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# **Keyboard Extension**

## **Technical Description 4XP0000.00-K20**

Version: **1.1 (July 2008)**

Model number: -

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### Chapter 1 General information

#### **Information:**

We reserve the right to change the contents of this description without warning. The information contained herein is believed to be accurate as of the date of publication; however, Bernecker & Rainer Industrie-Elektronik Ges.m.b.H makes no warranty, expressed or implied, with regard to the products contained herein. Bernecker & Rainer Industrie-Elektronik Ges.m.b.H. shall not be liable in the event of incidental or consequential damages in connection with or arising from the furnishing, performance or use of these products. The software names, hardware names, and trademarks used in this document are registered by the respective companies.

### 1 Safety notices

#### 1.1 Introduction

Programmable logic controllers (PLCs), operating and monitoring devices (industrial PCs, Power Panels, Mobile Panels, etc.) as well as B&R uninterruptible power supplies have been designed, developed, and manufactured for conventional use in industry. They were not designed, developed, and manufactured for any use involving serious risks or hazards that could lead to death, injury, serious physical damage, or loss of any kind without the implementation of exceptionally stringent safety precautions. In particular, such risks and hazards include the use of these devices to monitor nuclear reactions in nuclear power plants, as well as flight control systems, flight safety, the control of mass transit systems, medical life support systems, and the control of weapons systems.

Both when using programmable logic controllers and when using operating and monitoring devices as control systems in conjunction with a soft PLC (e.g. B&R Automation Runtime or comparable products) or a slot PLC (e.g. B&R LS251 or comparable products), the safety precautions applying to industrial control systems (e.g. the provision of safety devices such as emergency stop circuits, etc.) must be observed in accordance with applicable national and international regulations. The same applies for all other devices connected to the system, such as drives.

All tasks such as installation, commissioning, and maintenance are only permitted to be carried out by qualified personnel. Qualified personnel are persons who are familiar with the transport, mounting, installation, commissioning, and operation of the product and who have the appropriate qualifications (e.g. IEC 60364). National accident prevention guidelines must be followed.

The safety guidelines, connection descriptions (type plate and documentation), and limit values listed in the technical data are to be read carefully before installation and commissioning and must be observed.

#### 1.2 Intended use

Electronic devices are generally not failsafe. In the event of a failure on the programmable control system, operating or monitoring device, or uninterruptible power supply, the user is responsible for ensuring that other devices that may be connected, e.g. motors, are in a secure state.

#### 1.3 Transport and storage

During transport and storage, devices must be protected from excessive stress (mechanical load, temperature, humidity, aggressive atmosphere, etc.).

### 1.4 Installation

- Installation must take place according to the documentation, using suitable equipment and tools.
- Devices may only be installed without voltage applied and by qualified personnel.
- General safety regulations and nationally applicable accident prevention guidelines must be observed.
- Electrical installation must be carried out according to the relevant guidelines (e.g. line cross section, fuse, protective ground connection).

### 1.5 Operation

#### 1.5.1 Protection against touching electrical parts

To operate programmable logic controllers, operating and monitoring devices, and uninterruptible power supplies, certain components must carry dangerous voltage levels of over 42 VDC. A life-threatening electrical shock could occur if you come into contact with these parts. This could result in death, severe injury, or material damage.

Before turning on the programmable logic controller, the operational and monitoring devices and the uninterruptible power supply, ensure that the housing is properly grounded (PE rail). The ground connection must be established when testing the operating and monitoring devices or the uninterruptible power supply, even when operating them for only a short time.

Before turning the device on, make sure that all voltage-carrying parts are securely covered. During operation, all covers must remain closed.

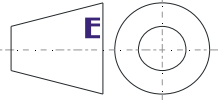
### 1.6 Organization of safety notices

The safety notices in this manual are organized as follows:

Safety notice	Description
<b>Danger!</b>	Disregarding the safety regulations and guidelines can be life-threatening.
<b>Caution!</b>	Disregarding the safety regulations and guidelines can result in severe injury or major damage to material.
<b>Warning!</b>	Disregarding the safety regulations and guidelines can result in injury or damage to material.
<b>Information:</b>	Important information for preventing errors.

