPPED
		On	 The POWERLINK node is in the operating phase. NMT_MS_OPERATIONAL / NMT_CS_OPERATIONAL

8.1.3

Status displays at the RJ45 sockets (X251, X252)

The LEDs at the RJ45 sockets **X251** and **X252** indicate the POWERLINK connection status.

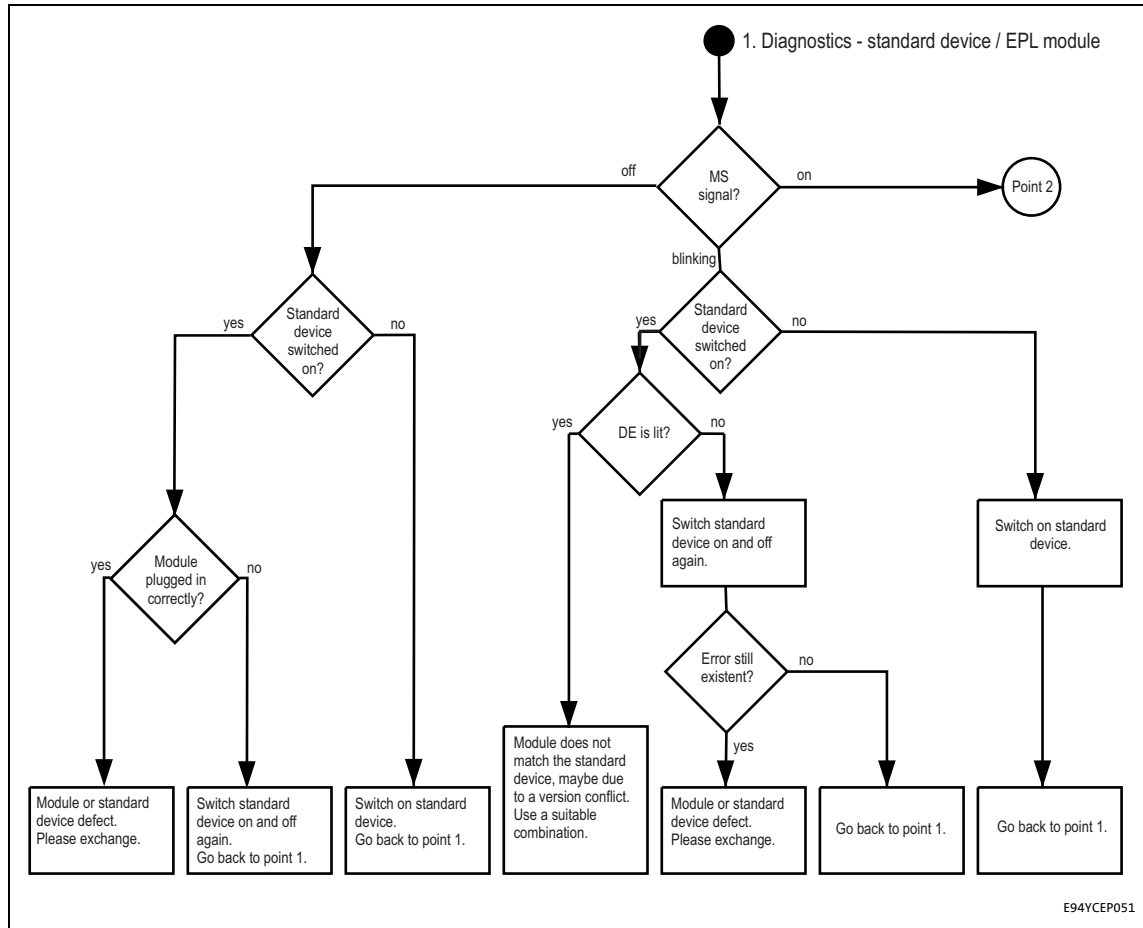
LEDs	Colour	Status	Description
 E94AYCEP001E	Green	Off	No POWERLINK connection
		On	 POWERLINK connection has been established.
		Blinking	 Data communication of POWERLINK connection is active.
	Red	On	 POWERLINK collision has occurred.

8.2 Troubleshooting with module signalling

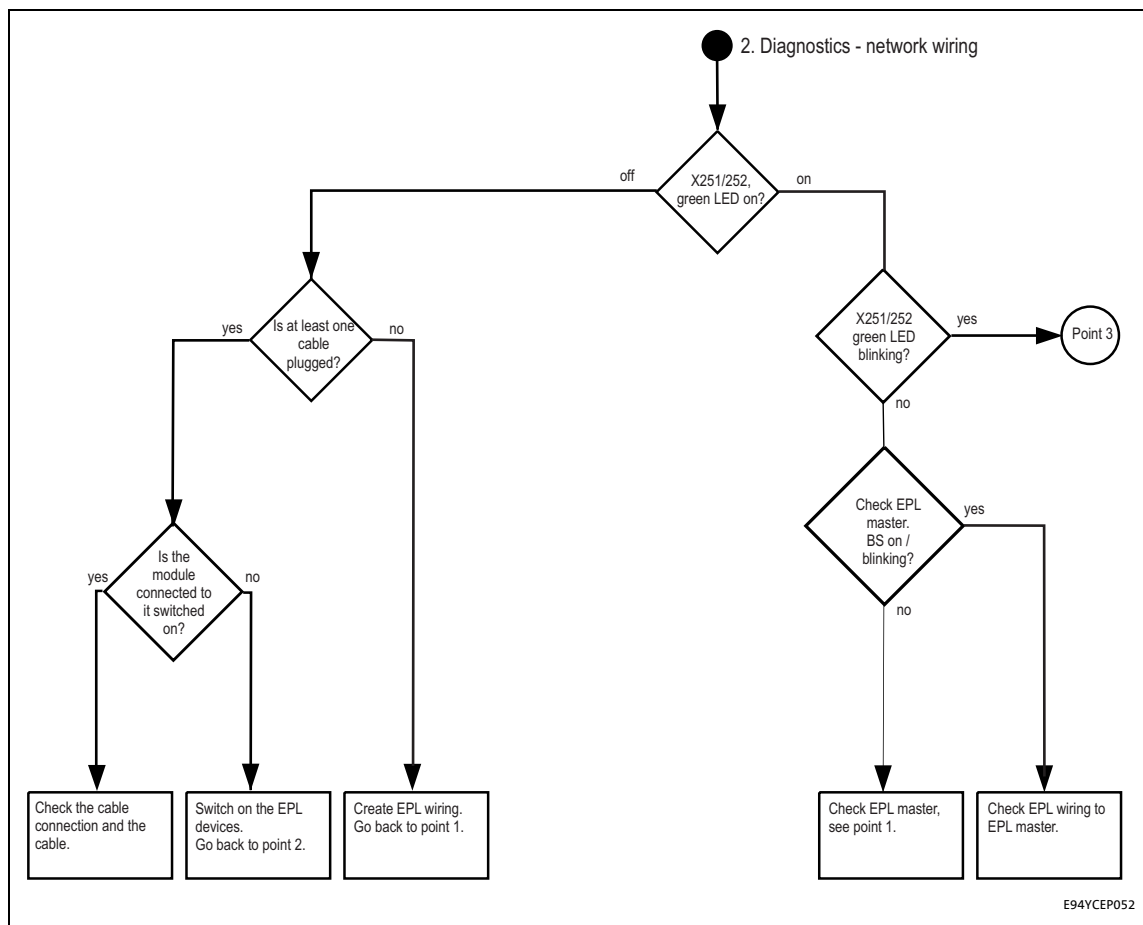
In the following, troubleshooting via the module signals will be described.

Please particularly observe ...

- the basic readiness for operation between the standard device and the communication module;
- the network wiring.



[8-1] Diagnostics - standard device / POWERLINK module

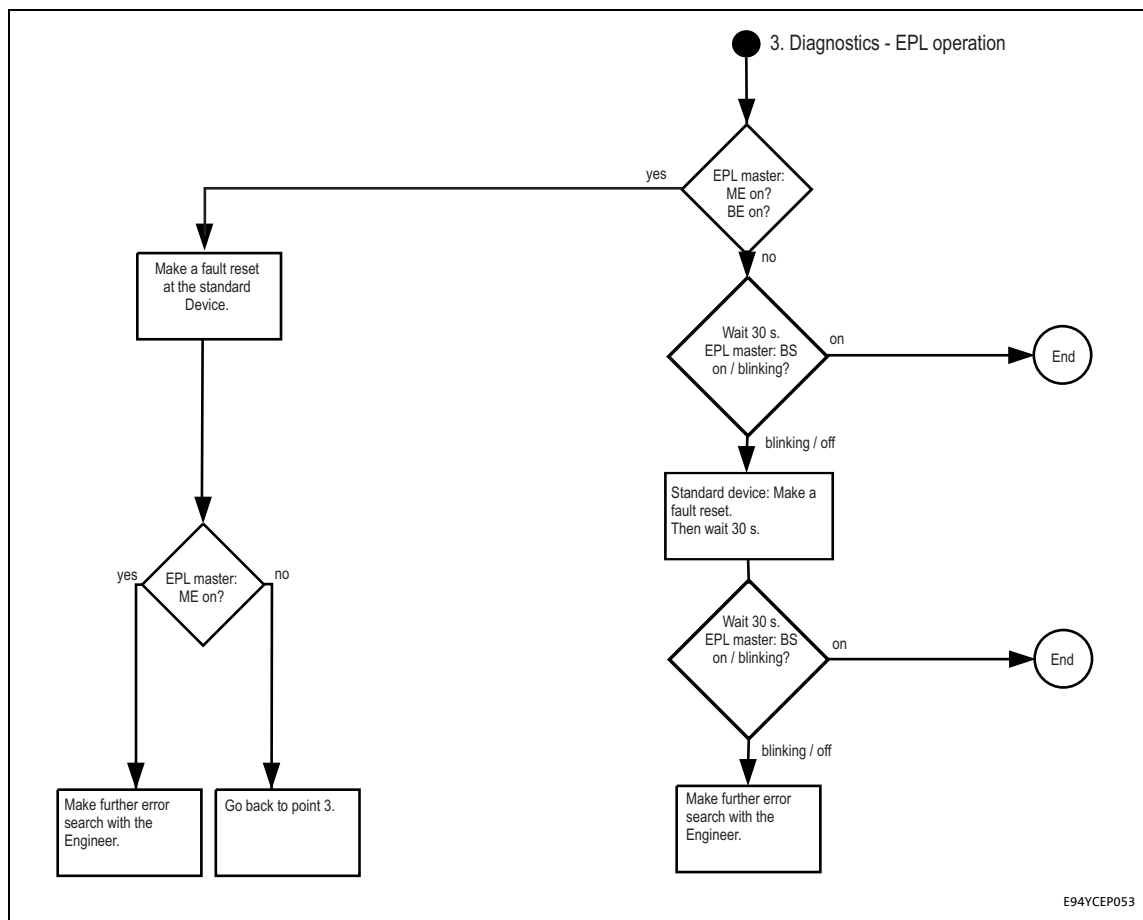


[8-2] Diagnostics - network wiring

**Note!**

The **BS** (Bus Status) LED refers to the Lenze E94AYCEP communication module as managing node.

This status display applies analogously to the managing nodes of other manufacturers.



[8-3] Diagnostics - POWERLINK operation

**Note!**

The LEDs **ME** (Module Error), **BE** (Bus Error) and **BS** (Bus Status) refer to the Lenze communication module E94AYCEP as Managing Node.

This status display applies analogously to the managing nodes of other manufacturers.

8.3 Diagnostic data

Pending diagnostic data are signalled from the controlled node to the managing node by means of an emergency message.

Errors and warnings in the Servo Drive 9400 and the plugged communication module are sent to the Managing Node as extended diagnostic messages.

The diagnostic data is visible via the engineering software of the host (PLC).

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

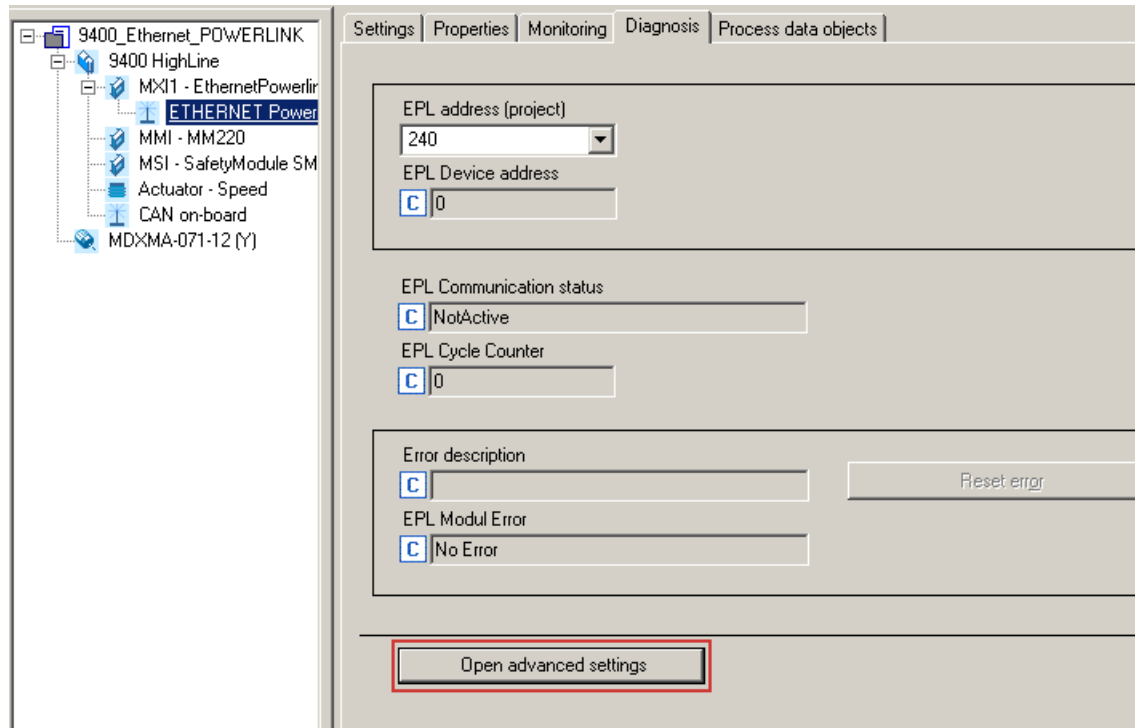


Reference manual/»Engineer« online help for Servo Drive 9400

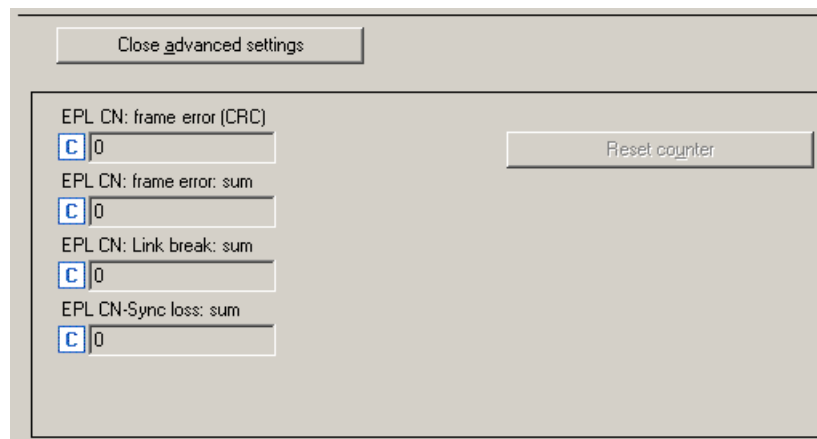
Here you will find general information on diagnostics & fault analysis and on error messages.

8.4 Diagnosing with the »Engineer«

In the »Engineer« under the **Diagnostics** tab, you will find POWERLINK diagnostics information.



The "Open extended settings" tab serves to display further diagnostics information on the controlled node (node ID '0' ... '239'):



9 Error messages

This chapter supplements the error list in the reference manual and the »Engineer« online help for the Servo Drive 9400 by the error messages of the POWERLINK communication module.



Reference manual/»Engineer« online help for Servo Drive 9400

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

9.1 Error messages of the communication module

This chapter describes all error messages of the communication module and their causes and remedies.

9.1.1 Short overview

The following table contains all error messages of the communication module in numerical order of the error numbers. Moreover the preset error response and - if applicable - the parameters for setting the error response are specified.



Tip!

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

Error number		Name	Response (Lenze setting)	Adjustable in
hex	dec			
0x00c83100	13119744	EPL: Lost connection to 9400 target	No response	-
0x00c85531	13129009	EPL: Memory access error	Information	-
0x00c85532	13129010	EPL: Memory: Read error	Information	-
0x00c85533	13129011	EPL: Memory: Write error	Information	-
0x00c86010	13131792	EPL: Internal watchdog activated	Fault	-
0x00c86011	13131793	EPL: Internal watchdog activated	Fault	-
0x00c86100	13132032	EPL: Internal error	Information	-
0x00c86101	13132033	EPL: Internal error	Fault	-
0x00c86110	13132048	EPL: Invalid PDO mapping detected	Warning Locked	-
0x00c8641f	13132831	EPL: Invalid parameter set	Fault	-
0x00c86420	13132832	EPL: Lenze settings loaded	Fault	-
0x00c88130	13140272	EPL: Fieldbus watchdog activated	Fault	-
0x00c88131	13140273	EPL: DataExchange exited	No response	C13883 / C14883
0x00c88261	13140577	EPL: Invalid address selected	Fault	-
0x00c88263	13140579	EPL MN: Network has not been started (bootup-1)	Warning Locked	C13891/2 / C14891/2
0x00c88264	13140580	EPL MN: Not all nodes are in the operational status (bootup-2)	Warning Locked	C13891/2 / C14891/2
0x00c88265	13140581	EPL: Synchronisation of MN lost	Warning Locked	C13891/3 / C14891/3
0x00c88266	13140582	EPL: Defective telegram (CRC) detected	Warning Locked	C13891/4 / C14891/4
0x00c88267	13140583	EPL: Failure of a network node	No response	C13891/5 / C14891/5
0x00c88281	13140609	EPL: Cycle time exceeded	Warning Locked	C13891/1 / C14891/1
0x00c88283	13140611	EPL: MN address assigned double	Fault	-
0x00c88284	13140612	EPL: Internal error	Fault	-

9.1.2 Possible causes and remedies

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

EPL: Lost connection to 9400 [0x00c83100]

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 MXI communication to the Servo Drive 9400 is interrupted. • Servo Drive 9400 is switched off. • The communication module is not connected correctly at the MXI slot of the Servo Drive 9400. • Communication module is defective.		• Switch on Servo Drive 9400. • Plug in the communication module correctly at the MXI slot of the Servo Drive 9400. • Send communication module together with a description of the fault to Lenze.	

