

User Manual



60873296_02

JX3-PS1

Expansion module for power supply

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Bucher Automation AG

Thomas-Alva-Edison-Ring 10
71672 Marbach/Neckar, Germany
T +49 7141 2550-0
info@bucherautomation.com

Technical support

T +49 7141 2550-444
support@bucherautomation.com

Sales

T +49 7141 2550-663
sales@bucherautomation.com

www.bucherautomation.com

Translation of the german original User Manual

Revision	2.02
Date of issue	8/29/2025

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1 Introduction

1.1 Information on this document

This document forms an integral part of the product and must be read and understood prior to using the device. It contains important and safety-related information for the proper use of the product as intended.

Target Groups

This document is intended for specialists with appropriate qualifications.

Only competent and trained personnel are allowed to put this device into operation.

During the whole product life cycle, safe handling and operation of the device must be ensured. In the case of missing or inadequate technical knowledge or knowledge of this document any liability is excluded.

Availability of Information

Make sure this document is kept at the ready in the vicinity of the product throughout its service life.

For information on new revisions of this document, visit the download area on our website. This document is not subject to any updating service.

[Start | www.bucherautomation.com](http://www.bucherautomation.com)

For further information refer to the following information products:

- User manuals
Information on commissioning Bucher Automation products
- Online help for the JetSym software
Functions of software products with application examples
- Application-oriented manuals
Product-independent documentation
- Version updates
Information about changes to the software products and operating system of your device

Info

Further information

For further information on the noise immunity of a system, please refer to the Application Note 016 *EMC-Compatible Installation of the Electric Cabinet* available for download on www.bucherautomation.com.

1.2 Typographical conventions

This manual uses different typographical effects to support you in finding and classifying information. Below, there is an example of a step-by-step instruction:

- ✓ This symbol indicates requirements which have to be met before executing the following action.
- ▶ This sign or a numbering at the beginning of a paragraph marks an action instruction that must be executed by the user. Execute the instructions one after the other.
- ⇒ The target after a list of instructions indicates reactions to, or results of these actions.

Info

Further information and practical tips

In the info box you will find helpful information and practical tips about your product.

2 Safety

2.1 Purpose

2.1.1 Intended use

This expansion module is used to supply power to JX3 I/O modules.

Operate the device only in accordance with the intended conditions of use and within the limits set forth in the technical specifications.

Intended use of the product includes its operation in accordance with this manual.

SELV

The operating voltage of this device is classified as Safety Extra Low Voltage and is, therefore, not subject to the EU Low Voltage Directive. The device may only be operated from a SELV source.

2.1.2 Non-intended use

Do not use the device in technical systems for which a high level of failure safety is specified.

Machinery Directive

This device is not a safety-related part as per Machinery Directive 2006/42/EC and must, therefore, not be used for safety-relevant applications.

2.2 Warnings used in this document

DANGER



High risk

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING



Medium risk

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION



Low risk

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE



Material damage

Indicates a situation which, if not avoided, could result in malfunctions or material damage.

3 Product description

The JX3-PS1 is an expansion module and provides power supply of up to 8 expansion modules. The module is required if the power supply of the bus node or controller used is not sufficient to supply all connected expansion modules.

