X20PD0053

1 General information

The potential distribution module provides 6x 5 VDC and 6x ground on the terminal connections. It thus offers additional wiring options for actuators or sensors. The supplied 24 VDC and status of the outputs are monitored.

- Free shunting potentials
- Monitoring the outputs

2 Order data

Model number	Short description	Figure
	Other functions	
X20PD0053	X20 potential distributor module, 6x 5 VDC, 6x GND	
	Required accessories	
	Bus modules	
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	
	Terminal blocks	
X20TB12	X20 terminal block, 12-pin, 24 VDC keyed	

Table 1: X20PD0053 - Order data

3 Technical data

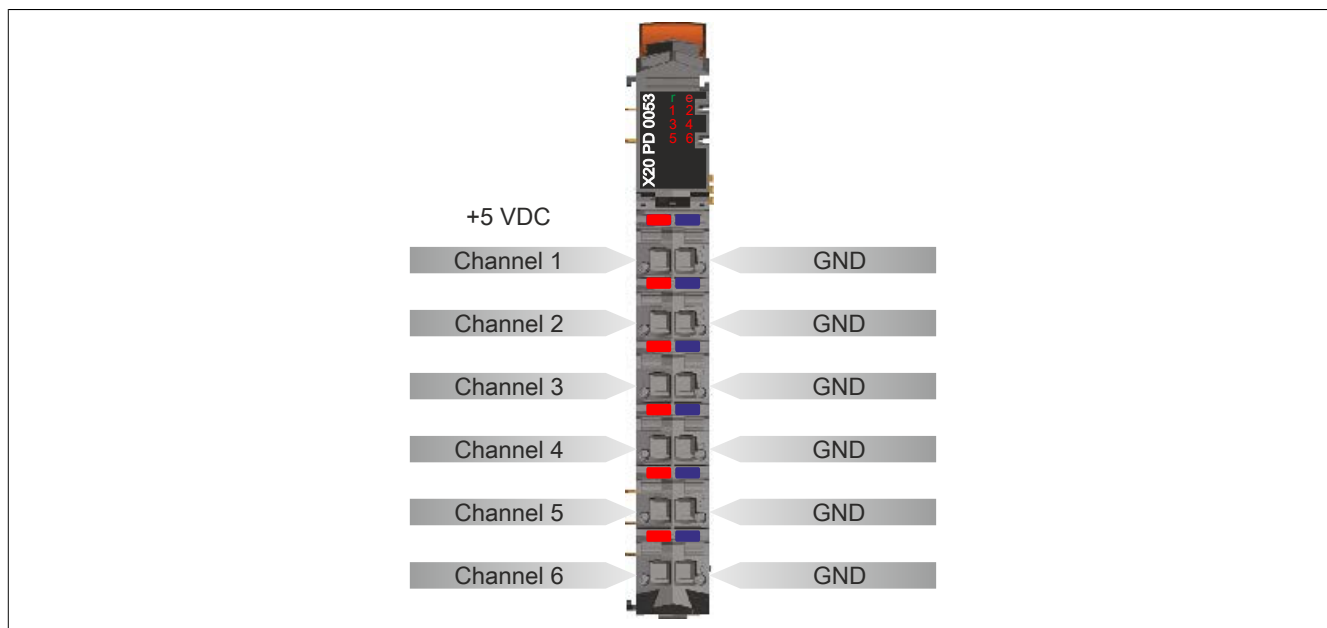| Model number	X20PD0053
Short description	
Potential distributor module	6x GND, 6x 5 VDC on the terminals
General information	
B&R ID code	0x04AF
Status indicators	Module status, channel status
Diagnostics	
Module run/error	Yes, using LED status indicator and software
Power consumption [1]	
Bus	0.1 W
Internal I/O	0.5 W
Additional power dissipation caused by actuators (resistive) [W]	Per output 180 mΩ * Output current[2]
Certifications	
CE	Yes
Encoder power supply	
Quantity	6
Nominal voltage	5 VDC ±5%
Connection type	2-wire connections
Additional functions	Short-circuit monitoring Overload error starting at 200 mA
Insulation voltage between channel and bus	500 V_{eff}
Electrical properties	
Electrical isolation	I/O power supply isolated from output
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 50°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
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 X20BM11 separately.
Pitch	12.5[+0.2] mm