EPL: Memory access error [0x00c85531]

Response (Lenze setting printed in bold)		Setting: not possible	
☐ None ☐ System error ☐ Error ☐ Fault ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☒ Information			
Cause		Remedy	
Access via the Servo Drive 9400 to a parameter set in the memory module failed.		Download application again (including module).	

EPL: Memory: Read error [0x00c85532]

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 in the memory module could not be read.		Download application again (including module).	

EPL: Memory: Write error [0x00c85533]

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 in the memory module could not be written.		Download application again (including module).	

EPL: Internal watchdog activated [0x00c86010]

Response (Lenze setting printed in bold)		Setting: not possible	
☐ None ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information			
Cause		Remedy	
Communication module is defective.		Send communication module together with a description of the fault to Lenze.	

EPL: Internal watchdog activated [0x00c86011]

Response (Lenze setting printed in bold)	Setting: not possible
☐ None ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	Remedy
Communication module is defective.	Send communication module together with a description of the fault to Lenze.

EPL: Internal error [0x00c86100]

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.	Send communication module together with a description of the fault to Lenze.

EPL: Internal error [0x00c86101]

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.	Send communication module together with a description of the fault to Lenze.

EPL: Invalid PDO mapping detected [0x00c86110]

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 entered PDO mapping is invalid.	Re-execute PDO mapping.

EPL: Invalid parameter set [0x00c8641f]

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.	Download application again (including module).

EPL: Lenze setting loaded [0x00c86420]

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 via the Servo Drive 9400 to a parameter set in the memory module failed.	Download application again (including module).

EPL: Fieldbus watchdog activated [0x00c88130]

Response (Lenze setting printed in bold)	Setting: not possible
☐ None ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ warning ☐ Information	
Cause	Remedy
Communication module is defective.	Send communication module together with a description of the fault to Lenze.

EPL: DataExchange exited [0x00c88131]

Response (Lenze setting printed in bold)	Setting: C13883 / C14883 (☒ Adjustable response)
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information	
Cause	Remedy
The POWERLINK data exchange has been terminated.	• Check wiring. • Plug network cable into POWERLINK terminal X251 or X252.

EPL: Invalid address selected [0x00c88261]

Response (Lenze setting printed in bold)	Setting: not possible
☐ None ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ Warning locked ☐ Warning ☐ Information	
Cause	Remedy
An invalid IP address has been assigned by the managing node via POWERLINK or set as node ID.	• Ensure that a valid IP address is assigned by the managing node via POWERLINK. • Set valid node ID. ▶ Node address setting (□ 35)

EPL MN: Network has not been started (bootup-1) [0x00c88263]

Response (Lenze setting printed in bold)	Setting: C13891/2 / C14891/2
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information	
Cause	Remedy
• The Managing Node could not start the POWERLINK network. • Not all required nodes were found.	• Check if all nodes are switched on • Check address setting and wiring.

EPL MN: Not all nodes are in the operational status (bootup-2) [0x00c88264]

Response (Lenze setting printed in bold)	Setting: C13891/2 / C14891/2
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information	
Cause	Remedy
The Managing Node could not transfer all nodes into the "NMT_CS_OPERATIONAL" status via process data exchange.	Check whether single nodes are in error status.

EPL: Synchronisation lost from MN [0x00c88265]

Response (Lenze setting printed in bold)		Setting: C13891/3 / C14891/3
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information		
Cause	Remedy	
In the controlled node, the synchronisation cycle of the managing node has failed. The controlled node changes automatically to the NMT_CS_PREOPERATIONAL_1 state and waits for a new run-up by the managing node.	• Check wiring components (failure of Managing Node, router). • Restart managing node if required. • Change CN monitoring thresholds via C13127 / C14127. ► Monitoring functions of the controlled node (43)	

EPL: Defective telegram (CRC) detected [0x00c88266]

Response (Lenze setting printed in bold)		Setting: C13891/4 / C14891/4
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information		
Cause	Remedy	
Faulty Ethernet frames (CRC error) have been detected. Possible causes:	• A device on the network is not POWERLINK-compliant. • EMC interference is too strong.	
	• Check if a non-POWERLINK-compliant device is in the network (e.g. diagnostics PC). • Reduce EMC interference on the network or use an additional shield connection. • Change monitoring thresholds: • Controlled Node: C13131/3 / C14131/3 ► Monitoring functions of the controlled node (43)	

EPL: Failure of a network node [0x00c88267]

Response (Lenze setting printed in bold)		Setting: C13891/5 / C14891/5
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information		
Cause	Remedy	
In case of the managing node, an unwanted change from the "Operational" status has occurred due to an error. Possible causes are:	• Node failure • Network cables have been detached. • Servo Drive 9400 is switched off. • Communication module is defective. • Time-out with Controlled Nodes • Telegram collisions due to non-compliant POWERLINK nodes	
	• Check wiring. • Plug network cable into POWERLINK terminal X251 or X252. • Restart managing node if required. • Switch on Servo Drive 9400. • Check if a non-POWERLINK compliant device is in the network (e.g. diagnostics PC). • Check whether collisions have occurred with the managing node. • Send communication module together with a description of the fault to Lenze.	

EPL: Cycle time exceeded [0x00c88281]

Response (Lenze setting printed in bold)		Setting: C13891/1 / C14891/1
☒ None ☐ System fault ☐ Fault ☒ Trouble ☒ Quick stop by trouble ☒ Warning locked ☐ Warning ☒ Information		
Cause	Remedy	
The Managing Node has detected that the previous cycle has not yet been completed when the new cycle starts.	Select a larger POWERLINK cycle time via C13060 / C14060 .	

EPL: MN address assigned double [0x00c88283]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
The address setting of the Managing Node has been assigned several times (node ID = '240'). This node is configured as Managing Node but does not participate in the frame traffic due to double addressing.	Correct address setting. ▶ Node address setting (□ 35)

EPL: Internal error [0x00c88284]

Response (Lenze setting printed in bold)	Setting: not possible
☐ No reaction ☐ System fault ☒ Fault ☐ Trouble ☐ Quick stop by trouble ☐ WarningLocked ☐ Warning ☐ Information	
Cause	Remedy
Internal error.	Send communication module together with a description of the fault to Lenze.

9.2 POWERLINK error messages

- The POWERLINK error messages are displayed via code [C13910](#) / [C14910](#).
- In order to distinguish between the error responses, the displayed error messages are preceded with 3 characters:

Response	Meaning
EL_...	Trouble (Fault)
QL_...	Quick stop by trouble
WL_...	Warning locked
I_...	Information (Info)

Error number		Name	Description
hex	dec		
0x1	1	EL_LeaveData Exchange	The POWERLINK data exchange has been completed (the node recognises that it does not have the "DataExchange" status anymore). Causes & remedy: • see error description EPL: DataExchange exited [0x00c88131] (📖 58) Codes: • C13883 / C14883 (error response)
0x3	3	QL_LeaveData Exchange	
0x4	4	WL_LeaveData Exchange	
0x6	6	I_LeaveData Exchange	
0x18263	98915	EL_EPL_BOOTUP_1	The Managing Node could not start the POWERLINK network. OR: Not all required nodes were found. Causes & remedy: • see error description EPL MN: Network has not been started (bootup-1) [0x00c88263] (📖 58) Codes: • C13891/2 / C14891/2 (error response)
0x38263	229987	QL_EPL_BOOTUP_1	
0x48263	295523	WL_EPL_BOOTUP_1	
0x68263	426595	I_EPL_BOOTUP_1	
0x18264	98916	EL_EPL_BOOTUP_2	The Managing Node could not transfer all nodes into the "NMT_CS_OPERATIONAL" status via process data exchange. Causes & remedy: • see error description EPL MN: Not all nodes are in the operational status (bootup-2) [0x00c88264] (📖 58) Codes: • C13891/2 / C14891/2 (error response)
0x38264	229988	QL_EPL_BOOTUP_2	
0x48264	295524	WL_EPL_BOOTUP_2	
0x68264	426596	I_EPL_BOOTUP_2	
0x18265	98917	EL_EPL_CN_SYNC_LOSS	In the Controlled Node, the synchronisation cycle of the Managing Node has failed. The Controlled Node automatically changes to the "NMT_xx_PREOPERATIONAL_1" status and waits for a new run-up by the Managing Node. Causes & remedy: • see error description EPL: Synchronisation lost from MN [0x00c88265] (📖 59) Codes: • C13127/3 / C14127/3 (monitoring threshold) • C13891/3 / C14891/3 (error response) • C13127/1 / C14127/1 (error counter)
0x38265	229989	QL_EPL_CN_SYNC_LOSS	
0x48265	295525	WL_EPL_CN_SYNC_LOSS	
0x68265	426597	I_EPL_CN_SYNC_LOSS	

Error number		Name	Description
hex	dec		
0x18266	98918	EL_EPL_COM_CRC	Faulty Ethernet frames (CRC error) have been detected. Causes & remedy: • see error description EPL: Defective telegram (CRC) detected [0x00c88266] (□ 59) Codes: • C13131/3 / C14131/3 (monitoring threshold) • C13891/4 / C14891/4 (error response) • C13131/1 / C14131/1 (error counter)
0x38266	229990	QL_EPL_COM_CRC	
0x48266	295526	WL_EPL_COM_CRC	
0x68266	426598	I__EPL_COM_CRC	
0x18267	98919	EL_EPL_MN_LOSS_CN	The MXI connection to the Servo Drive 9400 is interrupted or a node has failed. Causes & remedy: • see error description EPL: Lost connection to 9400 [0x00c83100] (□ 56) EPL: Failure of a network node [0x00c88267] (□ 59) Codes: • C13891/5 / C14891/5 (error response) • C13132 / C14132 (CN: link interruptions)
0x38267	229991	QL_EPL_MN_LOSS_CN	
0x48267	295527	WL_EPL_MN_LOSS_CN	
0x68267	426599	I__EPL_MN_LOSS_CN	
0x18283	98947	EL_EPL_ADDRESS_MN	An invalid IP address has been assigned by the Managing Node via POWERLINK or set as Node ID. OR: The address setting of the managing node (Node ID = '240') has been assigned several times. Causes & remedy: • see error description EPL: Invalid address selected [0x00c88261] (□ 58) EPL: MN address assigned double [0x00c88283] (□ 60) Codes: • see Node address setting (□ 35) • see Settings and displays in the »Engineer« (□ 37)
0x38283	230019	QL_EPL_ADDRESS_MN	
0x48283	295555	WL_EPL_ADDRESS_MN	
0x68283	426627	I__EPL_ADDRESS_MN	

10 Parameter reference

This chapter supplements the parameter list and the table of attributes contained in the reference manual and in the »Engineer« online help for the Servo Drive 9400 with the parameters of the E94AYCEC (POWERLINK) communication module.



Reference manual/»Engineer« online help for Servo Drive 9400

Here you will find general information on parameters.

10.1 Parameters of the standard device that are relevant to communication

In this chapter communication-relevant parameters of the Servo Drive 9400 are listed in numerically ascending order.

C00615

Parameter Name:		Data type: UNSIGNED_32 Index: 23960 = 0x5D98
C00615 Resp. to imp. device conf.		
Response to impermissible device configuration		
Selection list		
1	Fault	
3	Quick stop by trouble	
4	Warning Locked	
6	Information	
0	No response	
Subcodes	Lenze setting	Info
C00615/1	0: No Response	Reserved
C00615/2	1: No Response	Resp. to imp. module in MXI1
C00615/3	1: No Response	Resp. to imp. module in MXI2
C00615/4	0: No Response	Reserved
C00615/5	0: No Response	Reserved
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

C00636

Parameter Name:		Data type: UNSIGNED_32 Index: 23939 = 0x5D83
C00636 Resp. to new module in MXI1		
Response for the case where a new module has been plugged into slot 1 of the standard device.		
Selection list (Lenze setting printed in bold)		
1	Fault	
6	Information	
5	Warning	
4	Warning Locked	
3	Quick stop by trouble	
0	No response	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

C00637

Parameter Name: C00637 Resp. to new module in MXI2		Data type: UNSIGNED_32 Index: 23939 = 0x5D83
Response if a new module has been plugged into module slot 2 of the standard device.		
Selection list (Lenze setting printed in bold)		
1	Fault	
6	Information	
5	Warning	
4	Warning Locked	
3	Quick stop by trouble	
0	No response	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

C01501

Parameter Name: C01501 Resp. to comm. error with MXI1		Data type: UNSIGNED_32 Index: 23074 = 0x5A22
Response to a communication error between an "intelligent" module in slot 1 and the standard device		
Selection list (Lenze setting printed in bold)		
0	No response	
1	Fault	
3	Quick stop by trouble	
4	Warning Locked	
5	Warning	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

C01502

Parameter Name: C01502 Resp. to comm. error with MXI2		Data type: UNSIGNED_32 Index: 23074 = 0x5A22
Response to a communication error between an "intelligent" module in slot 2 and the standard device		
Selection list (Lenze setting printed in bold)		
0	No response	
1	Fault	
3	Quick stop by trouble	
4	Warning Locked	
5	Warning	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer		

10.2

Parameters of the communication module for slot MXI1

This chapter lists the parameters of the E94AYCEC communication module (POWERLINK) for slot MXI2 of the Servo Drive 9400 in numerically ascending order.

C13000

Parameter Name: C13000 EPL IP address			Data type: UNSIGNED_32 Index: 11575 = 0x2D37 EPL index: See subcodes
The code displays the IP address of the communication module. • The IP address is derived from the EPL node address (Node ID): 192.168.100.[Node ID] • The node ID is derived from the DIP switch position or from C13044. ▶ Node address setting (35)			
Setting range (min. value unit max. value)			
0.0.0.0 (0x00000000)		255.255.255.255 (0xFFFFFFFF)	
Subcodes	Lenze setting	Info	EPL index
C13000/1	3232261130 (0xC0A86401 = 192.168.100.1)	EPL IP address	0x1E40.0x02
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13001

Parameter Name: C13001 EPL IP subnet mask			Data type: UNSIGNED_32 Index: 11574 = 0x2D36 EPL index: See subcodes
The code describes the IP subnet mask which restricts the directly addressable IP address range (i.e. without a gateway in the EPL segment of the routers). The value 255.255.255.0 (0xFFFFFFFF00) is always assigned to the subnet mask in one segment.			
Setting range (min. value unit max. value)			
255.0.0.0 (0xFF000000)		255.255.255.0 (0xFFFFFFFF00)	
Subcodes	Lenze setting	Info	EPL index
C13001/1	4294967040 (0xFFFFFFFF00 = 255.255.255.0)	EPL IP-subnet mask	0x1E40.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13003

Parameter Name: C13003 EPL IP address router		Data type: UNSIGNED_32 Index: 11572 = 0x2D34 EPL index: See subcodes	
The code describes the IP address of the router which connects the EPL segment to the higher-level network. The standard entry corresponds to the standard router address of the EPL specification: → 192.168.100.254 Permissible entries replace the lowest-order byte of the standard entry with the EPL address of the node which has the function of a router.			
Setting range (min. value unit max. value)			
0.0.0.0 (0x00000000)	255.255.255.255 (0xFFFFFFFF)		
Subcodes	Lenze setting	Info	EPL index
C13003/1	3232261374 (0xC0A864FE = 192.168.100.254)	EPL IP address router	0x1E40.0x05
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13004

Parameter Name: C13004 EPL MAC address		Data type: OCTET_STRING Index: 11571 = 0x2D33 EPL index: See subcodes
The code indicates the physical address (MAC address) of the POWERLINK interface of the communication module. When the communication module is produced, the MAC address is assigned unequivocally worldwide and provides addressing on the lowest level.		
Subcodes	Info	EPL index
C13004/1	MAC Address (octet string[6]) 00-0A-86-xx-yy-zz • 00-0A-86 = Lenze • xx-yy-zz = consecutive number	0x1030.0x05
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13028

Parameter Name: C13028 EPL node declaration CN			Data type: UNSIGNED_32 Index: 11547 = 0x2D18 EPL index: See subcodes
The code describes the controlled nodes 1 ... 100 and their properties.			
Value is bit-coded:			
Bit 0 ... 31	see below		
Subcodes	Lenze setting	Info	EPL index
C13028/1	0	EPL node declaration CN	0x1F81.0x01
...	...	...	...
C13028/100	0	EPL node declaration CN	0x1F81.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

Description of the bits 0 ... 31

Bit	Relevance		Lenze	Value	Description
	MN	CN			
0 (LSB)	☒	☒	0, 1	0	EPL node with this ID does not exist.
				1	EPL node with this ID exists.
1	☒	☒	0, 1	0	EPL node with this ID is not a controlled node.
				1	EPL node with this ID is a controlled node.
2	☒	☐	1	0 ^{*)}	On detection of a booting controlled node, the application will not be informed.
				1	On detection of a booting controlled node, the application will be informed and the controlled node will be started.
3	☒	☒	1	0	Optional controlled node
				1	Obligatory controlled node
4	☒	☐	0	0	The managing node is allowed to send reset commands.
				1 ^{*)}	The managing node must not send any reset command.
5	☒	☐	0	0	Software version verification of the controlled node is not required.
				1 ^{*)}	Software version verification of the controlled node is required.
6	☒	☐	0, 1	0	Automatic application software update is not allowed.
				1	Automatic application software update is allowed.
7	-	-	0	0	Reserved / No function
8	☒	☒	0, 1	0	Isochronously accessed controlled node
				1	Asynchronously accessed controlled node (bit 9 is irrelevant)
9	☒	☒	0	0	Continuously accessed controlled node
				1	Multiplex EPL nodes are supported.
10	☒	☒	0	0	No "POWERLINK to standard Ethernet" router function.
				1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	☒	☒	0	0	No "POWERLINK to fieldbus" router function.
				1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	☒	☒	0	0	The managing node does not send any PRes frames
				1	The managing node sends PRes frames
13 ... 30	-	-	0	0	Reserved / No function
31 (MSB)	☒	☒	0, 1	0	Bits 0 ... 30 inhibited
				1	Bits 0 ... 30 enabled

^{*)} Not permissible for 9400 Servo Drives.