3.1 Design

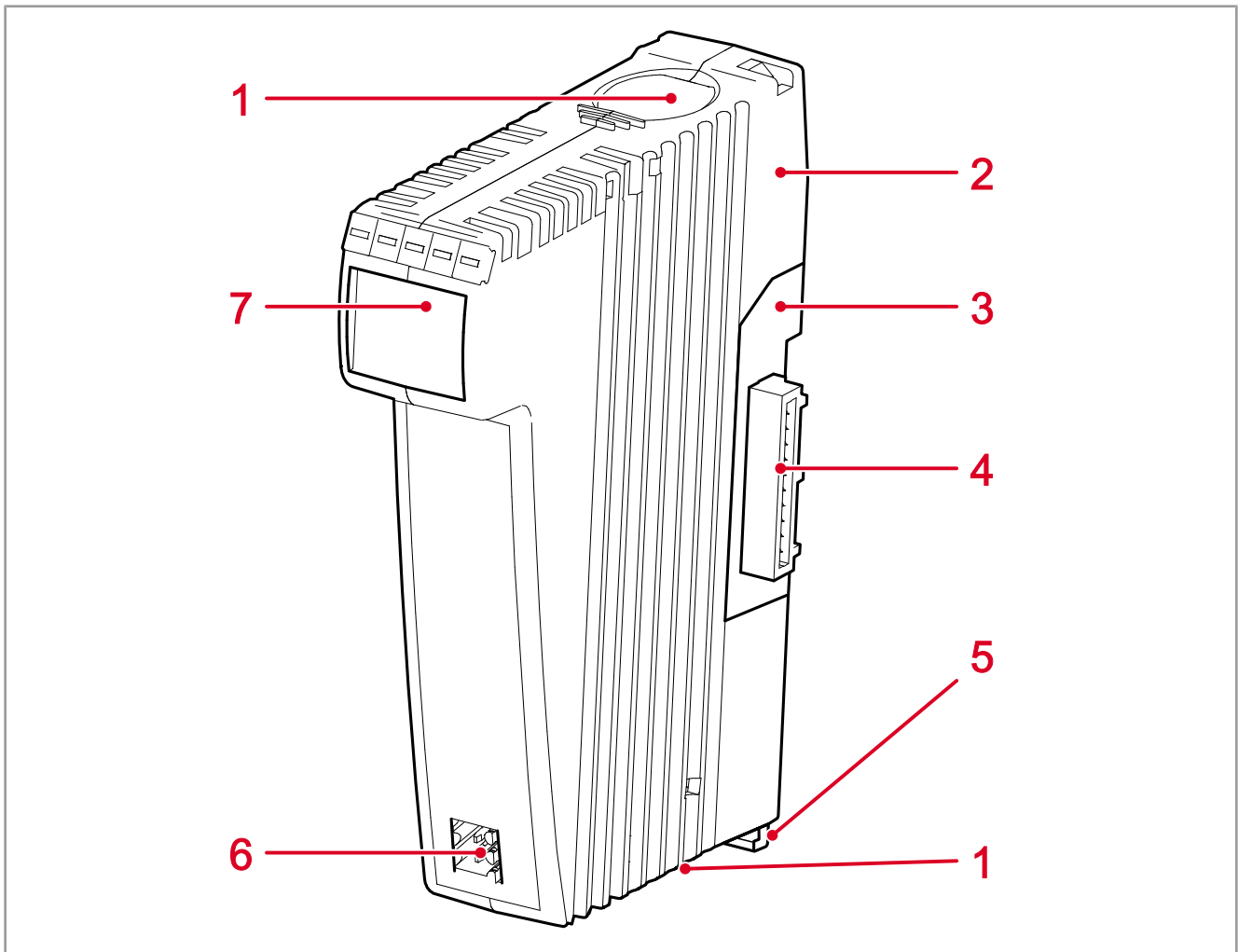


Fig. 1: Design

1	Latch
2	Housing
3	Backplane module
4	X119 plug: Interface to JX3-IO modules
5	DIN rail release latch
6	Terminal X10: Power supply [▶ 20]
7	Status indication [▶ 10]

3.2 Features

- Power supply of up to 8 JX3 expansion modules per JX3 station

i Info

Maximum power output

The maximum power consumption of connected expansion modules must not exceed 24 W.

3.3 Position and amount of expansion modules in the system

The maximum number of expansion modules connecting to the bus node depends on the expansion module type. After max. 8 expansion modules, a power supply module must be inserted.

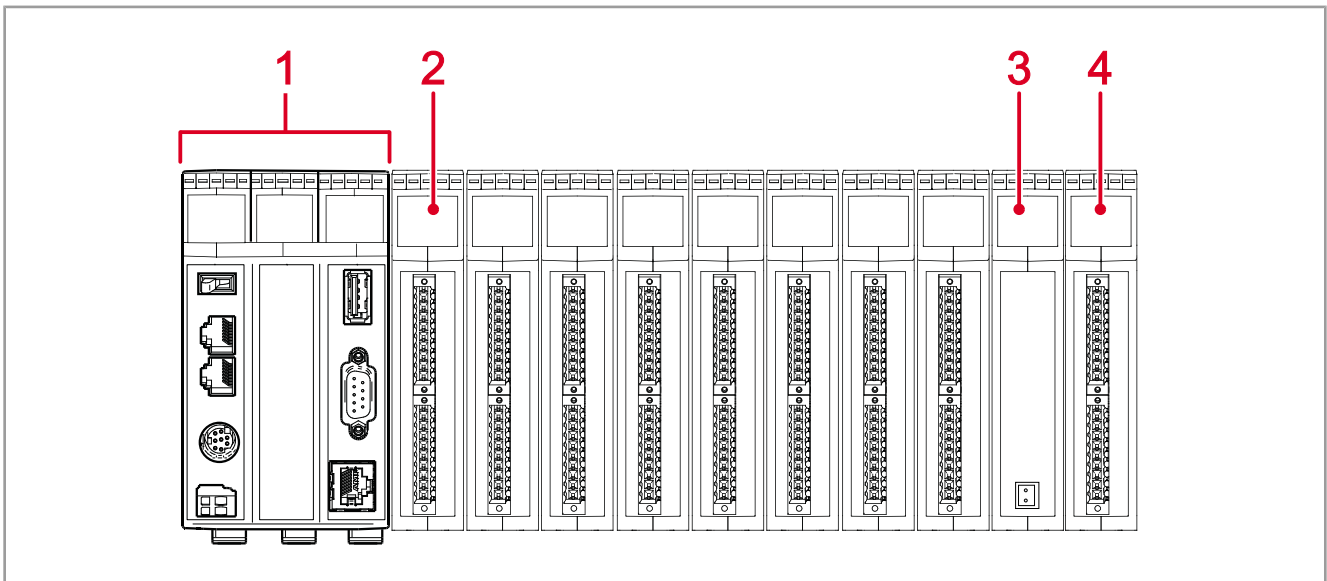


Fig. 2: Example: System overview of a controller together with various expansion modules

1	Controller
2	1. Expansion module
3	Power supply module
4	Further expansion modules

i Info

Number of connectible expansion modules

You can calculate the exact amount of connectible expansion modules by means of the system bus configurator, JX3-sysbus_configurator_xxx_e. The configurator is available for download. Go to www.bucherautomation.com and navigate to the JX3Modules product page > Downloads.

