

X20PS4951

1 General information

In order to connect potentiometers, modules must first be supplied with the appropriate voltage. The potentiometer supply module can be used to supply four potentiometers with ± 10 V. The data is evaluated using standard analog input modules.

- Open circuit and short circuit detection
- Simple implementation of potentiometer inputs
- 4x supply

2 Order data


Model number	Short description	Figure
	Other functions	
X20PS4951	X20 power supply module, for potentiometers, 4x ± 10 V for potentiometer supply	
	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: X20PS4951 - Order data

3 Technical data

Model number	X20PS4951
Short description	
System module	Supplies 4 potentiometers with ± 10 V
General information	
B&R ID code	0x1F43
Status indicators	Potentiometer supply monitoring by channel, operating state, module status
Diagnostics	
Module run/error	Yes, using status LED and software
Open circuit	Yes, using status LED and software
Overload	Yes, using status LED and software
Power consumption	
Bus	0.01 W
Internal I/O	1.8 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) FTZU 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)
LR	ENV1
KR	Yes
Potentiometer power supply	
Number of power supplies	4
Voltage	± 10 V
Potentiometer resistance	1 k Ω to 10 k Ω
Load	Max. 20 mA per supply channel
Short-circuit proof	Yes
Basic accuracy	
+10 V	$\pm 0.12\%$ at 25°C
-10 V	$\pm 0.21\%$ at 25°C
20 V	$\pm 0.165\%$ at 25°C
Isolation voltage between channel and bus	500 V _{eff}
Max. drift	
+10 V	$\pm 0.00012\%/^{\circ}\text{C}$
-10 V	$\pm 0.00032\%/^{\circ}\text{C}$
20 V	$\pm 0.00022\%/^{\circ}\text{C}$
Electrical properties	
Electrical isolation	Channel isolated from bus Channel not isolated from channel
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	See section "Derating"
Storage	-40 to 85°C
Transport	-40 to 85°C


Table 2: X20PS4951 - Technical data

Model number	X20PS4951
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 X20TB12 terminal block separately Order 1x X20BM11 bus module separately
Spacing	12.5 ^{+0.2} mm

