rexroth
A Bosch Company

Operating Instructions
(Translation of the original)

IndraControl XFE 01.1

Extension Modules Profibus, RT-Ethernet, Sercos, CAN

R911345570 Edition 07

Disclaimer

The data specified above only serve to describe the product. As our products are constantly being further developed, no statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

Table of contents

1 About this documentation

1.1 Revision history

Table 1: Editions of this documentation

Edition	Release date	Note
01	2014-10	First edition
02	2016-08	CAN modules and Sercos modules supplemented
03	2016-10	Corrections
04	2017-02	Explosion protection notes and type plate supplemented
05	2019-06	Standards and warning instructions modified for UL, explosion protection notes removed
06	2021-08	Description of the LEDs "SF" and "BF" supplemented for the RT-Ethernet module
07	2025-11	Marine and offshore certification removed

1.2 Overview on target groups and product phases

In the following illustration, the framed activities, product phases and target groups refer to the present documentation.

Example: In the product phase “Mounting (assembly/installation)”, the target group “Mechanic/electrician” can execute the activity “install” using this documentation.

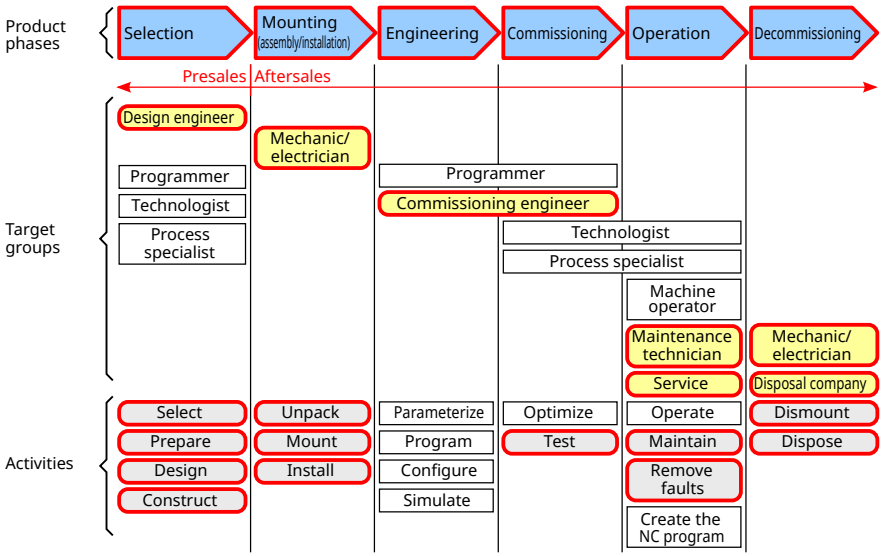

Fig. 1: Assigning the present documentation to the target groups, product phases and activities of the target group

This document instructs the technical staff of the machine manufacturer on how to safely perform the mechanical and electrical installation and on how to commission the device.

Required qualification: Individual who is able to assess the tasks assigned and to identify possible safety risks owing to qualification in the subject, knowledge and experience. The individual should also be familiar with the standards and regulations.

1.3 Scope

This document is valid for all variants of the modules, whose type code starts with: XFE01.1-FB ...

The type code specifications are located on the type plate of the module. Also refer to ➦ Chapter 2.1 “ Product identification and type plate ” on page 7.

1.4 Related documents

Table 2: Related documents

Title	Part number and document type
IndraControl XM21, XM22	➦ R911340667
Controls	Operating Instructions
IndraControl XM42	➦ R911345566
Controls	Operating Instructions

For related documents, go to the Rexroth Media Directory at ➦ http://www.boschrexroth.com and enter the specified part number.

1.5 Customer feedback

Customer requests, comments or suggestions for improvement are of great importance. Please email your feedback on the documentations to ➦ Feedback.Documentation@boschrexroth.de. Directly insert comments into the electronic PDF document and send the PDF file to Bosch Rexroth.

2 Product identification and scope of delivery

2.1 Product identification and type plate

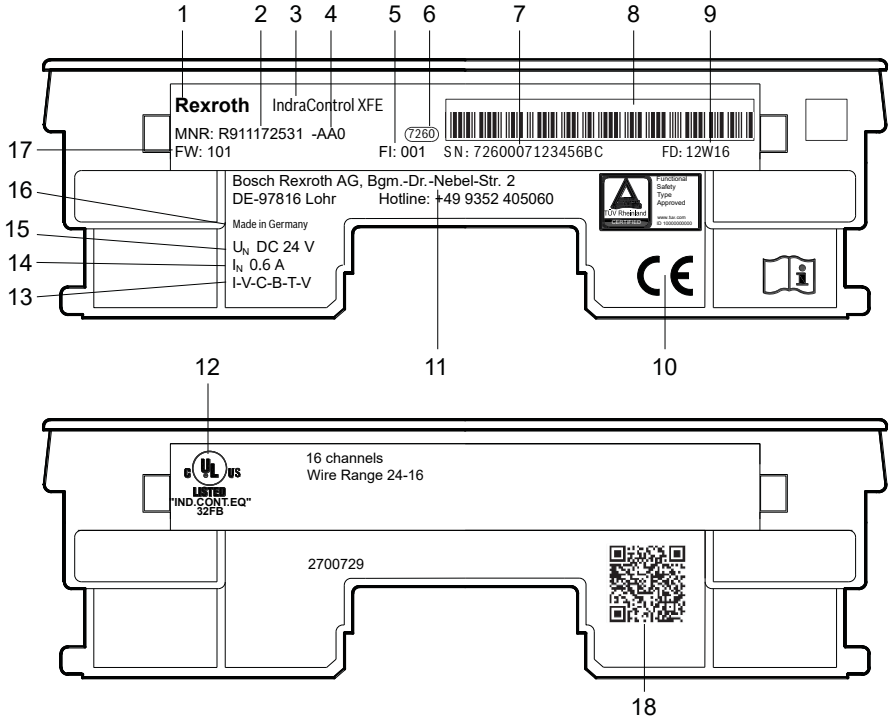

Fig. 2: Exemplary type plate

1 Word mark
2 Part number
3 Device name
4 State of revision
5 Functional index
6 Plant number
7 Serial number
8 Serial number as barcode
9 Manufacturing date (yyWww)
10 CE conformity marking