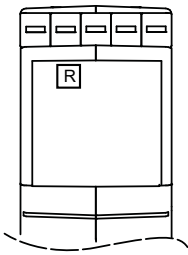
i Info

Further information

For in-depth information, see the JX3 System application-oriented manual. For application-oriented manuals open www.bucherautomation.com and go to product page JX3-PS1 > Product-independent documentation.

3.4 Status indication

The status LEDs indicate the status of the logic supply.



LEDs	Description
R	Logic circuit supply

Fig. 3: Status indication

3.4.1 Diagnostics capabilities by means of status indication

The color and status of the LEDs provide diagnostic options for various states.

LEDs	Status	Color	Description
R	OFF	---	No logic circuit supply
	ON	Green	Logic voltage supply is OK

3.5 Nameplate

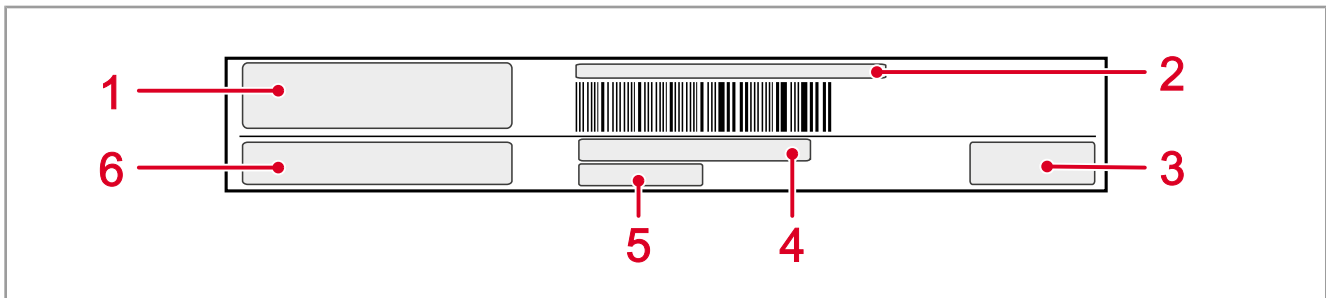


Fig. 4: Sample nameplate

1	Company logo
2	Serial number
3	Certification mark
4	Item number
5	Hardware revision
6	Item name

3.6 Scope of delivery

Scope of delivery	Item number	Quantity
JX3-PS1	10000635	1
Male connector in spring-cage technology, 2-pin	60870409	1
Terminal labels	60870411	10
Product Documentation Note	60888123	1

4 Technical specifications

This chapter contains information on both electrical and mechanical data as well as on operating data of the JX3-PS1 device.

