X20(c)HB8884

1 General information

POWERLINK is a standard protocol for Fast Ethernet with hard real-time properties. The Ethernet POWERLINK Standardization Group (EPSG) ensures that the standard remains open and is continually developed. www.ethernet-powerlink.org

Systems with redundant cabling can be implemented easily using POWERLINK. Unlike ring redundancy, cable redundancy does not require cable looping, which can sometimes be problematic. This allows the creation of all types of tree structures. When using a device with the link selector function, data is always transferred via the highest quality network lines. The link selector function is integrated in the module compact link selector. This makes it easy to connect any POWERLINK device to a redundant POWERLINK network.

- Connecting POWERLINK devices to the POWERLINK cable redundancy system
- Integrated compact link selector function

2 Coated modules

Coated modules are X20 modules with a protective coating for the electronics component. This coating protects X20c modules from condensation and corrosive gases.
The modules' electronics are fully compatible with the corresponding X20 modules.

For simplification purposes, only images and module IDs of uncoated modules are used in this data sheet.

The coating has been certified according to the following standards:

- Condensation: BMW GS 95011-4, 2x 1 cycle
- Corrosive gas: EN 60068-2-60, method 4, exposure 21 days

2.1 -40°C starting temperature

The starting temperature describes the minimum permissible ambient temperature when the power is switched off at the time the coated module is switched on. This is permitted to be as low as -40°C. During operation, the conditions as specified in the technical data continue to apply.

Information:

It is important to absolutely ensure that there is no forced cooling by air currents in a closed control cabinet, for example using a fan or ventilation slots.

3 Order data

Model number	Short description	Figure
	X20 redundancy systems	
X20HB8884	X20 compact link selector, 2x RJ45, order bus base, power supply module and terminal block separately.	
X20cHB8884	X20 compact link selector, coated, 2x RJ45, order bus base, power supply module and terminal block separately.	
	Required accessories	
	System modules for X20 redundancy system	
X20HB2885	X20 hub expansion module, integrated active 2-port hub, 2x RJ45	
X20cHB2885	X20 hub expansion module, coated, integrated active 2-port hub, 2x RJ45	
	System modules for expandable bus controllers	
X20BB81	X20 bus base, for X20 base module (BC, HB, etc.) and X20 power supply module, with one expansion slot for an X20 add-on module (IF, HB, etc.), X20 locking plates (left and right) X20AC0SL1/X20AC0SR1 included	
X20BB82	X20 bus base, for X20 base module (BC, HB, etc.) and X20 power supply module, with 2 expansion slots for 2 X20 add-on modules (IF, HB, etc.), X20 locking plates (left and right) X20AC0SL1/X20AC0SR1 included	
X20cBB81	X20 bus base, coated, for X20 base module (BC, HB, etc.) and X20 power supply module, with one expansion slot for an X20 add-on module (IF, HB, etc.), X20 locking plates (left and right) X20AC0SL1/X20AC0SR1 included	
X20cBB82	X20 bus base, coated, for X20 base module (BC, HB, etc.) and X20 power supply module, with two expansion slots for two X20 add-on modules (IF, HB, etc.), X20 locking plates (left and right) X20AC0SL1/X20AC0SR1 included	
	System modules for the X20 hub system	
X20HB2880	X20 hub expansion module, integrated 2-port hub, 2x RJ45	
X20PS8002	X20 power supply module for standalone hub and compact link selector	
X20cHB2880	X20 hub expansion module, coated, integrated 2-port hub, 2x RJ45	
X20cPS8002	X20 power supply module, coated, for standalone hub and compact link selector	
	Terminal blocks	
X20TB12	X20 terminal block, 12-pin, 24 VDC keyed	

Table 1: X20HB8884, X20cHB8884 - Order data

4 Technical data

Model number	X20HB8884	X20cHB8884
Short description		
POWERLINK compact link selector	Connects POWERLINK devices to a redundant POWERLINK network	
General information		
Status indicators	Module status, bus function	
Diagnostics		
Module status	Yes, using status LED	
Bus function	Yes, using status LED	
Power consumption	2 W	
Certifications		
CE	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	
HazLoc	cCSAus 244665 Process control equipment for hazardous locations Class I, Division 2, Groups ABCD, T5	
DNV GL	Temperature: **B** (0 - 55°C) Humidity: **B** (up to 100%) Vibration: **B** (4 g) EMC: **B** (bridge and open deck)	
LR	ENV1	
KR	Yes	
EAC	Yes	
KC	Yes	-
Interfaces		
Type	POWERLINK compact link selector	
Variant	2x shielded RJ45	
Cable length	Max. 100 m between 2 stations (segment length)	
Transfer rate	100 Mbit/s	
Transfer		
Physical layer	100BASE-TX	
Half-duplex	Yes	
Full-duplex	No	
Autonegotiation	Yes	
Auto-MDI/MDIX	Yes	
Hub propagation delay	0.96 to 1 µs	
Electrical properties		
Electrical isolation	Power supply isolated from POWERLINK (IF1 and IF2)	
Operating conditions		
Mounting orientation		
Horizontal	Yes	
Vertical	Yes	
Installation elevation above sea level		
0 to 2000 m	No limitations	
>2000 m	Reduction of ambient temperature by 0.5°C per 100 m	
Degree of protection per EN 60529	IP20	
Ambient conditions		
Temperature		
Operation		
Horizontal mounting orientation	-25 to 60°C	
Vertical mounting orientation	-25 to 50°C	
Derating	-	
Storage	-40 to 85°C	
Transport	-40 to 85°C	
Relative humidity		
Operation	5 to 95%, non-condensing	Up to 100%, condensing
Storage	5 to 95%, non-condensing	
Transport	5 to 95%, non-condensing	