11 Company address
12 Underwriters Laboratories Inc. mark
13 Check digit
14 Nominal current
15 Nominal voltage
16 Manufacturing country
17 Software release
18 QR code

2.2 Scope of delivery

- Extension module
- Bus base
- 24 V power connector XA-CN01
- Safety instructions

3 Using safety instructions

3.1 Structure of the safety instructions

The safety instructions are structured as follows:

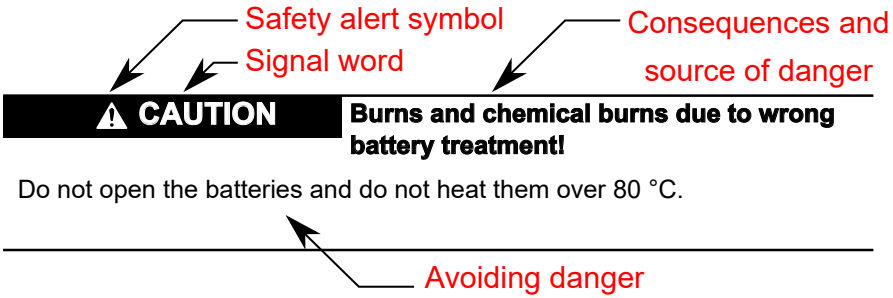

Fig. 3: Structure of the safety instructions

3.2 Explaining signal words and the safety alert symbol

The safety instructions in this documentation contain specific signal words (danger, warning, caution, notice) and, if necessary, a safety alert symbol (according to ANSI Z535.6).

The signal word draws attention to the safety instruction and indicates the risk potential.

The signal graphics (warning triangle with exclamation mark), added in front of the signal words Danger, Warning and Caution refer to hazards to inidividuals.

⚠ DANGER	In case of non-compliance with this safety instruction, death or serious injury **will** occur.
⚠ WARNING	In case of non-compliance with this safety instruction, death or serious injury **can** occur.
⚠ CAUTION	In case of non-compliance with this safety instruction, minor or moderate injury can occur.

NOTICE	In case of non-compliance with this safety instruction, material damage can occur.

3.3 Symbols used

This is a tip.

4 Intended use

NOTICE	**Risk of damaging the device if not expressly stated accessories, mounting parts and other components, cables, lines, software and firmware are used.** The extension modules may exclusively be used with the accessories and add-on components specified in this documentation. Components that are not expressly mentioned must neither be attached nor connected. The same applies to cables and lines. Only to be operated with the component configurations and combinations expressly defined and with the software and firmware specified in the corresponding functional description.

The extension modules can be used for complex connections to controls that cannot be operated at the S20 bus, such as interface modules to Profinet, Profibus, CAN and Sercos or Safety connection.

The extension modules may only be operated under the mounting and installation conditions, the position, and the specified ambient conditions (temperature, degree of protection, humidity, EMC etc.) specified in the related documentation.

5 Spare parts, accessories and wear parts

5.1 Power connectors, 24 V

Ordering code	Part number	Description
XA-CN01	R911173741	24 V plug

5.2 Connector set for the CAN module

Ordering code	Part number	Description
S20-CNS 2S-O/D/UI/E1/E2	R911173804	Connector set for the 24 V module and the CAN module

5.3 Bus base module

Ordering code	Part number	Description
XA-BS11	R911173772	Bus base module for extension modules

5.4 End clamp

Ordering code	Part number	Description
SUP-M01-ENDHALTER	R911170685	2 pieces of snap-on end brackets for 35 mm NS 35/7.5 support rail; width: 9.5 mm

5.5 Wear parts

There are no wear parts in the extension modules.

6 Ambient conditions

Table 3: Ambient conditions

Area of application	Only in interior spaces
Ambient temperature during operation	Up to 2000 m: -25 °C to +60 °C 2,000 m to 3,000 m -25 °C to +55 °C
Ambient temperature during storage and transport	-40 °C to +85 °C
Permitted air humidity	5 % to 95 % acc. to DIN EN 61131-2 Condensation not allowed
Mechanical strength①	Vibration stress • Oscillations, sinusoidal in all three axes acc. to DIN EN 60068-2-6 5-9 Hz with an amplitude of 3.5 mm 9-150 Hz with 5 g peak acceleration • Broadband noise acc. to DIN EN 60068-2-64 5-20-150 Hz with 0.572 g, 5 h per axis Shock stress: Shock resistance in all three axes acc. to DIN EN 60068-2-27 11 ms semi-sinusoidal 30 g
Overvoltage category	2
Contamination level	2
Degree of protection	IP20 acc. to DIN EN 60 529
Protection class	III, DIN EN 61010-2-201

① The vibration stress specifications assume the use of industrial-suited RJ45 plug connections. The “Industrial RJ45 plug” of the company Yamaichi is recommended (Y-ConPlug-41). The cables are available as accessories (RKB0020). To avoid vibration, secure the cables at a short distance (< 20 cm).

NOTICE

Defective device due to contaminated air!

- The ambient air must not contain acids, alkaline solutions, corrosive agents, salts, metal vapors and other electrically conductive contaminants in high concentrations.
- The devices to be installed into the housings and installation compartments must at least comply with the degree of protection IP 54 according to DIN EN 60529.
- The device shall be provided in a suitable fire enclosure in the end-use application.

NOTICE

Defective device due to gases jeopardizing functions

Due to the risk of corrosion, avoid sulphureous gases (e.g. sulphur dioxide (SO_2) and hydrogen sulphide (H_2S)). The device is not resistant against these gases.

NOTICE

Defective device due to overheating

To avoid overheating and to ensure a trouble-free operation of the device, the ambient air has to circulate. Also refer to the chapter "Installation notes" in the application manual.

