X20(c)PS3300

Data sheet
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Translation of the original documentation

Publishing information

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Disclaimer

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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 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

1.3 Order data

Order number	Short description	Figure
	Power supplies	
X20PS3300	X20 power supply module, for X2X Link and internal I/O power supply	
X20cPS3300	X20 power supply module, coated, for X2X Link and internal I/O power supply	
	Required accessories	
	Bus modules	
X20BM01	X20 power supply bus module, 24 VDC keyed, internal I/O power supply interrupted to the left	
X20BM05	X20 power supply bus module, with node number switch, 24 VDC keyed, internal I/O power supply interrupted to the left	
X20cBM01	X20 power supply bus module, coated, 24 VDC keyed, internal I/O power supply interrupted to the left	
	Terminal blocks	
X20TB12	X20 terminal block, 12-pin, 24 VDC keyed	

Table 1: X20PS3300, X20cPS3300 - Order data

1.4 Module description

The supply module is equipped with a feed for the X2X Link as well as the internal I/O supply.

- Feed for X2X Link and internal I/O supply
- Electrical isolation of feed and X2X Link supply
- Redundancy of X2X Link supply possible by operating multiple supply modules simultaneously

Functions:

- Monitoring the operating limits

Monitoring operating limits

The voltage of the I/O power supply is monitored for voltage overshoot or undershoot.

2 Technical description

2.1 Technical data

Order number	X20PS3300	X20cPS3300
Short description		
Power supply module	24 VDC supply module for I/O and bus	
General information		
B&R ID code	0x1BC0	0xDF13
Status indicators	Overload, operating state, module status	
Diagnostics		
Module run/error	Yes, using LED status indicator and software	
Overload	Yes, using LED status indicator and software	
Power consumption for X2X Link power supply [1]	1.42 W	
Power consumption [1]		
Internal I/O	0.6 W	
Additional power dissipation caused by actuators (resistive) [W]	-	
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	
HazLoc	cCSAus 244665 Process control equipment for hazardous locations Class I, Division 2, Groups ABCD, T5	
DNV	Temperature: **B** (0 to 55°C) Humidity: **B** (up to 100%) Vibration: **B** (4 g) EMC: **B** (bridge and open deck)	
CCS	Yes	-
LR	ENV1	
KR	Yes	
ABS	Yes	
BV	**EC33B** Temperature: 5 - 55°C Vibration: 4 g EMC: Bridge and open deck	
KC	Yes	-
X2X Link power supply input		
Input voltage	24 VDC -15% / +20%	
Input current	Max. 0.7 A	
Fuse	Integrated, cannot be replaced	
Reverse polarity protection	Yes	
X2X Link power supply output		
Nominal output power	7 W	
Parallel connection	Yes [2]	
Redundant operation	Yes	
Overload characteristics	Short-circuit proof, temporary overload	
Input I/O power supply		
Input voltage	24 VDC -15% / +20%	
Fuse	Required line fuse: Max. 10 A, slow-blow	
Reverse polarity protection	No	
Output I/O power supply		
Nominal output voltage	24 VDC	
Behavior on short circuit	Required line fuse	
Permissible contact load	10 A	
Electrical properties		
Electrical isolation	X2X Link supply isolated from X2X Link power supply I/O supply not isolated from I/O power supply	
Operating conditions		
Mounting orientation		
Horizontal	Yes	
Vertical	Yes	

Table 2: X20PS3300, X20cPS3300 - Technical data

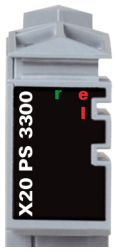
Order number	X20PS3300	X20cPS3300
Installation elevation above sea level		
0 to 2000 m	No limitation	
>2000 m	Reduction of ambient temperature by 0.5°C per 100 m	
Degree of protection per EN 60529	IP20	
Ambient conditions		
Temperature		
Operation		
Horizontal mounting orientation	-25 to 60°C	
Vertical mounting orientation	-25 to 50°C	
Derating	See section "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	
Mechanical properties		
Note	Order 1x terminal block X20TB12 separately. Order 1x power supply bus module X20BM01 separately	Order 1x terminal block X20TB12 separately. Order 1x power supply bus module X20cBM01 separately
Pitch	12.5$^{+0.2}$ mm	