C13029

Parameter Name: C13029 EPL node declaration MN		Data type: UNSIGNED_32 Index: 11546 = 0x2D1A EPL index: See subcodes	
The code describes managing node, diagnostic device, and EPL router as well as their properties.			
Value is bit-coded:			
Bit 0 ... 31	see below		
Subcodes	Lenze setting	Info	EPL index
C13029/1	2147483661 (0x8000000D)	EPL node assignment managing node	0x1F81.0xF0
C13029/2	0	EPL node assignment diagnostic device	0x1F81.0xFD
C13029/3	2147483655 (0x80000007)	EPL node assignment router	0x1F81.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

Description of the bits 0 ... 31

Bit	Relevance		Lenze	Value	Description
	MN	CN			
0 (LSB)	☒	☒	0, 1	0	EPL node with this ID does not exist.
				1	EPL node with this ID exists.
1	☒	☒	0, 1	0	EPL node with this ID is not a controlled node.
				1	EPL node with this ID is a controlled node.
2	☒	☐	1	0 ^{*)}	On detection of a booting controlled node, the application will not be informed.
				1	On detection of a booting controlled node, the application will be informed and the controlled node will be started.
3	☒	☒	1	0	Optional controlled node
				1	Obligatory controlled node
4	☒	☐	0	0	The managing node is allowed to send reset commands.
				1 ^{*)}	The managing node must not send any reset command.
5	☒	☐	0	0	Software version verification of the controlled node is not required.
				1 ^{*)}	Software version verification of the controlled node is required.
6	☒	☐	0, 1	0	Automatic application software update is not allowed.
				1	Automatic application software update is allowed.
7	-	-	0	0	Reserved / No function
8	☒	☒	0, 1	0	Isochronously accessed controlled node
				1	Asynchronously accessed controlled node (bit 9 is irrelevant)
9	☒	☒	0	0	Continuously accessed controlled node
				1	Multiplex EPL nodes are supported.
10	☒	☒	0	0	No "POWERLINK to standard Ethernet" router function.
				1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	☒	☒	0	0	No "POWERLINK to fieldbus" router function.
				1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	☒	☒	0	0	The managing node does not send any PRes frames
				1	The managing node sends PRes frames
13 ... 30	-	-	0	0	Reserved / No function
31 (MSB)	☒	☒	0, 1	0	Bits 0 ... 30 inhibited
				1	Bits 0 ... 30 enabled

*) Not permissible for 9400 Servo Drives.

C13030

Parameter Name: C13030 EPL device type		Data type: UNSIGNED_32 Index: 11545 = 0x2D19 EPL index: 0x1000	
The code indicates the device type of the EPL node.			
Value is bit-coded:			
Bit 1	Bit1		
Bit 2	Bit2		
Bit 3	Bit3		
Bit 4	Bit4		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13034

Parameter Name: C13034 EPL identity object			Data type: UNSIGNED_32 Index: 11541 = 0x2D15 EPL index: See subcodes
The code indicates the Manufacturer's EPL ID no. for Lenze.			
Subcodes	Lenze setting	Info	EPL index
C13034/1	59 (0x3B)	Manufacturer's EPL ID no.	0x1018.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13040

Parameter Name: C13040 EPL feature flags		Data type: UNSIGNED_32 Index: 11535 = 0x2D0F EPL index: 0x1F82
The code displays the POWERLINK functions implemented by the EPL node.		
Value is bit-coded:		
Bit 0 ... 31	see below	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

Description of the bits 0 ... 31

Bit	Relevance		Value	Description
	MN	CN		
0 (LSB)	☐	☒	0	Asynchronous access
			1	Isochronous access ^{*)}
1	☒	☒	0	No SDO by UDP/IP
			1	SDO via UDP/IP ^{*)}
2	☒	☒	0	No SDO via EPL "ASnd" ^{*)}
			1	SDO by EPL "ASnd"
3	☒	☒	0	No SDO integrated in PDO ^{*)}
			1	SDO integrated in PDO
4	☒	☒	0	No "NMT Info Services"
			1	"NMT Info Services" supported
5	☒	☒	0	No extended "NMT State Commands" ^{*)}
			1	Extended "NMT State Commands" supported
6	☒	☒	0	No dynamic PDO mapping ^{*)}
			1	Dynamic PDO mapping supported
7	☒	☐	0	No dynamic PDO mapping
			1	Dynamic PDO mapping supported
8	☒	☒	0	No configuration manager function
			1	Configuration manager function
9	☒	☒	0	Only isochronous cyclic access permitted.
			1	Isochronous multiplexed access possible.
10	☐	☒	0	No address assignment via software
			1	Address assignment via software
11	☒	☐	0	No support of the "Basic Ethernet Mode" by the master
			1	Support of the "Basic Ethernet Mode" by the master
12	☒	☒	0	No "POWERLINK to standard Ethernet" router function
			1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
13	☒	☒	0	No "POWERLINK to fieldbus" router function
			1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
14...31 (MSB)	-	-	-	Reserved / No function

^{*)} Values implemented by 9400 Servo Drives (MN: 0x0087_h = 135_d, CN 0x0083_h = 131_d).

C13041

Parameter Name: C13041 EPL version	Data type: UNSIGNED_8 Index: 11534 = 0x2D0E EPL index: not available
The code describes the version of the POWERLINK communication profile implemented by the communication module. The higher-order nibble describes the major version, the lower order nibble describes the minor version. The implemented value corresponds to the POWERLINK version 2.0.	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13042

Parameter Name: C13042 Current EPL device address	Data type: UNSIGNED_8 Index: 11533 = 0x2D0D EPL index: 0x1F93.0x01
The code displays the currently valid EPL node address (Node ID). - The node ID must be unequivocal in the EPL network segment. - See also C13044.	
Display area (min. value unit max. value)	
1	240
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13043

Parameter Name: C13043 EPL device address selection	Data type: UNSIGNED_8 Index: 11532 = 0x2D0C EPL index: 0x1F93.0x02
The code indicates whether the EPL node address (node ID) has been set via DIP switches at the communication module or via the software. 0: Node ID has been set via software (C13044). 1: Node ID has been set via DIP switches at the communication module. ► Node address setting (35)	
Display area (min. value unit max. value)	
0	1
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C13044

Parameter Name: C13044 EPL device address SW	Data type: UNSIGNED_8 Index: 11531 = 0x2D0B EPL index: 0x1F93.0x03
This code serves to set the EPL node address (node ID) via the software. The value "0" (Lenze setting) is not a valid node ID. It serves to activate the setting via the DIP switches. ► Node address setting (35)	
Setting range (min. value unit max. value)	
1	240
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT	

C13045

Parameter Name: C13045 EPL host name	Data type: VISIBLE_STRING Index: 11530 = 0x2D0A EPL index: 0x1F9A
The code defines a DNS-compatible device name. The length is limited to 15 characters. The device name must be unambiguous within the network domain. Naming convention: The device name • starts with a character • ends with a character or digit The device name consists of • letters ([A ... Z], [a ... z]) • digits ([0 ... 9]) • hyphen ([-])	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT	

C13060

Parameter Name: C13060 EPL cycle time	Data type: UNSIGNED_32 Index: 11515 = 0x2CFB EPL index: 0x1006																																												
The code declares the length of the EPL cycle in μs. • In the configured state, this code must have an identical value in all EPL nodes. • The selected value must correspond to the actual bus cycle time so that the internal monitoring functions work correctly.																																													
<table border="1"> <thead> <tr> <th colspan="2">Selection list (Lenze setting printed in bold)</th></tr> </thead> <tbody> <tr><td>500</td><td>0.5</td></tr> <tr><td>1000</td><td>1</td></tr> <tr><td>2000</td><td>2</td></tr> <tr><td>3000</td><td>3</td></tr> <tr><td>4000</td><td>4</td></tr> <tr><td>5000</td><td>5</td></tr> <tr><td>6000</td><td>6</td></tr> <tr><td>7000</td><td>7</td></tr> <tr><td>8000</td><td>8</td></tr> <tr><td>9000</td><td>9</td></tr> <tr><td>10000</td><td>10</td></tr> <tr><td>11000</td><td>11</td></tr> <tr><td>12000</td><td>12</td></tr> <tr><td>13000</td><td>13</td></tr> <tr><td>14000</td><td>14</td></tr> <tr><td>15000</td><td>15</td></tr> <tr><td>16000</td><td>16</td></tr> <tr><td>17000</td><td>17</td></tr> <tr><td>18000</td><td>18</td></tr> <tr><td>19000</td><td>19</td></tr> <tr><td>20000</td><td>20</td></tr> </tbody> </table>		Selection list (Lenze setting printed in bold)		500	0.5	1000	1	2000	2	3000	3	4000	4	5000	5	6000	6	7000	7	8000	8	9000	9	10000	10	11000	11	12000	12	13000	13	14000	14	15000	15	16000	16	17000	17	18000	18	19000	19	20000	20
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18000	18																																												
19000	19																																												
20000	20																																												
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT																																													

C13066

Parameter Name: C13066 EPL CN: Max. user data PRes RPDO			Data type: UNSIGNED_16 Index: 11509 = 0x2CF5 EPL index: See subcodes	
The code defines the reserved user data length of the PRes telegrams for controlled nodes 1 ... 100. Each subcode number corresponds to one EPL node with the same node ID. The EPL node must be enabled via code C13028. The subcodes describe the PRes telegrams received. The value must be within the range of 36 ... 1490 bytes. The values are upper limit values for the entire size of the PDO mappings for received PRes telegrams. In the configured state, the values stored for the EPL nodes must be identical to the corresponding C13072 entries. C13066 must have an identical value in all EPL nodes of the network.				
Setting range (min. value unit max. value)				
0	Byte	1490		
Subcodes	Lenze setting	Info	EPL index	
C13066/1	0 byte	EPL CN: max. user data of RPDO	0x1F8D.0x01	
...	...	...	...	
C13066/100	0 byte	EPL CN: max. user data of RPDO	0x1F8D.0x64	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C13071

Parameter Name: C13071 EPL Max. PDO user data RPDO PReq		Data type: UNSIGNED_16 Index: 11504 = 0x2CF0 EPL index: 0x1F98.0x04	
The code defines the maximum data volume to be received by the controlled node of the PDP mapping for the PReq telegram to be defined via one of the codes C13231 ... C13240. In the configured state, the value must be identical to the entry for a response valid for the EPL node. When a Servo Drive 9400 is used, the code as managing node is irrelevant since Servo Drives 9400 as managing nodes only transmit PDO data via broadcast PRes telegrams (C13071 = 36 bytes).			
Setting range (min. value unit max. value)		Lenze setting	
0	Byte	1490	36 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13072

Parameter Name: C13072 EPL Max. PDO user data TPDO PRes			Data type: UNSIGNED_16 Index: 11503 = 0x2CE5 EPL index: 0x1F98.0x05	
The code defines the maximum PDO data size to be sent by the EPL node for the current network configuration. The PDO mapping C13531 can assign data with a total size greater than or equal to C13072. In the configured state, C13072 must be identical to the entry in C13066 valid for the EPL node.				
Setting range (min. value unit max. value)			Lenze setting	
0	Byte	1490	400 bytes	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C13074

Parameter Name: C13074 EPL multi-stage cycle timing			Data type: UNSIGNED_8 Index: 11501 = 0x2CED EPL index: 0x1F98.0x07		
This code serves to define the maximum number of the multiplexed cycles. If, e.g., the value "3" is entered, the multiplexed cycle is repeated every three cycles. Within one multiplexed cycle, the nodes are queried according to the values in code C13079. If, e.g., the value "2" is entered for a node in C13079/x, it is always queried only in the second cycle of the three multiplexed cycles.					
Setting range (min. value unit max. value)			Lenze setting		
0	Cycles	255	0 cycles		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☒ COM ☐ MOT					

C13075

Parameter Name: C13075 EPL SDO channel width			Data type: UNSIGNED_16 Index: 11500 = 0x2CEC EPL index: 0x1F98.0x08
The code defines the maximum user data size of asynchronous frames. Protocol-specific headers for POWERLINK, UDP/IP and others as well as service-specific headers are to be interpreted as part of the user data. In the configured state, the C13075 values of all EPL nodes must be identical.			
Setting range (min. value unit max. value)			Lenze setting
282	Byte	1500	282 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13078

Parameter Name: C13078 EPL CN: Max. time - MN detection			Data type: UNSIGNED_32 Index: 11497 = 0x2CE9 EPL index: 0x1F99
The code defines the time interval needed for detecting a managing node. If a booting controlled node detects a managing node during the interval, it changes to NMT_CS_PREOPERATIONAL_1. If not, it changes to "Basic Ethernet Mode".			
Setting range (min. value unit max. value)			Lenze setting
0	µs	4294967295	10000000 µs
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13079

Parameter Name: C13079 EPL multi-stage node declaration CN			Data type: UNSIGNED_8 Index: 11496 = 0x2CE8 EPL index: See subcodes
This code indicates in which multiplexed cycle the controlled node is queried. The value entered must not exceed the value in code C13074 . If, for instance, the value "3" is entered in code C13074 , the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C13079/x, it is always queried only in the second cycle of the three multiplexed cycles.			
Setting range (min. value unit max. value)			
0	Cycles	255	
Subcodes	Lenze setting	Info	EPL index
C13079/1	0 cycles		0x1F9B.0x01
...	...		...
C13079/100	0 cycles		0x1F9B.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13095

Parameter Name: C13095 EPL communication status		Data type: UNSIGNED_8 Index: 11480 = 0x2CD8 EPL index: 0x1F8C
The code indicates the current NMT status of the EPL node.		
Selection list (read only)		Info
0	Off	NMT_GS_OFF
25	Initialising	NMT_GS_INITIALISING
41	ResetAppl	NMT_GS_RESET_APPLICATION
57	ResetComm	NMT_GS_RESET_COMMUNICATION
121	ResetConfig	NMT_GS_RESET_CONFIGURATION
28	NotActive	NMT_CS_NOT_ACTIVE NMT_MS_NOT_ACTIVE
29	PreOp1	NMT_CS_PRE_OPERATIONAL_1 NMT_MS_PRE_OPERATIONAL_1
93	PreOp2	NMT_CS_PRE_OPERATIONAL_2 NMT_MS_PRE_OPERATIONAL_2
109	ReadyToOp	NMT_CS_READY_TO_OPERATE NMT_MS_READY_TO_OPERATE
253	Operational	NMT_CS_OPERATIONAL NMT_MS_OPERATIONAL
77	Stopped	NMT_CS_STOPPED (only controlled node)
30	BasicEthernet	NMT_CS_BASIC_ETHERNET (only controlled node)
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13102

Parameter Name: C13102 EPL reset command		Data type: UNSIGNED_8 Index: 11473 = 0x2CD1 EPL index: 0x1F9E
A reset command to a single EPL node in the network can result in cycle and monitoring errors. The code initiates a reset of the EPL node. When the reset has been executed, the code is automatically set to "NMTInvalidService".		
Selection list (Lenze setting printed in bold)		Info
40	ResetNode	Status transition → NMT_GS_RESET_APPLICATION
41	ResetCommunication	Status transition → NMT_GS_RESET_COMMUNICATION
42	ResetConfiguration	Status transition → NMT_GS_RESET_CONFIGURATION
255	No command	No function
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13110

Parameter Name: C13110 EPL fault memory		Data type: UNSIGNED_8 Index: 11465 = 0x2CC9 EPL index: 0x1001
The code indicates the currently pending errors (according to error classes).		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13126

Parameter Name: C13126 EPL CN: Frame collisions			Data type: UNSIGNED_32 Index: 11449 = 0x2CB9 EPL index: See subcodes	
The code indicates the number of POWERLINK collisions detected by the controlled node. Each event is counted. Every single event is followed by an error message. No threshold value management is implemented.				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C13126/1	0		CumulativeCnt_U32	0x1C0A.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13127

Parameter Name: C13127 EPL CN: Sync loss			Data type: UNSIGNED_32 Index: 11448 = 0x2CB8 EPL index: See subcodes	
The controlled node expects SoC frames in time intervals which correspond to the cycle time (C13060). The code indicates the error counters for missing SoC frames. The monitoring response is determined via C13891/3 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C13127/1	0		CumulativeCnt_U32	0x1C0B.0x01
C13127/2	0		ThresholdCnt_U32	0x1C0B.0x02
C13127/3	9		Threshold_U32	0x1C0B.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13131

Parameter Name: C13131 EPL CN: Frame error (CRC)			Data type: UNSIGNED_32 Index: 11444 = 0x2CB4 EPL index: See subcodes	
The code indicates the number of frame checksum errors detected by the controlled nodes. The monitoring response is determined via C13891/4 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C13131/1	0		CumulativeCnt_U32	0x1C0F.0x01
C13131/2	0		ThresholdCnt_U32	0x1C0F.0x02
C13131/3	9		Threshold_U32	0x1C0F.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C13132

Parameter Name: C13132 EPL CN: Link interruptions		Data type: UNSIGNED_32 Index: 11443 = 0x2CB3 EPL index: 0x1C10
The code indicates the counter of the Controlled Node for POWERLINK connection interruptions. Each event is counted. Every single event is followed by an error message. No threshold value management is implemented.		
Display area (min. value unit max. value)		
0		4294967295
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13136

Parameter Name: C13136 EPL telegram counter		Data type: UNSIGNED_32 Index: 11439 = 0x2CAF EPL index: 0x1101.0x01
The subcodes of the code indicate a counter for EPL cycles. The counter is started with each mains power-up of the EPL node at 0. An overflow occurs at 4.294.967.295.		
Display area (min. value unit max. value)		
0		4294967295
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13219