4.1 Dimensions

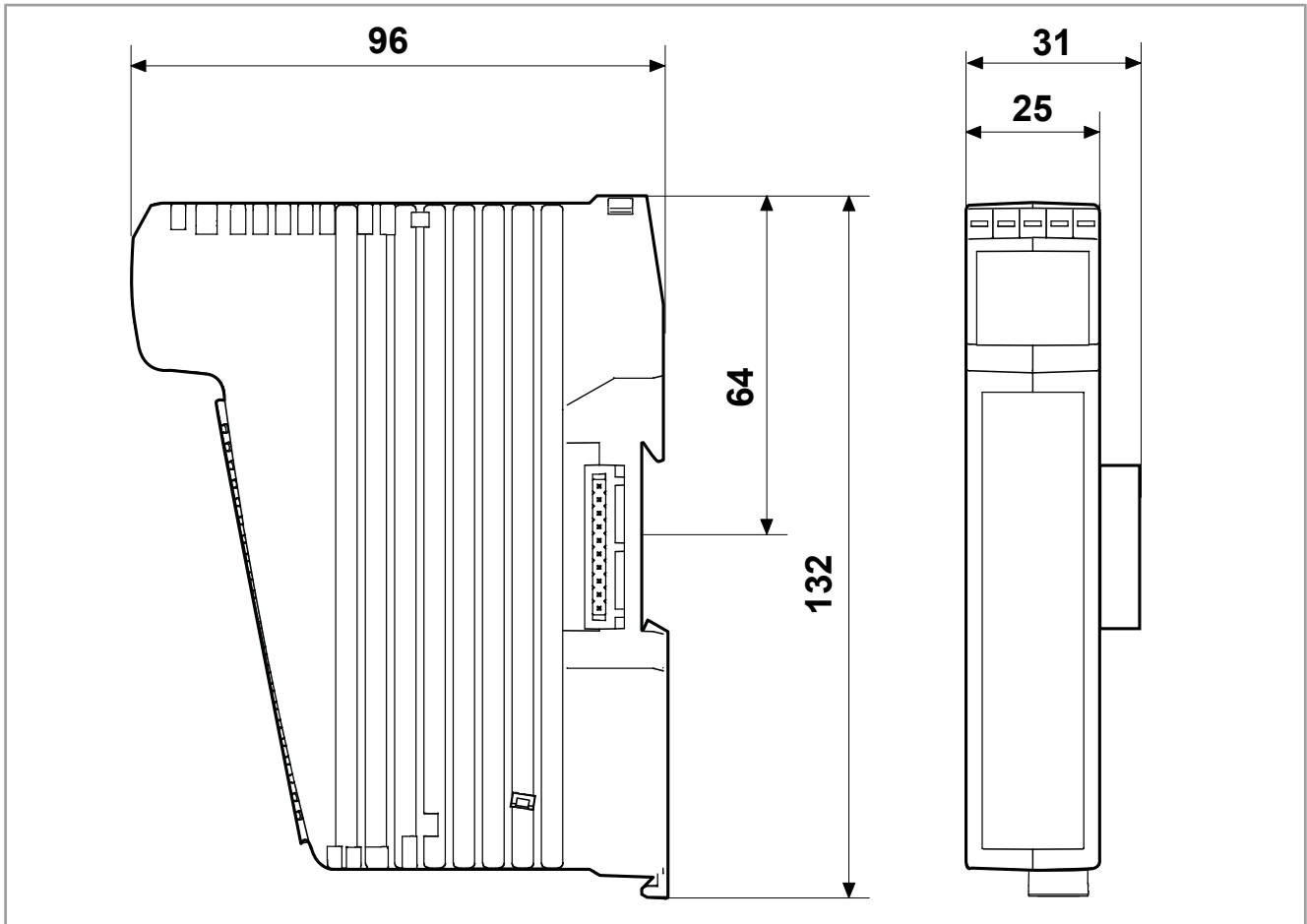


Fig. 5: Dimension in mm

4.2 Mechanical specifications

Parameter	Description	Standards
Mounting orientation	Vertically mounted on DIN rail	
Weight	140 g	
Housing specifications		
Material	Plastic	
Maximum drop height		
with shipping packaging	1 m	DIN EN 61131-2
with product packaging	0.3 m	DIN EN 60068-2-31
Vibration resistance		
Frequency sweeps	1 octave/minute, sinusoidal	DIN EN 61131-2 DIN EN 60068-2-6

Parameter	Description	Standards
Constant amplitude	3.5 mm	$5 \text{ Hz} \leq f \leq 9 \text{ Hz}$
Constant acceleration	1 g	$9 \text{ Hz} \leq f \leq 150 \text{ Hz}$
Number and direction	10 sweeps for all 3 spatial axes	
Shock resistance		
Type of shock	Half-sine wave	DIN EN 61131-2
Intensity and duration	15 g for 11 ms	DIN EN 60068-2-27
Number and direction	3 shocks in the directions of all 3 spatial axes	
Degree of protection		
Degree of protection	IP20	DIN EN 60529

Tab. 1: Mechanical specifications

4.3 Electrical properties

Power supply input (terminal X10)

Category	Description
Voltage rating	DC 24 V
Permissible voltage range	-15 % ... +20 %
Input current	1.0 A max
Power consumption	24 W max

Tab. 2: Power supply input (terminal X10)

Power supply of JX3-system bus

Category	Description
Logic voltage supply of JX3-system bus	DC +5 V (-15 % ... +10 %)
	$I_{SV} = 1.200 \text{ mA max.}$
	$P = 6 \text{ W max.}$
Supplementary supply	DC +24 V (+15 % ... +20 %)
	$I_{24V} = 1,000 \text{ mA max.}$
	$P = 24 \text{ W max.}$
Maximum power output	$P_{\text{max}} = 24 \text{ W}$

Tab. 3: Power supply of JX3-system bus

Electrical safety

Parameter	Description	Standards
Class of protection	III	DIN EN 61131-2
Dielectric test voltage	Functional ground is internally connected to the device ground	
Protective connection	0	
Overvoltage category	II	

Tab. 4: Electrical safety

4.4 Environmental Conditions

Parameter	Description	Standards
Operating temperature	0 °C ... +50 °C	DIN EN 61131-2
Storage temperature	-40 °C ... +70 °C	DIN EN 60068-2-1
Humidity	10 % ... 95 %, non-condensing	DIN EN 60068-2-2
Max. operating altitude	2,000 m above sea level	DIN EN 61131-2
Corrosion immunity and chemical resistance	No special protection against corrosion. Ambient air must be free from higher concentrations of acids, alkaline solutions, corrosive agents, salts, metal vapors and other corrosive or electroconductive contaminants.	
Degree of pollution – Electronics	Level 2	DIN EN 61131-2
	Usually, the pollution is non-conductive. However, temporary conductivity due to condensation may occur.	

Tab. 5: Environmental conditions

4.5 EMC Values

4.5.1 Housing

Emitted interference

Parameter	Values	Standards
Frequency band	30 MHz ... 230 MHz	DIN EN 61000-6-3 DIN EN 61131-2 DIN EN 55011
Limit value	30 dB ($\mu\text{V}/\text{m}$) at 10 m distance	
Frequency band	230 MHz ... 1,000 MHz	DIN EN 61000-6-3 DIN EN 61131-2 DIN EN 55011
Limit value	37 dB ($\mu\text{V}/\text{m}$) at 10 m distance	
	Class B	

Tab. 6: Emitted interference

Immunity to interference

Parameter	Values	Standards
Magnetic field with mains frequency		
Frequency	50 Hz	DIN EN 61131-2
Magnetic field	30 A/m	DIN EN 61000-6-2 DIN EN 61000-4-8
RF field, amplitude-modulated		
Frequency band	80 MHz ... 2 GHz	DIN EN 61131-2
Test field strength	10 V/m	DIN EN 61000-6-2
	AM 80 % with 1 kHz	DIN EN 61000-4-3
	Criterion A	
ESD		
Discharge through air Test peak voltage	8 kV	DIN EN 61131-2 DIN EN 61000-6-2
Discharge through air Test peak voltage	4 kV	DIN EN 61000-4-2
	Criterion A	