**Table 1: Organization of safety notices**

### 2 Guidelines

	All dimension diagrams (e.g. dimension diagrams, etc.) are drawn according to European dimension standards.
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### 3 Model number

Model number	Description
4XP0000.00-K20	cHMI add-on keyboard / X2X

Table 2: Model number

## Chapter 2 Technical data

### 4 General information

The 4XP0000.00-K20 is an X2X keyboard with 4 B&R Illuminated Ring Keys. This add-on keyboard is 90mm x 80 mm (WxH) and has an anodized aluminum front with a cord gasket all the way around. Additionally, the front is covered by a membrane in RAL 9007 (white aluminum), and the luminous field for each of the rings has an embossed rim. Each illuminated ring can have up to 3 different colors (yellow, red, green). The keyboard is delivered with legend strips, which can be printed by the customer as needed. The operator panel can be attached using mounting clamps. Power supply and X2X are connected via terminal blocks. (Supply plug is included in accessories)

### 5 cHMI add-on keyboard

#### 5.1 Interface descriptions

The following pages provide information about all interfaces and connectors present on the operator panel.

##### 5.1.1 Supply voltage

Input voltage: 24 VDC  $\pm$  25%

The 3-pin socket required for the supply voltage connection is included in delivery.  
The supply voltage is internally protected so that the device cannot be damaged if there is an overload or if the voltage supply is connected incorrectly.  
Pin assignments can be found either in the following table or on the device's sticker.

Supply voltage	
Pin	Description
1	+
2	Ground
3	-
Accessories(included in the delivery)	
0TB703.81	Plug 24VDC 3.5mm 3-pin cage clamps

13

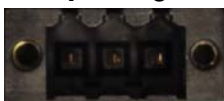


Figure 1: Voltage supply

#### Important!

The pin's connection to the functional ground (pin 2) should be as short as possible.



## Chapter 2 X2X interface

### 5.1.2 X2X interface

The 4XP0000.00-K20 is equipped with an X2X interface.

The interface is wired to an 8-pin connector.

X2X interface	
Connection	Description
1	X2X
2	X2X↓
3	X2X\
4	SHLD
5	X2X
6	X2X↓
7	X2X\
8	SHLD
<b>Accessories</b> (not included in the delivery)	
0TB1108.8110	8-pin cage clamps




Figure 2: X2X interface

### 5.1.3 Status LEDs

The operator panel is equipped with two status LEDs which are visible on the outside.

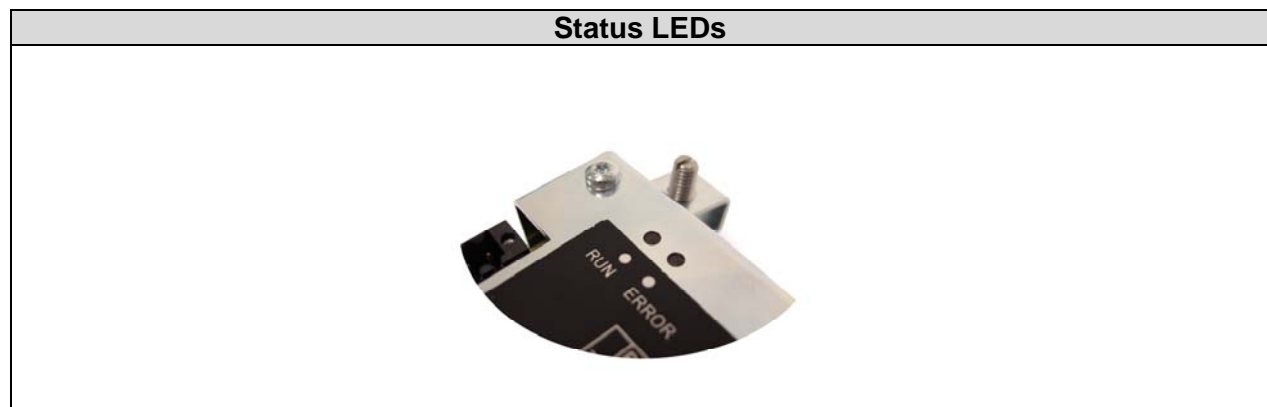


Figure 3: Status LEDs

LED	Color	Function
Run	Green	Connection was established to the X2X bus
Error	Red	No connection possible to the X2X bus

Table 3: Status LEDs

### 5.2 Stickers

#### 5.2.1 Device label

The following label is attached to the back of the operator panel. It shows brief descriptions for all of the interfaces:

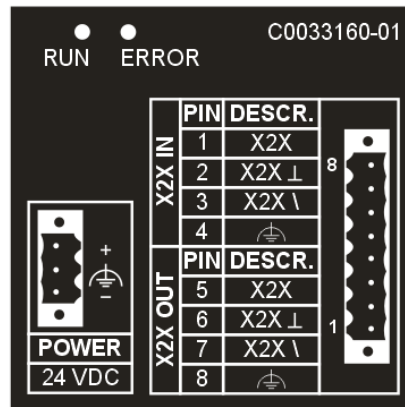


Figure 4: Device label

#### 5.2.2 Serial number sticker

##### General information

Each B&R device is given a unique serial number sticker with a barcode that allows the device to be clearly identified.

