X20(c)PD2113

1 General information

The potential distributor module with feed can provide 6x 24 VDC and 6x ground connections from the internal I/O supply on the terminals. This module can also be used instead of a special feed module for the internal I/O supply. The internal 24 VDC supply is connected to the terminal connections through a replaceable microfuse for protection. The 24 VDC feed and the functionality of the fuse are monitored.

Information:

Since the 6x 24 VDC terminals are interconnected and the fuse is located between the terminals and the internal I/O supply, the terminal potentials are not protected against short circuits from an external feed. If using an external feed, the respective 24 VDC terminals must be protected with an external fuse. In this case a X20BM01 bus module should be used.

- Integrated exchangeable microfuse
- Monitoring of the fuse
- Potential for routing as needed
- Can be used as feed module for the I/O supply

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

3 Order data

Model number	Short description	Figure
	Other functions	
X20PD2113	X20 potential distributor module, 6x GND, 6x 24 VDC, with feed option, integrated microfuse	
X20cPD2113	X20 potential distributor, coated, 6x GND, 6x 24 VDC, with supply option, integrated microfuse	
	Required accessories	
	Bus modules	
X20BM01	X20 power supply bus module, 24 VDC keyed, internal I/O supply interrupted to the left	
X20BM05	X20 power supply bus module, with node number switch, 24 VDC keyed, internal I/O supply interrupted to the left	
X20BM11	X20 bus module, 24 VDC keyed, internal I/O supply continuous	
X20BM15	X20 bus module, with node number switch, 24 VDC keyed, internal I/O supply continuous	
X20cBM01	X20 power supply bus module, coated, 24 VDC keyed, internal I/O supply interrupted to the left	
X20cBM11	X20 bus module, coated, 24 VDC keyed, internal I/O supply continuous	
	Terminal blocks	
X20TB12	X20 terminal block, 12-pin, 24 VDC keyed	

Table 1: X20PD2113, X20cPD2113 - Order data

4 Technical data

Model number	X20PD2113	X20cPD2113
Short description		
Potential distributor module with supply	6x 24 VDC on the terminal connections, 6x ground on the terminal connections	
General information		
B&R ID code	0x267F	0xE23B
Status indicators	Operating state, module status	
Diagnostics		
Module run/error	Yes, using status LED and software	
Fuse monitoring	Yes, using status LED and software	
Power consumption [1]		
Bus	0.12 W	
Internal I/O	-	
External I/O	1.15 W	
Additional power dissipation caused by actuators (resistive) [W]	-	
Certifications		
CE	Yes	
KC	Yes	-
EAC	Yes	
UL	cULus E115267 Industrial control equipment	
HazLoc	cCSAus 244665 Process control equipment for hazardous locations Class I, Division 2, Groups ABCD, T5	
ATEX	Zone 2, II 3G Ex nA nC IIA T5 Gc IP20, Ta (see X20 user's manual) FTZÚ 09 ATEX 0083X	
DNV GL	Temperature: **B** (0 - 55°C) Humidity: **B** (up to 100%) Vibration: **B** (4 g) EMC: **B** (bridge and open deck)	
Input supply with feed		
Nominal input voltage	24 VDC -15% / +20% external, external ground	
Input current	Max. 6 A	
Fuse	Integrated 6.3 A, slow-blow, can be replaced	
Behavior on short circuit	No protection available Use external fuse	
Reverse polarity protection	No	
Output I/O power supply		
Nominal output voltage	24 VDC, ground	
Permissible contact load	6 A	
Behavior on short circuit		
On 24 VDC power supply	Integrated fuse	
On GND power supply	No protection available	
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	
Mechanical properties		
Note	Order 1x X20TB12 terminal block separately Order 1x X20BM01 or X20B-M11 bus module separately	Order 1x X20TB12 terminal block separately Order 1x X20cBM01 or X20cB-M11 bus module separately
Spacing	$12.5^{+0.2}$ mm	

Table 2: X20PD2113, X20cPD2113 - Technical data

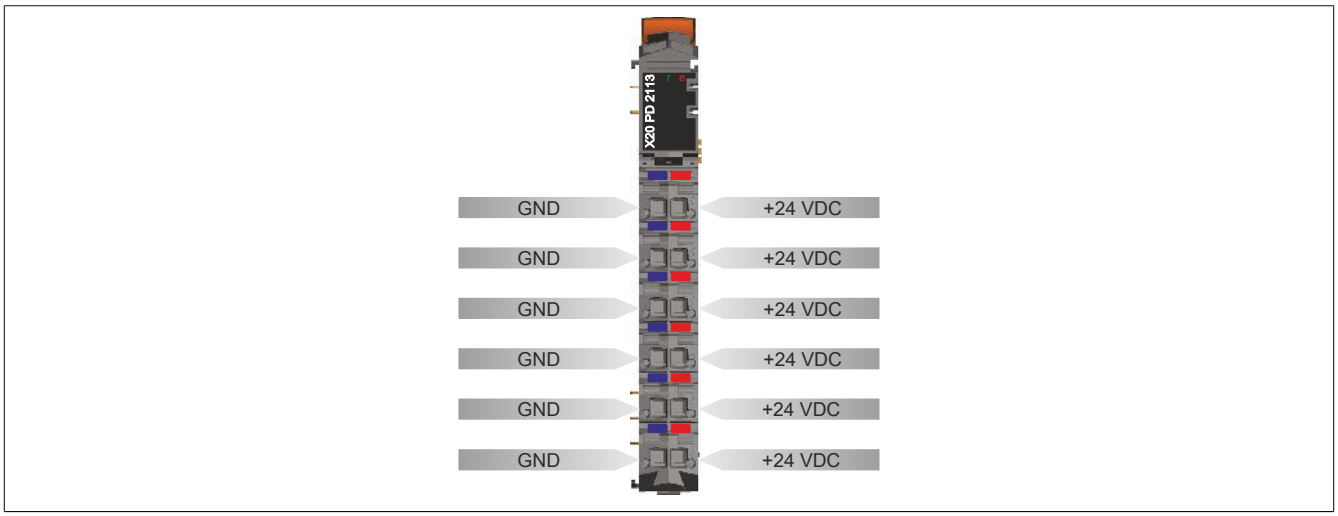
1) The specified values are maximum values. For examples of the exact calculation, see section "Mechanical and electrical configuration" of the X20 system user's manual.

