X20PS9600

1 General information

The power supply module is used together with an X20 Compact-S CPU. It has a feed for the Compact-S CPU, X2X Link and the internal I/O power supply.

- Supply for Compact-S CPU, X2X Link and internal I/O power supply
- Electrical isolation of supply and CPU / X2X Link power supply
- Redundancy of CPU / X2X Link supply possible by operating multiple supply modules simultaneously
- · RS232 configurable as an online interface
- · CAN bus

2 Order data

Model number	Short description	Figure
	System modules for Compact-S CPUs	-
X20PS9600	X20 power supply module, for Compact-S CPU and internal I/O power supply, X2X Link power supply	33
	Required accessories	8
	System modules for Compact-S CPUs	8 6 1
X20BB52	X20 Compact-S bus base, for Compact-S CPU and Compact-S CPU power supply module, base for integrated RS232 interface, X20 connection, X20 end cover plates (left and right) X20AC0SL1/X20AC0SR1 included	OCX III
X20BB57	X20 Compact-S bus base, for Compact-S CPU and Compact-S CPU power supply module, base for integrated RS232 and CAN bus interface, X20 connection, X20 end cover plates (left and right) X20AC0SL1/X20AC0SR1 included	
X20BB62	X20 Compact-S bus base, for Compact-S CPU and Compact-S CPU power supply module, base for integrated RS232 interface, slot for X20 interface module, X20 connection, X20 end cover plates (left and right) X20AC0SL1/X20AC0SR1 included	
X20BB67	X20 Compact-S bus base, for Compact-S CPU and Compact-S CPU power supply module, base for integrated RS232 and CAN bus interface, slot for X20 interface module, X20 connection, X20 end cover plates (left and right) X20AC0SL1/X20AC0SR1 included	
X20BB72	X20 Compact-S bus base, for Compact-S CPU and Compact-S CPU power supply module, base for integrated RS232 interface, 2 slots for X20 interface modules, X20 connection, X20 end cover plates (left and right) X20AC0SL1/X20AC0SR1 included	
X20BB77	X20 Compact-S bus base, for Compact-S CPU and Compact-S CPU power supply module, base for integrated RS232 and CAN bus interface, 2 slots for X20 interface modules, X20 connection, X20 end cover plates (left and right) X20AC0SL1/X20AC0SR1 included	
	Terminal blocks	
X20TB12	X20 terminal block, 12-pin, 24 VDC keyed	