Parameter Name: C13219 EPL device type MN		Data type: UNSIGNED_32 Index: 11356 = 0x2C5C EPL index: See subcodes	
The code contains the device type ID of the EPL nodes. Each subcode corresponds to an EPL node with node ID = subcode number. When being in the configured status, the values must be identical with the device types stored locally in each EPL node under C13030.			
Subcodes	Lenze setting	Info	EPL index
C13219/1	0	Managing node	0x1F84.0xF0
C13219/2	0	Diagnostics device	0x1F84.0xFD
C13219/3	0	router	0x1F84.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13225

Parameter Name: C13225 EPL MN: Max. user data RPDO			Data type: UNSIGNED_16 Index: 11350 = 0x2C56 EPL index: See subcodes	
The code defines the reserved user data length of the PRes frames. Each subcode number corresponds to an EPL node with the same node ID. The subcode describes the PRes frames received. The value must be within the limits of 36 ... 1490 bytes. The values are upper limit values for the total size of the PDO mappings which must be defined each one of the codes C13231 ... C13240 for PRes frames received. In the configured state, the values stored for the EPL nodes must be identical to the corresponding C13072 entries. C13066 must have an identical value in all EPL nodes of the network.				
Setting range (min. value unit max. value)				
0	Byte	1490		
Subcodes	Lenze setting	Info	EPL index	
C13225/1	0 byte	Managing node	0x1F8D.0xF0	
C13225/2	0 byte	Diagnostics device	0x1F8D.0xFD	
C13225/3	0 byte	router	0x1F8D.0xFE	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C13229

Parameter Name: C13229 EPL multi-stage node declaration MN		Data type: UNSIGNED_8 Index: 11346 = 0x2C52 EPL index: See subcodes	
This code indicates in which multiplexed cycle the node is queried. The value entered must not exceed the value in code C13074. If, for instance, the value "3" is entered in code C13074, the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C13229/x, it is always queried only in the second cycle of the three multiplexed cycles.			
Setting range (min. value unit max. value)			
0	Cycles	255	
Subcodes	Lenze setting	Info	EPL index
C13229/1	0 cycles	Managing node	0x1F9B.0xF0
C13229/2	0 cycles	Diagnostics device	0x1F9B.0xFD
C13229/3	0 cycles	router	0x1F9B.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13231

Parameter Name: C13231 EPL RPDO			Data type: UNSIGNED_64 Index: 11344 = 0x2C50 EPL index: See subcodes
EPL RPDO-1			
Subcodes	Lenze setting	Info	EPL index
C13231/1	0	EPL RPDO	0x1600.0x01
...	...	...	...
C13231/32	0	EPL RPDO	0x1600.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☒ COM ☐ MOT			

C13232

Parameter Name: C13232 EPL RPDO			Data type: UNSIGNED_64 Index: 11343 = 0x2C4F EPL index: See subcodes
EPL RPDO-2			
Subcodes	Lenze setting	Info	EPL index
C13232/1	0	EPL RPDO	0x1601.0x01
...	...	...	...
C13232/32	0	EPL RPDO	0x1601.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13233

Parameter Name: C13233 EPL RPDO			Data type: UNSIGNED_64 Index: 11342 = 0x2C4E EPL index: See subcodes
EPL RPDO-3			
Subcodes	Lenze setting	Info	EPL index
C13233/1	0	EPL RPDO	0x1602.0x01
...	...	...	...
C13233/32	0	EPL RPDO	0x1602.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13234

Parameter Name: C13234 EPL RPDO			Data type: UNSIGNED_64 Index: 11341 = 0x2C4D EPL index: See subcodes
EPL RPDO-4			
Subcodes	Lenze setting	Info	EPL index
C13234/1	0	EPL RPDO	0x1603.0x01
...	...	...	...
C13234/32	0	EPL RPDO	0x1603.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13235

Parameter Name: C13235 EPL RPDO			Data type: UNSIGNED_64 Index: 11340 = 0x2C4C EPL index: See subcodes
EPL RPDO-5			
Subcodes	Lenze setting	Info	EPL index
C13235/1	0	EPL RPDO	0x1604.0x01
...	...	...	...
C13235/32	0	EPL RPDO	0x1604.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13236

Parameter Name: C13236 EPL RPDO			Data type: UNSIGNED_64 Index: 11339 = 0x2C4B EPL index: See subcodes
EPL RPDO-6			
Subcodes	Lenze setting	Info	EPL index
C13236/1	0	EPL RPDO	0x1605.0x01
...	...	...	...
C13236/32	0	EPL RPDO	0x1605.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13237

Parameter Name: C13237 EPL RPDO			Data type: UNSIGNED_64 Index: 11338 = 0x2C4A EPL index: See subcodes
EPL RPDO-7			
Subcodes	Lenze setting	Info	EPL index
C13237/1	0	EPL RPDO	0x1606.0x01
...	...	...	...
C13237/32	0	EPL RPDO	0x1606.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13238

Parameter Name: C13238 EPL RPDO			Data type: UNSIGNED_64 Index: 11337 = 0x2C49 EPL index: See subcodes
EPL RPDO-8			
Subcodes	Lenze setting	Info	EPL index
C13238/1	0	EPL RPDO	0x1607.0x01
...	...	...	...
C13238/32	0	EPL RPDO	0x1607.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13239

Parameter Name: C13239 EPL RPDO			Data type: UNSIGNED_64 Index: 11336 = 0x2C48 EPL index: See subcodes
EPL RPDO-9			
Subcodes	Lenze setting	Info	EPL index
C13239/1	0	EPL RPDO	0x1608.0x01
...	...	...	...
C13239/32	0	EPL RPDO	0x1608.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13240

Parameter Name: C13240 EPL RPDO			Data type: UNSIGNED_64 Index: 11335 = 0x2C47 EPL index: See subcodes
EPL RPDO-10			
Subcodes	Lenze setting	Info	EPL index
C13240/1	0	EPL RPDO	0x1609.0x01
...	...	...	...
C13240/32	0	EPL RPDO	0x1609.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13484

Parameter Name: C13484 EPL address: RPDO			Data type: UNSIGNED_8 Index: 11091 = 0x2B53 EPL index: See subcodes
The subcodes 1 ... 10 describe the node address of the transmitting EPL node for the PDO channels 1 ... 10 (mapping see C13231 ... C13240). Values > "0" describe the origin of a PRes frame. The value "0" is reserved for PReq (must not be used in systems with a Servo Drive 9400 as managing node). The subcodes 1 ... 10 are only valid if the corresponding subcode of C13489 has a value > "0". Before writing the EPL node address in a subcode of C13484, the corresponding subcode of C13489 must be set to the value "0". Renewed writing of the number of mapping entries in the subcode of C13489 enables the node address.			
Setting range (min. value unit max. value)			
0		255	
Subcodes	Lenze setting	Info	EPL index
C13484/1	0	EPL address: RPDO	0x1400.0x01
...	...	...	...
C13484/10	0	EPL address: RPDO	0x1409.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13489

Parameter Name: C13489 EPL number RPDO			Data type: UNSIGNED_8 Index: 11086 = 0x2B4E EPL index: See subcodes
The subcodes 1 ... 10 describe the number of valid mapping entries of the PDO channels 1 ... 10 (valid subcodes in C13231 ... C13240). The value "0" inhibits the corresponding PDO channel. Before writing the mapping entries in C13231 ... C13240 or the EPL address of the SDO transmitter in the corresponding subcode of C13484, the corresponding subcode of code C13489 must be set to the value "0". A renewed writing of the number of mapping entries in the subcode of C13489 enables the mapping and the transmission EPL address for the PDO channel. The sum of all mapping entries enabled via the subcodes of C13489 must not exceed the value "64". Make sure that the sum of memory requirements of all objects mapped in C13231 ... C13240 does not exceed 64 bytes.			
Setting range (min. value unit max. value)			
0		32	
Subcodes	Lenze setting	Info	EPL index
C13489/1	0	EPL RPDO: object count	0x1600.0x00
...	...	...	...
C13489/10	0	EPL RPDO: object count	0x1609.0x00
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13531

Parameter Name: C13531 EPL TPDO			Data type: UNSIGNED_64 Index: 11044 = 0x2B24 EPL index: See subcodes
The code describes the mapping for the TPDO channel. C13789.1 describes the number of valid mapping object entries in this code. Subcodes 1 ... 32 describe the mapping of the single objects. Servo Drives 9400 exclusively support mapping objects with a data length of 8 bits (1 byte) or a multiple of this value. Incompatible objects must be mapped on variables with a compatible data length. The "Offset" (bytes 4 and 5) and "Length" (bytes 6 and 7) of the mapping object description must be a multiple of 8. Before changing the mapping object entries in C13531, C13789/1 must be set to "0". This deactivates the mapping. Writing into C13789/1 with a value unequal "0" re-enables the mapping. Offset and length of the data object relevant for the receiving EPL node must be identical with the corresponding values of the entry in C13531.			
Subcodes	Lenze setting	Info	EPL index
C13531/1	0	EPL TPDO	0x1A00.0x01
...	...	...	...
C13531/32	0	EPL TPDO	0x1A00.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13789

Parameter Name: C13789 EPL number TPDO			Data type: UNSIGNED_8 Index: 10786 = 0x2A22 EPL index: See subcodes
The subcode 1 describes the number of valid mapping object entries (subcodes) in code C13531. The value "0" inhibits the TPDO. Before writing a subcode of C13531, set C13789 subcode 1 to the value "0". Renewed writing of the number of mapping object entries in C13789 subcode 1 enables the TPDO mapping.			
Setting range (min. value unit max. value)			
0		32	
Subcodes	Lenze setting	Info	EPL index
C13789/1	0	EPL TPDO: object count	0x1A00.0x00
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C13880

Parameter Name: C13880 EPL quality lights			Data type: UNSIGNED_8 Index: 10695 = 0x29C7 EPL index: not available
The code indicates the current quality status (values: 1, 2 or 4) of the network functions of the communication module.			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☒ PDO_MAP_TX ☐ COM ☐ MOT			

C13881

Parameter Name: C13881 EPL reset error counter			Data type: UNSIGNED_8 Index: 10694 = 0x29C6 EPL index: not available
The value "1" (TRUE) enables the code to reset the cycle counter. After reset termination the code automatically assumes the value "0" (FALSE).			
Setting range (min. value unit max. value)		Lenze setting	
0		1	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13882

Parameter Name: C13882 EPL reset cycle counter			Data type: UNSIGNED_8 Index: 10693 = 0x29C5 EPL index: not available		
The value "1" (TRUE) enables the code to reset the cycle counter (C13136). After reset termination the code automatically assumes the value "0" (FALSE).					
Setting range (min. value unit max. value)			Lenze setting		
0		1	0		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C13883

Parameter Name: C13883 EPL response when "DataExchange" is quit		Data type: UNSIGNED_8 Index: 10692 = 0x29C4 EPL index: not available	
Setting of the response when the "DataExchange" state is quit. A change in the monitoring response becomes immediately effective.			
Selection list (Lenze setting printed in bold)			
0	No response		
1	Trouble		
3	Quick stop by trouble		
4	Warning Locked		
6	Information		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13885

Parameter Name: C13885 EPL data RPDO: error response		Data type: UNSIGNED_8 Index: 10690 = 0x29C2 EPL index: not available	
The code controls the error response to failing PDO communication with a node. The failure is detected because expected PDO data are missing.			
Selection list (Lenze setting printed in bold)		Info	
0	Process data received	The data received last is continued to be used.	
1	Clear process data	The data of all reception PDO channels is set to "0".	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13891

Parameter Name: C13891 EPL module error responses			Data type: UNSIGNED_8 Index: 10684 = 0x29BC EPL index: See subcodes
The subcodes of C13891 determine the response to errors (e.g. communication errors) of the EPL stack.			
Selection list			
0	No response		
1	Trouble		
3	Quick stop by trouble		
4	Warning Locked		
6	Information		
Subcodes	Lenze setting	Info	EPL index
C13891/1	4: Warning locked	Monitoring response - EPL cycle time violation	
C13891/2	4: Warning locked	Monitoring response - EPL boot-up error	
C13891/3	4: Warning locked	Monitoring response - EPL synchronisation loss	
C13891/4	4: Warning locked	Monitoring response - EPL frame error (CRC)	
C13891/5	0: No Response	Monitoring response EPL controlled node response error	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13900

Parameter Name: C13900 EPL firmware type			Data type: VISIBLE_STRING Index: 10675 = 0x29B3 EPL index: not available
Display of the Lenze firmware type of the communication module (product designation).			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13901

Parameter Name: C13901 EPL firmware date			Data type: VISIBLE_STRING Index: 10674 = 0x29B2 EPL index: not available
Display of the date the firmware of the communication module was created			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13902

Parameter Name: C13902 EPL firmware version			Data type: VISIBLE_STRING Index: 10673 = 0x29B1 EPL index: not available
Display of the version number of the communication module firmware			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C13910

Parameter Name: C13910 EPL error code last error		Data type: UNSIGNED_32 Index: 10665 = 0x29A9 EPL index: not available
Display of the error code of the last occurred POWERLINK error message ▶ POWERLINK error messages (61)		
Selection list (read only)		
0	No error	
98915	EL_EPL_BOOTUP_1	
229987	QL_EPL_BOOTUP_1	
295523	WL_EPL_BOOTUP_1	
426595	I_EPL_BOOTUP_1	
98916	EL_EPL_BOOTUP_2	
229988	QL_EPL_BOOTUP_2	
295524	WL_EPL_BOOTUP_2	
426596	I_EPL_BOOTUP_2	
98947	EL_EPL_ADDRESS_MN	
230019	QL_EPL_ADDRESS_MN	
295555	WL_EPL_ADDRESS_MN	
426627	I_EPL_ADDRESS_MN	
98918	EL_EPL_COM_CRC	
229990	QL_EPL_COM_CRC	
295526	WL_EPL_COM_CRC	
426598	I_EPL_COM_CRC	
98919	EL_EPL_MN_LOSS_CN	
229991	QL_EPL_MN_LOSS_CN	
295527	WL_EPL_MN_LOSS_CN	
426599	I_EPL_MN_LOSS_CN	
98917	EL_EPL_CN_SYNC_LOSS	
229989	QL_EPL_CN_SYNC_LOSS	
295525	WL_EPL_CN_SYNC_LOSS	
426597	I_EPL_CN_SYNC_LOSS	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13911

Parameter Name: C13911 EPL module warning		Data type: UNSIGNED_32 Index: 10664 = 0x29A8 EPL index: not available
Display of pending warnings		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13919

Parameter Name: C13919 EPL additional error info		Data type: UNSIGNED_32 Index: 10656 = 0x29A0 EPL index: not available
Display of coded additional information on a pending error		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C13920

Parameter Name: C13920 EPL DIP switch	Data type: UNSIGNED_8 Index: 10655 = 0x299F EPL index: not available
The code outputs the current DIP switch setting of the communication module. • The switch with the labelling "128" is displayed on the most significant bit, the switch "1" on the least significant bit. • The numerical value of C13920 corresponds to the node ID of the communication module. ► Node address setting (📖 35)	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

10.3 Parameters of the communication module for slot MXI2

This chapter lists the parameters of the E94AYCEC communication module (POWERLINK) for slot MXI2 of the Servo Drive 9400 in numerically ascending order.

C14000

Parameter Name: C14000 EPL IP address			Data type: UNSIGNED_32 Index: 10575 = 0x294F EPL index: See subcodes
The code displays the IP address of the communication module. • The IP address is derived from the EPL node address (Node ID): 192.168.100.[Node ID] • The node ID is derived from the DIP switch position or from C14044. ▶ Node address setting (35)			
Setting range (min. value unit max. value)			
0.0.0.0 (0x00000000)		255.255.255.255 (0xFFFFFFFF)	
Subcodes	Lenze setting	Info	EPL index
C14000/1	3232261130 (0xC0A86401 = 192.168.100.1)	EPL IP address	0x1E40.0x02
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14001

Parameter Name: C14001 EPL IP subnet mask			Data type: UNSIGNED_32 Index: 10574 = 0x294E EPL index: See subcodes
The code describes the IP subnet mask which restricts the directly addressable IP address range (i.e. without a gateway in the EPL segment of the routers). The value 255.255.255.0 (0xFFFFFFFF00) is always assigned to the subnet mask in one segment.			
Setting range (min. value unit max. value)			
255.0.0.0 (0xFF000000)		255.255.255.0 (0xFFFFFFFF00)	
Subcodes	Lenze setting	Info	EPL index
C14001/1	4294967040 (0xFFFFFFFF00 = 255.255.255.0)	EPL IP-subnet mask	0x1E40.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14003

Parameter Name: C14003 EPL IP address router		Data type: UNSIGNED_32 Index: 10572 = 0x294C EPL index: See subcodes	
The code describes the IP address of the router which connects the EPL segment to the higher-level network. The standard entry corresponds to the standard router address of the EPL specification: → 192.168.100.254 Permissible entries replace the lowest-order byte of the standard entry with the EPL address of the node which has the function of a router.			
Setting range (min. value unit max. value)			
0.0.0.0 (0x00000000)			
Subcodes	Lenze setting	Info	EPL index
C14003/1	3232261374 (0xC0A864FE = 192.168.100.254)	EPL IP address router	0x1E40.0x05
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14004

Parameter Name: C14004 EPL MAC address		Data type: OCTET_STRING Index: 10571 = 0x294B EPL index: See subcodes
The code indicates the physical address (MAC address) of the POWERLINK interface of the communication module. When the communication module is produced, the MAC address is assigned unequivocally worldwide and provides addressing on the lowest level.		
Subcodes	Info	EPL index
C14004/1	MAC Address (octet string[6]) 00-0A-86-xx-yy-zz • 00-0A-86 = Lenze • xx-yy-zz = consecutive number	0x1030.0x05
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14028

Parameter Name: C14028 EPL node declaration CN			Data type: UNSIGNED_32 Index: 10547 = 0x2933 EPL index: See subcodes
The code describes the controlled nodes 1 ... 100 and their properties.			
Value is bit-coded:			
Bit 0 ... 31	see below		
Subcodes	Lenze setting	Info	EPL index
C14028/1	0	EPL node declaration CN	0x1F81.0x01
...	...	...	...
C14028/100	0	EPL node declaration CN	0x1F81.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

Description of the bits 0 ... 31

Bit	Relevance		Lenze	Value	Description
	MN	CN			
0 (LSB)	☒	☒	0, 1	0	EPL node with this ID does not exist.
				1	EPL node with this ID exists.
1	☒	☒	0, 1	0	EPL node with this ID is not a controlled node.
				1	EPL node with this ID is a controlled node.
2	☒	☐	1	0 ^{*)}	On detection of a booting controlled node, the application will not be informed.
				1	On detection of a booting controlled node, the application will be informed and the controlled node will be started.
3	☒	☒	1	0	Optional controlled node
				1	Obligatory controlled node
4	☒	☐	0	0	The managing node is allowed to send reset commands.
				1 ^{*)}	The managing node must not send any reset command.
5	☒	☐	0	0	Software version verification of the controlled node is not required.
				1 ^{*)}	Software version verification of the controlled node is required.
6	☒	☐	0, 1	0	Automatic application software update is not allowed.
				1	Automatic application software update is allowed.
7	-	-	0	0	Reserved / No function
8	☒	☒	0, 1	0	Isochronously accessed controlled node
				1	Asynchronously accessed controlled node (bit 9 is irrelevant)
9	☒	☒	0	0	Continuously accessed controlled node
				1	Multiplex EPL nodes are supported.
10	☒	☒	0	0	No "POWERLINK to standard Ethernet" router function.
				1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	☒	☒	0	0	No "POWERLINK to fieldbus" router function.
				1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	☒	☒	0	0	The managing node does not send any PRes frames
				1	The managing node sends PRes frames
13 ... 30	-	-	0	0	Reserved / No function
31 (MSB)	☒	☒	0, 1	0	Bits 0 ... 30 inhibited
				1	Bits 0 ... 30 enabled

^{*)} Not permissible for 9400 Servo Drives.

