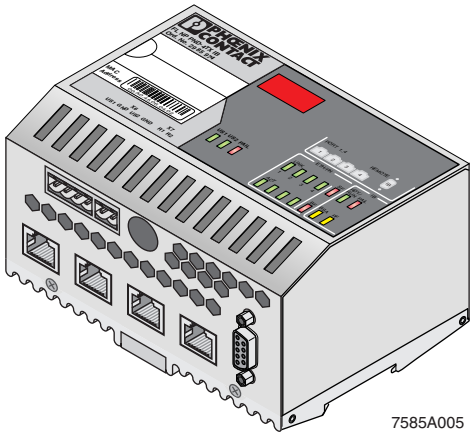
FL NP PND-4TX IB

PROFINET proxy for INTERBUS with INTERBUS remote bus output and integrated switch with four RJ45 ports



7585A005

Data sheet
7585_en_05

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1 Description

PROFINET / INTERBUS proxy

1.1 Features

- 10/100BASE-T(X) Ethernet twisted pair interface
- Transmission speeds of 10 Mbps and 100 Mbps
- Integrated managed switch with four ports
- Supported protocols: SNMPv1, TCP/IP, LLDP, MRP, and PROFINET RT Version 2.2; MRP for Ethernet ports X1/X2 as of Firmware Version 3.21
- PROFINET device based on ERTEC 400
- Supports PROFINET conformance class B
- Entire configuration set via GSDML device descriptions in the PROFINET configuration tools
- Integrated PROFINET proxy for INTERBUS
- INTERBUS Generation 4 functions
- INTERBUS protocol (IEC 61158)
- Comprehensive system diagnostics
- INTERBUS master connection (copper technology)
- DDI and HFI support in gateway mode

1.2 Application

- Connection of an INTERBUS system to a PROFINET controller
- Use in control cabinets or small control boxes in order to seamlessly integrate existing INTERBUS solutions in PROFINET
- Connection of an INTERBUS system via TCP/IP in gateway mode
- Use as a remote controller board for Ethernet-based control platforms

Quick start guides for both PC Worx and Siemens SIMATIC S7 (see “Ordering data” on page 3) are available on the Internet at www.phoenixcontact.net/catalog.

Make sure you use the latest version of the device description files (GSDML, FDCML) and the latest documentation for the proxy. The latest device description files and documentation can be downloaded at www.phoenixcontact.net/catalog.

This document is valid for all products listed in the “Ordering data” on page 3

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2 Ordering data

Products

Description	Type	Order No.	Pcs. / Pkt.
PROFINET proxy for INTERBUS with INTERBUS remote bus output and integrated switch with four RJ45 ports	FL NP PND-4TX IB	2985974	1

Accessories

Description	Type	Order No.	Pcs. / Pkt.
Memory card for optional saving of the PROFINET name (examples)	IBS CF FLASH 256MB	2988780	1
Device description file	GSDML/FDCML at www.phoenixcontact.net/catalog		

Documentation

Description	Type	Order No.	Pcs. / Pkt.
Quick start guide: PC Worx	UM QS EN PC WORX	–	1
Quick start guide: Configuring INTERBUS devices in a PROFINET network using the example of STEP 7	UM QS EN PROFINET PROXY IB	–	1
Diagnostics guide: INTERBUS	IBS SYS DIAG DSC UM E	–	1
User manual: Driver reference manual	IBS PC SC SWD UM E	–	1

3 Technical data

General data	
Function	PROFINET proxy for INTERBUS/switch
Housing dimensions (width x height x depth)	128 mm x 95 mm x 69 mm (without connectors, memory card not inserted)
Weight	650 g
Permissible temperature (operation)	-25°C ... +60°C
Permissible temperature (storage/transport)	-25°C ... +70°C
Humidity (operation)	10% ... 95%, no condensation
Humidity (storage/transport)	10% ... 95%, no condensation
Air pressure (operation)	80 kPa ... 108 kPa, 2000 m above sea level
Air pressure (storage/transport)	66 kPa ... 108 kPa, 3000 m above sea level
Degree of protection	IP20, IEC 60529
Class of protection	Class 3 VDE 0106; IEC 60536, PELV with preconnected power supply unit with safe isolation
Pollution degree (installation in housing with ≥ IP54 protection)	2
Air and creepage distances	According to IEC 60439-1
Preferred mounting position	On a standard DIN rail (for mounting position, see Figure 7 on page 11)
Connection to functional earth ground	Snapped onto a grounded DIN rail
Display elements	Local diagnostic and status LEDs

