

X20TB1F

Data sheet
1.60 (April 2025)



Publishing information

B&R Industrial Automation GmbH

B&R Strasse 1

5142 Eggelsberg

Austria

Telephone: +43 7748 6586-0

Fax: +43 7748 6586-26

office@br-automation.com

Disclaimer

All information in this document is current as of its creation. The contents of this document are subject to change without notice. B&R Industrial Automation GmbH assumes unlimited liability in particular for technical or editorial errors in this document only (i) in the event of gross negligence or (ii) for culpably inflicted personal injury. Beyond that, liability is excluded to the extent permitted by law. Liability in cases in which the law stipulates mandatory unlimited liability (such as product liability) remains unaffected. Liability for indirect damage, consequential damage, business interruption, loss of profit or loss of information and data is excluded, in particular for damage that is directly or indirectly attributable to the delivery, performance and use of this material.

B&R Industrial Automation GmbH notes that the software and hardware designations and brand names of the respective companies used in this document are subject to general trademark, brand or patent protection.

Hardware and software from third-party suppliers referenced in this document is subject exclusively to the respective terms of use of these third-party providers. B&R Industrial Automation GmbH assumes no liability in this regard. Any recommendations made by B&R Industrial Automation GmbH are not contractual content, but merely non-binding information for which no liability is assumed. When using hardware and software from third-party suppliers, the relevant user documentation of these third-party suppliers must additionally be consulted and, in particular, the safety guidelines and technical specifications contained therein must be observed. The compatibility of the products from B&R Industrial Automation GmbH described in this document with hardware and software from third-party suppliers is not contractual content unless this has been separately agreed in individual cases; in this respect, warranty for such compatibility is excluded in any case, and it is the sole responsibility of the customer to verify this compatibility in advance.

1312929924884-1.60

1 General information

1.1 Other applicable documents

For additional and supplementary information, see the following documents.

Other applicable documents

Document name	Title
MAX20	X20 System user's manual

1.2 Order data


Order number	Short description	Figure
	Terminal blocks	
X20TB1F	X20 terminal block, 16-pin, 24 VDC keyed	

Table 1: X20TB1F - Order data



Information:

To avoid damaging the terminals, the B&R X20AC0SD1 screw driver should be used.

1.3 Module description

X20 24 VDC modules with 16 connections are wired using the X20TB1F terminal block.

- Tool-free wiring with push-in technology
- Simple wire release using a screwdriver
- Ability to label each terminal
- Plain text labeling also possible
- Test access for standard probes
- Can be customer-coded

2 Technical description

2.1 Technical data

Order number	X20TB1F
General information	
Certifications	
CE	Yes
UKCA	Yes
ATEX	Zone 2, II 3G Ex nA nC IIA T5 Gc IP20, Ta (see X20 user's manual) FTZÚ 09 ATEX 0083X
UL	cULus E115267 Industrial control equipment
DNV	Temperature: B (0 to 55°C) Humidity: B (up to 100%) Vibration: B (4 g) EMC: B (bridge and open deck)
LR	ENV1
KR	Yes
ABS	Yes
BV	EC33B Temperature: 5 - 55°C Vibration: 4 g EMC: Bridge and open deck
Terminal block	
Number of pins	16
Type of terminal block	Push-in terminal
Push-in force per contact	Typ. 10 N
Cable type	Only copper wires (no aluminum wires!)
Wire stripping length	7 to 9 mm
Connection cross section	
Single-wire	0.08 to 1.50 mm ² / 28 to 16 AWG
Fine-stranded wires	0.25 to 1.50 mm ² / 24 to 16 AWG
With wire end sleeve	0.25 to 0.75 mm ² / 24 to 20 AWG
Distance between contacts	
Left - Right	4.2 mm
Above - Below	8.25 mm
Electrical properties	
Nominal voltage	24 VDC
Max. voltage	50 VDC
Nominal current ¹⁾	2 A / contact
Contact resistance	≤5 mΩ
Ambient conditions ²⁾	
Temperature	
Operation	Corresponds to the X20 module used
Relative humidity	
Operation	Corresponds to the X20 module used

Table 2: X20TB1F - Technical data

1) The respective limit data of the I/O modules must be taken into account!

2) Identical for operation, storage and transport.

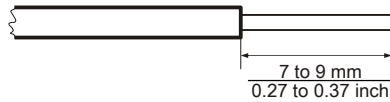


Warning!

It is possible to come into contact with parts that carry voltage when the terminal block is disconnected. For this reason, working on a disconnected terminal block is not permitted at voltages starting at 50 V.