##### Design/Dimensions

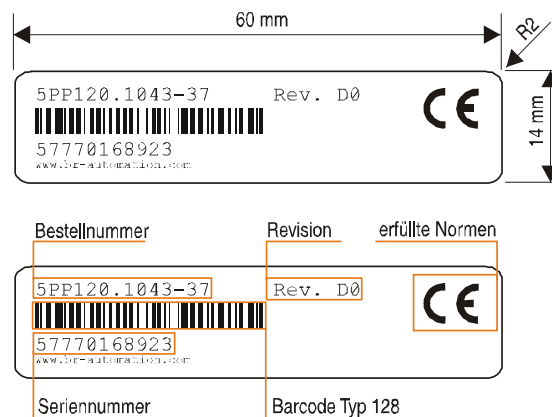


Figure 5: Design/dimensions - Serial number sticker

5.3 Device 4XP0000.00-K20



Figure 6: Front view

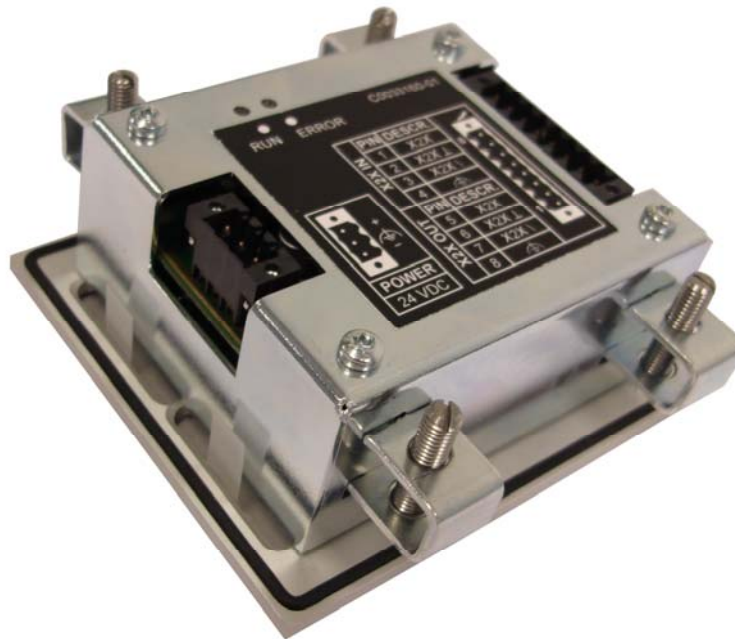


Figure 7: Rear view

## Chapter 2 Technical data

### 5.3.1 Technical data

Features	4XP0000.00-K20
X2X Interface	
Type	X2X slave
Electrical isolation	Yes
Design	8-pin multipoint connector
Distance between 2 stations	100m
Internal bus supply	Yes
LEDs	1x Run (green), 1x Error (red)
Keys	
Short stroke keys	4 B&R illuminated ring keys
Illuminated ring colors	red, yellow, green
Electrical characteristics	
Power supply	
Rated voltage	24 VDC $\pm$ 25%
Starting current	Max. 20 A for < 1 ms
Power consumption	170 mA
Mechanical characteristics	
Front	
Frame	Naturally anodized aluminum
Membrane	Polyester
Design	White aluminum (RAL9007)
Gasket	Flat gasket around display front
Housing	Metal
Outer dimensions	
Width	90 mm
Height	80 mm
Depth	37 mm
Weight	0,25 kg
Environmental characteristics	
Ambient temperature	
Operation	0 .. 50°C
Storage	-20 .. 60°C
Transport	-20 .. 60°C
Relative humidity	
Operation	5 .. 85%, non-condensing
Storage	T $\leq$ 40°C: 5% to 90%, non-condensing
	T > 40°C: < 75%, non-condensing
Transport	T $\leq$ 40°C: 5% to 90%, non-condensing
	T > 40°C: < 75%, non-condensing
Protection type	IP20 back side
	IP65, protection from dust and sprayed water from front
Altitude	Max. 3000 m