Supply voltage (U_{S1}/U_{S2} redundant)	
Connection	Via COMBICON; conductor cross section = 2.5 mm^2, maximum
Nominal value	24 V DC
Permissible ripple	3.6 V_{pp} within the permissible voltage range
Permissible voltage range	18.5 V DC ... 30.2 V DC
Current consumption	350 mA, typical
Power consumption, typical	8.5 W

Interfaces	
Ethernet (RJ45 ports)	
Number	4
Connection format	8-pos. RJ45 socket
Connection medium	Twisted pair cable with a conductor cross section of 0.14 mm^2 ... 0.22 mm^2
Cable impedance	100 Ω
Transmission speed	10/100 Mbps
Maximum network segment expansion	100 m
Function	100 BASE-T(X)
INTERBUS	
Bus connection	INTERBUS remote bus, outgoing
Connection format	9-pos. D-SUB socket
Transmission speed	500 kbps and 2 Mbps

Interfaces	
Floating alarm contact	
Voltage	24 V DC
Current carrying capacity	100 mA, maximum

INTERBUS functions	
Number of I/Os in input and output direction	Up to 1024 bytes (in PROFINET mode, see Table "Formula for calculating limits" on page 5)
Number of devices	Up to 512 devices (in PROFINET mode, see "Formula for calculating limits" on page 5)
	Up to 16 device levels
Transmission speed	2 Mbaud/500 kbaud
Functions	Optical regulation, single-channel diagnostics, switching devices, isolated switching, hiding devices

Software	
Software requirements	PC Worx Version 5.10 or later, Service Pack 1 Diag+ Version 2.3 or later
Device description	GSDML file according to specification 2 (can be downloaded at www.phoenixcontact.net/catalog)

PROFINET	
Type	Modular PROFINET device
Specification	2.2
Conformance class	B
Performance class	≥ 1 ms
Supported functions	Topology detection, automatic device replacement, parameterizable alarm and startup behavior, PDev parameter records for topology information
Number of slots	Up to 514 (in PROFINET mode, see "Formula for calculating limits" on page 5)

Formula for calculating limits

(No. Dev = Number of devices)

The basic specifications (number of slots/devices/number of I/Os) are maximum limits, which may be lower depending on the selected control system and memory capacity.

In addition, the number of devices is limited by the maximum telegram length of a PROFINET telegram (1440 bytes, maximum).

An approximation can be made using the following formulas:

No. Dev $_{IN}$ = Total number of INTERBUS devices with I/Os in the input direction

No. Dev $_{OUT}$ = Total number of INTERBUS devices with I/Os in the output direction

No. Dev $_{IN/OUT}$ = Total number of INTERBUS devices with I/Os in the input and output direction

No. Dev $_{without}$ = Total number of INTERBUS devices without process data in the input and output direction

Data length $_{IN}$ = Length of the INTERBUS process image in the input data direction

Data length $_{OUT}$ = Length of the INTERBUS process image in the output data direction

= Data length $_{IN}$ + No. Dev $_{IN}$ + No. Dev $_{OUT}$ + (2 x No. Dev $_{IN/OUT}$) + No. Dev $_{without}$ + 8 ≤ 1440

= Data length $_{OUT}$ + No. Dev $_{OUT}$ + No. Dev $_{IN}$ + (2 x No. Dev $_{IN/OUT}$) + No. Dev $_{without}$ + 4 ≤ 1440

Mechanical tests	
Shock test according to IEC 60068-2-27	Operation: 25g Storage/transport: 50g
Vibration resistance according to IEC 60068-2-6	Operation/storage/transport: 5g
Free fall according to IEC 60068-2-32	1 m

Conformance with EMC directive 2014/30/EU		
Noise immunity test according to EN 61000-6-2		
Electrostatic discharge (ESD)	EN 61000-4-2 IEC 61000-4-2	Criterion B 6 kV contact discharge 8 kV air discharge
Electromagnetic HF field	EN 61000-4-3 IEC 61000-4-3	Criterion A Field strength: 10 V/m
Fast transients (burst)	EN 61000-4-4 IEC 61000-4-4	Criterion B Signal/data lines: 2.2 kV
Surge current loads (surge)	EN 61000-4-5 IEC 61000-4-5	Criterion B Signal/data lines: 1.1 kV
Conducted interferences	EN 61000-4-6 IEC 61000-4-6	Criterion A Test voltage: 10 V
Noise emission test according to EN 61000-6-4		Class A

NOTE: Radio interference

This is a Class A item of equipment. When using the equipment in residential areas, it may cause radio interference. In this case, the operator may be required to implement appropriate measures and to pay the resulting costs.