This is a product that corresponds to the limit values of the emitted interference of class A (industrial environments). This is a product that does not correspond to the limit values of the emitted interference of class B (residential area and small enterprises.

When using the product in residential areas or small enterprises, the operator has to take actions to prevent radio interferences (also refer to DIN EN 55022).

7 Technical data

7.1 General technical data

Table 4: Technical data

Weight	0.120 kg
Degree of protection	IP 20 acc. to DIN EN 60 529

7.2 Voltage supply and current consumption

The following specifications include the values acc. to EN 61131-2.

Infeed U_L	DC 24 V PELV/SELV (safety extra-low voltage)
Maximum voltage range allowed	DC 18 V to DC 31.2 V (incl. all tolerances and ripple)
Current consumption from U_L	0.2 A max.
Power consumption from U_L	4.8 W max.
Reverse polarity protection of the supply voltage	Diode
Fuse protection	Internal protective fuse, 4 A

Transient protection	Present, suppressor diodes
Voltage dips at current supply interfaces	Up to 10 ms without impairment

NOTICE

Electronic damage due to polarity reversal or due to a nominal current that is too low

The power supply unit has to be able to deliver the quadruple nominal current of the internal and external fuses to ensure that the fuse reliably triggers in case of error.

7.2.1 Electrical isolation and isolation of the voltage ranges

Profibus extension module

24 V supply with FE to XF8	1200 V DC, 1 min.

RT Ethernet extension module

24 V supply with FE to XF40	1200 V DC, 1 min.
24 V supply with FE to XF41	1200 V DC, 1 min.
XF40 to XF41	1200 V DC, 1 min.

Sercos extension module

24 V supply with FE to XF3	1200 V DC, 1 min.
24 V supply with FE to XF4	1200 V DC, 1 min.
XF3 to XF4	1200 V DC, 1 min.

CAN extension module

24 V supply to XF70	1200 V DC, 1 min.
24 V supply to XF71	1200 V DC, 1 min.
24 V supply to FE	1200 V DC, 1 min.
XF70 to FE	1200 V DC, 1 min.
XF71 to FE	1200 V DC, 1 min.
XF70 to XF71	1200 V DC, 1 min.

8 Standards

8.1 General information

The products have been developed according to the German editions of the standards published at the time of product engineering.

8.2 Standards used

Table 5: Standards used

Standard	Meaning	Edition
IEC 60204-1	Electrical equipment of machines	2007
IEC 61131-2	Programmable logic controllers	2008
IEC 60529	Degrees of protection provided by enclosures (IP code)	2014
IEC 61010-2-201	Safety requirements for electrical equipment for measurement, control and laboratory use	2014
UL 61010-2-201	Safety requirements for electrical equipment for measurement, control and laboratory use	2014

8.3 CE marking

8.3.1 Declaration of conformity

The electronic products described in the present operating instructions comply with the requirements and the target of the following EU directive and with the following harmonized European standards:

EMC directive 2014/30/EU

The electronic products described in the present operating instructions are intended for use in industrial environments and comply with the following requirements:

Table 6: Standards for electromagnetic compatibility (EMC)

Standard	Title	Edition
DIN EN 61000-6-4	Electromagnetic compatibility (EMC) Part 6-4: Generic standards – Emission standard for industrial environments	September 2011
DIN EN 61000-6-2	Electromagnetic compatibility (EMC) Part 6-2: Generic standards – Immunity for industrial environments	March 2006

Loss of EU conformity due to modifications at the device

EU marking applies only to the device upon delivery. After modifying the device, verify the EU conformity.

8.4 UL/CSA certified

The devices are certified according to

- UL 61010-1 – Edition 3
  UL 61010-2-201 – Edition 1 (Industrial Control Equipment)
- CSA C22.2 NO. 61010-1-12 UPDATE – Edition 3
  CSA C22.2 NO. 61010-2-201:14 – Edition 1

However, there can be combinations or extension stages with a limited or missing certification. Thus, verify the registration according to the UL marking on the device.

Loss of UL/CSA conformity due to modifications at the device.

UL and CSA marking applies only to the device upon delivery. After modifying the device, verify the UL and the CSA conformity.

9 Interfaces of the XFE modules

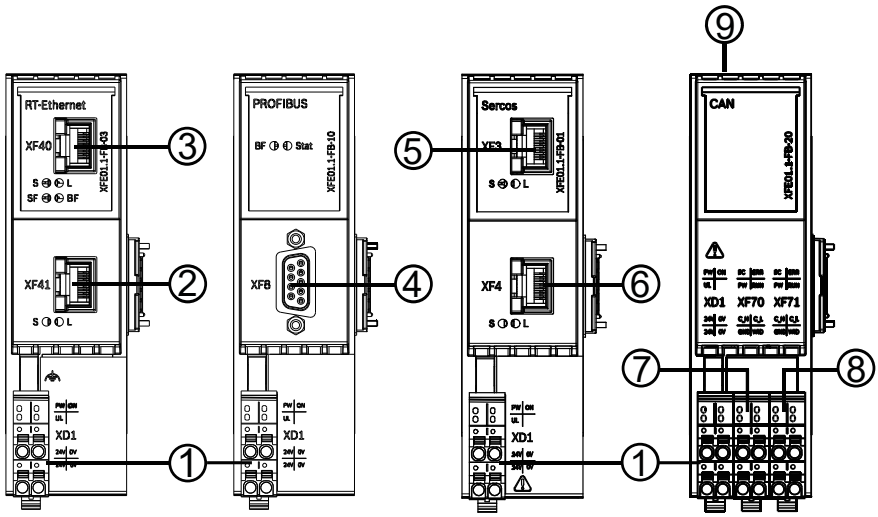

Fig. 4: Interfaces of the extension modules

NOTICE

Destruction of components and devices due to mounting and dismounting under voltage!

- Before mounting or dismounting, disconnect the IPC or the control - including its components - from voltage.
- Connect the voltage only after the IPC or the control and its components have been set up.