C14029

Parameter Name: C14029 EPL node declaration MN			Data type: UNSIGNED_32 Index: 10546 = 0x2932 EPL index: See subcodes
The code describes managing node, diagnostic device, and EPL router as well as their properties.			
Value is bit-coded:			
Bit 0 ... 31	see below		
Subcodes	Lenze setting	Info	EPL index
C14029/1	2147483661 (0x8000000D)	EPL node assignment managing node	0x1F81.0xF0
C14029/2	0	EPL node assignment diagnostic device	0x1F81.0xFD
C14029/3	2147483655 (0x80000007)	EPL node assignment router	0x1F81.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

Description of the bits 0 ... 31

Bit	Relevance		Lenze	Value	Description
	MN	CN			
0 (LSB)	☒	☒	0, 1	0	EPL node with this ID does not exist.
				1	EPL node with this ID exists.
1	☒	☒	0, 1	0	EPL node with this ID is not a controlled node.
				1	EPL node with this ID is a controlled node.
2	☒	☐	1	0 ^{*)}	On detection of a booting controlled node, the application will not be informed.
				1	On detection of a booting controlled node, the application will be informed and the controlled node will be started.
3	☒	☒	1	0	Optional controlled node
				1	Obligatory controlled node
4	☒	☐	0	0	The managing node is allowed to send reset commands.
				1 ^{*)}	The managing node must not send any reset command.
5	☒	☐	0	0	Software version verification of the controlled node is not required.
				1 ^{*)}	Software version verification of the controlled node is required.
6	☒	☐	0, 1	0	Automatic application software update is not allowed.
				1	Automatic application software update is allowed.
7	-	-	0	0	Reserved / No function
8	☒	☒	0, 1	0	Isochronously accessed controlled node
				1	Asynchronously accessed controlled node (bit 9 is irrelevant)
9	☒	☒	0	0	Continuously accessed controlled node
				1	Multiplex EPL nodes are supported.
10	☒	☒	0	0	No "POWERLINK to standard Ethernet" router function.
				1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
11	☒	☒	0	0	No "POWERLINK to fieldbus" router function.
				1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
12	☒	☒	0	0	The managing node does not send any PRes frames
				1	The managing node sends PRes frames
13 ... 30	-	-	0	0	Reserved / No function
31 (MSB)	☒	☒	0, 1	0	Bits 0 ... 30 inhibited
				1	Bits 0 ... 30 enabled

*) Not permissible for 9400 Servo Drives.

C14030

Parameter Name: C14030 EPL device type		Data type: UNSIGNED_32 Index: 10545 = 0x2931 EPL index: 0x1000	
The code indicates the device type of the EPL node.			
Value is bit-coded:			
Bit 1	Bit1		
Bit 2	Bit2		
Bit 3	Bit3		
Bit 4	Bit4		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14034

Parameter Name: C14034 EPL identity object			Data type: UNSIGNED_32 Index: 10541 = 0x292D EPL index: See subcodes
The code indicates the Manufacturer's EPL ID no. for Lenze.			
Subcodes	Lenze setting	Info	EPL index
C14034/1	59 (0x3B)	Manufacturer's EPL ID no.	0x1018.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14040

Parameter Name: C14040 EPL feature flags	Data type: UNSIGNED_32 Index: 10535 = 0x2927 EPL index: 0x1F82
The code displays the POWERLINK functions implemented by the EPL node.	
Value is bit-coded:	
Bit 0 ... 31	see below
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

Description of the bits 0 ... 31

Bit	Relevance		Value	Description
	MN	CN		
0 (LSB)	☐	☒	0	Asynchronous access
			1	Isochronous access ^{*)}
1	☒	☒	0	No SDO by UDP/IP
			1	SDO via UDP/IP ^{*)}
2	☒	☒	0	No SDO via EPL "ASnd" ^{*)}
			1	SDO by EPL "ASnd"
3	☒	☒	0	No SDO integrated in PDO ^{*)}
			1	SDO integrated in PDO
4	☒	☒	0	No "NMT Info Services"
			1	"NMT Info Services" supported
5	☒	☒	0	No extended "NMT State Commands" ^{*)}
			1	Extended "NMT State Commands" supported
6	☒	☒	0	No dynamic PDO mapping ^{*)}
			1	Dynamic PDO mapping supported
7	☒	☐	0	No dynamic PDO mapping
			1	Dynamic PDO mapping supported
8	☒	☒	0	No configuration manager function
			1	Configuration manager function
9	☒	☒	0	Only isochronous cyclic access permitted.
			1	Isochronous multiplexed access possible.
10	☐	☒	0	No address assignment via software
			1	Address assignment via software
11	☒	☐	0	No support of the "Basic Ethernet Mode" by the master
			1	Support of the "Basic Ethernet Mode" by the master
12	☒	☒	0	No "POWERLINK to standard Ethernet" router function
			1	The device can be used as an "POWERLINK to standard Ethernet" router (router type 1).
13	☒	☒	0	No "POWERLINK to fieldbus" router function
			1	The device can be used as an "POWERLINK to fieldbus" router (router type 1).
14...31 (MSB)	-	-	-	Reserved / No function

^{*)} Values implemented by 9400 Servo Drives (MN: 0x0087_h = 135_d, CN 0x0083_h = 131_d).

C14041

Parameter Name: C14041 EPL version	Data type: UNSIGNED_8 Index: 10534 = 0x2926 EPL index: not available
The code describes the version of the POWERLINK communication profile implemented by the communication module. The higher-order nibble describes the major version, the lower order nibble describes the minor version. The implemented value corresponds to the POWERLINK version 2.0.	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C14042

Parameter Name: C14042 Current EPL device address	Data type: UNSIGNED_8 Index: 10533 = 0x2925 EPL index: 0x1F93.0x01
The code displays the currently valid EPL node address (Node ID). • The node ID must be unequivocal in the EPL network segment. • See also C14044.	
Display area (min. value unit max. value)	
1	240
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C14043

Parameter Name: C14043 EPL device address selection	Data type: UNSIGNED_8 Index: 10532 = 0x2924 EPL index: 0x1F93.0x02
The code indicates whether the EPL node address (node ID) has been set via DIP switches at the communication module or via the software. • 0: Node ID has been set via software (C14044). • 1: Node ID has been set via DIP switches at the communication module. ► Node address setting (35)	
Display area (min. value unit max. value)	
0	1
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

C14044

Parameter Name: C14044 EPL device address SW	Data type: UNSIGNED_8 Index: 10531 = 0x2923 EPL index: 0x1F93.0x03
This code serves to set the EPL node address (node ID) via the software. The value "0" (Lenze setting) is not a valid node ID. It serves to activate the setting via the DIP switches. ► Node address setting (35)	
Setting range (min. value unit max. value)	
1	240
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT	

C14045

Parameter Name: C14045 EPL host name	Data type: VISIBLE_STRING Index: 10530 = 0x2922 EPL index: 0x1F9A
The code defines a DNS-compatible device name. The length is limited to 15 characters. The device name must be unambiguous within the network domain. Naming convention: The device name • starts with a character • ends with a character or digit The device name consists of • letters ([A ... Z], [a ... z]) • digits ([0 ... 9]) • hyphen ([-])	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT	

C14060

Parameter Name: C14060 EPL cycle time	Data type: UNSIGNED_32 Index: 10515 = 0x2913 EPL index: 0x1006																																												
The code declares the length of the EPL cycle in μs. • In the configured state, this code must have an identical value in all EPL nodes. • The selected value must correspond to the actual bus cycle time so that the internal monitoring functions work correctly.																																													
<table border="1"> <thead> <tr> <th colspan="2">Selection list (Lenze setting printed in bold)</th></tr> </thead> <tbody> <tr><td>500</td><td>0.5</td></tr> <tr><td>1000</td><td>1</td></tr> <tr><td>2000</td><td>2</td></tr> <tr><td>3000</td><td>3</td></tr> <tr><td>4000</td><td>4</td></tr> <tr><td>5000</td><td>5</td></tr> <tr><td>6000</td><td>6</td></tr> <tr><td>7000</td><td>7</td></tr> <tr><td>8000</td><td>8</td></tr> <tr><td>9000</td><td>9</td></tr> <tr><td>10000</td><td>10</td></tr> <tr><td>11000</td><td>11</td></tr> <tr><td>12000</td><td>12</td></tr> <tr><td>13000</td><td>13</td></tr> <tr><td>14000</td><td>14</td></tr> <tr><td>15000</td><td>15</td></tr> <tr><td>16000</td><td>16</td></tr> <tr><td>17000</td><td>17</td></tr> <tr><td>18000</td><td>18</td></tr> <tr><td>19000</td><td>19</td></tr> <tr><td>20000</td><td>20</td></tr> </tbody> </table>		Selection list (Lenze setting printed in bold)		500	0.5	1000	1	2000	2	3000	3	4000	4	5000	5	6000	6	7000	7	8000	8	9000	9	10000	10	11000	11	12000	12	13000	13	14000	14	15000	15	16000	16	17000	17	18000	18	19000	19	20000	20
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C14066

Parameter Name: C14066 EPL CN: Max. user data PRes RPDO			Data type: UNSIGNED_16 Index: 10509 = 0x290D EPL index: See subcodes	
The code defines the reserved user data length of the PRes telegrams for controlled nodes 1 ... 100. Each subcode number corresponds to one EPL node with the same node ID. The EPL node must be enabled via code C14028. The subcodes describe the PRes telegrams received. The value must be within the range of 36 ... 1490 bytes. The values are upper limit values for the entire size of the PDO mappings for received PRes telegrams. In the configured state, the values stored for the nodes must be identical to the corresponding C14072 entries. C14066 must have an identical value in all EPL nodes of the network.				
Setting range (min. value unit max. value)				
0	Byte	1490		
Subcodes	Lenze setting	Info	EPL index	
C14066/1	0 byte	EPL CN: max. user data of RPDO	0x1F8D.0x01	
...	...	...	...	
C14066/100	0 byte	EPL CN: max. user data of RPDO	0x1F8D.0x64	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C14071

Parameter Name: C14071 EPL Max. PDO user data RPDO PReq			Data type: UNSIGNED_16 Index: 10504 = 0x2908 EPL index: 0x1F98.0x04		
The code defines the maximum data volume to be received by the controlled node of the PDP mapping for the PReq telegram to be defined via one of the codes C14231 ... C14240. In the configured state, the value must be identical to the entry for a response valid for the EPL node. When a Servo Drive 9400 is used, the code as managing node is irrelevant since Servo Drives 9400 as managing nodes only transmit PDO data via broadcast PRes telegrams (C14071 = 36 bytes).					
Setting range (min. value unit max. value)			Lenze setting		
0	Byte	1490	36 bytes		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT					

C14072

Parameter Name: C14072 EPL Max. PDO user data TPDO PRes			Data type: UNSIGNED_16 Index: 10503 = 0x2907 EPL index: 0x1F98.0x05	
The code defines the maximum PDO data size to be sent by the EPL node for the current network configuration. The PDO mapping C14531 can assign data with a total size greater than or equal to C14072. In the configured state, C14072 must be identical to the entry in C14066 valid for the EPL node.				
Setting range (min. value unit max. value)			Lenze setting	
0	Byte	1490	400 bytes	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C14074

Parameter Name: C14074 EPL multi-stage cycle timing			Data type: UNSIGNED_8 Index: 10501 = 0x2905 EPL index: 0x1F98.0x07		
This code serves to define the maximum number of the multiplexed cycles. If, e.g., the value "3" is entered, the multiplexed cycle is repeated every three cycles. Within one multiplexed cycle, the nodes are queried according to the values in code C14079. If, e.g., the value "2" is entered for a node in C14079/x, it is always queried only in the second cycle of the three multiplexed cycles.					
Setting range (min. value unit max. value)			Lenze setting		
0	Cycles	255	0 cycles		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☒ COM ☐ MOT					

C14075

Parameter Name: C14075 EPL SDO channel width			Data type: UNSIGNED_16 Index: 10500 = 0x2904 EPL index: 0x1F98.0x08
The code defines the maximum user data size of asynchronous frames. Protocol-specific headers for POWERLINK, UDP/IP and others as well as service-specific headers are to be interpreted as part of the user data. In the configured state, the C14075 values of all EPL nodes must be identical.			
Setting range (min. value unit max. value)			Lenze setting
282	Byte	1500	282 bytes
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14078

Parameter Name: C14078 EPL CN: Max. time - MN detection			Data type: UNSIGNED_32 Index: 10497 = 0x2901 EPL index: 0x1F99
The code defines the time interval needed for detecting a managing node. If a booting controlled node detects a managing node during the interval, it changes to NMT_CS_PREOPERATIONAL_1. If not, it changes to "Basic Ethernet Mode".			
Setting range (min. value unit max. value)			Lenze setting
0	µs	4294967295	10000000 µs
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14079

Parameter Name: C14079 EPL multi-stage node declaration CN			Data type: UNSIGNED_8 Index: 10496 = 0x2900 EPL index: See subcodes
This code indicates in which multiplexed cycle the controlled node is queried. The value entered must not exceed the value in code C14074 . If, for instance, the value "3" is entered in code C14074 , the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C14079/x, it is always queried only in the second cycle of the three multiplexed cycles.			
Setting range (min. value unit max. value)			
0	Cycles	255	
Subcodes	Lenze setting	Info	EPL index
C14079/1	0 cycles		0x1F9B.0x01
...	...		...
C14079/100	0 cycles		0x1F9B.0x64
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14095

Parameter Name: C14095 EPL communication status		Data type: UNSIGNED_8 Index: 10480 = 0x28F0 EPL index: 0x1F8C
The code indicates the current NMT status of the EPL node.		
Selection list (read only)		Info
0	Off	NMT_GS_OFF
25	Initialising	NMT_GS_INITIALISING
41	ResetAppl	NMT_GS_RESET_APPLICATION
57	ResetComm	NMT_GS_RESET_COMMUNICATION
121	ResetConfig	NMT_GS_RESET_CONFIGURATION
28	NotActive	NMT_CS_NOT_ACTIVE NMT_MS_NOT_ACTIVE
29	PreOp1	NMT_CS_PRE_OPERATIONAL_1 NMT_MS_PRE_OPERATIONAL_1
93	PreOp2	NMT_CS_PRE_OPERATIONAL_2 NMT_MS_PRE_OPERATIONAL_2
109	ReadyToOp	NMT_CS_READY_TO_OPERATE NMT_MS_READY_TO_OPERATE
253	Operational	NMT_CS_OPERATIONAL NMT_MS_OPERATIONAL
77	Stopped	NMT_CS_STOPPED (only controlled node)
30	BasicEthernet	NMT_CS_BASIC_ETHERNET (only controlled node)
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14102

Parameter Name: C14102 EPL reset command		Data type: UNSIGNED_8 Index: 10473 = 0x28E9 EPL index: 0x1F9E
A reset command to a single EPL node in the network can result in cycle and monitoring errors. The code initiates a reset of the EPL node. When the reset has been executed, the code is automatically set to "NMTInvalidService".		
Selection list (Lenze setting printed in bold)		Info
40	ResetNode	Status transition → NMT_GS_RESET_APPLICATION
41	ResetCommunication	Status transition → NMT_GS_RESET_COMMUNICATION
42	ResetConfiguration	Status transition → NMT_GS_RESET_CONFIGURATION
255	No command	No function
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14110

Parameter Name: C14110 EPL fault memory		Data type: UNSIGNED_8 Index: 10465 = 0x28E1 EPL index: 0x1001
The code indicates the currently pending errors (according to error classes).		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14126

Parameter Name: C14126 EPL CN: Frame collisions			Data type: UNSIGNED_32 Index: 10449 = 0x28D1 EPL index: See subcodes	
The code indicates the number of POWERLINK collisions detected by the controlled node. Each event is counted. Every single event is followed by an error message. No threshold value management is implemented.				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C14126/1	0		CumulativeCnt_U32	0x1C0A.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14127

Parameter Name: C14127 EPL CN: Sync loss			Data type: UNSIGNED_32 Index: 10448 = 0x28D0 EPL index: See subcodes	
The controlled node expects SoC frames in time intervals which correspond to the cycle time (C14060). The code indicates the error counters for missing SoC frames. The monitoring response is determined via C14891/3 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting	Info	EPL index	
C14127/1	0	CumulativeCnt_U32	0x1C0B.0x01	
C14127/2	0	ThresholdCnt_U32	0x1C0B.0x02	
C14127/3	9	Threshold_U32	0x1C0B.0x03	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14131