4 Safety notes

WARNING: Operation only by qualified personnel

Disregarding this warning may result in damage to equipment and/or serious personal injury.

Only qualified personnel may start up and operate this device.

Qualified personnel are persons who are authorized to start up, to ground, and to mark devices, systems, and equipment according to the standards of safety technology. Qualified personnel must be familiar with all warning instructions and maintenance measures in this document.

WARNING: Only use PELV

The FL NP PND-4TX IB proxy is designed exclusively for protective extra-low voltage (PELV) operation according to EN 60204-1. Only protective extra-low voltages according to the defined standard may be used to supply and connect the alarm contact.

NOTE: Shielding

The shielding ground of the connected twisted pair cables is electrically connected to the socket.

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

NOTE: Electrostatic discharge

The device contains components that can be damaged or destroyed by electrostatic discharge. When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD) according to EN 61340-5-1 and IEC 61340-5-1.

NOTE: Only personnel authorized by Phoenix Contact are permitted to open the housing.

5 Front view

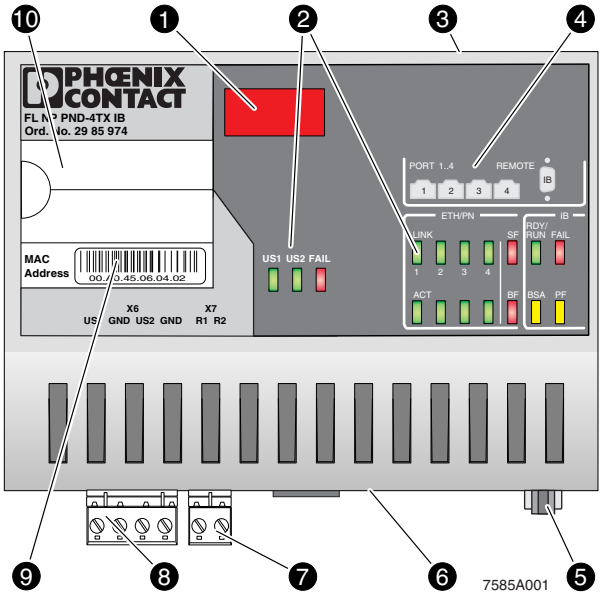


Figure 1 Front view of the FL NP PND-4TX IB

The following components are located on the proxy:

1 7-segment display
2 Diagnostic and status indicators
3 Slot for the parameterization memory
4 Diagram of Ethernet port numbering and the INTERBUS connection
5 Outgoing INTERBUS connection (REMOTE)
6 Ethernet ports
7 COMBICON alarm contact
8 Supply voltage
9 MAC address
10 Labeling field

Slot for the parameterization memory

The slot for the optional parameterization memory (Compact Flash card, e.g., IBS CF FLASH 256MB, Order No. 2988780) is located on the top of the housing (3 in Figure 1).

When the memory card is inserted, the PROFINET name and data for switching to gateway mode are present on the memory card (see “Parameterization memory” on page 17).

6 Interfaces

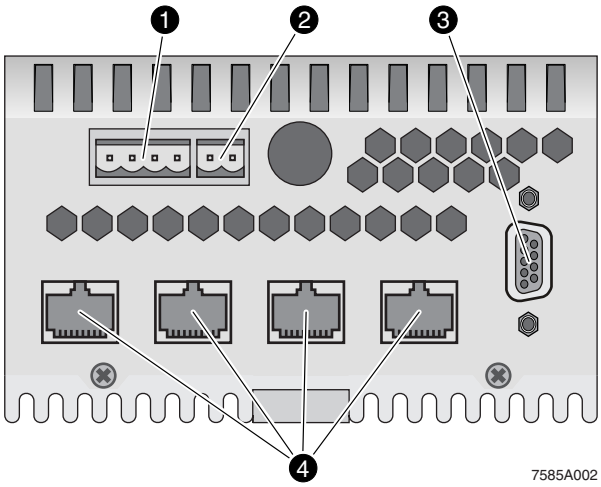


Figure 2 Interfaces of the FL NP PND-4TX IB

The following interfaces are located on the proxy:

1 Supply voltage
2 COMBICON alarm contact
3 Outgoing INTERBUS connection (9-pos. D-SUB socket)
4 Ethernet ports (X1 ... 4)

6.1 Assignment of Ethernet ports

The proxy has four Ethernet ports in RJ45 format (4 in Figure 2 on page 8). Only one twisted pair cable with an impedance of 100 Ω may be connected to a port.