Table 2: X20PS3300, X20cPS3300 - Technical data

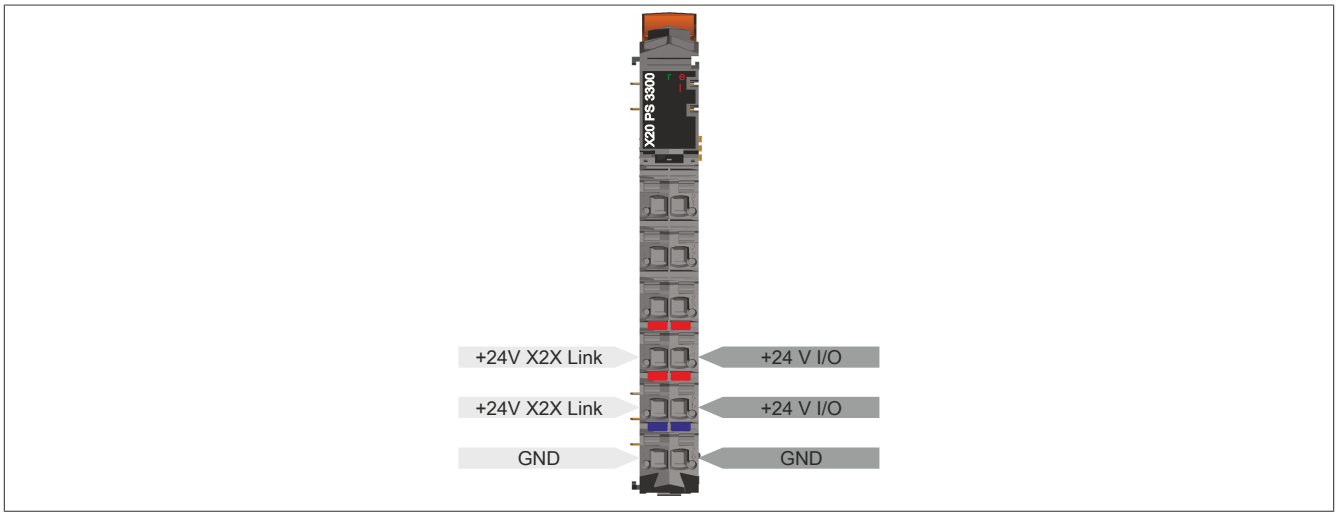
1) The specified values are maximum values. For examples of the exact calculation, see section "Mechanical and electrical configuration" in the X20 system user's manual.
2) In parallel operation, it is only permitted to expect 75% of the nominal power. It is important to make sure that all power supply units operated in parallel are switched on and off at the same time.

2.2 LED status indicators

For a description of the various operating modes, see section "Additional information - Diagnostic LEDs" in the X20 system user's manual.