Parameter Name: C14131 EPL CN: Frame error (CRC)			Data type: UNSIGNED_32 Index: 10444 = 0x28CC EPL index: See subcodes	
The code indicates the number of frame checksum errors detected by the controlled nodes. The monitoring response is determined via C14891/4 .				
Setting range (min. value unit max. value)				
0		4294967295		
Subcodes	Lenze setting		Info	EPL index
C14131/1	0		CumulativeCnt_U32	0x1C0F.0x01
C14131/2	0		ThresholdCnt_U32	0x1C0F.0x02
C14131/3	9		Threshold_U32	0x1C0F.0x03
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT				

C14132

Parameter Name: C14132 EPL CN: Link interruptions		Data type: UNSIGNED_32 Index: 10443 = 0x28CB EPL index: 0x1C10
The code indicates the counter of the Controlled Node for POWERLINK connection interruptions. Each event is counted. Every single event is followed by an error message. No threshold value management is implemented.		
Display area (min. value unit max. value)		
0		4294967295
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14136

Parameter Name: C14136 EPL telegram counter		Data type: UNSIGNED_32 Index: 10439 = 0x28C7 EPL index: 0x1101.0x01
The subcodes of the code indicate a counter for EPL cycles. The counter is started with each mains power-up of the EPL node at 0. An overflow occurs at 4.294.967.295.		
Display area (min. value unit max. value)		
0		4294967295
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14219

Parameter Name: C14219 EPL device type MN		Data type: UNSIGNED_32 Index: 10356 = 0x2874 EPL index: See subcodes	
The code contains the device type ID of the EPL nodes. Each subcode corresponds to an EPL node with node ID = subcode number. When being in the configured status, the values must be identical with the device types stored locally in each EPL node under C14030.			
Subcodes	Lenze setting	Info	EPL index
C14219/1	0	Managing node	0x1F84.0xF0
C14219/2	0	Diagnostics device	0x1F84.0xFD
C14219/3	0	router	0x1F84.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14225

Parameter Name: C14225 EPL MN: Max. user data RPDO			Data type: UNSIGNED_16 Index: 10350 = 0x286E EPL index: See subcodes	
The code defines the reserved user data length of the PRes frames. Each subcode number corresponds to an EPL node with the same node ID. The subcode describes the PRes frames received. The value must be within the limits of 36 ... 1490 bytes. The values are upper limit values for the total size of the PDO mappings which must be defined each one of the codes C14231 ... C14240 for PRes frames received. In the configured state, the values stored for the EPL nodes must be identical to the corresponding C14072 entries. C14066 must have an identical value in all EPL nodes of the network.				
Setting range (min. value unit max. value)				
0	Byte	1490		
Subcodes	Lenze setting		Info	EPL index
C14225/1	0 byte		Managing node	0x1F8D.0xF0
C14225/2	0 byte		Diagnostics device	0x1F8D.0xFD
C14225/3	0 byte		router	0x1F8D.0xFE
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C14229

Parameter Name: C14229 EPL multi-stage node declaration MN			Data type: UNSIGNED_8 Index: 10346 = 0x286A EPL index: See subcodes	
This code indicates in which multiplexed cycle the node is queried. The value entered must not exceed the value in code C14074. If, for instance, the value "3" is entered in code C14074, the multiplexed cycle is repeated every three cycles. If now the value "3" is entered for one node in C14229/x, it is always queried only in the second cycle of the three multiplexed cycles.				
Setting range (min. value unit max. value)				
0	Cycles	255		
Subcodes	Lenze setting	Info	EPL index	
C14229/1	0 cycles	Managing node	0x1F9B.0xF0	
C14229/2	0 cycles	Diagnostics device	0x1F9B.0xFD	
C14229/3	0 cycles	router	0x1F9B.0xFE	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT				

C14231

Parameter Name: C14231 EPL RPDO			Data type: UNSIGNED_64 Index: 10344 = 0x2868 EPL index: See subcodes	
EPL RPDO-1				
Subcodes	Lenze setting		Info	EPL index
C14231/1	0		EPL RPDO	0x1600.0x01
...	...		...	...
C14231/32	0		EPL RPDO	0x1600.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO MAP RX ☐ PDO MAP TX ☒ COM ☐ MOT				

C14232

Parameter Name: C14232 EPL RPDO			Data type: UNSIGNED_64 Index: 10343 = 0x2867 EPL index: See subcodes
EPL RPDO-2			
Subcodes	Lenze setting	Info	EPL index
C14232/1	0	EPL RPDO	0x1601.0x01
...	...	...	...
C14232/32	0	EPL RPDO	0x1601.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14233

Parameter Name: C14233 EPL RPDO			Data type: UNSIGNED_64 Index: 10342 = 0x2866 EPL index: See subcodes
EPL RPDO-3			
Subcodes	Lenze setting	Info	EPL index
C14233/1	0	EPL RPDO	0x1602.0x01
...	...	...	...
C14233/32	0	EPL RPDO	0x1602.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14234

Parameter Name: C14234 EPL RPDO			Data type: UNSIGNED_64 Index: 10341 = 0x2865 EPL index: See subcodes
EPL RPDO-4			
Subcodes	Lenze setting	Info	EPL index
C14234/1	0	EPL RPDO	0x1603.0x01
...	...	...	...
C14234/32	0	EPL RPDO	0x1603.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14235

Parameter Name: C14235 EPL RPDO			Data type: UNSIGNED_64 Index: 10340 = 0x2864 EPL index: See subcodes
EPL RPDO-5			
Subcodes	Lenze setting	Info	EPL index
C14235/1	0	EPL RPDO	0x1604.0x01
...	...	...	...
C14235/32	0	EPL RPDO	0x1604.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14236

Parameter Name: C14236 EPL RPDO			Data type: UNSIGNED_64 Index: 10339 = 0x2863 EPL index: See subcodes
EPL RPDO-6			
Subcodes	Lenze setting	Info	EPL index
C14236/1	0	EPL RPDO	0x1605.0x01
...	...	...	...
C14236/32	0	EPL RPDO	0x1605.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14237

Parameter Name: C14237 EPL RPDO			Data type: UNSIGNED_64 Index: 10338 = 0x2862 EPL index: See subcodes
EPL RPDO-7			
Subcodes	Lenze setting	Info	EPL index
C14237/1	0	EPL RPDO	0x1606.0x01
...	...	...	...
C14237/32	0	EPL RPDO	0x1606.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14238

Parameter Name: C14238 EPL RPDO			Data type: UNSIGNED_64 Index: 10337 = 0x2861 EPL index: See subcodes
EPL RPDO-8			
Subcodes	Lenze setting	Info	EPL index
C14238/1	0	EPL RPDO	0x1607.0x01
...	...	...	...
C14238/32	0	EPL RPDO	0x1607.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14239

Parameter Name: C14239 EPL RPDO			Data type: UNSIGNED_64 Index: 10336 = 0x2860 EPL index: See subcodes
EPL RPDO-9			
Subcodes	Lenze setting	Info	EPL index
C14239/1	0	EPL RPDO	0x1608.0x01
...	...	...	...
C14239/32	0	EPL RPDO	0x1608.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14240

Parameter Name: C14240 EPL RPDO			Data type: UNSIGNED_64 Index: 10335 = 0x285F EPL index: See subcodes
EPL RPDO-10			
Subcodes	Lenze setting	Info	EPL index
C14240/1	0	EPL RPDO	0x1609.0x01
...	...	...	...
C14240/32	0	EPL RPDO	0x1609.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14484

Parameter Name: C14484 EPL address: RPDO			Data type: UNSIGNED_8 Index: 10091 = 0x276B EPL index: See subcodes
The subcodes 1 ... 10 describe the node address of the transmitting EPL node for the PDO channels 1 ... 10 (mapping see C14231 ... C14240). Values > "0" describe the origin of a PRes frame. The value "0" is reserved for PReq (must not be used in systems with a Servo Drive 9400 as managing node). The subcodes 1 ... 10 are only valid if the corresponding subcode of C14489 has a value > "0". Before writing the EPL node address in a subcode of C14484, the corresponding subcode of C14489 must be set to the value "0". Renewed writing of the number of mapping entries in the subcode of C14489 enables the node address.			
Setting range (min. value unit max. value)			
0		255	
Subcodes	Lenze setting	Info	EPL index
C14484/1	0	EPL address: RPDO	0x1400.0x01
...	...	...	...
C14484/10	0	EPL address: RPDO	0x1409.0x01
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14489

Parameter Name: C14489 EPL number RPDO			Data type: UNSIGNED_8 Index: 10086 = 0x2766 EPL index: See subcodes
The subcodes 1 ... 10 describe the number of valid mapping entries of the PDO channels 1 ... 10 (valid subcodes in C14231 ... C14240). The value "0" inhibits the corresponding PDO channel. Before writing the mapping entries in C14231 ... C14240 or the EPL address of the SDO transmitter in the corresponding subcode of C14484, the corresponding subcode of code C14489 must be set to the value "0". A renewed writing of the number of mapping entries in the subcode of C14489 enables the mapping and the transmission EPL address for the PDO channel. The sum of all mapping entries enabled via the subcodes of C14489 must not exceed the value "64". Make sure that the sum of memory requirements of all objects mapped in C14231 ... C14240 does not exceed 64 bytes.			
Setting range (min. value unit max. value)			
0		32	
Subcodes	Lenze setting	Info	EPL index
C14489/1	0	EPL RPDO: object count	0x1600.0x00
...	...	...	...
C14489/10	0	EPL RPDO: object count	0x1609.0x00
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14531

Parameter Name: C14531 EPL TPDO			Data type: UNSIGNED_64 Index: 10044 = 0x273C EPL index: See subcodes
The code describes the mapping for the TPDO channel. C14789.1 describes the number of valid mapping object entries in this code. Subcodes 1 ... 32 describe the mapping of the single objects. Servo Drives 9400 exclusively support mapping objects with a data length of 8 bits (1 byte) or a multiple of this value. Incompatible objects must be mapped on variables with a compatible data length. The "Offset" (bytes 4 and 5) and "Length" (bytes 6 and 7) of the mapping object description must be a multiple of 8. Before changing the mapping object entries in C14531, C14789/1 must be set to "0". This deactivates the mapping. Writing into C14789/1 with a value unequal "0" re-enables the mapping. Offset and length of the data object relevant for the receiving EPL node must be identical with the corresponding values of the entry in C14531.			
Subcodes	Lenze setting	Info	EPL index
C14531/1	0	EPL TPDO	0x1A00.0x01
...	...	...	...
C14531/32	0	EPL TPDO	0x1A00.0x20
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14789

Parameter Name: C14789 EPL number TPDO			Data type: UNSIGNED_8 Index: 9786 = 0x263A EPL index: See subcodes
The subcode 1 describes the number of valid mapping object entries (subcodes) in code C14531. The value "0" inhibits the TPDO. Before writing a subcode of C14531, set C14789 subcode 1 to the value "0". Renewed writing of the number of mapping object entries in C14789 subcode 1 enables the TPDO mapping.			
Setting range (min. value unit max. value)			
0		32	
Subcodes	Lenze setting	Info	EPL index
C14789/1	0	EPL TPDO: object count	0x1A00.0x00
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☒ COM ☐ MOT			

C14880

Parameter Name: C14880 EPL quality lights			Data type: UNSIGNED_8 Index: 9695 = 0x25DF EPL index: not available
The code indicates the current quality status (values: 1, 2 or 4) of the network functions of the communication module.			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☒ PDO_MAP_TX ☐ COM ☐ MOT			

C14881

Parameter Name: C14881 EPL reset error counter			Data type: UNSIGNED_8 Index: 9694 = 0x25DE EPL index: not available
The value "1" (TRUE) enables the code to reset the cycle counter. After reset termination the code automatically assumes the value "0" (FALSE).			
Setting range (min. value unit max. value)		Lenze setting	
0		1	0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14882

Parameter Name: C14882 EPL reset cycle counter			Data type: UNSIGNED_8 Index: 9693 = 0x25DD EPL index: not available		
The value "1" (TRUE) enables the code to reset the cycle counter (C14136). After reset termination the code automatically assumes the value "0" (FALSE).					
Setting range (min. value unit max. value)			Lenze setting		
0			1		0
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☒ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT					

C14883

Parameter Name: C14883 EPL response when "DataExchange" is quit		Data type: UNSIGNED_8 Index: 9692 = 0x25DC EPL index: not available	
Setting of the response when the "DataExchange" state is quit. A change in the monitoring response becomes immediately effective.			
Selection list (Lenze setting printed in bold)			
0	No response		
1	Trouble		
3	Quick stop by trouble		
4	Warning Locked		
6	Information		
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14885

Parameter Name: C14885 EPL data RPDO: error response		Data type: UNSIGNED_8 Index: 9690 = 0x25DA EPL index: not available	
The code controls the error response to failing PDO communication with a node. The failure is detected because expected PDO data are missing.			
Selection list (Lenze setting printed in bold)		Info	
0	Process data received	The data received last is continued to be used.	
1	Clear process data	The data of all reception PDO channels is set to "0".	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14891

Parameter Name: C14891 EPL module error responses			Data type: UNSIGNED_8 Index: 9684 = 0x25D4 EPL index: See subcodes
The subcodes of C14891 determine the response to errors (e.g. communication errors) of the EPL stack.			
Selection list			
0	No response		
1	Trouble		
3	Quick stop by trouble		
4	Warning Locked		
6	Information		
Subcodes	Lenze setting	Info	EPL index
C14891/1	4: Warning locked	Monitoring response - EPL cycle time violation	
C14891/2	4: Warning locked	Monitoring response - EPL boot-up error	
C14891/3	4: Warning locked	Monitoring response - EPL synchronisation loss	
C14891/4	4: Warning locked	Monitoring response - EPL frame error (CRC)	
C14891/5	0: No Response	Monitoring response EPL controlled node response error	
☒ Read access ☒ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14900

Parameter Name: C14900 EPL firmware type			Data type: VISIBLE_STRING Index: 9675 = 0x25CB EPL index: not available
Display of the Lenze firmware type of the communication module (product designation).			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14901

Parameter Name: C14901 EPL firmware date			Data type: VISIBLE_STRING Index: 9674 = 0x25CA EPL index: not available
Display of the date the firmware of the communication module was created			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14902

Parameter Name: C14902 EPL firmware version			Data type: VISIBLE_STRING Index: 9673 = 0x25C9 EPL index: not available
Display of the version number of the communication module firmware			
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT			

C14910

Parameter Name: C14910 EPL error code last error		Data type: UNSIGNED_32 Index: 9665 = 0x25C1 EPL index: not available
Display of the error code of the last occurred POWERLINK error message ▶ POWERLINK error messages (61)		
Selection list (read only)		
0	No error	
98915	EL_EPL_BOOTUP_1	
229987	QL_EPL_BOOTUP_1	
295523	WL_EPL_BOOTUP_1	
426595	I_EPL_BOOTUP_1	
98916	EL_EPL_BOOTUP_2	
229988	QL_EPL_BOOTUP_2	
295524	WL_EPL_BOOTUP_2	
426596	I_EPL_BOOTUP_2	
98947	EL_EPL_ADDRESS_MN	
230019	QL_EPL_ADDRESS_MN	
295555	WL_EPL_ADDRESS_MN	
426627	I_EPL_ADDRESS_MN	
98918	EL_EPL_COM_CRC	
229990	QL_EPL_COM_CRC	
295526	WL_EPL_COM_CRC	
426598	I_EPL_COM_CRC	
98919	EL_EPL_MN_LOSS_CN	
229991	QL_EPL_MN_LOSS_CN	
295527	WL_EPL_MN_LOSS_CN	
426599	I_EPL_MN_LOSS_CN	
98917	EL_EPL_CN_SYNC_LOSS	
229989	QL_EPL_CN_SYNC_LOSS	
295525	WL_EPL_CN_SYNC_LOSS	
426597	I_EPL_CN_SYNC_LOSS	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14911

Parameter Name: C14911 EPL module warning		Data type: UNSIGNED_32 Index: 9664 = 0x25C0 EPL index: not available
Display of pending warnings		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14919

Parameter Name: C14919 EPL additional error info		Data type: UNSIGNED_32 Index: 9656 = 0x25B8 EPL index: not available
Display of coded additional information on a pending error		
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT		

C14920

Parameter Name: C14920 EPL DIP switch	Data type: UNSIGNED_8 Index: 9655 = 0x25B7 EPL index: not available
The code outputs the current DIP switch setting of the communication module. • The switch with the labelling "128" is displayed on the most significant bit, the switch "1" on the least significant bit. • The numerical value of C14920 corresponds to the node ID of the communication module. ▶ Node address setting (📖 35)	
☒ Read access ☐ Write access ☐ CINH ☐ PLC-STOP ☐ No transfer ☐ PDO_MAP_RX ☐ PDO_MAP_TX ☐ COM ☐ MOT	

10.4 Table of attributes

The table of attributes contains information required for communicating with the Servo Drive 9400 via parameters.