Table 2: X20PD0053 - 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.
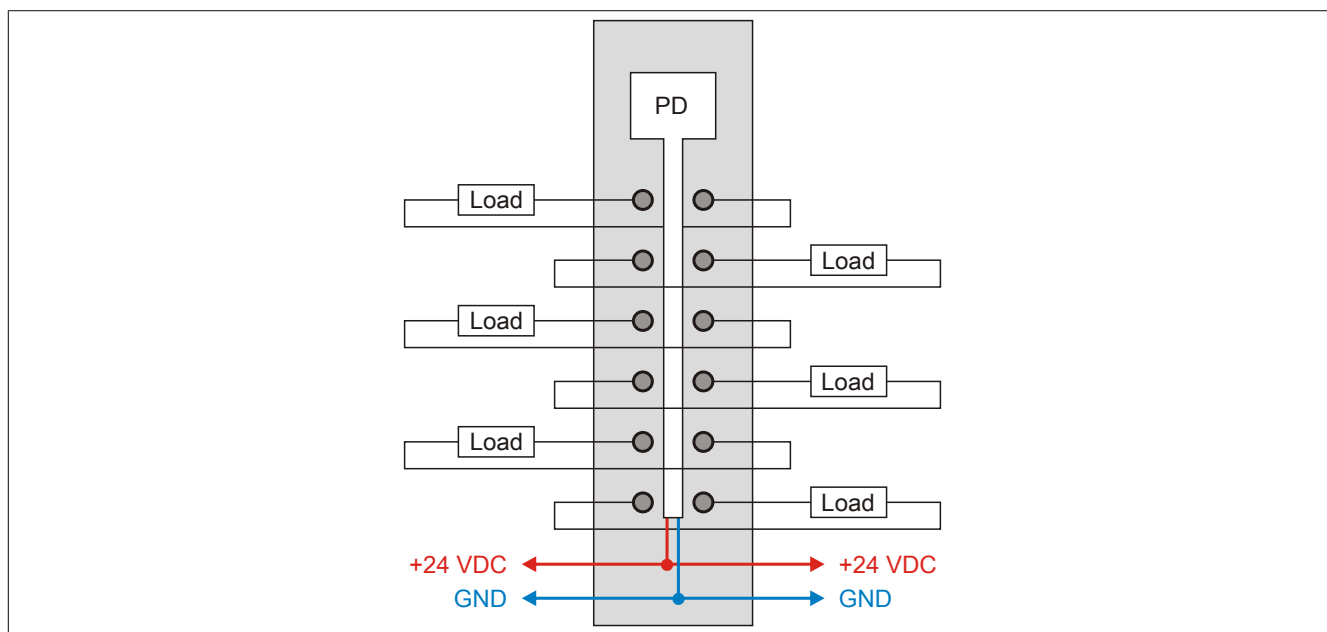
4 LED status indicators

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	Mode RESET
			Blinking	Mode PREOPERATIONAL
			On	Mode RUN
	e	Red	Off	Module not supplied with power or everything OK
			On	Error or reset state
			Double flash	I/O or supply voltage too low
	Channels 1 - 6	Red	On	Monitoring of the corresponding output has responded (short circuit or overload).

5 Pinout

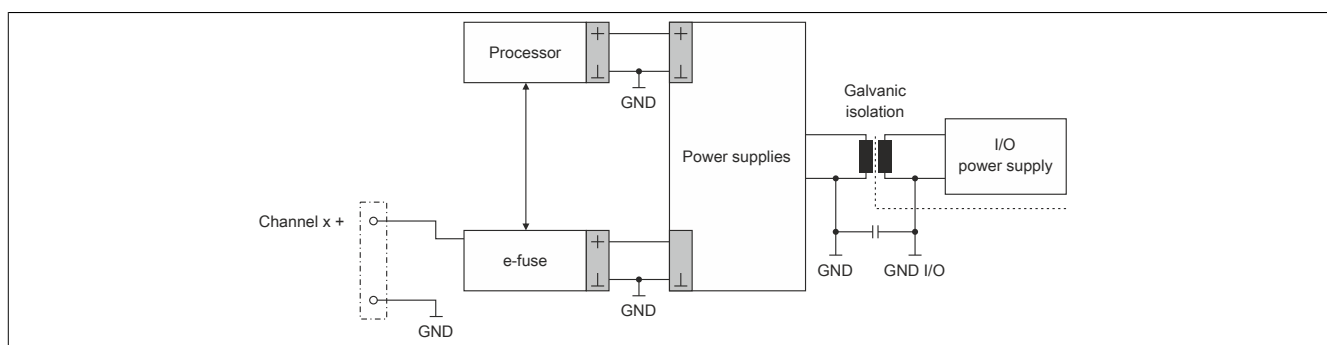| +5 VDC | | |
Channel 1		GND
Channel 2		GND
Channel 3		GND
Channel 4		GND
Channel 5		GND
Channel 6		GND

6 Connection example

7 Output circuit diagram

8 Register description

8.1 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.

8.2 Function model 1 - 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 1				
2	2	Status of the outputs	USINT	●			
		StatusOutput01	Bit 0				
		...	...				
		StatusOutput06	Bit 5				
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.

8.3 Function model 254 - Bus controller

Register	Offset[1]	Name	Data type	Read		Write	
				Cyclic	Acyclic	Cyclic	Acyclic
0	0	Status of the module	USINT	●			
		StatusInput01	Bit 0				
		StatusInput02	Bit 1				
2	2	Status of the outputs	USINT	●			
		StatusOutput01	Bit 0				
		...	...				
		StatusOutput06	Bit 5				
4	4	SupplyVoltage	USINT	●			

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

8.3.1 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" of the X20 user's manual (version 3.50 or later).

8.3.2 CAN I/O bus controller

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

8.4 Status of the module

Name:
StatusInput01 to StatusInput02

This register is used to monitor the module input voltage and voltage of the outputs.

Data type	Values
USINT	See the bit structure.

Bit structure:

Bit	Description	Value	Information
0	StatusInput01 (5 VDC voltage of outputs)	0	No error
		1	Voltage <4.7 V
1	StatusInput02 (24 VDC module input voltage)	0	No error
		1	Error
2 - 7	Reserved	0	

8.5 Status of the outputs

Name:
StatusOutput01 to StatusOutput06

The status of the outputs is monitored in this register. In the event of an error state on the output, e.g. short circuit or overload, the respective error bit is set.

Data type	Values
USINT	See the bit structure.

Bit structure:

Bit	Name	Value	Information
0	StatusOutput01	0	No error
		1	Short circuit or overload
...	...	...	
5	StatusOutput06	0	No error
		1	Short circuit or overload
6 - 7	Reserved	0	

8.6 Voltage of the outputs

Name:
SupplyVoltage

The 5 V supply voltage for the outputs is indicated in this register with a resolution of 0.1 V.

Data type	Values
USINT	0 to 255

8.7 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

8.8 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
1 ms