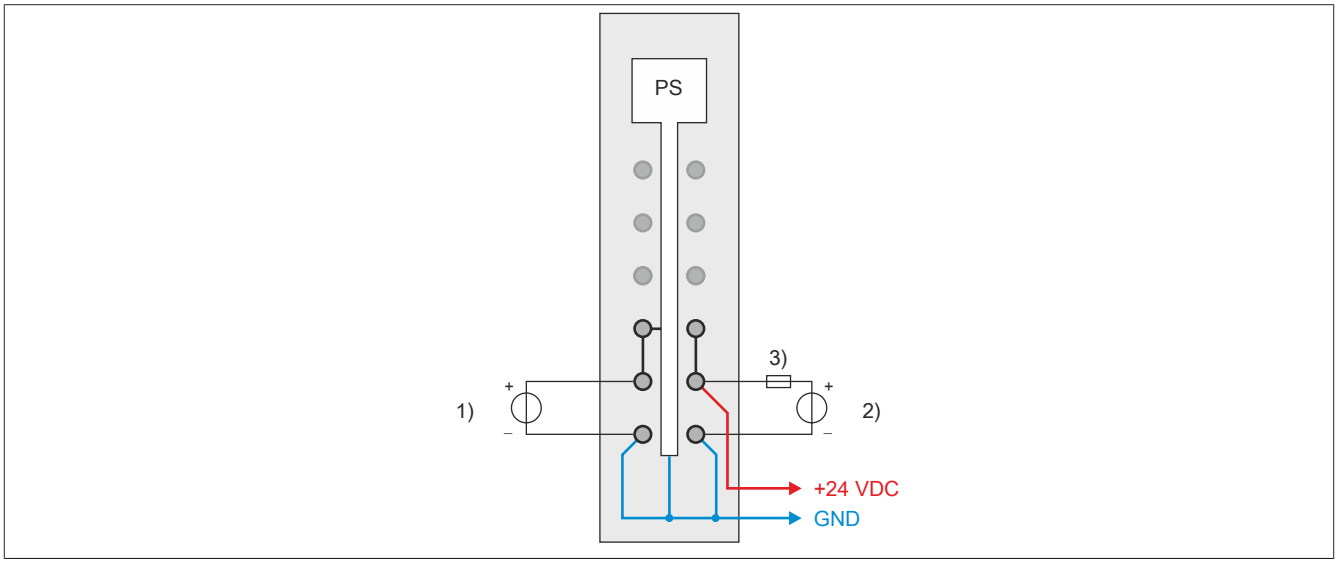
Figure	LED	Color	Status	Description
	r	Green	Off	No power to module
			Single flash	RESET mode
			Blinking	PREOPERATIONAL mode
			On	RUN mode
	e	Red	Off	No power to module or everything OK
			Double flash	LED indicates one of the following states: • The X2X Link power supply of the power supply unit is overloaded (>2.3 A). • I/O supply too low • Input voltage for X2X Link supply too low
	e + r	Red on / Green single flash		Invalid firmware
	l	Red	Off	The X2X Link supply is within the valid limits
			On	The X2X Link power supply of the power supply unit is overloaded (>1.5 A).