How to read the table of attributes:

Column		Meaning	Entry	
Code		Parameter name	Cxxxxx	
Name		Parameter short text (display text)	Text	
Index	dec	Index under 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		0x5FFF - 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 (CINH) required	☒ Writing is only possible when the controller is inhibited (CINH)	

Table of attributes

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	Data type	Factor	R	W	CINH
C13000	EPL IP address	11575	0x2D37	A	1	UNSIGNED_32		☑	☑	
C13001	EPL IP subnet mask	11574	0x2D36	A	1	UNSIGNED_32		☑	☑	
C13003	EPL IP router address	11572	0x2D34	A	1	UNSIGNED_32		☑	☑	
C13004	EPL MAC address	11571	0x2D33	A	1	OCTET_STRING		☑		
C13028	EPL node declaration CN	11547	0x2D1B	A	100	UNSIGNED_32		☑	☑	
C13029	EPL node declaration MN	11546	0x2D1A	A	3	UNSIGNED_32		☑	☑	
C13030	EPL device type	11545	0x2D19	E	1	UNSIGNED_32		☑		
C13034	EPL identity object	11541	0x2D15	A	1	UNSIGNED_32		☑	☑	
C13040	EPL Feature Flags	11535	0x2D0F	E	1	UNSIGNED_32		☑		
C13041	EPL version	11534	0x2D0E	E	1	UNSIGNED_8		☑		
C13042	Current EPL device address	11533	0x2D0D	E	1	UNSIGNED_8	1	☑		
C13043	EPL device address selection	11532	0x2D0C	E	1	UNSIGNED_8	1	☑		
C13044	EPL device address SW	11531	0x2D0B	E	1	UNSIGNED_8	1	☑	☑	
C13045	EPL host name	11530	0x2D0A	E	1	VISIBLE_STRING		☑	☑	
C13060	EPL cycle time	11515	0x2CFB	E	1	UNSIGNED_32		☑	☑	
C13066	EPL CN: max. data PRes RPDO	11509	0x2CF5	A	100	UNSIGNED_16	1	☑	☑	
C13071	EPL max. PDO data RPDO PReq	11504	0x2CF0	E	1	UNSIGNED_16	1	☑	☑	
C13072	EPL max. PDO data TPDO PRes	11503	0x2CEF	E	1	UNSIGNED_16	1	☑	☑	
C13074	EPL multi-stage cycle timing	11501	0x2CED	E	1	UNSIGNED_8	1	☑	☑	
C13075	EPL SDO channel width	11500	0x2CEC	E	1	UNSIGNED_16	1	☑	☑	
C13078	EPL CN: max. time - MN detection	11497	0x2CE9	E	1	UNSIGNED_32	1	☑	☑	
C13079	EPL multi-stage node declaration CN	11496	0x2CE8	A	100	UNSIGNED_8	1	☑	☑	
C13095	EPL communication status	11480	0x2CD8	E	1	UNSIGNED_8		☑		
C13102	EPL reset command	11473	0x2CD1	E	1	UNSIGNED_8	1	☑	☑	
C13110	EPL fault register	11465	0x2CC9	E	1	UNSIGNED_8		☑		
C13126	EPL CN: collision error	11449	0x2CB9	A	1	UNSIGNED_32	1	☑	☑	
C13127	EPL CN: sync loss	11448	0x2CB8	A	3	UNSIGNED_32	1	☑	☑	
C13131	EPL CN: frame error (CRC)	11444	0x2CB4	A	3	UNSIGNED_32	1	☑	☑	
C13132	EPL CN: link interruptions	11443	0x2CB3	E	1	UNSIGNED_32	1	☑		
C13136	EPL cycle counter	11439	0x2CAF	E	1	UNSIGNED_32	1	☑		
C13219	EPL device type MN	11356	0x2C5C	A	3	UNSIGNED_32		☑	☑	
C13225	EPL MN: max. data RPDO	11350	0x2C56	A	3	UNSIGNED_16	1	☑	☑	
C13229	EPL multi-stage node declaration MN	11346	0x2C52	A	3	UNSIGNED_8	1	☑	☑	
C13231	EPL RPDO	11344	0x2C50	A	32	UNSIGNED_64		☑	☑	
C13232	EPL RPDO	11343	0x2C4F	A	32	UNSIGNED_64		☑	☑	
C13233	EPL RPDO	11342	0x2C4E	A	32	UNSIGNED_64		☑	☑	
C13234	EPL RPDO	11341	0x2C4D	A	32	UNSIGNED_64		☑	☑	
C13235	EPL RPDO	11340	0x2C4C	A	32	UNSIGNED_64		☑	☑	
C13236	EPL RPDO	11339	0x2C4B	A	32	UNSIGNED_64		☑	☑	
C13237	EPL RPDO	11338	0x2C4A	A	32	UNSIGNED_64		☑	☑	
C13238	EPL RPDO	11337	0x2C49	A	32	UNSIGNED_64		☑	☑	
C13239	EPL RPDO	11336	0x2C48	A	32	UNSIGNED_64		☑	☑	
C13240	EPL RPDO	11335	0x2C47	A	32	UNSIGNED_64		☑	☑	
C13484	EPL address: RPDO	11091	0x2B53	A	10	UNSIGNED_8	1	☑	☑	
C13489	EPL RPDO: object count	11086	0x2B4E	A	10	UNSIGNED_8	1	☑	☑	
C13531	EPL TPDO	11044	0x2B24	A	32	UNSIGNED_64		☑	☑	
C13789	EPL TPDO: object count	10786	0x2A22	A	1	UNSIGNED_8	1	☑	☑	
C13880	EPL quality lights	10695	0x29C7	E	1	UNSIGNED_8		☑		
C13881	EPL reset error counter	10694	0x29C6	E	1	UNSIGNED_8	1	☑	☑	

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	Data type	Factor	R	W	CINH
C13882	EPL reset cycle counter	10693	0x29C5	E	1	UNSIGNED_8	1	☑	☑	
C13883	EPL response when "DataExchange" is quit	10692	0x29C4	E	1	UNSIGNED_8	1	☑	☑	
C13885	EPL data RPDO: error response	10690	0x29C2	E	1	UNSIGNED_8	1	☑	☑	
C13891	EPL module error response	10684	0x29BC	A	5	UNSIGNED_8	1	☑	☑	
C13900	EPL firmware type	10675	0x29B3	E	1	VISIBLE_STRING		☑		
C13901	EPL firmware date	10674	0x29B2	E	1	VISIBLE_STRING		☑		
C13902	EPL firmware version	10673	0x29B1	E	1	VISIBLE_STRING		☑		
C13910	EPL module error	10665	0x29A9	E	1	UNSIGNED_32		☑		
C13911	EPL module warning	10664	0x29A8	E	1	UNSIGNED_32		☑		
C13919	EPL additional error info	10656	0x29A0	E	1	UNSIGNED_32		☑		
C13920	EPL DIP switch	10655	0x299F	E	1	UNSIGNED_8		☑		
C14000	EPL IP address	10575	0x294F	A	1	UNSIGNED_32		☑	☑	
C14001	EPL IP subnet mask	10574	0x294E	A	1	UNSIGNED_32		☑	☑	
C14003	EPL IP router address	10572	0x294C	A	1	UNSIGNED_32		☑	☑	
C14004	EPL MAC address	10571	0x294B	A	1	OCTET_STRING		☑		
C14028	EPL node declaration CN	10547	0x2933	A	100	UNSIGNED_32		☑	☑	
C14029	EPL node declaration MN	10546	0x2932	A	3	UNSIGNED_32		☑	☑	
C14030	EPL device type	10545	0x2931	E	1	UNSIGNED_32		☑		
C14034	EPL identity object	10541	0x292D	A	1	UNSIGNED_32		☑	☑	
C14040	EPL Feature Flags	10535	0x2927	E	1	UNSIGNED_32		☑		
C14041	EPL version	10534	0x2926	E	1	UNSIGNED_8		☑		
C14042	Current EPL device address	10533	0x2925	E	1	UNSIGNED_8	1	☑		
C14043	EPL device address selection	10532	0x2924	E	1	UNSIGNED_8	1	☑		
C14044	EPL device address SW	10531	0x2923	E	1	UNSIGNED_8	1	☑	☑	
C14045	EPL host name	10530	0x2922	E	1	VISIBLE_STRING		☑	☑	
C14060	EPL cycle time	10515	0x2913	E	1	UNSIGNED_32		☑	☑	
C14066	EPL CN: max. data PRes RPDO	10509	0x290D	A	100	UNSIGNED_16	1	☑	☑	
C14071	EPL max. PDO data RPDO PReq	10504	0x2908	E	1	UNSIGNED_16	1	☑	☑	
C14072	EPL max. PDO data TPDO PRes	10503	0x2907	E	1	UNSIGNED_16	1	☑	☑	
C14074	EPL multi-stage cycle timing	10501	0x2905	E	1	UNSIGNED_8	1	☑	☑	
C14075	EPL SDO channel width	10500	0x2904	E	1	UNSIGNED_16	1	☑	☑	
C14078	EPL CN: max. time - MN detection	10497	0x2901	E	1	UNSIGNED_32	1	☑	☑	
C14079	EPL multi-stage node declaration CN	10496	0x2900	A	100	UNSIGNED_8	1	☑	☑	
C14095	EPL communication status	10480	0x28F0	E	1	UNSIGNED_8		☑		
C14102	EPL reset command	10473	0x28E9	E	1	UNSIGNED_8	1	☑	☑	
C14110	EPL fault register	10465	0x28E1	E	1	UNSIGNED_8		☑		
C14126	EPL CN: collision error	10449	0x28D1	A	1	UNSIGNED_32	1	☑	☑	
C14127	EPL CN: sync loss	10448	0x28D0	A	3	UNSIGNED_32	1	☑	☑	
C14131	EPL CN: frame error (CRC)	10444	0x28CC	A	3	UNSIGNED_32	1	☑	☑	
C14132	EPL CN: link interruptions	10443	0x28CB	E	1	UNSIGNED_32	1	☑		
C14136	EPL cycle counter	10439	0x28C7	E	1	UNSIGNED_32	1	☑		
C14219	EPL device type MN	10356	0x2874	A	3	UNSIGNED_32		☑	☑	
C14225	EPL MN: max. data RPDO	10350	0x286E	A	3	UNSIGNED_16	1	☑	☑	
C14229	EPL multi-stage node declaration MN	10346	0x286A	A	3	UNSIGNED_8	1	☑	☑	
C14231	EPL RPDO	10344	0x2868	A	32	UNSIGNED_64		☑	☑	
C14232	EPL RPDO	10343	0x2867	A	32	UNSIGNED_64		☑	☑	
C14233	EPL RPDO	10342	0x2866	A	32	UNSIGNED_64		☑	☑	
C14234	EPL RPDO	10341	0x2865	A	32	UNSIGNED_64		☑	☑	
C14235	EPL RPDO	10340	0x2864	A	32	UNSIGNED_64		☑	☑	
C14236	EPL RPDO	10339	0x2863	A	32	UNSIGNED_64		☑	☑	

Code	Name	Index		Data				Access		
		dec	hex	DS	DA	Data type	Factor	R	W	CINH
C14237	EPL RPDO	10338	0x2862	A	32	UNSIGNED_64		☒	☒	
C14238	EPL RPDO	10337	0x2861	A	32	UNSIGNED_64		☒	☒	
C14239	EPL RPDO	10336	0x2860	A	32	UNSIGNED_64		☒	☒	
C14240	EPL RPDO	10335	0x285F	A	32	UNSIGNED_64		☒	☒	
C14484	EPL address: RPDO	10091	0x276B	A	10	UNSIGNED_8	1	☒	☒	
C14489	EPL RPDO: object count	10086	0x2766	A	10	UNSIGNED_8	1	☒	☒	
C14531	EPL TPDO	10044	0x273C	A	32	UNSIGNED_64		☒	☒	
C14789	EPL TPDO: object count	9786	0x263A	A	1	UNSIGNED_8	1	☒	☒	
C14880	EPL quality lights	9695	0x25DF	E	1	UNSIGNED_8		☒		
C14881	EPL reset error counter	9694	0x25DE	E	1	UNSIGNED_8	1	☒	☒	
C14882	EPL reset cycle counter	9693	0x25DD	E	1	UNSIGNED_8	1	☒	☒	
C14883	EPL response when "DataExchange" is quit	9692	0x25DC	E	1	UNSIGNED_8	1	☒	☒	
C14885	EPL data RPDO: error response	9690	0x25DA	E	1	UNSIGNED_8	1	☒	☒	
C14891	EPL module error response	9684	0x25D4	A	5	UNSIGNED_8	1	☒	☒	
C14900	EPL firmware type	9675	0x25CB	E	1	VISIBLE_STRING		☒		
C14901	EPL firmware date	9674	0x25CA	E	1	VISIBLE_STRING		☒		
C14902	EPL firmware version	9673	0x25C9	E	1	VISIBLE_STRING		☒		
C14910	EPL module error	9665	0x25C1	E	1	UNSIGNED_32		☒		
C14911	EPL module warning	9664	0x25C0	E	1	UNSIGNED_32		☒		
C14919	EPL additional error info	9656	0x25B8	E	1	UNSIGNED_32		☒		
C14920	EPL DIP switch	9655	0x25B7	E	1	UNSIGNED_8		☒		

11 POWERLINK objects

The following objects specified by the POWERLINK communication profile are supported:

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1000	NMT_DeviceType_U32	-	U32	R	R	C13030 / C14030		
0x1001	ERR_ErrorRegister_U8	-	I8	R	R	C13110 / C14110		
0x1006	NMT_CycleLen_U32	-	U32	RW	RW	C13060 / C14060		
0x1018.0x00	NMT_IdentityObject_REC	NumberOfEntries	U8	R	R	-	1	1
0x1018.0x01	NMT_IdentityObject_REC	VendorId_U32	U32	R	R	C13034/1 / C14034/1		
0x1030.0x00	NMT_InterfaceGroup_0h_REC	NumberOfEntries	U8	R	R	-	9	9
0x1030.0x01	NMT_InterfaceGroup_0h_REC	InterfaceIndex_U16	U16	R	R	Interface no. of the POWERLINK interface	0	0
0x1030.0x02	NMT_InterfaceGroup_0h_REC	InterfaceDescription_VSTR	VS3	R	R	Description of the POWERLINK interface	EPL	EPL
0x1030.0x03	NMT_InterfaceGroup_0h_REC	InterfaceType_U8	U8	R	R	Interface type	6	6: ethernet-csmacd
0x1030.0x04	NMT_InterfaceGroup_0h_REC	InterfaceMtu_U32	U32	R	R	Maximum frame size [byte]	1518	1518
0x1030.0x05	NMT_InterfaceGroup_0h_REC	InterfacePhysAddress_OSTR	OS6	R	R	C13004/1 / C14004/1		
0x1030.0x06	NMT_InterfaceGroup_0h_REC	InterfaceName_VSTR	VS16	RW	RW	Symb. name of the POWERLINK interface	EPL	-
0x1030.0x07	NMT_InterfaceGroup_0h_REC	InterfaceOperState_U8	U8	R	R	Operation status of the POWERLINK interface	-	0: down 1: up
0x1030.0x08	NMT_InterfaceGroup_0h_REC	InterfaceAdminState_U8	U8	RW	RW	Administration status of the POWERLINK interface	1	0: down 1: up
0x1030.0x09	NMT_InterfaceGroup_0h_REC	Valid_BOOL	BOOL	RW	RW	Release of the interface description	1	0: FALSE, 1: TRUE
0x1101.0x00	Dia_NMTTelegramCount_REC	NumberOfEntries	U8	R	R	-	1	1
0x1101.0x01	Dia_NMTTelegramCount_REC	IsochrCyc_U32	U32	R	R	C13136/1 / C14136/1		
0x1400.0x00	PDO_RxCommParam_00h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1400.0x01	PDO_RxCommParam_00h_REC	NodeID_U8	U8	RW	RW	C13484/1 / C14484/1		
0x1400.0x02	PDO_RxCommParam_00h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1401.0x00	PDO_RxCommParam_01h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1401.0x01	PDO_RxCommParam_01h_REC	NodeID_U8	U8	RW	RW	C13484/2 / C14484/2		
0x1401.0x02	PDO_RxCommParam_01h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1402.0x00	PDO_RxCommParam_02h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1402.0x01	PDO_RxCommParam_02h_REC	NodeID_U8	U8	RW	RW	C13484/3 / C14484/3		
0x1402.0x02	PDO_RxCommParam_02h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1403.0x00	PDO_RxCommParam_03h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1403.0x01	PDO_RxCommParam_03h_REC	NodeID_U8	U8	RW	RW	C13484/4 / C14484/4		
0x1403.0x02	PDO_RxCommParam_03h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1404.0x00	PDO_RxCommParam_04h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1404.0x01	PDO_RxCommParam_04h_REC	NodeID_U8	U8	RW	RW	C13484/5 / C14484/5		
0x1404.0x02	PDO_RxCommParam_04h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1405.0x00	PDO_RxCommParam_05h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1405.0x01	PDO_RxCommParam_05h_REC	NodeID_U8	U8	RW	RW	C13484/6 / C14484/6		
0x1405.0x02	PDO_RxCommParam_05h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1406.0x00	PDO_RxCommParam_06h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1406.0x01	PDO_RxCommParam_06h_REC	NodeID_U8	U8	RW	RW	C13484/7 / C14484/7		