Tab. 7: Immunity to interference

4.5.2 DC power supply inputs and outputs

Emitted interference

Parameter	Values	Standards
Signal and control line connections, DC voltage supply inputs and - outputs		
Frequency band	0.15 ... 0.5 MHz	DIN EN 61000-6-3
Limit value	40 to 30 dB	
Frequency band	0.5 ... 30 MHz	DIN EN 61000-6-3
Limit value	30 dB	
	Class B	

Tab. 8: Emitted interference

Immunity to interference

Parameter	Values	Standards
Asymmetric RF, amplitude-modulated		
Frequency band	0.15 ... 80 MHz	DIN EN 61131-2
Test voltage	10 V	DIN EN 61000-6-2
	AM 80 % with 1 kHz	DIN EN 61000-4-6
Source impedance	150 Ω	
	Criterion A	

Parameter	Values	Standards
Bursts		
Test voltage	2 kV	DIN EN 61131-2
	tr/tn 5/50 ns	DIN EN 61000-6-2 DIN EN 61000-4-4
Repetition frequency	5 kHz	
	Criterion A	
Surge voltages, symmetric, line to cable		
Series-mode interference	tr/th 1.2/50 μ s	DIN EN 61131-2
	0.5 kV	DIN EN 61000-6-2 DIN EN 61000-4-5
Surge voltages, asymmetric, line to earth		
Common-mode interference	tr/th 1.2/50 μ s	DIN EN 61131-2
	0.5 kV	DIN EN 61000-6-2 DIN EN 61000-4-5

Tab. 9: DC power supply inputs and outputs

5 Mechanical installation

This chapter describes how to install and replace the device.

NOTICE



Damaged devices

Damaged devices may cause considerable physical damage.

- ▶ Check the device for external damage and faulty connections.
- ▶ Ensure to install only fully functional devices.

5.1 Installing the device on the DIN rail

NOTICE



Functional impairment caused by unfavorable installation

- ▶ Install the device only in vertical position on the DIN rail (DIN EN 60715).
- ▶ Keep a minimum distance of 30 mm to surrounding parts.