Table 4: Technical data

### 5.3.2 Dimensions

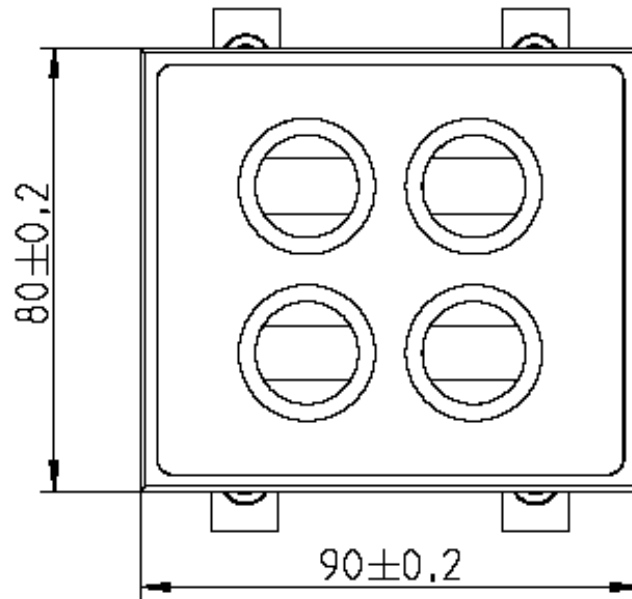


Figure 8: Dimensions

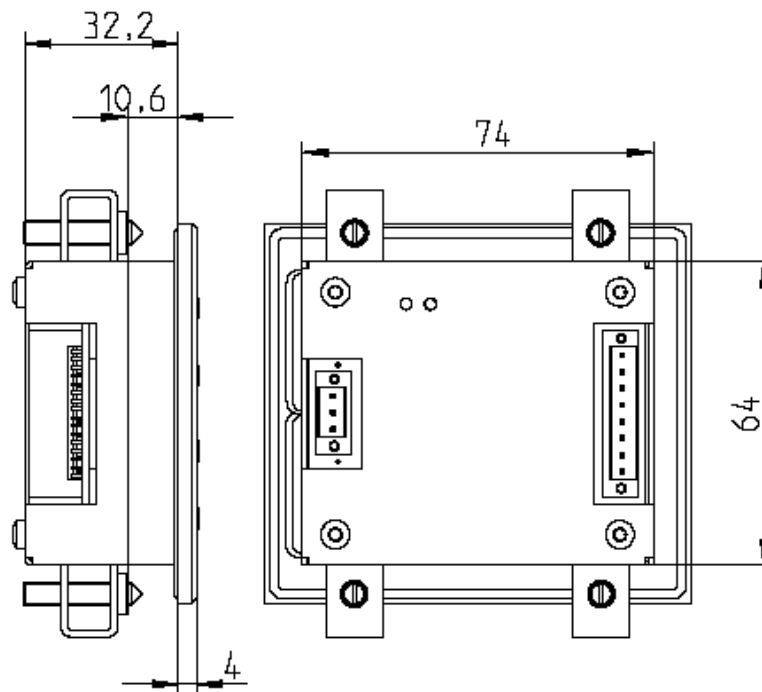


Figure 9: Dimensions

## Chapter 2 Contents of delivery

### 5.3.3 Contents of delivery

The following components are included in the delivery of the Power Panel device:

Amount	Component
1	Operator panel 4XP0000.00-K20
4	Retaining clips
1	24 VDC supply plug

Table 5: Contents of delivery

### 5.3.4 Key- and LEDmatrix

	TC0	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC9	TC10	TC11	TC12	TC13	TC14	TC15
RT0	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RT1	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RT2	T1	T2	T3	T4	free	free	free	free	free	free	free	free	free	free	free	free
RT3	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RT4	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RT5	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RT6	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RT7	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free

Illuminated ring keys

	LC0	LC1	LC2	LC3	LC4	LC5	LC6	LC7	LC8	LC9	LC10	LC11	LC12	LC13	LC14	LC15
RL0	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	free	free	free	free
RL1	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RL2	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RL3	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RL4	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RL5	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RL6	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free
RL7	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free	free

LED - ring green

LED - ring yellow

LED - ring red

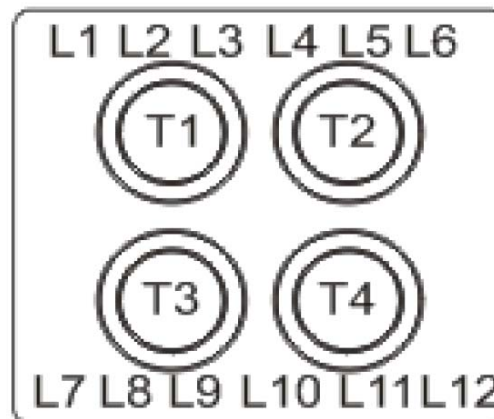


Figure 10: Key- and LEDmatrix

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