Table 7: Interfaces of the extension modules

No.	Name	Connection type	Connector type (Integrated)	Mating connector and cable (From outside)
①	XD1	Voltage supply	4-pin	(4-wire)
RT Ethernet extension module				
②	XF41	Ethernet	RJ45 socket 8-pin	RJ45 plug 8-pin

No.	Name	Connection type	Connector type (Integrated)	Mating connector and cable (From outside)
③	XF40	Ethernet	RJ45 socket 8-pin	RJ45 plug 8-pin
Profibus extension module				
④	XF8	Profibus	D-SUB socket 9-pin	D-SUB plug 9-pin
Sercos extension module				
⑤	XF3	Ethernet	RJ45 socket 8-pin	RJ45 plug 8-pin
⑥	XF4	Ethernet	RJ45 socket 8-pin	RJ45 plug 8-pin
CAN extension module				
⑦	XF70	CAN	CAN cable (4-pin)	CAN cable (4-pin)
⑧	XF71	CAN	CAN cable (4-pin)	CAN cable (4-pin)
⑨	Fallback pushbutton			

Table 8: Pin assignment of XF70 and XF71

Plug contact XF70 or XF71	Signal	Function
00 or 02	C_H	CAN_H signal
01 or 03	C_L	CAN_L signal
10 or 12	GND	CAN ground
11 or 13	WID	Adding the termination resistor to the CAN network The resistor is enabled by connecting the plug contacts 10 (CAN GND) and 11 (WID) or 12 (CAN GND) and 13 (WID).

Table 9: Connection data of XF70 and XF71

Plug name	S20 plug
Connection method	Spring-cage connection in direct plug-in technology
Conductor cross-section	Rigid or flexible 0.2 mm^2 to 1.5 mm^2
Conductor cross-section AWG	24 to 16

10 Mounting, dismounting and electric installation

10.1 Housing dimensions of the XFE module

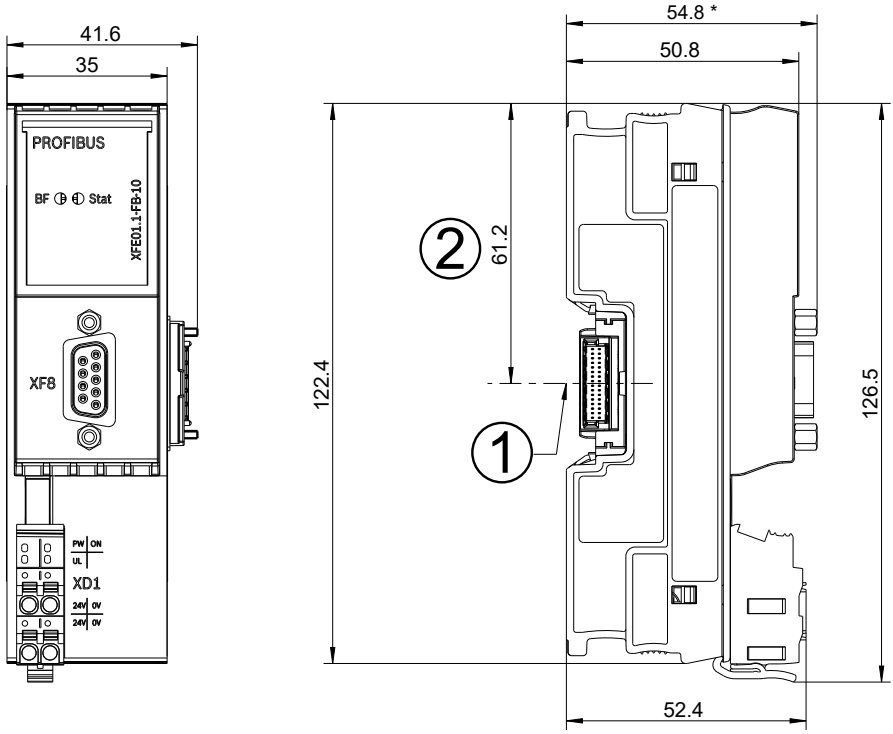

Fig. 5: Housing dimensions

* The dimensions depend on the respective extension module

① Mounting rail TH 35 – 7.5 acc. to DIN EN 60715

② Mounting rail center

10.2 Installation notes

NOTICE	**Destruction of the device due to electrostatic discharge**
	The device contains components that can be damaged or destroyed by electrostatic discharge. Comply with the required safety measures against electrostatic discharge (ESD) acc. to EN 61340-5-1 when operating the control.

- Shielding connection for the extension module

To ensure EMC safety, connect all shieldings directly at the control cabinet entrance to a common FE ground line.

Note:

The shielding connection set for the S20 modules may not be set for the extension modules.

- Mounting location

  The extension modules have the degree of protection IP 20 and are thus intended for use in a closed control cabinet or control box (terminal box) of the degree of protection IP 54 or higher.

- Mounting rail

  Mount the extension modules on a 35 mm standard mounting rail. The preferred overall height of the mounting rail is 7.5 mm (corresponds to TH 35-7.5 acc. to EN 60715).

  Mount the extension modules and the extension bus base modules as described in this chapter.

  Install the extension modules on a horizontally mounted mounting rail.

  The fastening distance of the mounting rails may not exceed 200 mm. This distance is required to ensure stability while mounting and dismounting the control or the extension modules.

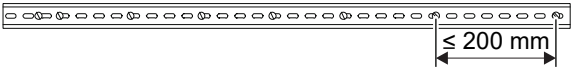

Fig. 6: Mounting rail fastening (in mm)

NOTICE	**Electronic damage due to fastening elements of the mounting rail**
	If screws and rivets are too high on the mounting rail, the bus base modules do not really engage on the mounting rail. Use only screws and rivets with a structural height of up to 3 mm to fasten the mounting rail.