Depending on the Ethernet network used, the data transmission rate is 10 Mbps or 100 Mbps. The Ethernet ports of the proxy can detect a pair of incorrectly connected receive cables (RD+/RD-) and correct them using the auto polarity correction function.

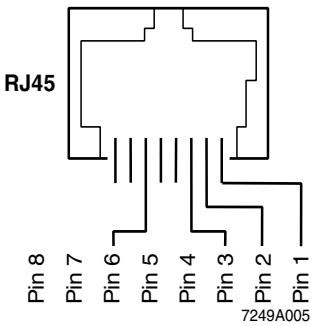
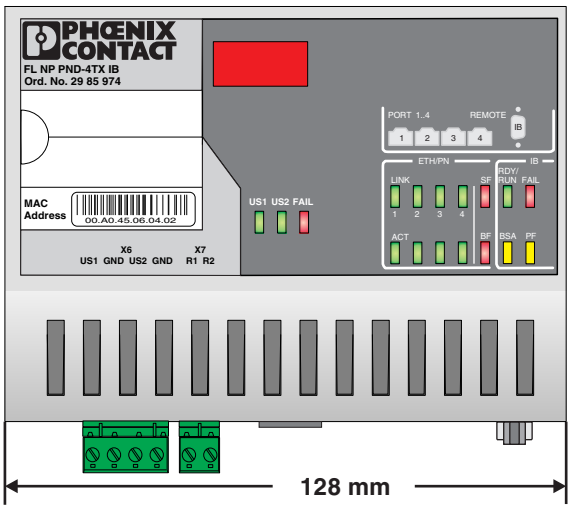


Figure 3 Pin assignment

PIN	Assignment	Meaning
8	res.	Reserved
7	res.	Reserved
6	TD-	Transmit data -
5	res.	Reserved
4	res.	Reserved
3	TD+	Transmit data +
2	RD-	Receive data -
1	RD+	Receive data +

7 Housing dimensions of the proxy



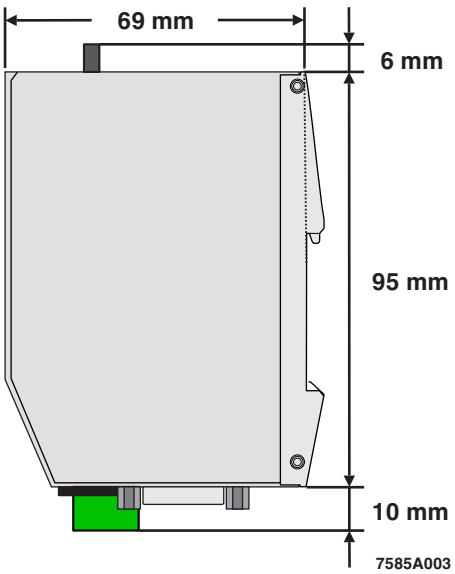


Figure 4 Housing dimensions of the proxy

Depth: 69 mm/71 mm from top edge of DIN rail

8 Mounting and removing the proxy

Mount the proxy on a DIN rail according to EN 60751 (e.g., NS 35 ... from Phoenix Contact). To avoid contact resistance, only use clean, corrosion-free DIN rails.

Before mounting the modules, an end clamp (E/NS 35N, Order No. 0800886) should be mounted on the left-hand side next to the proxy to stop the modules from slipping on the DIN rail. The end clamp on the right-hand side should only be mounted once the proxy has been mounted.

9 Installation

9.1 Connecting the supply voltage/grounding

The 24 V supply voltage (8 in Figure 1 on page 8) and the alarm contact (7 in Figure 1 on page 8) are connected via two COMBICON terminal block bases. To connect the cables, remove the relevant terminal block base.