2.3 Pinout



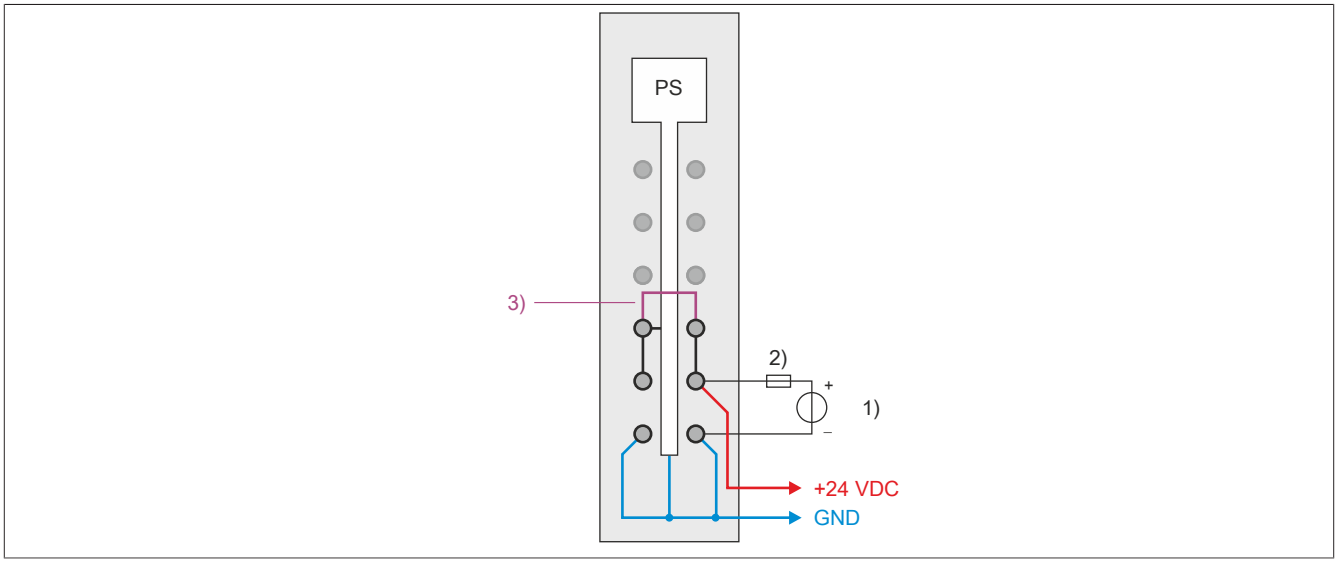
2.4 Connection examples

With 2 isolated power supplies



1) Supply for the X2X Link power supply
2) Supply for the I/O power supply
3) Fuse, 10 A slow-blow

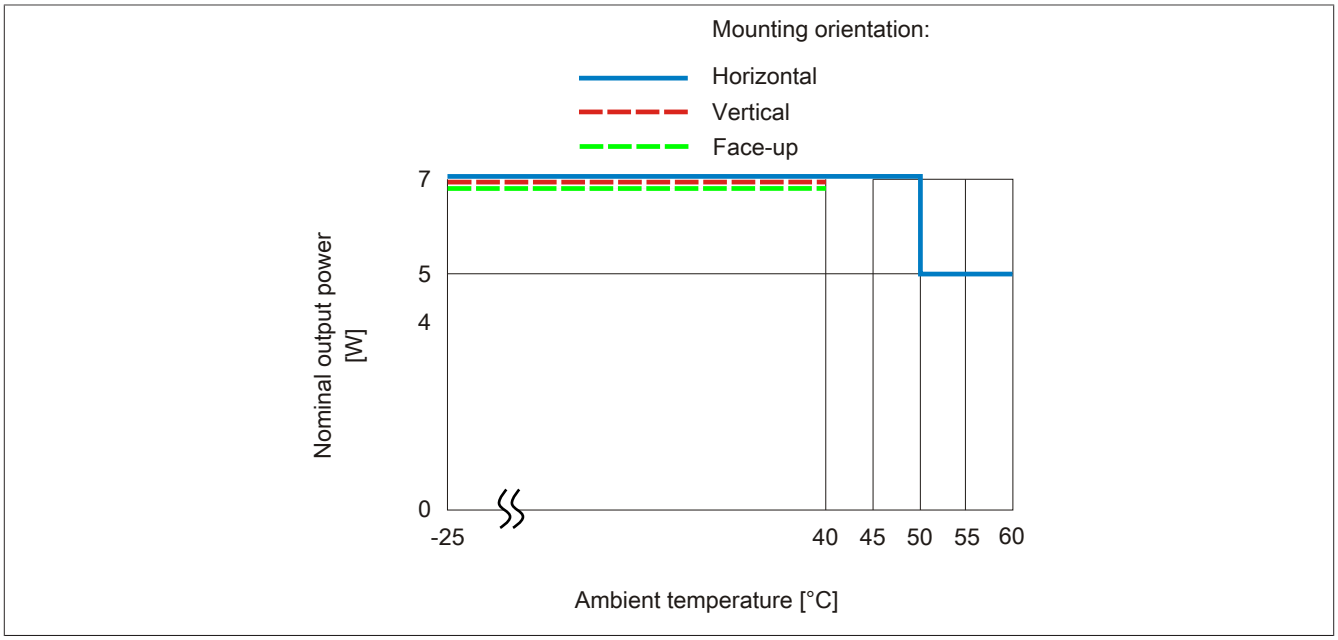
With 1 power supply and jumper



1) Supply for the I/O power supply
2) Fuse, 10 A slow-blow
3) Jumper

2.5 Derating

The nominal output power for the power supply is 7 W. Depending on the mounting orientation, derating must be taken into account.