Table 1: X20PS9600 - Order data

3 Technical data

Short description Power supply module Interfaces Several production SAR ID code Status indicators Diagnosisis Module numbers M	lodel number	X20PS9600
Power supply module for Compact'S CPU, X2X Link power supply and I/O interfaces General Information BAR ID code Status indicators Diagnostics Module nurierror CAN bus data transfer "Yes, using status LED and software Peers of the Compact of		λ201 00000
Interfaces (Seneral Information BAR ID code (Seneral Information) BAR ID code (Selection of Covertoad, operating state, module status, R\$232, CAN bus ⁵⁾ Diagnostics (Module numberor CAN bus data transfer ¹¹ R\$232 data transfer ¹² (See, using status LED and software Ves, using status LED and software Power consumption of X2X Link power supply ⁷¹ (Power consumption of X2X Link power supply interpretation of X2X Link power supply output (Power supply output power Power Power Power Supply Output Power Supply Output Power supply output Power supply Interpretation of X2X Link power	•	24 VDC power supply module for Compact-S CPLL X2X Link power supply and I/O
General Information	2	
BBR ID code Overload, operating state, module status, R5232, CAN bus ¹⁾ Diagnostics Module nurieror AND tost data transfer ¹¹ Power consumption of X2X Link power supply ²⁾ Power consumption of X2X Link power supply in X2X Link power supply unput current Public Consumption (Note) Power supply (No		TATOLOL, TA OF HE DUO
Slatus indicators Diagnostics		0xFR03
Diagnostics Modular numberor CAN bus data transfer 10 RS232 data transfer 10 RS232 data transfer 10 Power consumption of X2X Link power supply 10 O. 6 W Additional power dissipation caused by actuators (resistive) [W] Certifications CE. Yes. U.L. RS232 data transfer 20 Yes. U.L. RS232 data transfer 30 Yes. U.L. RS232 data transfer 30 Ves. U.L. RS232 data transfer 30 Ves. U.L. RS24		
Médule nunierror CAN Dus data transfer " Possusing status LED and software Yes, using status LED and software Power consumption of X2X Link power supply □ O. 6.6 W Additional power dissipation caused by actuators (resistive) [W] Certifications CE Yes UL CILISE 115267 UL CILISE 115267 CULUS 115267		Overload, operating state, module states, No202, Oray bas
CAN bus data transfer ¹ RS232 data transfer Pseu transfe		Vec. using status LED and software
RS232 data transfer Overtoad Yes, using status LED Overtoad Yes, using status LED and software Power consumption of X2X Link power supply ? Power consumption of X2X Link power supply ? Power consumption of X2X Link power supply ? Additional power dissipation caused by actuators (resistive) fifty Certifications CE Ves UL Certifications CE Ves UL Certifications ATEX Zone 2, II 3G Ex n A n Cl IA T5 Gc IP20, Ta (see X20 user's manual) FTZU 09 ATEX DOSX GDST-R PSS CPU X2X Link power supply input Input voltage QUI X2X Link power supply unput Input voltage Input current Insurance in the proper supply unput Input voltage Input current Ves CPU X2X Link power supply output Nominal output power ATEX Reverse polarity protection CPU X2X Link power supply output Nominal output power ATEX Reverse polarity protection Reverse polarity protection Yes CPU X2X Link power supply output Nominal output power ATEX Reverse polarity protection Reverse polarity protection Yes Redundant operation Yes Required line fuse Required line fuse Max. 10 A, slow-blow No Output I/O power supply Nominal output voltage Reverse polarity protection No Output I/O power supply Nominal output voltage Reverse polarity protection No Output I/O power supply Nominal output voltage Reverse polarity protection No Output I/O power supply Nominal output voltage Reverse polarity protection No Output I/O power supply Nominal output voltage Reverse polarity protection Required line fuse Max. 10 A, slow-blow No Output I/O power supply Nominal output voltage Reverse polarity protection Reverse polarity protection No Output I/O power supply Nominal output voltage Reverse polarity protection Reverse polarity protection No Output I/O power supply Nominal output voltage Reverse polarity protection Reverse polarity protection Reverse polarity protection No Output I/O power supply Nominal output voltag		
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Power consumption of XX Link power supply 70 Power consumption 72 Internal I/O Additional power dissipation caused by actuators (resistive) [W] Certifications CE Yes UL Industrial control equipment ATEX Zone 2, II 3G Ex n An CI II TS Ge IP20, Ta (see X20 user's manual) FTZÜ 09 ATEX 083X GOST-R Yes CPU / XX Link power supply input Input voltage Input voltage Input voltage Input power Parallel connection Redundant operation Yes CPU / XX Link power supply output Nominal output power Parallel connection Redundant operation Yes Redundant operation Yes Reverse polarity protection Redundant operation Yes Reverse polarity protection Reverse polarity protection Reverse polarity protection Reverse polarity protection Redundant operation Yes Redundant operation No Redundant operation Reverse polarity protection R		
Power consumption ® 1. Internal I/O 0.6 W Additional power dissipation caused by actuators (resistive) I/V) Centrifications CE Yes UL Clus E115267 Industrial control equipment ATEX Zone 2, II 36 Ex nA nC III AT 5 GC IP20, Ta (see X20 user's manual) FTZU 09 ATEX 0083X GOST-R PROVINCE SEED SEED SEED SEED SEED SEED SEED SE		
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(resistive) [W] Certifications		0.6 W
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UIL CILLUS E115267 Industrial control equipment		
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P20, Ta (see X20 user's manual) FTZÚ 09 ATEX 0083X		· ·
GOST-R CPU / X2X Link power supply input Input voltage	ATEX	IP20, Ta (see X20 user's manual)
CPU / X2X Link power supply input	GOST-R	
Input voltage 24 VDC -15% / +20% Input current		
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Interface IF1 Signal RS232 Variant Connection made using 12-pin terminal block X20TB12 Transfer rate Max. 115.2 kbit/s Interface IF3 1) Signal CAN bus Variant Connection made using 12-pin terminal block X20TB12 Transfer rate CAN bus Variant Connection made using 12-pin terminal block X20TB12 Transfer rate Max. 1 Mbit/s Electrical characteristics Electrical isolation CPU/X2X Link supply isolated from CPU/X2X Link power supply I/O supply not isolated from I/O power supply I/O supply not isolated from I/O power supply Operating conditions Horizontal Yes Vertical Yes Installation elevation above sea level		
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Variant Connection made using 12-pin terminal block X20TB12 Transfer rate Max. 1 Mbit/s Electrical characteristics Electrical isolation CPU/X2X Link supply isolated from CPU/X2X Link power supply I/O supply not isolated from I/O power supply Operating conditions Mounting orientation Horizontal Yes Vertical Yes Installation elevation above sea level		OAN!
Transfer rate Max. 1 Mbit/s Electrical characteristics Electrical isolation CPU/X2X Link supply isolated from CPU/X2X Link power supply I/O supply not isolated from I/O power supply Operating conditions Mounting orientation Horizontal Yes Vertical Yes Installation elevation above sea level	9	
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Mounting orientation Horizontal Yes Vertical Yes Installation elevation above sea level		
Horizontal Yes Vertical Yes Installation elevation above sea level		
Vertical Yes Installation elevation above sea level	flounting orientation	
Installation elevation above sea level	Horizontal	Yes
	Vertical	Yes
0 to 2000 m No limitations	nstallation elevation above sea level	
o to 2000 m	0 to 2000 m	No limitations
>2000 m Reduction of ambient temperature by 0.5°C per 100 m	>2000 m	Reduction of ambient temperature by 0.5°C per 100 m
Degree of protection per EN 60529 IP20	Degree of protection per EN 60529	
Environmental conditions	3	
Temperature		
Operation		
Horizontal mounting orientation -25 to 60°C	•	-25 to 60°C.
Vertical mounting orientation -25 to 50 °C	-	
Derating See section "Derating"	-	
-	-	<u> </u>
Storage -40 to 85°C Transport -40 to 85°C	Storago	