9.2 Connecting the supply voltage

The 24 V supply voltage can be connected redundantly. Both voltage inputs (U_{S1} and U_{S2}) are decoupled from each other and are electrically isolated from the housing.

In the event of a redundant voltage supply, the higher of the two voltages supplies the device. The load is not distributed.

In the event of a non-redundant power supply, the proxy indicates a supply voltage failure via the alarm contact and the FAIL LED.

This error message can be prevented by connecting the supply voltage to both terminal blocks in parallel (see Figure 5, version 1).

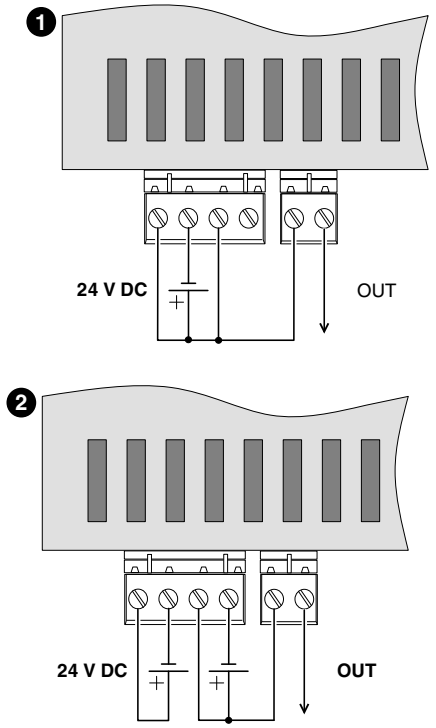


Figure 5 Typical connection of supply voltage and alarm contact

9.3 Connecting the alarm contact

The proxy has a floating alarm contact. This alarm contact monitors the functions of the proxy and thus enables remote diagnostics.

The alarm contact is floating and closed during correct operation of the proxy. An error is indicated through interruption of the contact.

The alarm contact can be connected as shown in Figure 5 or it can be supplied from an independent voltage source.

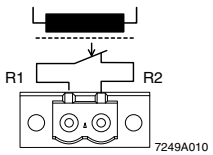


Figure 6 Basic circuit diagram for the alarm contact

9.4 Connecting functional earth ground

Snapping the proxy onto a grounded DIN rail connects it to the ground potential.

WARNING: Ensure correct grounding

Grounding protects people and machines against hazardous voltages. Correct grounding, taking the local conditions into account, is vital.

All Factoryline devices must be grounded so that any possible interference is shielded from the data telegram and discharged to ground potential.

A conductor of at least 2.5 mm^2 must be used for grounding. When mounting on a DIN rail, the DIN rail must be connected to protective earth ground via grounding terminal blocks. The module is connected to protective earth ground via the metal base element.

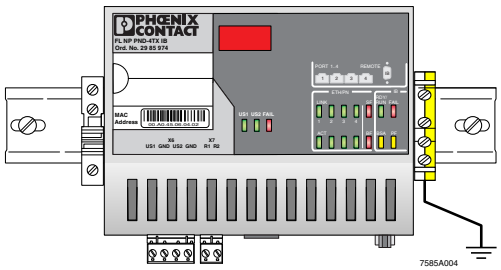


Figure 7 Proxy on a grounded DIN rail

9.5 Connecting INTERBUS

Connect the remote bus cable, which goes to the first INTERBUS remote bus device, to the remote bus connection (9-pos. D-SUB socket) of the proxy (3 in Figure 2 on page 8).