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1406.0x02	PDO_RxCommParam_06h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1407.0x00	PDO_RxCommParam_07h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1407.0x01	PDO_RxCommParam_07h_REC	NodeID_U8	U8	RW	RW	C13484/8 / C14484/8		
0x1407.0x02	PDO_RxCommParam_07h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1408.0x00	PDO_RxCommParam_08h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1408.0x01	PDO_RxCommParam_08h_REC	NodeID_U8	U8	RW	RW	C13484/9 / C14484/9		
0x1408.0x02	PDO_RxCommParam_08h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1409.0x00	PDO_RxCommParam_09h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1409.0x01	PDO_RxCommParam_09h_REC	NodeID_U8	U8	RW	RW	C13484/10 / C14484/10		
0x1409.0x02	PDO_RxCommParam_09h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1600.0x00	PDO_RxMappParam_00h_REC	NumberOfEntries	U8	RW	RW	C13489/1 / C14489/1		
0x1600.0x01...0x20	PDO_RxMappParam_00h_REC	ObjectMapping_U64	U64	RW	RW	C13231/1...32 / C14231/1...32		
0x1601.0x00	PDO_RxMappParam_01h_REC	NumberOfEntries	U8	RW	RW	C13489/2 / C14489/2		
0x1601.0x01...0x20	PDO_RxMappParam_01h_REC	ObjectMapping_U64	U64	RW	RW	C13232/1...32 / C14232/1...32		
0x1602.0x00	PDO_RxMappParam_02h_REC	NumberOfEntries	U8	RW	RW	C13489/3 / C14489/3		
0x1602.0x01...0x20	PDO_RxMappParam_02h_REC	ObjectMapping_U64	U64	RW	RW	C13233/1...32 / C14233/1...32		
0x1603.0x00	PDO_RxMappParam_03h_REC	NumberOfEntries	U8	RW	RW	C13489/4 / C14489/4		
0x1603.0x01...0x20	PDO_RxMappParam_03h_REC	ObjectMapping_U64	U64	RW	RW	C13234/1...32 / C14234/1...32		
0x1604.0x00	PDO_RxMappParam_04h_REC	NumberOfEntries	U8	RW	RW	C13489/5 / C14489/5		
0x1604.0x01...0x20	PDO_RxMappParam_04h_REC	ObjectMapping_U64	U64	RW	RW	C13235/1...32 / C14235/1...32		
0x1605.0x00	PDO_RxMappParam_05h_REC	NumberOfEntries	U8	RW	RW	C13489/6 / C14489/6		
0x1605.0x01...0x20	PDO_RxMappParam_05h_REC	ObjectMapping_U64	U64	RW	RW	C13236/1...32 / C14236/1...32		
0x1606.0x00	PDO_RxMappParam_06h_REC	NumberOfEntries	U8	RW	RW	C13489/7 / C14489/7		
0x1606.0x01...0x20	PDO_RxMappParam_06h_REC	ObjectMapping_U64	U64	RW	RW	C13237/1...32 / C14237/1...32		
0x1607.0x00	PDO_RxMappParam_07h_REC	NumberOfEntries	U8	RW	RW	C13489/8 / C14489/8		
0x1607.0x01...0x20	PDO_RxMappParam_07h_REC	ObjectMapping_U64	U64	RW	RW	C13238/1...32 / C14238/1...32		
0x1608.0x00	PDO_RxMappParam_08h_REC	NumberOfEntries	U8	RW	RW	C13489/9 / C14489/9		
0x1608.0x01...0x20	PDO_RxMappParam_08h_REC	ObjectMapping_U64	U64	RW	RW	C13239/1...32 / C14239/1...32		
0x1609.0x00	PDO_RxMappParam_09h_REC	NumberOfEntries	U8	RW	RW	C13489/10 / C14489/10		
0x1609.0x01...0x20	PDO_RxMappParam_09h_REC	ObjectMapping_U64	U64	RW	RW	C13240/1...32 / C14240/1...32		
0x1800.0x00	PDO_TxCommParam_00h_REC	NumberOfEntries	U8	R	R	-	2	2
0x1800.0x01	PDO_TxCommParam_00h_REC	NodeID_U8	U8	R	R	Node ID of the receiver	0	0 (pseudo node ID for PRes-Tx)
0x1800.0x02	PDO_TxCommParam_00h_REC	MappingVersion_U8	U8	R	R	Version of PDO mapping	0	0
0x1A00.0x00	PDO_RxMappParam_00h_REC	NumberOfEntries	U8	RW	RW	C13789/1 / C14789/1		
0x1A00.0x01...0x20	PDO_TxMappParam_00h_REC	ObjectMapping_U64	U64	RW	RW	C13531/1...32 / C14531/1...32		
0x1C00.0x00	DLL_MNCRCErrRec_REC	NumberOfEntries	U8	R	-	-	1	1
0x1C00.0x01	DLL_MNCRCErrRec_REC	CumulativeCnt_U32	U32	R	-	-		
0x1C00.0x02	DLL_MNCRCErrRec_REC	ThresholdCnt_U32	U32	R	-	-		
0x1C00.0x03	DLL_MNCRCErrRec_REC	Threshold_U32	U32	RW	-	-		
0x1C01.0x00	DLL_MNCCollision_REC	NumberOfEntries	U8	R	-	-	1	1

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1C01.0x01	DLL_MNCollision_REC	CumulativeCnt_U32	U32	R	-	-		
0x1C02.0x00	DLL_MNCycTimeExceed_REC	NumberOfEntries	U8	R	-	-	3	3
0x1C02.0x01	DLL_MNCycTimeExceed_REC	CumulativeCnt_U32	U32	R	-	-		
0x1C02.0x02	DLL_MNCycTimeExceed_REC	ThresholdCnt_U32	U32	R	-	-		
0x1C02.0x03	DLL_MNCycTimeExceed_REC	Threshold_U32	U32	RW	-	-		
0x1C03	DLL_MNLossOfLinkCum_U32	-	U32	R	-	-		
0x1C07.0x00	DLL_CNLossPResCumCnt_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1C07.0x01 ...0x64	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	R	-	-		
0x1C07.0x65 ...0xEF	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	-	-	not supported		
0x1C07.0xF0	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	R	-	-		
0x1C07.0xF1 ...0xFC	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	-	-	not supported		
0x1C07.0xFD	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	R	-	-		
0x1C07.0xFE	DLL_CNLossPResCumCnt_AU32	CumCnt	U32	R	-	-		
0x1C08.0x00	DLL_CNLossPResThrCnt_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1C08.0x01 ...0x64	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	R	-	not supported		
0x1C08.0x65 ...0xEF	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	-	-	not supported		
0x1C08.0xF0	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	R	-	not supported		
0x1C08.0xF1 ...0xFC	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	-	-	not supported		
0x1C08.0xFD	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	R	-	not supported		
0x1C08.0xFE	DLL_CNLossPResThrCnt_AU32	ThrCnt	U32	R	-	not supported		
0x1C09.0x00	DLL_CNLossPResThreshold_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1C09.0x01 ...0x64	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	-		
0x1C09.0x65 ...0xEF	DLL_CNLossPResThreshold_AU32	Threshold	U32	-	-	not supported		
0x1C09.0xF0	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	-		
0x1C09.0xF1 ...0xFC	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	not supported		
0x1C09.0xFD	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	-		
0x1C09.0xFE	DLL_CNLossPResThreshold_AU32	Threshold	U32	RW	-	-		
0x1C0A.0x00	DLL_CNCollision_REC	NumberOfEntries	U8	-	R	-	1	1
0x1C0A.0x01	DLL_CNCollision_REC	CumulativeCnt_U32	U32	-	R	C13126/1 / C14126/1		
0x1C0B.0x00	DLL_CNLossSoC_REC	NumberOfEntries	U8	-	R	-	3	3
0x1C0B.0x01	DLL_CNLossSoC_REC	CumulativeCnt_U32	U32	-	R	C13127/1 / C14127/1		
0x1C0B.0x02	DLL_CNLossSoC_REC	ThresholdCnt_U32	U32	-	R	C13127/2 / C14127/2		
0x1C0B.0x03	DLL_CNLossSoC_REC	Threshold_U32	U32	-	RW	C13127/3 / C14127/3		
0x1C0F.0x00	DLL_CNCRCErrRec_REC	NumberOfEntries	U8	-	R	-	1	1
0x1C0F.0x01	DLL_CNCRCErrRec_REC	CumulativeCnt_U32	U32	-	R	C13131/1 / C14131/1		
0x1C0F.0x02	DLL_CNCRCErrRec_REC	ThresholdCnt_U32	U32	-	R	C13131/2 / C14131/2		
0x1C0F.0x03	DLL_CNCRCErrRec_REC	Threshold_U32	U32	-	RW	C13131/3 / C14131/3		
0x1C10	DLL_CNLossOfLinkCum_U32	-	U32	-	R	C13132 / C14132		
0x1C12	DLL_MNCycleSuspendNumber_U32	-	U32	RW	-	-		
0x1E40.0x00	NWL_IpAddrTable_0h_REC	NumberOfEntries	U8	R	R	-	5	5
0x1E40.0x01	NWL_IpAddrTable_0h_REC	IflIndex_U16	U16	R	R	-	0	0
0x1E40.0x02	NWL_IpAddrTable_0h_REC	Addr_IPAD	U32	R	R	C13000/1 / C14000/1		
0x1E40.0x03	NWL_IpAddrTable_0h_REC	NetMask_IPAD	U32	R	R	C13001/1 / C14001/1		

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1E40.0x04	NWL_IpAddrTable_0h_REC	ReasmMaxSize_U16	U16	R	R	Maximum frame size which can be reconstructed from frames arriving in fragments [byte].	1518	1518
0x1E40.0x05	NWL_IpAddrTable_0h_REC	DefaultGateway_IPAD	U32	RW	RW	C13003/1 / C14003/1		
0x1E4A.0x00	NWL_IpGroup_REC	NumberOfEntries	U8	R	R	-	3	3
0x1E4A.0x01	NWL_IpGroup_REC	Forwarding_BOOL	BOOL	R	R	Release for IP router function	0	0 - FALSE
0x1E4A.0x02	NWL_IpGroup_REC	DefaultTTL_U16	U16	RW	RW	TimeToLive value for transmitted IP frames Limits the range with regard to router stations passed.	255	0 ... 255
0x1E4A.0x03	NWL_IpGroup_REC	ForwardingDatagrams_U32	U32	R	R	Counter for routed frames	-	-
0x1F80	NMT_StartUp_U32	-	U32	RW	-	-		
0x1F81.0x00	NMT_NodeAssignment_AU32	NumberOfEntries	U8	R	R	-	254	254
0x1F81.0x01 ... 0x64	NMT_NodeAssignment_AU32	NodeAssignment	U32	RW	RW	C13028/1...100 / C14028/1...100		
0x1F81.0x65 ... 0xEF	NMT_NodeAssignment_AU32	NodeAssignment	U32	-	-	not supported		
0x1F81.0xF0	NMT_NodeAssignment_AU32	NodeAssignment	U32	RW	RW	C13029/1 / C14029/1		
0x1F81.0xF1 ... 0xFC	NMT_NodeAssignment_AU32	NodeAssignment	U32	-	-	not supported		
0x1F81.0xFD	NMT_NodeAssignment_AU32	NodeAssignment	U32	RW	RW	C13029/2 / C14029/2		
0x1F81.0xFE	NMT_NodeAssignment_AU32	NodeAssignment	U32	RW	RW	C13029/3 / C14029/3		
0x1F82	NMT_FeatureFlags_U32	-	U32	R	R	C13040 / C14040		
0x1F83	NMT_EPLVers_U8	-	U8	R	R	C13041 / C14041		
0x1F84.0x00	NMT_MNDeviceTypeList_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1F84.0x01 ... 0x64	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	RW	-	-		
0x1F84.0x65 ... 0xEF	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	-	-	not supported		
0x1F84.0xF0	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	RW	-	C13219/1 / C14219/1		
0x1F84.0xF1 ... 0xFC	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	-	-	not supported		
0x1F84.0xFD	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	RW	-	C13219/2 / C14219/2		
0x1F84.0xFE	NMT_MNDeviceTypeList_AU32	CNDeviceTypeld	U32	RW	-	C13219/3 / C14219/3		
0x1F89.0x00	NMT_BootTime_REC	NumberOfEntries	U8	R	-	-	5	5
0x1F89.0x01	NMT_BootTime_REC	MNWaitNotAct_U32	U32	RW	-	-		
0x1F89.0x02	NMT_BootTime_REC	MNTimeoutPreOp1_U32	U32	RW	-	-		
0x1F89.0x03	NMT_BootTime_REC	MNWaitPreOp1_U32	U32	RW	-	-		
0x1F89.0x04	NMT_BootTime_REC	MNTimeoutPreOp2_U32	U32	RW	-	-		
0x1F89.0x05	NMT_BootTime_REC	MNTimeoutReadyToOp_U32	U32	RW	-	-		
0x1F8A.0x00	NMT_MNCycleTiming_REC	NumberOfEntries	U8	R	-	-	2	2
0x1F8A.0x01	NMT_MNCycleTiming_REC	WaitSoCPreReq_U32	U32	RW	-	-		
0x1F8A.0x02	NMT_MNCycleTiming_REC	AsyncSlotTimeout_U32	U32	RW	-	-		
0x1F8B.0x00	NMT_MNPreReqPayloadList_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1F8B.0x01 ... 0x64	NMT_MNPreReqPayloadList_AU32	CNPreReqPayload	U32	RW	-	Maximum user data size in the CN-addressing PReq frame [byte], Node ID = subcode no.	36	36
0x1F8B.0x65 ... 0xEF	NMT_MNPreReqPayloadList_AU32	CNPreReqPayload	U32	-	-	not supported	36	36
0x1F8B.0xF0	NMT_MNPreReqPayloadList_AU32	CNPreReqPayload	U32	RW	-	Maximum user data size in the CN-addressing PReq frame [byte], Node ID = subcode no.	36	36

EPL index	Index name	Subindex name	Type	MN	CN	Reference / description	Lenze	Values
0x1F8B.0xF1 ...0xFC	NMT_MNPReqPayloadList_ AU32	CNPReqPayload	U32	-	-	not supported	36	36
0x1F8B.0xFD ...0xFE	NMT_MNPReqPayloadList_ AU32	CNPReqPayload	U32	RW	-	Maximum user data size in the CN- addressing PReq frame [byte], Node ID = subcode no.	36	36
0x1F8C	NMT_CurrState_U8	-	U8	R	R	C13095 / C14095		
0x1F8D.0x00	NMT_MNPResPayloadList_ AU32	NumberOfEntries	U8	R	R	-	254	254
0x1F8D.0x01 ...0x64	NMT_MNPResPayloadList_ AU32	PResPayload	U16	RW	RW	C13066/1...100 / C14066/1...100		
0x1F8D.0x65 ...0xEF	NMT_MNPResPayloadList_ AU32	PResPayload	U16	-	-	not supported		
0x1F8D.0xF0	NMT_MNPResPayloadList_ AU32	PResPayload	U16	RW	RW	C13225/1 / C14225/1		
0x1F8D.0xF1 ...0xFC	NMT_MNPResPayloadList_ AU32	PResPayload	U16	-	-	not supported		
0x1F8D.0xFD	NMT_MNPResPayloadList_ AU32	PResPayload	U16	RW	RW	C13225/2 / C14225/2		
0x1F8D.0xFE	NMT_MNPResPayloadList_ AU32	PResPayload	U16	RW	RW	C13225/3 / C14225/3		
0x1F8E.0x00	NMT_MNCNCurrState_AU8	NumberOfEntries	U8	R	-	-	254	254
0x1F8E.0x01 ...0x64	NMT_MNCNCurrState_AU8	CNCurrState	U8	R	-	-		
0x1F8E.0x65 ...0xEF	NMT_MNCNCurrState_AU8	CNCurrState	U8	-	-	not supported		
0x1F8E.0xF0	NMT_MNCNCurrState_AU8	CNCurrState	U8	R	-	-		
0x1F8E.0xF1 ...0xFC	NMT_MNCNCurrState_AU8	CNCurrState	U8	-	-	not supported		
0x1F8E.0xFD	NMT_MNCNCurrState_AU8	CNCurrState	U8	R	-	-		
0x1F8E.0xFE	NMT_MNCNCurrState_AU8	CNCurrState	U8	R	-	-		
0x1F92.0x00	NMT_MNCNResTimeout_AU32	NumberOfEntries	U8	R	-	-	254	254
0x1F92.0x01 ...0x64	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	RW	-	-		
0x1F92.0x65 ...0xEF	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	-	-	not supported		
0x1F92.0xF0	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	RW	-	-		
0x1F92.0xF1 ...0xFC	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	-	-	not supported		
0x1F92.0xFD	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	RW	-	-		
0x1F92.0xFE	NMT_MNCNResTimeout_AU32	CNResTimeout	U32	RW	-	-		
0x1F93.0x00	NMT_EPLNodeID_REC	NumberOfEntries	U8	R	R	-	3	3
0x1F93.0x01	NMT_EPLNodeID_REC	NodeID_U8	U8	R	R	C13042 / C14042		
0x1F93.0x02	NMT_EPLNodeID_REC	NodeIDByHW_BOOL	BOOL	R	R	C13043 / C14043		
0x1F93.0x03	NMT_EPLNodeID_REC	SWNodeID_U8	U8	RW	RW	C13044 / C14044		
0x1F98.0x00	NMT_CycleTiming_REC	NumberOfEntries	U8	R	R	-	9	9
0x1F98.0x01	NMT_CycleTiming_REC	IsochrTxMaxPayload_ U16	U16	R	R	Size of the isochronous transmit memory	1490	1490
0x1F98.0x02	NMT_CycleTiming_REC	IsochrRxMaxPayload_ U16	U16	R	R	Size of the isochronous receive memory	1490	1490
0x1F98.0x03	NMT_CycleTiming_REC	PResMaxLatency_U32	U32	-	R	Isochronous response delay [ns]	2000	2000
0x1F98.0x04	NMT_CycleTiming_REC	PReqActPayload_U16	U16	-	RW	C13071 / C14071		
0x1F98.0x05	NMT_CycleTiming_REC	PResActPayload_U16	U16	RW	RW	C13072 / C14072		
0x1F98.0x06	NMT_CycleTiming_REC	ASndMaxLatency_U32	U32	-	R	Asynchronous response delay [ns]	80000	80000
0x1F98.0x07	NMT_CycleTiming_REC	MultipleCycleCnt_U8	U8	RW	RW	C13074 / C14074	0	0
0x1F98.0x08	NMT_CycleTiming_REC	AsyncMTUSize_U16	U16	RW	RW	C13075 / C14075		
0x1F98.0x09	NMT_CycleTiming_REC	Prescaler_U16	U16	RW	RW	not supported		

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0x1F99	NMT_CNBasicEthernetTimeout_U32	-	U32	-	RW	C13078 / C14078		
0x1F9A	NMT_HostName_VSTR	-	VS32	RW	RW	C13045 / C14045		
0x1F9B.0x01 ...0x64	NMT_MultiplCycleAssign_AU8	CycleNo	U8	RW	RW	C13079 / C14079	0	0 ... value of index 0x1F98. 0x07
0x1F9B.0xF0	NMT_MultiplCycleAssign_AU8	CycleNo	U8	RW	RW	C13229/1 / C14229/1	0	
0x1F9B.0xFD	NMT_MultiplCycleAssign_AU8	CycleNo	U8	RW	RW	C13229/2 / C14229/2	0	
0x1F9B.0xFE	NMT_MultiplCycleAssign_AU8	CycleNo	U8	RW	RW	C13229/3 / C14229/3	0	
0x1F9E	NMT_ResetCmd_U8	-	U8	W	W	C13102 / C14102		
0x1F9F.0x00	NMT_RequestCmd_REC	NumberOfEntries	U8	R	-	-	4	4
0x1F9F.0x01	NMT_RequestCmd_REC	Release_BOOL	BOOL	RW	-	-		
0x1F9F.0x02	NMT_RequestCmd_REC	CmdID_U8	U8	RW	-	-		
0x1F9F.0x03	NMT_RequestCmd_REC	CmdTarget_U8	U8	RW	-	-		
0x1F9F.0x04	NMT_RequestCmd_REC	CmdData_DOM	DOM	R	-	User data to command from subcode 2	blank	blank

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Your opinion is important to us

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

Perhaps we have not succeeded in achieving this objective in every respect. If you have suggestions for improvement, please e-mail us to:

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Thank you very much for your support.

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