5 LED status indicators

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

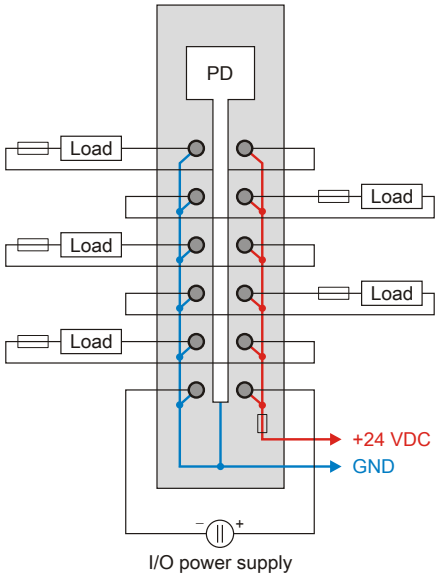
Figure	LED	Color	Status	Description
	r	Green	Off	No power to module
			Single flash	RESET mode
			Blinking	PREOPERATIONAL mode
			On	RUN mode
	e	Red	Off	No power to module or everything OK
			On	Error or reset status
			Single flash	Fuse defective or missing
			Double flash	Supply voltage too low
			Triple flash	Internal I/O supply OK but fuse defective and supply voltage too low
	e + r	Red on / Green single flash		Invalid firmware

6 Pinout

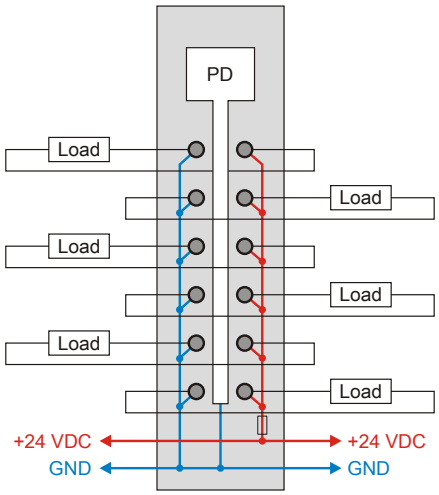


7 Connection examples

Connection example with external supply



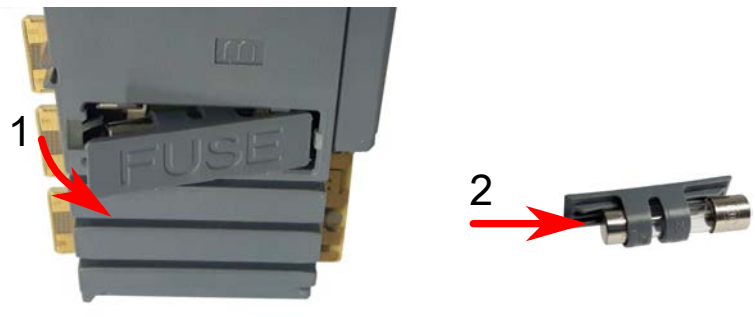
Connection example with internal supply



8 Replacing the built-in fuse

The module is equipped with a 6.3 A built-in fuse. Proceed as follows to replace a defective fuse:

1) Remove the fuse cover with the fuse on the right side of the module using a screwdriver.
2) Slide the cylindrical fuse out of the fuse holder and slide the new fuse in.



9 Register description

9.1 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" of the X20 system user's manual.

9.2 Function model 1 - Standard

Register	Fixed offset	Name	Data type	Read		Write	
				Cyclic	Non-cyclic	Cyclic	Non-cyclic
0	1	Module status	USINT	•			
		StatusFuse	Bit 0				
		StatusPowerSupply	Bit 1				
2	2	Counter01	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.

Non-cyclic access continues to be based on the register numbers.

9.3 Function model 254 - Bus controller

Register	Offset[1)]	Name	Data type	Read		Write	
				Cyclic	Non-cyclic	Cyclic	Non-cyclic
0	0	Module status	USINT	•			
		StatusFuse	Bit 0				
		StatusPowerSupply	Bit 1				
2	2	Counter01	USINT	•			

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

9.3.1 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 additional registers and functions depending on the fieldbus used.

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

9.3.2 CAN I/O bus controller

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

9.4 Module status

Name:
Module status
StatusFuse
StatusPowerSupply

This register can be used to read the status of the power supply.

Data type	Values
USINT	See the bit structure.

Bit structure:

Bit	Description	Value	Information
0	StatusFuse	0	Fuse OK
		1	Fuse not OK
	StatusPowerSupply	0	Level of fed voltage OK
		1	Level of fed voltage not OK
2 - 7	Reserved	-	

9.5 Counter for the voltage dips

Name:
Counter01

This register is used to count how often the voltage dips on the PD module.

Data type	Values
USINT	0 to 255

9.6 Minimum cycle time

The minimum cycle time specifies the time up to which 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

9.7 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
100 µs