X20PD2113

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

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
MAEMV	Installation / EMC guide

2 Order data

Order number	Short description	Figure
	Other functions	
X20PD2113	X20 potential distributor module, 6x GND, 6x 24 VDC, with power supply option, integrated fine-wire fuse	
	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	
X20BM11	X20 bus module, 24 VDC keyed, internal I/O power supply connected through	
X20BM15	X20 bus module, with node number switch, 24 VDC keyed, internal I/O power supply connected through	
	Terminal blocks	
X20TB12	X20 terminal block, 12-pin, 24 VDC keyed	

Table 1: X20PD2113 - Order data

3 Technical description

3.1 Technical data

Order number	X20PD2113
Short description	
Potential distributor module with supply	6x 24 VDC on the terminals, 6x ground on the terminals
General information	
B&R ID code	0x267F
Status indicators	Operating state, module status
Diagnostics	
Module run/error	Yes, using LED status indicator and software
Fuse monitoring	Yes, using LED status indicator and software
Power consumption [1]	
Bus	0.12 W
Internal I/O	1.15 W [2]
External I/O	1.15 W [3]
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 - 55°C) Humidity: **B** (up to 100%) Vibration: **B** (4 g) EMC: **B** (bridge and open deck)
LR	ENV1
KR	Yes
ABS	Yes
EAC	Yes
KC	Yes
Input power supply with feed	
Nominal input voltage	24 VDC -15% / +20% external, ground external
Input current	Max. 6 A
Fuse	Integrated 6.3 A, slow-blow, can be replaced
Behavior on short circuit	No protection available Use an 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 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	-
Storage	-40 to 85°C
Transport	-40 to 85°C

Table 2: X20PD2113 - Technical data

Order number	X20PD2113
Relative humidity	
Operation	5 to 95%, non-condensing
Storage	5 to 95%, non-condensing
Transport	5 to 95%, non-condensing
Mechanical properties	
Note	Order 1x terminal block X20TB12 separately. Order 1x bus module X20BM01 or X20BM11 separately.
Pitch	12.5$^{+0.2}$ mm

Table 2: X20PD2113 - Technical data

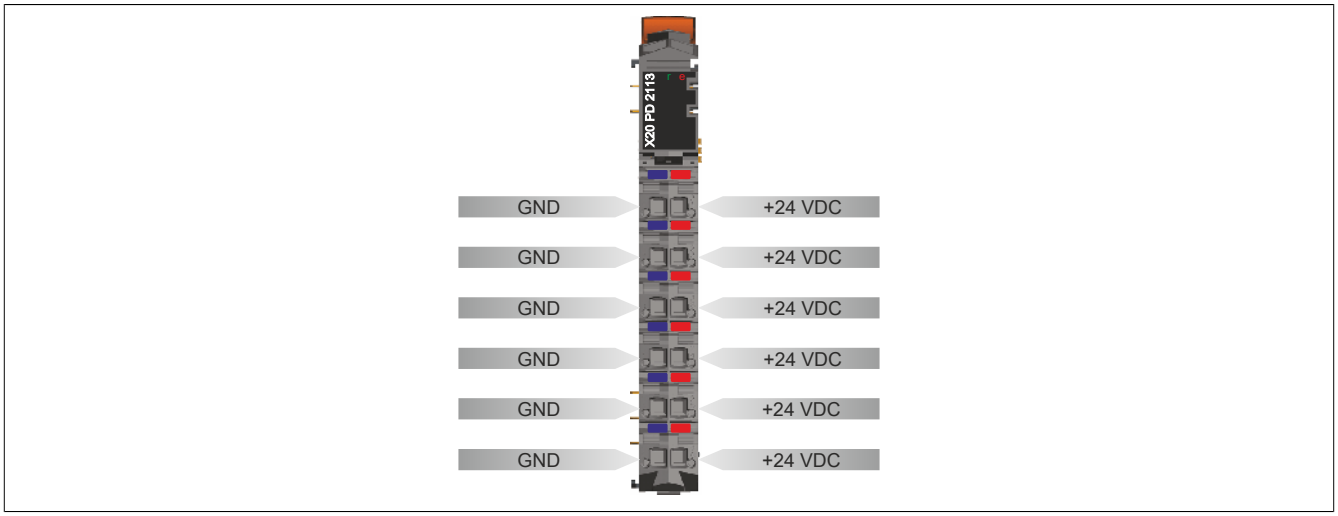
1) The specified values are maximum values. For examples of the exact calculation, see section "Mechanical and electrical configuration" in the X20 system user's manual.
2) When using the module without an external power supply.
3) When using the module with an external power supply.