10 Status and diagnostic indicators

10.1 General meaning

LED status			Meaning
Voltage supply			
US1	Green	ON	Supply voltage 1 present
		OFF	Supply voltage 1 too low
US2	Green	ON	Supply voltage 2 present
		OFF	Supply voltage 2 too low
FAIL	Red	ON	Alarm contact open (an error has occurred)
		OFF	Alarm contact closed (an error has not occurred)
Port 1 ... 4/Ethernet			
A LINK LED for each port is located on the proxy (2 in Figure 1 on page 8).			
LINK	Green	ON	Physical network connection ready to operate
		Flashing	Flashing function of the configuration and parameterization software active/device search
		OFF	Physical network connection interrupted or not present
An ACT LED (activity) for each port is located below the LINK LED on the proxy (2 in Figure 1).			
ACT	Green	ON	Sending/receiving data telegrams
		OFF	Not sending/receiving data telegrams
SF	Red	ON	Group error message: Faulty parameterization, bus error, peripheral fault, single-channel diagnostics present or control level of an optical path is above the threshold value.
		OFF	Group error message not present, INTERBUS operating without errors.
BF	Red	ON	No PROFINET communication
		Flashing	No communication connection to the PROFINET controller, connection is being activated.
		OFF	The PROFINET controller has established an active communication connection to the PROFINET device.
INTERBUS			
RDY/ RUN	Green	ON	Master in RUN mode
		Flashing	Master in READY mode
		OFF	Master not ready to operate
FAIL	Red	ON	Bus, controller or user error
		OFF	No error
BSA	Yellow	ON	Bus segment aborted
		OFF	No bus segment aborted
PF	Yellow	ON	Peripheral fault
		OFF	No peripheral fault

10.2 Diagnostic indicators (LEDs) during operation and in the event of an error

LED		Meaning
States during operation:		
SF BF RDY/RUN FAIL	OFF ON Flashing OFF	The PROFINET device is waiting for communication with the PROFINET controller. INTERBUS is not parameterized.
SF BF RDY/RUN FAIL	OFF OFF ON OFF	The PROFINET controller was able to establish communication without errors.
States in the event of an error:		
SF BF RDY/RUN FAIL	ON OFF Flashing ON	The INTERBUS configuration sent by the PROFINET controller to the PROFINET device could not be executed. **Remedy:** Check and correct the parameterization.
SF BF RDY/RUN FAIL	ON OFF Flashing ON	INTERBUS error during operation Refer to the diagnostic indicator on the 7-segment display (“bUS”/“PF”/“SL” - see page 13). **Remedy:** A bus error or a peripheral fault has occurred.
SF BF RDY/RUN FAIL ACT LINK	OFF ON ON OFF OFF OFF	The physical communication connection was interrupted, the PROFINET controller can no longer be accessed. No link. Remedy: Restore the physical connection.

11 Meaning of the 7-segment display

11.1 On startup/during operation

Display	Meaning
Pxx	Various boot phases
-I I-	PROFINET communication has been interrupted or not initialized (see BF LED).
- - -	PROFINET communication has been initialized, data is being exchanged.
	(RUN line) Operating (no errors present, INTERBUS is in RUN mode (see RUN LED)).
“0-0” alternating with an error indication or RUN line. The LINK LED flashes during the device search.	
	PROFINET device identification (error indications: see “bUS”/“PF”, “SL”, and “Err”)
“bUS” or “PF” alternating with “xxx.” and “yyy” Example: bUS → 002. → 001 → bUS → ...	
	“bUS” INTERBUS bus error messages or “PF” peripheral fault messages when integrating the proxy into an AUTOMATION system:
$xxx._{dec}$	Segment number
yyy_{dec}	Device number (position number)
“SL” alternating with “xxx”	
	Error messages when integrating the proxy into a Siemens SIMATIC S7 system:
xxx_{dec}	Slot number in the PROFINET system
“Err” alternating with “0d”, “80” or “E0” and “xx” Example: Err → 80 → 01 → Err → ...	
	Errors detected by the device firmware.
$0d0F_{hex}$	Incorrect/missing data in the INTERBUS configuration
Remedy	Check the INTERBUS configuration.
8000_{hex}	Internal device error
8001_{hex}	Triggering the hardware watchdog
8002_{hex}	Triggering the software watchdog
0d0bhex, 0d0Chex, 0d0dhex, 0d0Ehex, 0d10hex, 0Exxhex	Device firmware error

Display	Meaning
Remedy	Reset the voltage on the controller board and observe the behavior. If the error occurs again, replace the device. If the error still persists, external influences such as network errors, cabling, the communication volume/network load or configuration must be checked. If this does not solve the problem, please contact Phoenix Contact.
“Err” alternating with “CF” and “xx”	
$CF02_{hex}$	The parameterization memory was removed during operation.
$CF03_{hex}$	The parameterization memory is not a compatible memory card.
$CF04_{hex}$	The parameterization memory was inserted while the supply voltage was switched on. The parameterization memory can only be written again once the supply voltage has been switched on and off (reset).
Remedy	Only use compatible parameterization memories. 1. In the event of $CFXX_{hex}$ errors, switch off the supply voltage. 2. Insert the parameterization memory in the card holder. 3. Switch on the supply voltage.
MAU warning	
	INTERBUS diagnostic message in an AUTOMATION system:
“FO” alternating with “xxx.” and “yyy” Example: FO → 002. → 001 → FO → ...	
$xxx._{dec}$	Segment number
yyy_{dec}	Device number (position number)
	In a Siemens SIMATIC S7 system:
“SL” alternating with “FO” and “xxx” Example: SL → FO → 005 → SL → ...	
xxx_{dec}	Slot number in the PROFINET system