2.2 Wiring

In order to achieve a secure connection in the terminal blocks, wires must be stripped accordingly.



Information:

The wire stripping length is not permitted to be more or less than 7 to 9 mm.

Connection cross sections

The following table shows the possible wire cross sections and connection types for the various terminal blocks:

	X20TB06 X20TB12	X20TB1E X20TB1F	X20TB32
Single-wire			
mm ²	0.08 to 2.50	0.08 to 1.50	0.08 to 2.50
AWG	28 to 14	28 to 16	28 to 14
Fine-stranded			
mm ²	0.25 to 2.50	0.25 to 1.50	0.25 to 2.50
AWG	24 to 14	24 to 16	24 to 14
With wire end sleeves			
mm ²	0.25 to 1.50	0.25 to 0.75	0.25 to 1.50
AWG	24 to 16	24 to 20	24 to 16
With double wire end sleeves			
mm ²	Up to 2x 0.75	-	Up to 2x 0.75
AWG	Up to 2x 21	-	Up to 2x 21




Information:

To avoid damaging the push-in terminal blocks, B&R screwdriver X20AC0SD1 should be used.

2.3 Cable holding force of contacts

To ensure secure contact of a cable with the terminal block, it is not permitted to be subjected to too much tension. If the cable holding force is exceeded, the cable will disconnect from the terminal block and result in a malfunction.

	Fine-stranded wires			Solid wires				With wire end sleeves	
Cable in mm²	0.25	1.5	2.5	0.08	0.25	1.5	2.5	0.25	1.5
Standard specification (min. value in newtons)	12.5	40	50	4	12.5	40	50	12.5	40



Information:

Fine-stranded wires must be twisted in order to maintain the cable holding forces.

Use of wire end sleeves

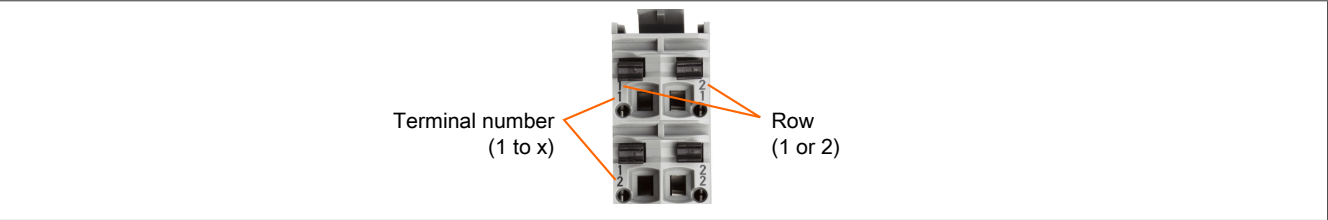
In order to achieve an optimal cable holding force, the following points must be observed:

- Square crimping with the roughest possible surface should be carried out.
- The end of the wire end sleeve should not be cut in order to avoid a reduction of the cross section.
- No wires should protrude at the end of the sleeve.
- The wire end sleeve must be inserted completely to the end.
- The length of the wire end sleeve corresponds to the [wire stripping length](#).

2.4 Unique terminal numbering

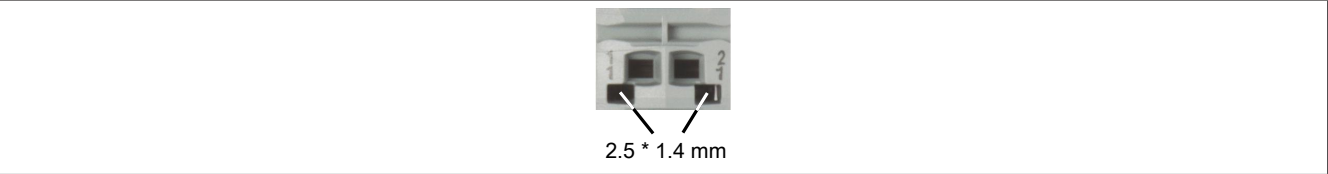
Each terminal connection is unique and can be identified by the numbers in the plastic. In this way, terminal assignments can be clearly allocated in the planning stage without any risk of confusion.

- Upper number: Row number 1 or 2
- Lower number: Terminal numbers 1 to 3 (6-pin terminal block), 1 to 6 (12-pin terminal block), 1 to 8 (16-pin terminal block)



2.5 Access for test probes

Each contact is equipped with an additional opening for using a test probe.



2.6 Disconnecting attachment cables

The access for test probes is used to disconnect the cables. To do this, the specially developed B&R X20AC0SD1 screwdriver is inserted into the opening until the clamping mechanism is unlocked and the cable can be removed.