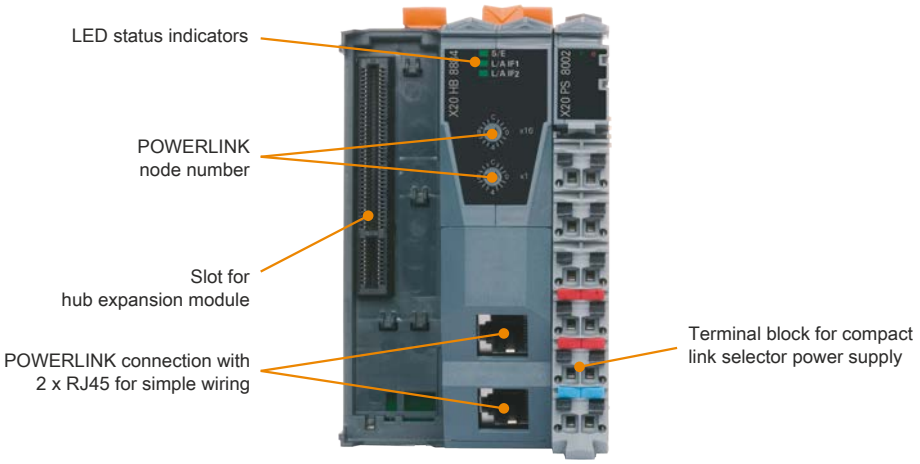
Table 2: X20HB8884, X20cHB8884 - Technical data

Model number	X20HB8884	X20cHB8884
Mechanical properties		
Note	Order 1x terminal block X20TB12 separately Order 1x power supply module X20PS8002 separately Order 1x hub expansion module X20HB2880 or 2x hub expansion module X20HB2885 separately Order 1x bus base X20BB81 or X20BB82 separately	Order 1x terminal block X20TB12 separately Order 1x power supply module X20cPS8002 separately Order 1x hub expansion module X20cHB2880 or 2x hub expansion module X20cHB2885 separately Order 1x bus base X20cBB81 or X20cBB82 separately
Pitch [1]		
X20BB81	62.5$^{+0.2}$ mm	
X20BB82	87.5$^{+0.2}$ mm	

Table 2: X20HB8884, X20cHB8884 - Technical data

1) Spacing is based on the width of bus base X20BB81 or X20BB82. 1 X20HB2880 hub expansion module or 2 X20HB2885 hub expansion modules and 1 X20PS8002 power supply module are also always required for the compact link selector.

5 Operating and connection elements



5.1 LED status indicators

Figure	LED	Color	Status	Description
	S/E[1]	Green	On	An active POWERLINK network was detected on both networks.
		Red	Single flash	Network 2 is active. Disturbances detected on network 1 or there is no POWERLINK network active. Note: Several red blinking signals are displayed immediately after the device is switched on. This is not an error, however.
			Double flash	Network 1 is active. Disturbances detected on network 2 or there is no POWERLINK network active. **Several red blinking signals are displayed immediately after the device is switched on. This is not an error, however.**
			On	Failure of both networks.
	L/A IFx	Green	Blinking	A link to the peer station has been established. The LED blinks when Ethernet activity is taking place on the bus.
			On	A link to the remote station has been established.

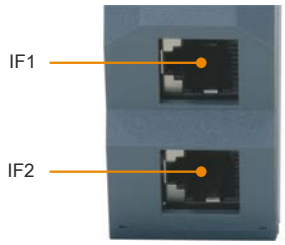
1) The Status/Error LED is a green/red dual LED.

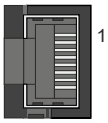
5.2 POWERLINK node numbers

The number switches have no function during operation. They are only used for product testing.

5.3 Ethernet interface

For information about wiring X20 modules with an Ethernet interface, see section "Mechanical and electrical configuration - Wiring guidelines for X20 modules with Ethernet cables" of the X20 user's manual.



Interface	Pinout		
	Pin	Ethernet	
 1 Shielded RJ45	1	RXD	Receive data
	2	RXD\	Receive data\
	3	TXD	Transmit data
	4	Termination	
	5	Termination	
	6	TXD\	Transmit data\
	7	Termination	
	8	Termination	

6 POWERLINK cable redundancy system

It is often indispensable to have redundant network cabling, especially in systems that handle technical processes. The potential for danger, especially to the lines that run through the system, is disproportionately high in relation to the need to keep communication active in all operating situations. This risk is effectively reduced with double cabling that is routed separately.

The POWERLINK cable redundancy system is based on the principle of doubling the transfer routing as well as providing continual and simultaneous monitoring. That means data is simultaneously fed into two cable lines using a corresponding mechanism. The same mechanisms are used to receive these telegrams from the redundant network.

Information:

Details about the structure of a redundancy system can be found in the "Redundancy for control systems" user's manual. The user's manual is available in the Downloads section of the B&R website www.br-automation.com.