- End clamps
  - Fasten end clamps on both sides of the IndraControl XM station. End clamps guarantee the correct fastening of the control and the modules connected to them on the mounting rail and they are used as lateral end elements.
  - Always fasten the left end clamp of the station before mounting the control. This ensures the following:
    - It impedes the shifting of the control.
    - The installation place for the end clamps is secured.
    - If the control has to be replaced, there is sufficient space to separate the control from the bus base modules.
    - They have a counterpressure against the engaging forces when mounting the modules in series to the control.
- Do not route cables parallel to motor cables or other strong interference sources to avoid the coupling of interferences
- The LED displays may not be hidden
- Observe the bending radius of the cables used when laying the connecting lines
- Use strain reliefs for all cables

- Keep the maximum distance possible from interference sources
- Provide minimum distances for sufficient cooling. Refer to the operating instructions of the XM control, see

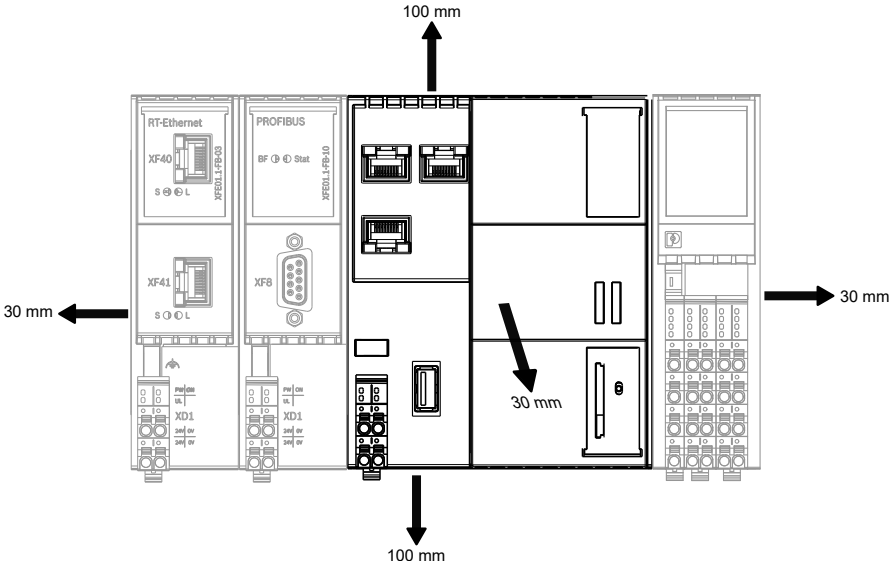

Fig. 7: Minimum distances for the circulation of ambient air

In case of a several line design, the supply air has to be measured under each line and its limit value has to be observed. For information on ambient temperatures, refer to

- Additionally, provide sufficient distance for mounting, dismounting, plugs and cables.
- Use only cables approved for temperatures of at least +60°C. In case of ambient temperatures above +55 C, use cables approved for temperatures of at least +75°C.

10.3 Mounting

NOTICE	**Damages at the contacts by tilting the modules**
	Attach the modules vertically on the support rail and remove the modules vertically from the support rail.

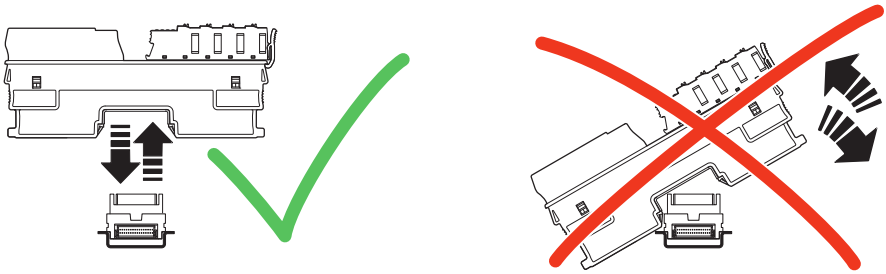

Fig. 8: Positioning and removing modules only vertically

NOTICE	**Destruction of components and devices due to mounting and dismounting under voltage!**
	– Before mounting or dismounting, disconnect the IPC or the control - including its components - from voltage. – Connect the voltage only after the IPC or the control and its components have been set up.

The extension bus base modules can only be mounted if the control is not attached to the control bus base module.

10.3.1 Mounting extension bus base modules

1. Press the extension bus base modules for the extension modules on the top-hat rail on the left next to the control bus base module until all latchings are safely closed (see (A) in the following figure).
2. Move the first extension bus base module (see (B) to the right and connect the extension bus base module with the bus base module of the control (see (D) in the following figure).
3. Move the other extension bus base modules to the right until all bus base modules are connected to each other (see (C) in the following figure).
4. Fit the extension modules and the XMx control on the bus bases.

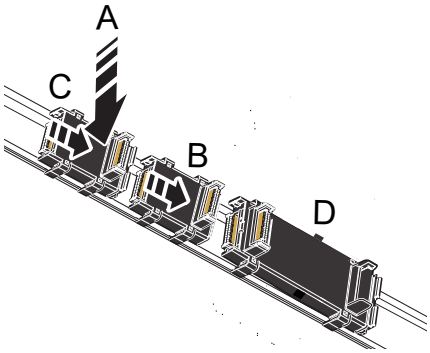

Fig. 9: Interconnect extension bus base modules and connect them to the control bus base module

10.4 Dismounting

For dismounting, use a common tool such as a slotted screwdriver with a 2.5 mm blade.

NOTICE	**Destruction of components and devices due to mounting and dismounting under voltage!**
	– Before mounting or dismounting, disconnect the IPC or the control - including its components - from voltage. – Connect the voltage only after the IPC or the control and its components have been set up.

10.4.1 Removing extension module from top-hat rail

1. Remove the left end clamp.
2. Use a suitable tool (e.g. slotted screwdriver) and put it first into the upper and then into the lower disengaging mechanism (base latch) of the control and disengage the control (see (A) in the following figure). The base latches are locked in the open position.
3. Remove the extension module vertically to the support rail (see (B) in the following figure). The base latches engage again in idle position.