Table 2: X20PS9600 - Technical data

Model number	X20PS9600		
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 X20BB5x, X20BB6x or X20BB7x Compact-S CPU base separately		
Spacing	12.5 ^{+0.2} mm		

Table 2: X20PS9600 - Technical data

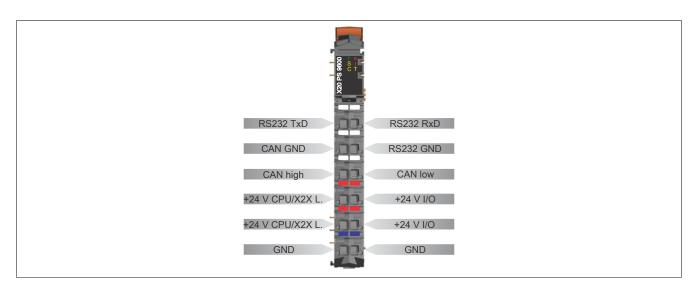
- 1) CAN bus only when used with bus module X20BB57, X20BB67 or X20BB77.
- 2) The specified values are maximum values. For examples of the exact calculation, see section "Mechanical and electrical configuration" of the X20 system user's manual.
- 3) In parallel operation, it is only permitted to assume 75% of the rated power. It is important to make sure that all power supplies operated in parallel are switched on and off at the same time.