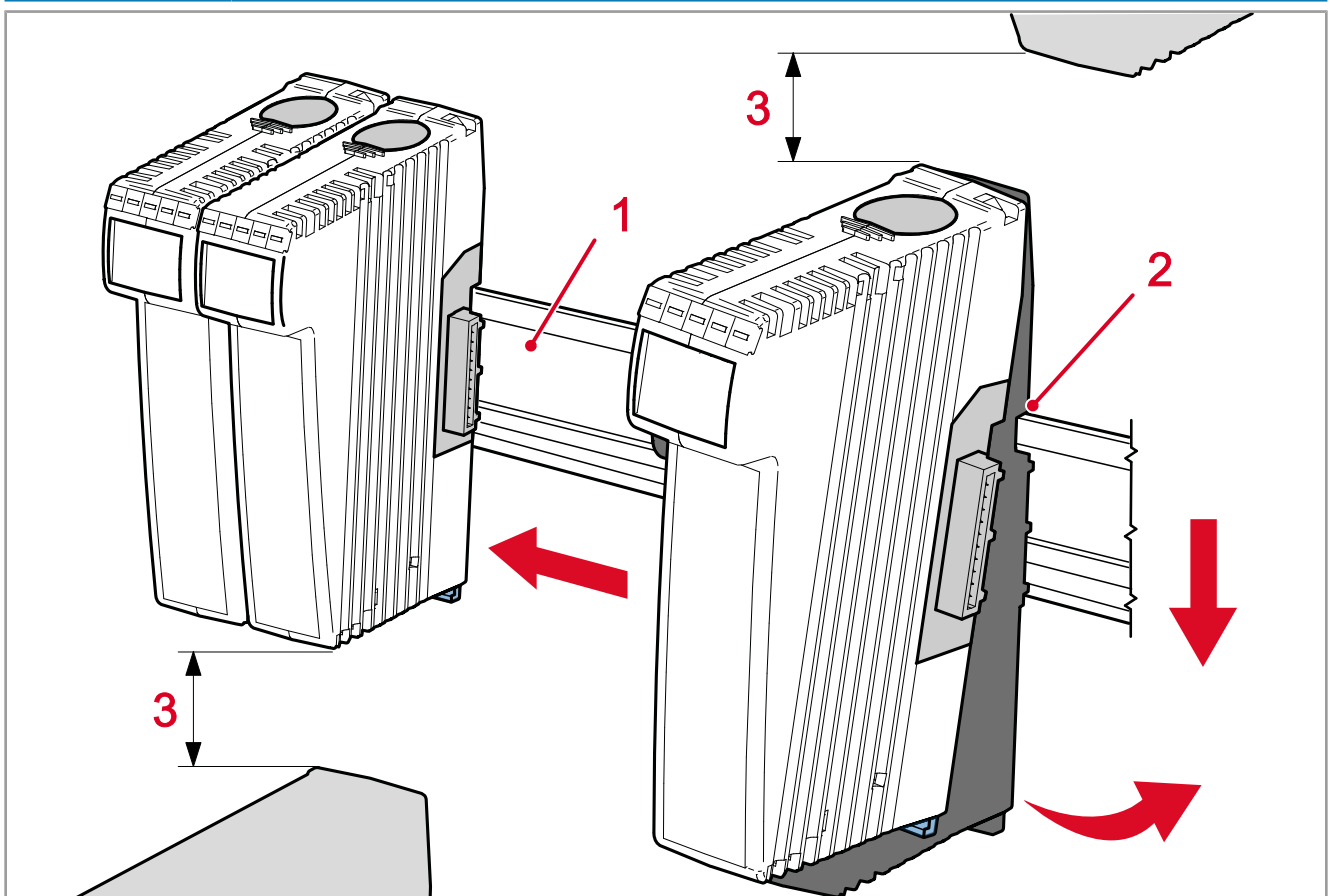


Fig. 6: Installing the device on the DIN rail

1	DIN rail
2	Upper latch
3	Minimum distance to surrounding parts (30 mm min.)

1. De-energize the system.
2. Place the upper latch (2) in an angled position on the DIN rail (1).
3. Snap the lower latch of the device onto the DIN rail.
4. Slide the device on the DIN rail to its intended position.

5.2 Removing Device from DIN Rail

Applying force to the release latch disengages the device from the DIN rail.

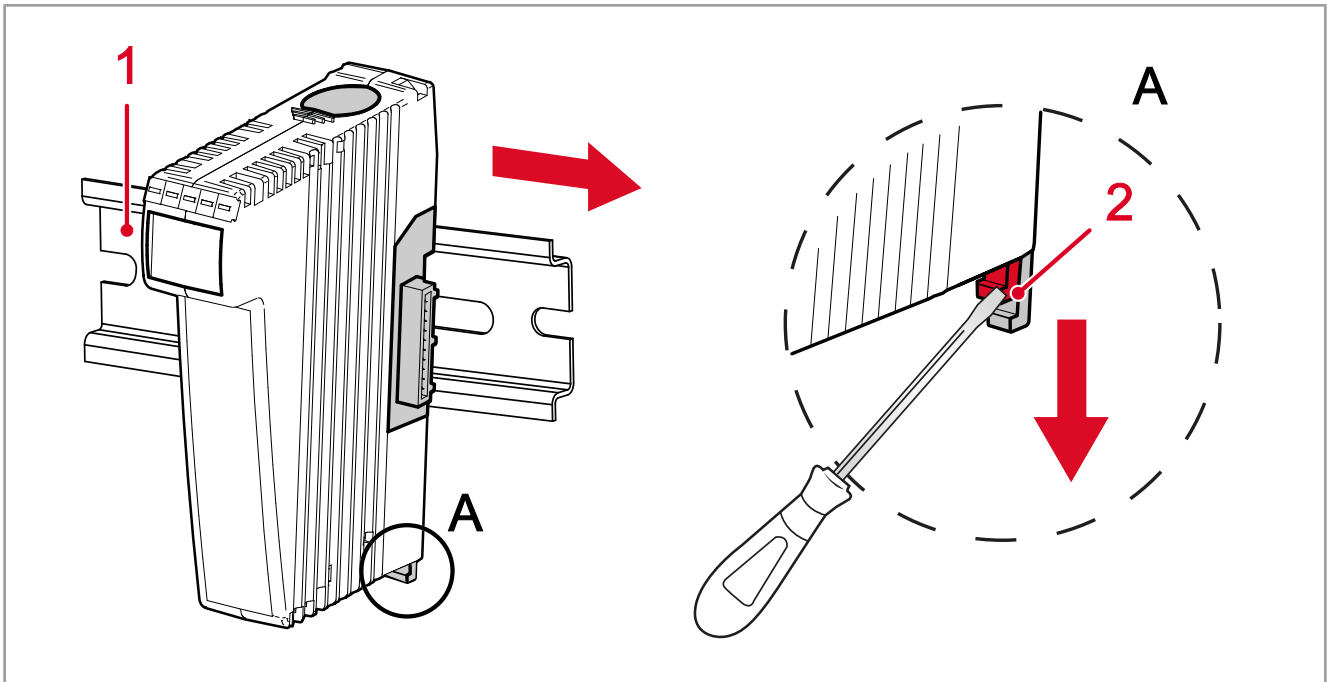


Fig. 7: Removing the device from the DIN rail

1	DIN rail
2	DIN rail release latch
A	Detail view

1. Disconnect the system from the power supply.
2. Pull the device off the overall assembly.
3. Pry the release latch (2) downwards and pull the device off the DIN rail (1).

5.3 Dismounting Enclosure from Backplane Module

Pressing down on the upper and the lower backplane latches of the device allows you to remove the enclosure from the backplane module.

NOTICE



Mechanical damage and reduced EMC noise immunity

If devices are replaced, degree of protection IP20 is not ensured. Touching the EMC clip may lead to mechanical damage to the device and reduced EMC noise immunity.

- ▶ Do not touch any electronic components once the enclosure has been removed from the backplane module.