3 Function description

3.1 Monitoring the operating limits

The status of the bus supply voltage and the bus current can be read out.

Bit	Description
0	No error
1	Warning for overcurrent (>2.3 A) or undervoltage

The status of the I/O supply voltage can be read out.

Bit	Description
0	Supply voltage OK
1	Supply voltage outside the valid range

Information:

The register is described in "Status of the module" on page 11.

4 Commissioning

4.1 Using the module on the bus controller

Function model 254 "Bus controller" is used by default only by non-configurable bus controllers. All other bus controllers can use other registers and functions depending on the fieldbus used.

For detailed information, see section "Additional information - Using I/O modules on the bus controller" in the X20 user's manual (version 3.50 or later).

4.1.1 CAN I/O bus controller

The module occupies 1 analog logical slot on CAN I/O.

5 Register description

5.1 General data points

In addition to the registers described in the register description, the module has additional general data points. These are not module-specific but contain general information such as serial number and hardware variant.

General data points are described in section "Additional information - General data points" in the X20 System user's manual.

5.2 Function model 0 - Standard

Register	Fixed offset	Name	Data type	Read		Write	
				Cyclic	Acyclic	Cyclic	Acyclic
0	1	Status of the module	USINT	•			
		StatusInput01	Bit 0				
		StatusInput02	Bit 2				
2	2	SupplyCurrent	USINT	•			
4	3	SupplyVoltage	USINT	•			

Fixed modules require their data points to be in a specific order in the X2X frame. Cyclic access occurs according to a predefined offset, not based on the register address.

Acyclic access continues to be based on the register numbers.

5.3 Function model 254 - Bus controller

Register	Offset[1)]	Name	Data type	Read		Write	
				Cyclic	Acyclic	Cyclic	Acyclic
0	0	Status of the module	UINT	•			
		StatusInput01	Bit 0				
		StatusInput02	Bit 2				
2	2	SupplyCurrent	UINT	•			
4	4	SupplyVoltage	UINT	•			

1) The offset specifies the position of the register within the CAN object.

5.4 Status of the module

Name:
Module status

The following voltage and current states of the module are monitored in this register:

Function model	Data type	Values
0 - Standard	USINT	See the bit structure.
254 - Bus controller	UINT	See the bit structure.

Bit structure:

Bit	Name	Value	Information
0	StatusInput01	0	No error
		1	Warning for overcurrent (>2.3 A) or undervoltage
1	Reserved	0	
2	StatusInput02	0	Supply voltage OK
		1	Supply voltage outside the valid range
3 - x	Reserved	0	

5.5 Bus power supply current

Name:
SupplyCurrent

This register indicates the bus supply current with a resolution of 0.1 A.

Function model	Data type
0 - Standard	USINT
254 - Bus controller	UINT

5.6 Bus supply voltage

Name:
SupplyVoltage

This register indicates the measured bus supply voltage with a resolution of 0.1 V.

Information:

The nominal bus supply voltage is 5 V and should not fall below 4.7 V.

Function model	Data type
0 - Standard	USINT
254 - Bus controller	UINT

5.7 Minimum cycle time

The minimum cycle time specifies how far the bus cycle can be reduced without communication errors occurring. It is important to note that very fast cycles reduce the idle time available for handling monitoring, diagnostics and acyclic commands.

Minimum cycle time
100 µs

5.8 Minimum I/O update time

The minimum I/O update time specifies how far the bus cycle can be reduced so that an I/O update is performed in each cycle.

Minimum I/O update time
2 ms