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.

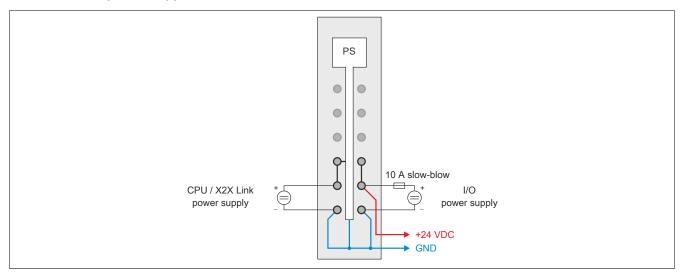
Figure	LED	Color	Status	Description
	r	Green	Off	No power to module
			Single flash	RESET mode
			Blinking	PREOPERATIONAL mode
T			On	RUN mode
	е	Red	Off	No power to module or everything OK
09 s i E			Double flash	LED indicates one of the following states:
96 ° †]				Power supply for CPU / X2X Link overloaded
ă, P				I/O power supply too low
X20 PS				Input voltage for CPU / X2X Link power supply too low
×	e + r	Solid red / Single green flash		Invalid firmware
	1	Red	Off	CPU / X2X Link power supply within valid range
			On	Power supply for CPU / X2X Link overloaded
	S	Yellow	Off	CPU not transmitting data via the RS232 interface
			On	CPU transmitting data via the RS232 interface
	С	Yellow	Off	CPU not transmitting data via the CAN bus interface
			On	CPU transmitting data via the CAN bus interface
	Т	Yellow	Off	Terminating resistor integrated in bus module X20BB57, X20BB67 or X20BB77
				switched off
			On	Terminating resistor integrated in bus module X20BB57, X20BB67 or X20BB77
				switched on

5 Pinout

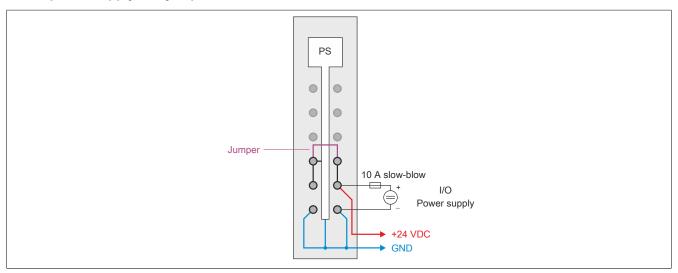


6 Connection examples

With 2 isolated power supplies



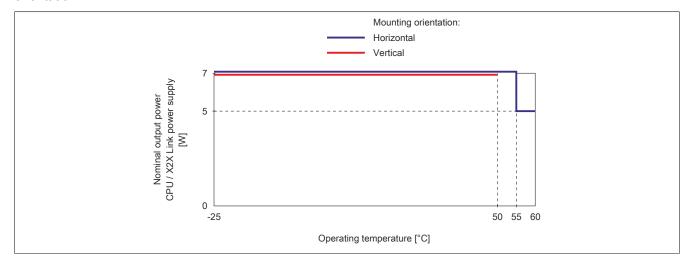
With 1 power supply and jumper



7 Derating

7.1 CPU / X2X Link power supply

The nominal output power for CPU / X2X Link power supply is 7 W. Derating may occur depending on the mounting orientation.



7.2 I/O power supply

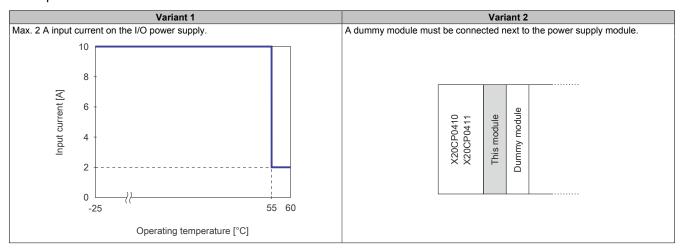
Information:

The specified maximum temperature and derating values are based on worst-case conditions. The CPU contains an internal temperature sensor that triggers a reset if 95°C is exceeded. Depending on the environmental conditions (artificial convection), maintaining the internal temperature at <90°C can prevent derating.