Display	Meaning
“P.b.o.”, “E.x.x”	
Error states in connection with a firmware update	
P.b.o	Error in boot device during firmware update
Remedy	1. Check the settings on your PC and your firmware update tool. 2. Check whether the BootP server is active. 3. Check whether the MAC address is set correctly. 4. Make sure that two tools are not active simultaneously. 5. Check whether the correct firmware file is selected.
E.1.7.	Error during TFTP transmission. Restart the update.
E.1.8.	Error while saving the file. Restart the update.
E.1.9.	Incorrect firmware file. Select the correct firmware.
E.P.1.	Invalid firmware file format. Restart the update.
E.1.C	Invalid firmware file checksum. Restart the update.
Error states following a firmware update	
E.2.0./1.	Invalid MAC addresses. Please return the device to Phoenix Contact.

In the event of a group error message (SF), the slot number is indicated on the 7-segment display.

Example: Error at slot 3. Display: “SL” alternating with “03” every second.

11.2 During firmware update

An application note for firmware update via TFTP (AH EN TFTP FIRMWARE UPDATE) can be found at www.phoenixcontact.net/catalog.

Display	Meaning
b03	The TFTP server is receiving a request for firmware download.
b04	The firmware is being downloaded to the memory.
b05	The firmware transfer to the memory is complete.

12 Properties of the PROFINET device/ mapping of inputs and outputs to PROFINET

Here you will find an overview of the properties of the proxy operating as a PROFINET device and its parameterization.

Following integration in an engineering tool, the proxy uses the following slots.

Slot	Data length/description
Slot 0	0 words, FL NP PND-4TX IB, device proxy including device parameterization and interface information (PDev)
Slot 1	4 words for the INTERBUS standard function and diagnostic registers respectively
Slot 2	0 words, INTERBUS interface converter

12.1 Parameterization of the device behavior (slot 0)

The proxy parameterization can be viewed and modified at slot 0. There are parameters that control the PROFINET alarm behavior and parameters that specify the INTERBUS behavior in your S7 system.

Please note that the evaluation of the alarm behavior (incoming/outgoing alarms) depends on the control system programming (PROFINET controller) in your application.

PROFINET alarm behavior

PROFINET enables the PROFINET device to store diagnostic information together with the error location and error type.

The diagnostic alarms are only transmitted if they have been enabled via parameters during startup.

When the cause of the diagnostic alarm has been removed, an outgoing alarm is transmitted to the PROFINET controller.

If at least one item of diagnostic information has been stored, the SF LED lights up.

If no diagnostic information is present, the SF LED is off.

In the display, bus errors are given higher priority than peripheral faults.

Default setting: **Messages inactive**

With this default setting, the proxy does not generate any alarms.

Parameters	Diagnostic alarm
INTERBUS diagnostics	
This parameter controls the alarm behavior of the proxy for all diagnostic events (excluding peripheral faults and single-channel diagnostics) of the INTERBUS system.	The proxy transmits an incoming/outgoing diagnostic alarm to the PROFINET controller.
Power supply failure	
This parameter controls the proxy alarm behavior according to the supply voltages U_{S1} and/or U_{S2}.	Use this setting to specify whether an incoming/outgoing alarm is transmitted when the minimum value of supply voltages U_{S1} and/or U_{S2} is not reached/exceeded.
Limit value for optical regulation reached (MAU warning)	
This parameter controls the alarm behavior of the proxy when fiber optic transmission quality is adversely affected in the entire fiber optic system.	When the control level switches from 14 to 15, an incoming alarm is transmitted. When the control level switches from 14 to 13, an outgoing alarm is transmitted.
Single-channel diagnostics	
The single-channel diagnostics of various I/O modules (e.g., for Ruggedline) can be activated separately.	**All messages active** All single-channel errors are indicated via incoming/outgoing alarms. **U_{S2} messages inactive** All single-channel errors are indicated, except for U_{S2} messages.
I/O diagnostics	
I/O diagnostics can be activated separately. (Device-specific error messages, which do not lead to INTERBUS errors)	A peripheral fault message is indicated via an incoming/outgoing alarm.
Report the INTERBUS module's return	
This parameter controls the proxy alarm behavior when an INTERBUS device is switched off/on.	The proxy transmits an alarm if an INTERBUS device that was previously switched off is switched on.