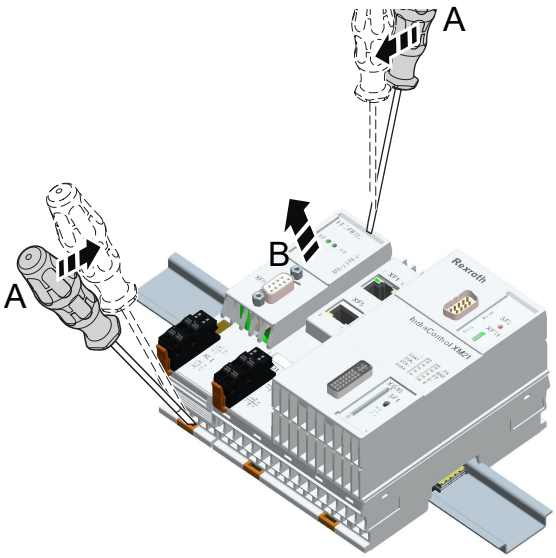

Fig. 10: Removing extension module from top-hat rail

10.5 Electric installation

10.5.1 General hazard warnings

⚠ WARNING	**Danger of personal injury due to incorrect mounting or electric installation!** – Avoid dangerous system states, which might cause personal injury! – Ensure the specified personal safety that impedes damages caused by direct and indirect touching of parts under voltage (connection to the protective connector, insulation, etc.)!

10.5.2 External power supply unit

All control components are supplied from 24 V voltage supplies.

Use the Bosch Rexroth power supply unit VAP01.1H-W23-024-010-NN, part number R911171065, for the logic supply. For further information on the external power supply unit and on the creation of overvoltage categories, refer to the documentation of the power supply unit.

All lines of the 24 V voltage supply have to be routed separately from lines carrying higher voltages.

All peripherals, such as digital sensors or actuators connected to the interfaces of the control, also have to comply with the criteria of safety-separated circuits.

The same external power supply unit has to supply the 24 V voltage supply of the XMx control and the extension modules. Connect the voltage supply to the XD1 plugs of the XMx control and then bridge the cables to the power connectors XD1 of the extension modules, refer to Fig. 11. Other connection variants are not permitted.

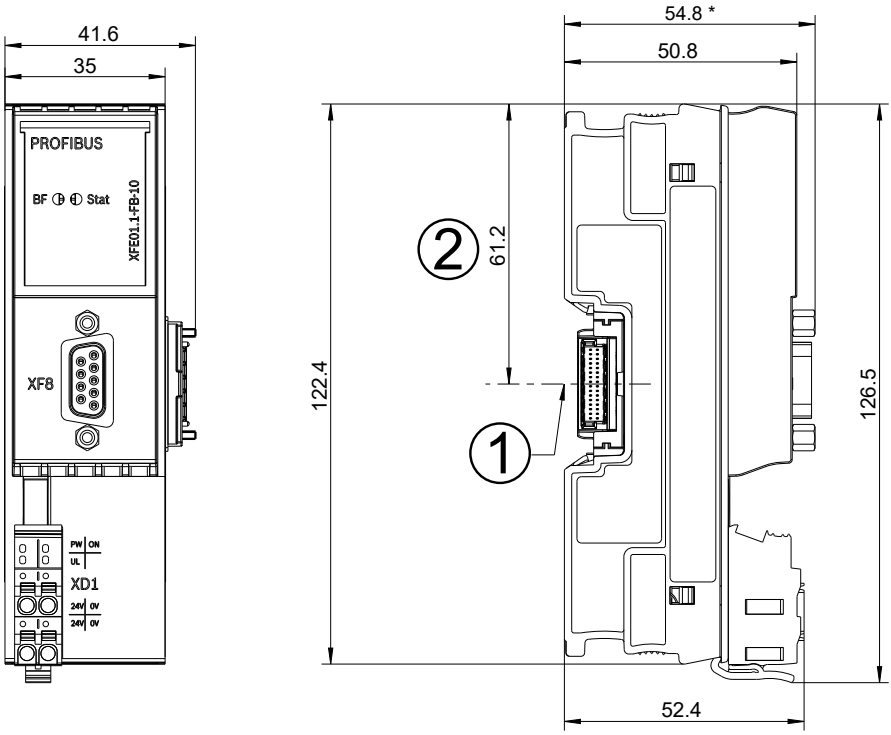

Fig. 11: Mandatory voltage supply
① 24 V voltage supply
② Top-hat rail
③ Extension module
④ XM2x control
⑤ S20 Module

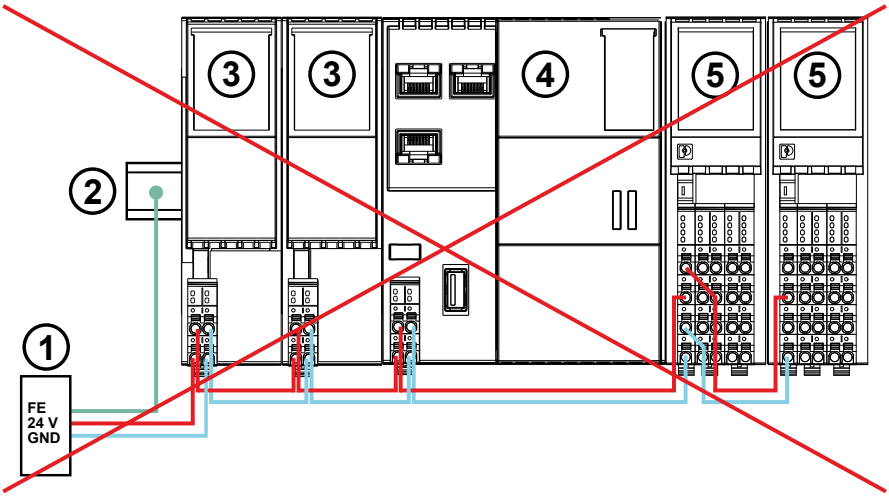

Fig. 12: Not allowed voltage supply

① 24 V voltage supply
② Top-hat rail
③ Extension module
④ XM2x control
⑤ S20 Module

10.5.3 Voltage supply for the control and for the extension modules

The control is supplied via the XD1 plug.