3.2 LED status indicators

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

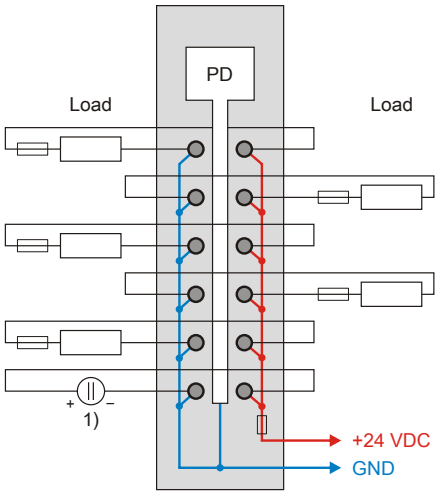
Figure	LED	Color	Status	Description
	r	Green	Off	No power to module
			Single flash	RESET mode
			Blinking	PREOPERATIONAL mode
			On	RUN mode
	e	Red	Off	No power to module or everything OK
			On	Error or reset status
			Single flash	Fuse defective or missing
			Double flash	Supply voltage too low
		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

3.3 Pinout



3.4 Connection examples

Connection example with external supply

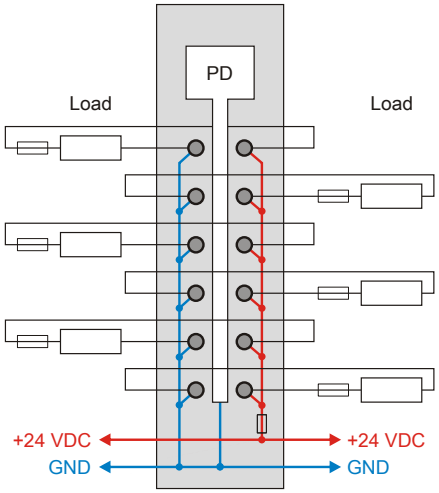


1)

Information:

If the module is supplied with external voltage (24 VDC), it must be ensured that no other module feeds into the potential group of the internal I/O power supply. The potential groups of the internal I/O power supply can be separated using module X20BM01.

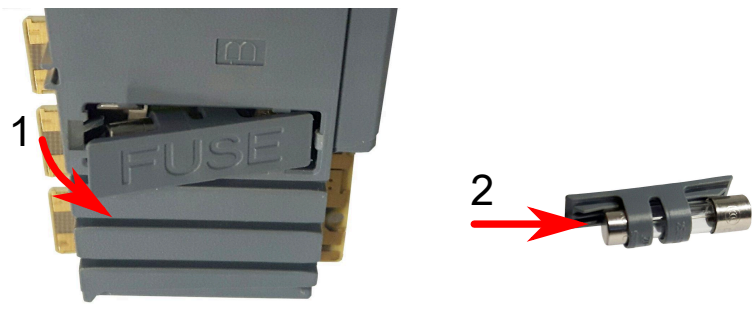
Connection example with internal supply



3.5 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.



4 Register description

4.1 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.

4.2 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.

4.3 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.

4.3.1 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 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).

4.3.2 CAN I/O bus controller

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

4.4 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	-	

4.5 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

4.6 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

4.7 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