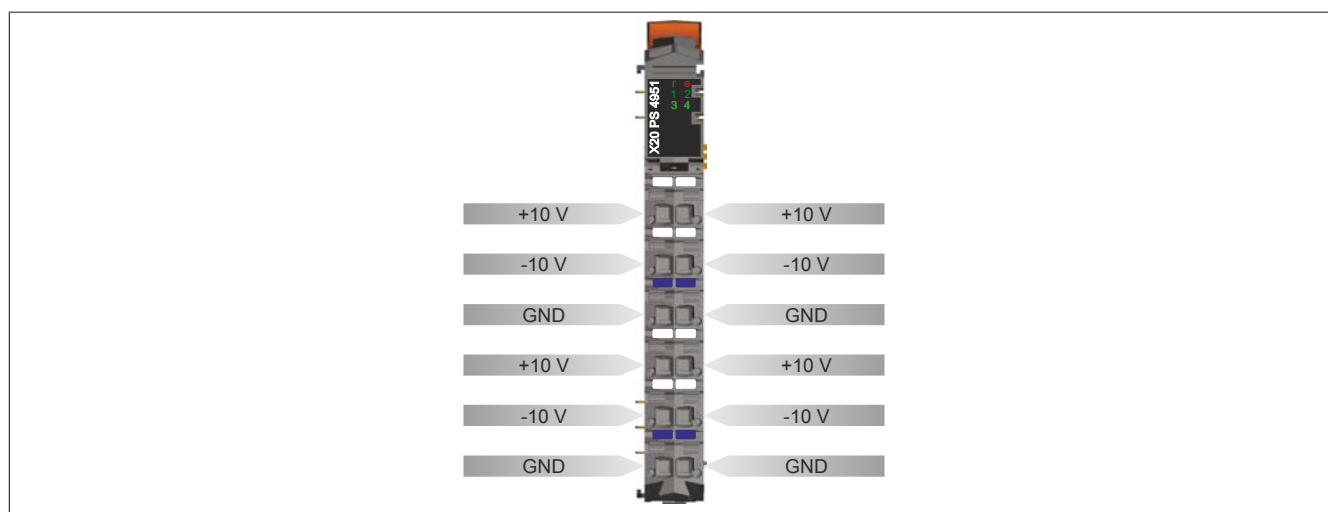
Table 2: X20PS4951 - Technical data

4 LED status indicators

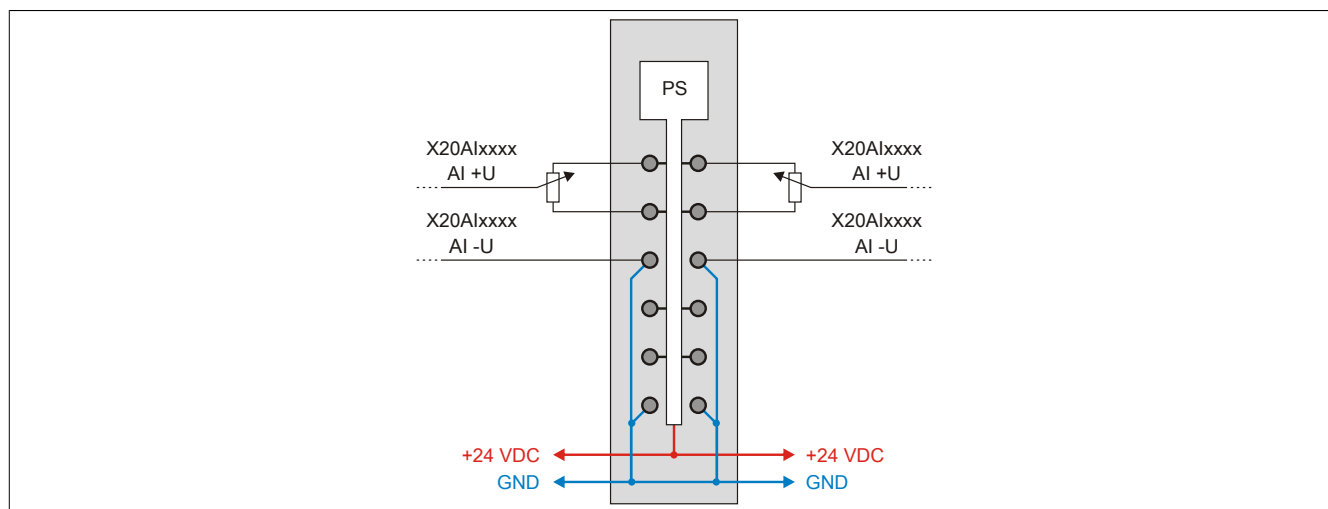
For a description of the various operating modes, see section "Additional information - Diagnostic LEDs" of the X20 system user's manual.

Figure	LED	Color	Status	Description
	r	Green	Off	No power to module
			Single flash	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	At least one supply channel overloaded
	e + r		Red on / Green single flash	Invalid firmware
	1 - 4	Green	Off	No power to module or open line
			Blinking	Overload: Output is off
			On	There is a load on the output, normal operation