Connect the power connector with cables with a conductor cross-section of AWG 16 (1.5 mm^2).

Observe the color-coding of the plugs.

Only the “XA-CN01” power connector is permitted to connect the 24 V supply voltage (see ➦ Chapter 5.1 “Power connectors, 24 V” on page 9).

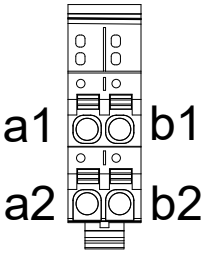

Fig. 13: Power connector XD1

Table 10: Pin assignment of the power connector XD1

Plug contact	Signal	Function
a1, a2	U_L +24 V	+24 V DC supply voltage (U_L)
b1, b2	GND	GND (U_L) (ground supply voltage)

10.5.4 24 V voltage supply

The voltage of 24 V can be supplied with or without electrical isolation. The CAN extension module is provided with a GND/FE separation. The other extension modules are provided with a low-ohmic GND/FE connection.

11 Commissioning

11.1 Commissioning notes

The extension modules can be directly operated. Programming or configuration is not required.

Observe the operating instructions of the control, see ➥ Chapter 1.4 “Related documents ” on page 6.

When commissioning the extension module “CAN”, the internal, programmable function block is loaded. After successful loading, the LED “ON” is green at the voltage plug. Then, the internal, programmable function blocks of the control “XMx” are loaded. If these function block have been loaded successfully as well, the display “ON” is green at the voltage supply plug of the control “XMx”. In case of an error, the display LED is not on, refer to ➥ Chapter 13.1 “Error messages of the status LEDs ” on page 27.

11.2 IT security

Operating systems and machines requires the implementation of a comprehensive concept for state-of-the-art IT security. Bosch Rexroth products are part of this comprehensive concept. The properties of the Bosch Rexroth products have to be considered for a comprehensive IT Security concept. For the required properties, refer to the IT Security Guideline (➥ R911342562).

12 Device description

12.1 General information

Use the extension modules “Sercos”, “Profibus”, “Profinet” and “CAN” for a field bus with the same name at a control.

12.2 LEDs on extension modules

For the error diagnostics, multiple LEDs indicating the operating state of the extension module are located on its front.

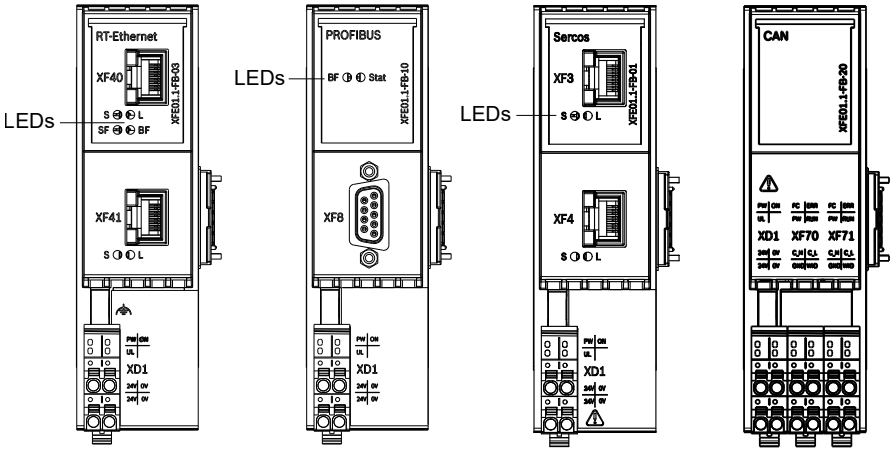

Fig. 14: LED displays of the extension modules

Table 11: RT Ethernet extension module

LED	Color	Function
S	Orange	LED is cyclically on: Data is sent
L	Green	LED is permanently on: Connection present
SF	Red	LED off: No error
BF	Red	LED off: No error

Table 12: Profibus extension module

LED	Color	Function
Stat	Green	LED is permanently on: Communication present
		LED is acyclically on: Module not configured
		LED is cyclically on: Module configured
BF	Red	LED is permanently on: No connection
		LED flashes: Slave diagnostics

Table 13: Sercos extension module

LED	Color	Function
S	Orange	LED is cyclically on: Data is sent
L	Green	LED is permanently on: Connection present

Table 14: CAN extension module

LED	Color	Function
PW	Green	LED is permanently on: CAN voltage present
ERR	Red	LED displays the bus error acc. to the CANopen standard CiA 303 Part 3: Indicator Specification
RUN	Green	LED displays the bus state acc. to the CANopen standard CiA 303 Part 3: Indicator Specification

For the error displays of the LEDs, refer to ➦ Chapter 13.1 “Error messages of the status LEDs ” on page 27.

The LEDs are displayed as described after the control startup and after the initialization of the extension modules!

12.3 LEDs on the XD1 plug

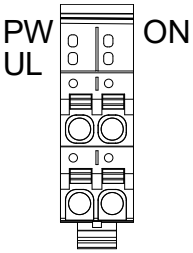

Fig. 15: LEDs on the XD1 plug

The following function is assigned to the LED on the XD1 plug:

Table 15: LED function on the XD1 plug

LED	Color	Function
PW	Green	Internal voltages are present
ON	Green	Internally programmed function blocks are loaded
U_L	Green	24 V supply voltage connected and within the permitted range

13 Error causes and troubleshooting

13.1 Error messages of the status LEDs

For operating and error displays, refer to ➦ Chapter 12.2 “ LEDs on extension modules” on page 25 and ➦ Chapter 12.3 “LEDs on the XD1 plug ” on page 26.