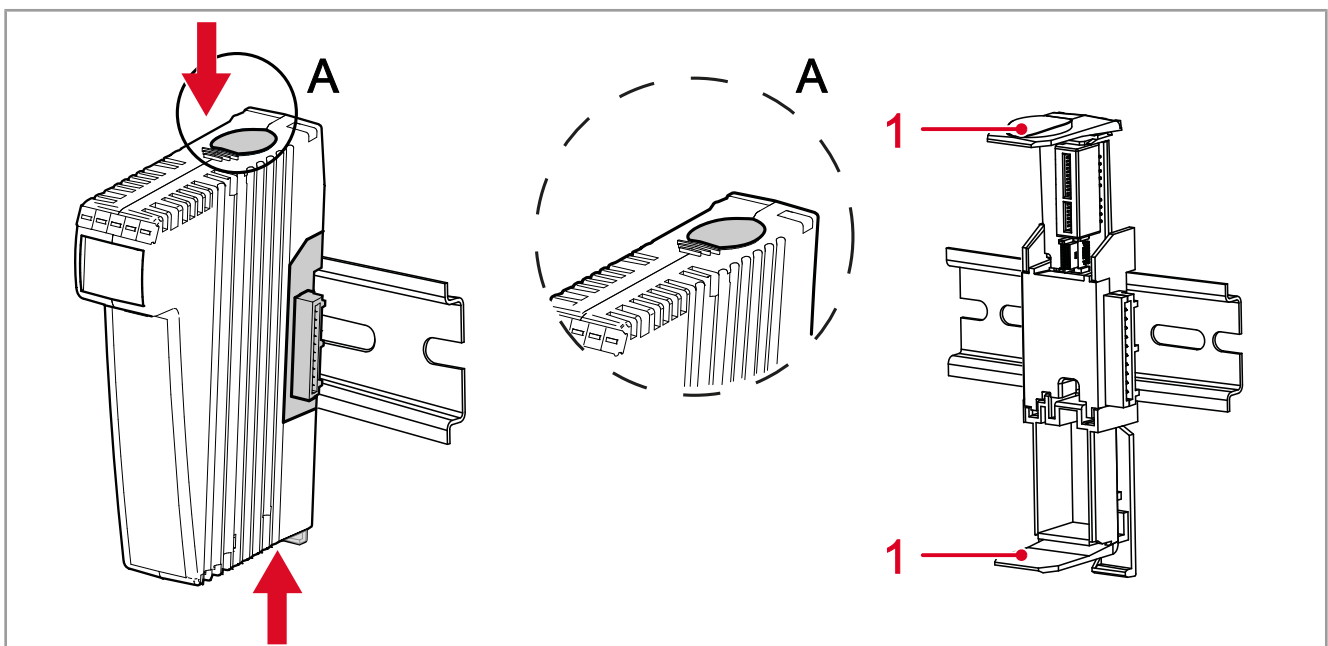


Fig. 8: Removing the enclosure from the backplane module

A	Detail view
1	Latch

1. Disconnect the system from the power supply.
2. Simultaneously, press and hold the upper and lower latches (1) of the device.
3. With the latches pressed down pull the enclosure away from DIN rail.

6 Electrical Connection

NOTICE



Damages to material or functional impairment

Improper implementation of the wiring harness may cause mechanical stress.

- ▶ Protect the cables from bending, twisting or chafing.
- ▶ Install strain reliefs for the connecting cables.

6.1 Improving EMC Noise Immunity

A system's immunity to noise is determined by its weakest component. Wire termination methods, lines and proper shielding factor into the equation. Take note of the measures described in this section.

Info

Further information

For further information on the noise immunity of a system, please refer to the Application Note 016 *EMC-Compatible Installation of the Electric Cabinet* available for download on www.bucherautomation.com.

DIN rail

- Mount the JX3-PS1 device on a DIN rail sized 35 mm x 7.5 mm as per DIN EN 60715.
- The DIN rail must be electrically conducting and grounded by either of the following two ways:
 - Directly
 - Via rear panel of the electric cabinet

Application Note 016

Follow the instructions given in Application Note 016 *EMC-Compatible Installation of the Electric Cabinet*.

The following instructions are excerpts from Application Note 016:

- Keep signal and power lines **separated from each other** at all times. Bucher Automation AG recommends that there be a minimum distance of 20 cm. Cables and lines should cross each other at an angle of 90°.
- Shield the following cables and lines:
 - Analog lines
 - Data lines
 - Motor cables coming from inverter drives (servo output stage, frequency converter)
 - Lines between components and interference suppressor filter, where the suppressor filter is located not immediately adjacent to the component.
- Place the shield **on both sides**.
- Keep unshielded wire ends of shielded cables as short as possible.
- Span the shield **entirely** across the isolation. For **wide-area grounding**, clamp it down tightly with an extensively earthed strain relief.

6.2 Interfaces

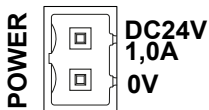
6.2.1 Terminal X10 - Power supply

Ports and interfaces

X10 lets you connect the following devices:

- Power supply for up to 8 JX3-peripheral modules which have been installed to the right of the JX3-PS1 module

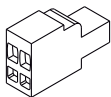
Pinning



Pin	Description
DC 24 V 1.0 A	Supply voltage for connected JX3peripheral modules
0 V	Reference potential (GND)

2-pin connector, spring-cage technology

The controller comes with a 2-pin spring-clamp connector.