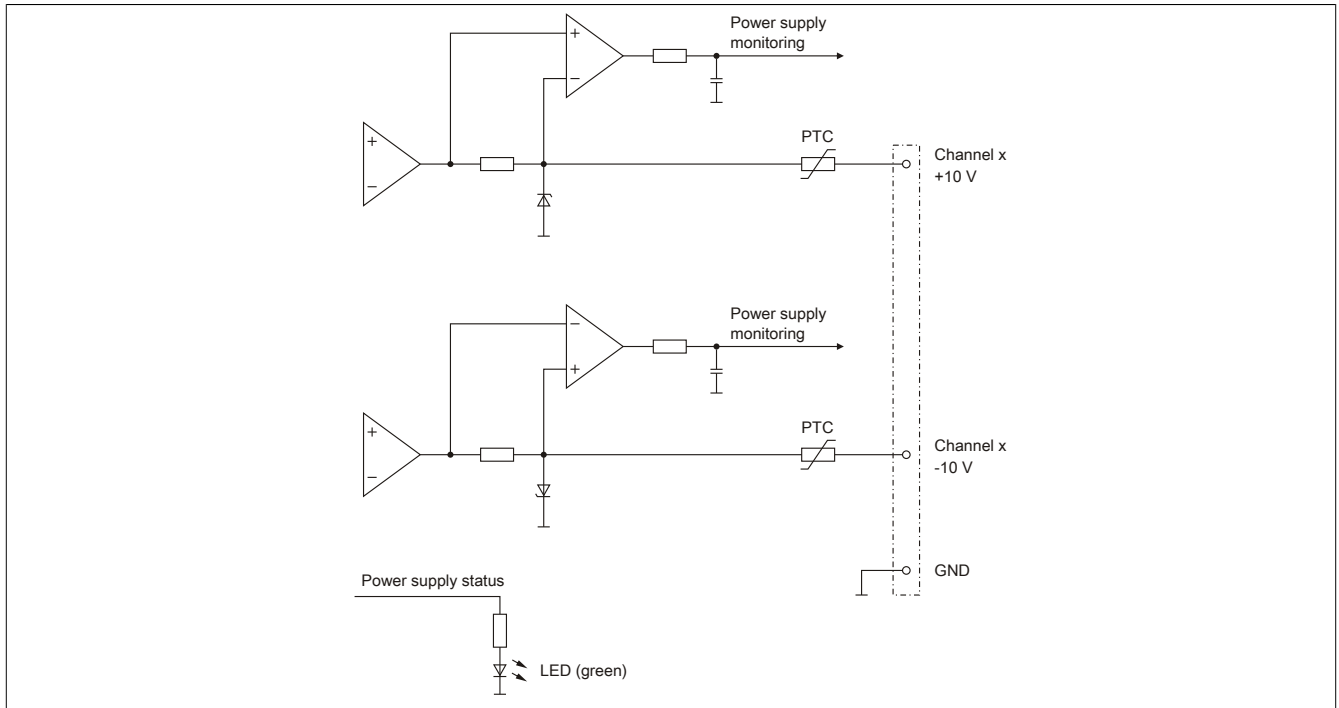
5 Pinout



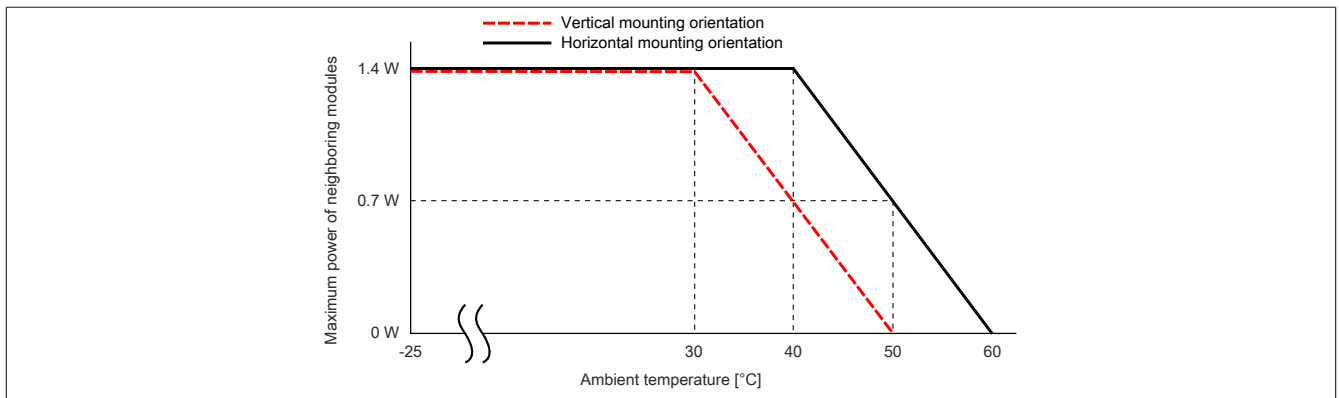
6 Connection example



7 Output circuit diagram



8 Derating



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 0 - Standard

Register	Name	Data type	Read		Write	
			Cyclic	Non-cyclic	Cyclic	Non-cyclic
0	Supply status	USINT	•			
	ShortCircuit01	Bit 0				
				
	ShortCircuit01	Bit 3				
	OpenLine01	Bit 4				
				
	OpenLine04	Bit 7				

9.3 Function model 254 - Bus controller

Register	Offset ¹⁾	Name	Data type	Read		Write	
				Cyclic	Non-cyclic	Cyclic	Non-cyclic
0	0	Supply status	USINT	•			
		ShortCircuit01	Bit 0				
					
		ShortCircuit01	Bit 3				
		OpenLine01	Bit 4				
					
		OpenLine04	Bit 7				

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 Supply status

Name:

OpenLine01 to OpenLine04

ShortCircuit01 to ShortCircuit04

This register can be used to display the status of the respective channels.

Data type	Values
USINT	See the bit structure.

Bit structure:

Bit	Name	Value	Information
0	ShortCircuit01	0	No short circuit
		1	Short circuit on channel 1
...
3	ShortCircuit04	0	No short circuit
		1	Short circuit on channel 4
4	OpenLine01	0	No open line
		1	Open line on channel 1
...
7	OpenLine04	0	No open line
		1	Open line on channel 4

9.5 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 μ s

9.6 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