INTERBUS settings

INTERBUS enables devices to be switched in the bus configuration, for example, by defining appropriate group assignments for INTERBUS devices, which are operated via the fiber optic interface at the proxy.

Notes on switching INTERBUS devices (report the INTERBUS module's return)

If the “Report the INTERBUS module's return” parameter is set to inactive (default), the PROFINET controller will not be informed when the INTERBUS device is switched off.

As long as the INTERBUS device is switched off, then within the proxy the substitute value 0 will be entered in the input process data of the switched-off device.

Use the “Messages active” value (“Report the INTERBUS module's return” parameter) to ensure that the PROFINET controller will be informed when an INTERBUS device is switched off.

As a result, the PROFINET controller will no longer update the device process data.

Only when an alarm informs the PROFINET controller that the device has returned does the controller start to update the device process data again.

Parameters	Settings	
Automatic start following INTERBUS error	Inactive (Default)	Active If a bus error occurs, INTERBUS is restarted automatically following a delay time. This start procedure is repeated until INTERBUS runs without errors. As long as an error is present in the INTERBUS system, a corresponding error message is output.
Automatic start delay	5 seconds (Default)	5 s ... 120 s The time set here specifies the delay time for the automatic bus start in seconds. You can set automatic start delay values in the range from 5 to 120 seconds.

12.2 INTERBUS diagnostic and status register (slot 1)

When the proxy is installed as a PROFINET device, I/O addresses are assigned for the INTERBUS master at slot 1. The INTERBUS standard function and diagnostic registers are mapped to these addresses.

Additional information about INTERBUS standard function and diagnostic registers and INTERBUS diagnostics is available on the Internet at www.phoenixcontact.net/catalog.

Here you will find quick start guides for PC Worx and Siemens SIMATIC S7 as well as the INTERBUS diagnostics guide (see “Ordering data” on page 3).

13 Parameterization memory

NOTE: Only insert or remove the parameterization memory when the power is switched off.

If the parameterization memory is inserted, the device name is stored on it as part of device naming.

This simplifies the replacement of devices if the PROFINET controller does not support automatic, topology-based device identification.

NOTE: Please note that the device name will not be stored in the parameterization memory if the card is first inserted in the proxy after the device has been named.

In this case, the device name is lost and you must carry out device naming again.

14 Applicative system redundancy for process data

Applicative system redundancy is supported by firmware version 3.21 or later. It is only provided for process data but not for parameter data.

Acyclic communication allows two PROFINET controllers (primary and backup) to communicate with the same bus coupler.

Parallel PCP services are not supported. This means, if a second PROFINET controller tries to access a PCP device while there is a another PROFINET controller with a service pending, the second service request is rejected by the bus coupler.

With regard to communication, no distinction is made between the primary (process controlling) and backup controller.

Using applicative system redundancy, “Plug and Pull” alarms (e.g., “Report the INTERBUS module's return”, see Section “PROFINET alarm behavior” on page 15) may not be activated.

15 Gateway mode

The proxy supports gateway mode. In this operating mode, I/O data can be read and written via standard TCP/IP services.

At application level, both the Device Driver Interface (DDI) and High-Level Fieldbus Interface (HFI) are supported.

The DDI is available for various operating systems. For other operating systems, a development kit can be used.

The HFI is a .NET-based library, which enables I/Os to be directly accessed via objects. Diagnostics and connection monitoring are automatically integrated in the HFI.

For additional information about the DDI, please refer to the driver reference manual (see “Documentation” on page 3) or HFI online help.

For gateway mode, a specific startup sequence must be stored on an inserted memory card.

The required data is available for download and can be written to the CF card using a suitable card reader.

The IP address of the device is also permanently stored on this card. This IP address can be modified using the “NetNames+” tool.

In “NetNames+”, the “Permanently store IP address” setting must be enabled under “Options”, as the device will lose its IP address on the next voltage reset.