7.2.1 X20CP0410 and X20CP0411

Horizontal installation

Derating is not required in the temperature range -25 to 55°C. 1 of the following 2 derating variants must be applied at temperatures above 55°C:



Vertical installation

Derating is not required in the vertical mounting orientation.

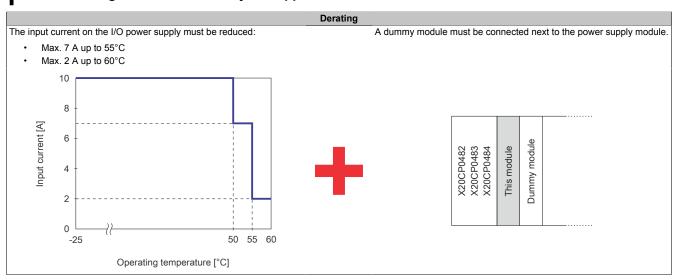
7.2.2 X20CP0482, X20CP0483 and X20CP0484

Horizontal installation

Derating is not required in the temperature range -25 to 50°C. The following 2 derating variants must be applied at temperatures above 50°C:

Information:

Both derating variants must always be applied!

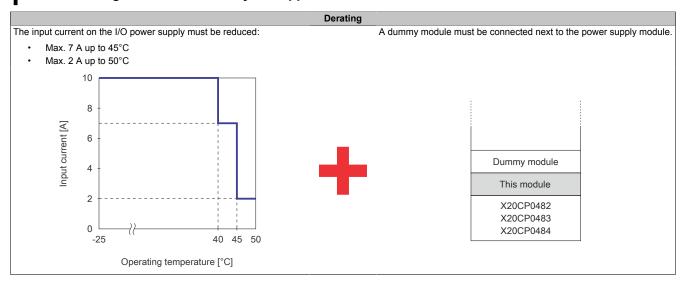


Vertical installation

Derating is not required in the temperature range -25 to 40°C. The following 2 derating variants must be applied at temperatures above 40°C:

Information:

Both derating variants must always be applied!



8 Register description

8.1 General data points

In addition to the registers listed in the register description, the module also has other more general data points. These registers are not specific to the module but contain general information such as serial number and hardware version.

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

8.2 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.

8.3 Status of the module

Name:

Module status

The following module power supply voltages are monitored in this register:

Bus supply current:

Bus supply current >2.3 A is displayed as a warning.

Bus supply voltage:

Bus supply voltage <4.7 V is displayed as a warning.

I/O supply voltage <20.4 V is displayed as a warning.

Data type	Values
USINT	See the bit structure.

Bit structure:

Bit	Name	Value	Information
0	StatusInput01	0	No error
		1	Warning if overcurrent (>2.3 A) or undervoltage (<4.7 V)
1	Reserved	0	
2	StatusInput02	0	I/O power supply above the warning limit of 20.4 V
		1	I/O power supply below the warning limit of 20.4 V
3 - x	Reserved	0	

8.4 Bus power supply current

Name:

SupplyCurrent

This register displays the bus supply current measured at a resolution of 0.1 A.

Function model	Data type
0 - Standard	USINT

8.5 Bus supply voltage

Name:

SupplyVoltage

This register displays the bus supply voltage measured at a resolution of 0.1 V.

Function model	Data type
0 - Standard	USINT

8.6 Minimum cycle time

The minimum cycle time defines 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	

8.7 Minimum I/O update time

The minimum I/O update time defines how far the bus cycle can be reduced while still allowing an I/O update to take place in each cycle.

	Minimum I/O update time
ſ	2 ms