Category	Description	Standards
Connector		
Designation	BU_02_E_BLZF_GE_RM3.5	
Connector technology	Spring-cage connection	
Type	2-pin, 3.5 mm pitch	
Connectible conductors		
Outer diameter of the isolation	2.90 mm max	
AWG	16 ... 28	
Clamping range	0.13 ... 1.5 mm ²	
Stripping length	10 mm	
Specification without wire end ferrules		
Solid conductor	H05(07) V-U	
	0.2 ... 1.5 mm ²	
Flexible conductor	H05(07) V-K	
	0.2 ... 1.5 mm ²	
Specification with wire end ferrules		
Wire end ferrule without sleeve	0.2 ... 1.5 mm ²	DIN 46228/1
Wire end ferrule with sleeve	0.2 ... 1.5 mm ²	DIN 46228/4
Crimping tool	PZ 4, PZ 6 ROTO, PZ 6/5	DIN 46228

Tab. 10: Connector specification, 2-pin connector, spring-cage technology

6.3 Functional test

After switching on, no configuration of the module is necessary.

To commission the JX3-PS1 module, carry out the following steps:

- ✓ The JX3-PS1 is connected to a JX3 station.
- ✓ The expansion modules to be supplied with power are connected to the right of the JX3-PS1 module.
- ▶ Power up the JX3 station.
- ⇒ The LED R of the JX3-PS1 lights up green if the commissioning has been carried out correctly.

7 Maintenance

This product is maintenance-free. The operation of the product does not require inspection or maintenance efforts.

7.1 Repairs

Defective components can cause dangerous malfunctions and compromise safety.

Only the manufacturer is authorized to perform repair work.

It is forbidden to open the product.

Product modifications

Modifications and alterations to the product and its functions are not allowed. The manufacturer exempts from liability for any modifications made to the product.

The original parts are specifically designed for the product. Parts and equipment from other manufacturers must not be used.

The manufacturer exempts from liability for any damage resulting from the use of non-original parts and equipment is excluded.

7.2 Storage and Shipment

Storage

When storing the product, observe the environmental conditions given in chapter "Technical specifications".

Shipment and packaging

The product contains electrostatically sensitive components which can be damaged if not handled properly. Damages to the product can impair its reliability.

To protect the product from impact or shock, it must be shipped in its original packaging, or in an appropriate protective ESD packaging.

If the packaging is damaged, inspect the device for any visible damage, and immediately inform your freight forwarder and Bucher Automation AG of the damage caused during shipment. It is strictly forbidden to use a product that has been damaged or dropped.

7.3 Return and Disposal

The WEEE icon (crossed-out wheeled bin) says that end users must not dispose of waste electrical and electronic equipment together with household waste, but separately in an appropriate way. Applicable local environmental directives and regulations must be complied with.

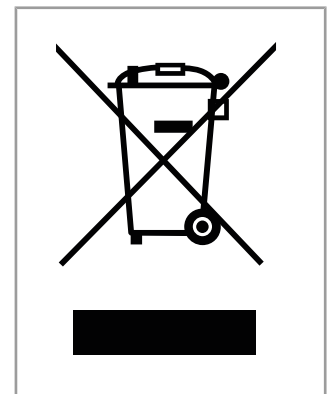


Fig. 9: WEEE icon – crossed out wheeled bin

Disposal options

To do so, you may either resort to professional disposal service providers or return waste electronics to Bucher Automation AG.

Find detailed information along with the required Return Delivery Form on our [website](#).

Batteries

Prior to disposing of waste electronics, remove any batteries where this is possible in a safe and non-destructive way. Dispose of batteries properly.

Personal data

It is the responsibility of the end user to delete any personal data stored on waste electric and electronic equipment prior to disposal.

Packaging material

The product's packaging materials must not be disposed of together with household waste. Find detailed information on how to return packaging material to Bucher Automation AG on our [website](#).

8 Service

8.1 Technical Support

In case of questions, suggestions, or issues, please contact our experts from Technical Support. You may reach out by phone or through the contact form on our homepage:

[Technical Support | www.bucherautomation.com](https://www.bucherautomation.com)

Or email us:

support@bucherautomation.com

Please supply the following information when contacting Technical Support:

- Hardware revision and serial number
The hardware revision and serial number is printed on the nameplate of the product.
- OS version
To determine the operating system version, use the functions of the development environment.

9 Spare parts and accessories

NOTICE



Inadequate accessories might cause damage to the product

Parts and equipment from other manufacturers might impede the function of the device and cause damage to the product.

- ▶ Only use accessories recommended by Bucher Automation AG.

9.1 Spare parts

Component	Item number
Terminal labels	60870411
Male connector in spring-cage technology, 2-pin	60870409

Tab. 11: Spare parts

9.2 Accessories

i Info

Ordering Accessories

The accessories are not part of the scope of delivery.

Suitable accessories can be obtained from Bucher Automation AG.

Component	Item number
Screwdriver	60871712
End clamp for DIN rail	60863970

Tab. 12: Accessories

Bucher Automation AG

Thomas-Alva-Edison-Ring 10
71672 Marbach/Neckar, Germany
T +49 7141 2550-0
info@bucherautomation.com



www.bucherautomation.com