Table 16: Voltage power connector

LED	LED display	Cause
PW	LED is off	Internal voltage error: • Voltage transformer is defective • 24 V supply voltage is not connected • 24 V supply voltage is connected with reverse polarity
ON	LED is off	Internally programmed function block is not loaded
U_L	LED is off	24 V voltage errors: • 24 V supply voltage is not connected • 24 V supply voltage is connected with reverse polarity

Table 17: RT-Ethernet (Profinet, Ethernet/IP)

LED	LED display	Cause
S	LED is off	No data is sent
L	LED is off	No connection present
SF	Red	• Master and slave: LED flashes (1 Hz, 3 s): The DCP signal service is triggered via the bus and it is only available for the Profinet device. • Master: LED flashes (2 Hz): System error: invalid configuration, monitoring error or internal error LED on (together with BF “red on"): Invalid master license • Slave: LED on: Watchdog timeout; channel, generic or extended diagnostics present; system error

LED	LED display	Cause
BF	Red	• Master: LED flashes (2 Hz): Configuration error: Not all configured I/O devices are connected LED on (together with SF “red on"): Hardware problem, field bus stack cannot be loaded or there is no valid master license. LED on (together with SF “red on"): No link, double IP, Hidden Loop • Slave: LED flashes (2 Hz): No data exchange LED on: No configuration or slow physical connection, no physical connection or double IP

During normal mode (without errors), the LEDs “SF” and “BF” can also be on, but at low intensity. This does not signal an error state. Check, whether additional diagnostic information in available in the diagnostic log.

Table 18: Profibus

LED	LED display	Cause
Stat	LED is acyclically on	Module not configured
BF	LED is permanently on	No connection
	LED flashes	Slave diagnostics

Table 19: Sercos

LED	LED display	Cause
S	LED is off	No data is sent
L	LED is off	No connection present

Table 20: CAN

LED	LED display	Cause
PW	LED is off	Voltage error of the CAN voltage
ERR	LED is red	Bus error, refer to the CANopen standard “CIA 303 Part 3: Indicator Specification”
RUN	LED is off	Communication error, refer to the CANopen standard “CIA 303 Part 3: Indicator Specification”

13.1.1 Error cases after commissioning the CAN module

The following errors can be displayed when commissioning the CAN module, also refer to ➥ Chapter 11.1 “Commissioning notes ” on page 24:

1. Switch off the 24 V voltage supply for the XMx control and the voltage supply of the extension modules.

2. Keep the “Reset” button SF2 at the XMx control pressed and switch on the 24 V voltage supply. If either the display LED “DIA3” or the LED “DIA4” is on at the XMx control, release the “Reset” button SF2.
3. If the display LED ON is on at the XMx control, the error is recovered.

   If the display LED ON is *not* on at the control XMx, press the Fallback pushbutton of the CAN module. Proceed the following step.
4. Initiate the Fallback mode for the extension modules, whose display LED “ON” is *not* on:

   Keep the “Fallback” pushbutton of the respective module pressed using a plastic pen until the display LED “ON” is on at the extension module. This loads a backup data set. Release the “Fallback” pushbutton.

   Perform this step for all extension modules, whose display LED “ON” was *not* on. After completing that for all extension modules, the display LED “ON” of the XMx control is on.

The XMx control can only start if all connected extension modules started without any errors. If the LED “ON” is not on at a connected extension module with “Fallback” mode, actively initiate the “Fallback” mode.

14 Maintenance

14.1 General maintenance information

NOTICE	**Maintenance work in the device is only permitted by trained staff!**
	If hardware or software components have to be exchanged, please contact the Bosch Rexroth Service or ensure that only skilled staff changes the respective components.

14.2 Scheduled maintenance tasks

Include the following tasks into the maintenance schedule:

- Check all plug and terminal connections of the components for proper tightness and possible damage at least once a year
- Ensure that cables are not broken or crushed
- Replace damaged parts immediately

15 Ordering information

15.1 Type code

Type short description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Example:	X	F	E	0	1	.	1	-	F	B	-	1	0		

01 **Device type 1**
I/O box..... = X

02 **Device type 2**
Function extension... = F

03 **Extension type**
Ext. board (detachable) = B
Ext. card (plug-in) ..... = C
Ext. module (modular) . = E

04 **Type of construction**
Type 1 – PCIe ..... = 01
Type 2 – S20 ..... = 02

05 **Design**
HW design ..... = 1

06 **Function type**
Communication interface ..... = CX
Field bus ..... = FB
I/O connection ..... = IO
Safety ..... = SY [1)]
Memory, volatile..... = M0

07 **Function (corresponding to the function type)**

Field bus
No field bus ..... = 00
Sercos master ..... = 01
Sercos slave ..... = 02
RT-Ethernet configurable master ..... = 03
RT-Ethernet configurable slave ..... = 04
Profibus master ..... = 10
Profibus slave ..... = 11
CAN Master (netX) ..... = 12
CAN Slave (netX) ..... = 13
CAN master 2 x (passive)..... = 20
CAN slave 2 x (passive) ..... = 21
CAN master 4 x (passive)..... = 22
CAN slave 4 x (passive)..... = 23

Safety
Safe Logic to SIL3 ..... = 01[1)]

Note:
1) Function type “SY” only available with function Safety “01”

Fig. 16: Type code

15.2 Accessories and spare parts

For ordering information on accessories and spare parts, refer to “Spare parts, accessories and wear parts”.

16 Disposal

16.1 Return

For disposal, our products can be returned free of charge. However, the products must be free from remains such as oil, grease or other impurities.

Furthermore, the products returned for disposal must not contain any undue foreign substances or external components.

Send the products free of charge to the following address:

Bosch Rexroth AG
Electric Drives and Controls
Bürgermeister-Dr.-Nebel-Straße 2
97816 Lohr am Main, Germany

16.2 Packaging

The packaging material consists of cardboard, plastics, wood or styrofoam. Packaging material can be recycled anywhere.

For ecological reasons, please do not return empty packages.

17 Service and support

Our worldwide service network provides an optimized and efficient support. Our experts provide you with advice and assistance. You can contact us **24/7**.

Service Germany

Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Hotline** and **Service Helpdesk** under:

Phone:	**+49 9352 40 5060**
Fax:	**+49 9352 18 4941**
Email:	➦ service.svc@boschrexroth.de
Internet:	➦ http://www.boschrexroth.com

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

Service worldwide

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

Preparing information

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances
- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)

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