

X20DO4529

1 General information

The module is equipped with 4 relay outputs.

- 4 digital outputs
- Relay module for 115 VAC
- 4 change over contacts
- Single-channel isolated outputs

Danger!

Risk of electric shock!

The terminal block must only be allowed to conduct voltage when it is inserted. It must not under any circumstances be removed or inserted when voltage is applied or have voltage applied to it when it is removed.

Danger!

The voltage classes on the terminal block must not be mixed! Only operation at mains voltage (e.g. 115 VAC) OR safety extra-low voltage (e.g. 24 VDC SELV) is permitted.

2 Order data


Model number	Short description	Figure
	Digital outputs	
X20DO4529	X20 digital output module, 4 relays, changeover contacts, 115 VAC / 0.5 A, 24 VDC / 1 A	
	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: X20DO4529 - Order data

3 Technical data

Model number	X20DO4529
Short description	
I/O module	4 digital outputs 30 VDC / 115 VAC, outputs are single-channel isolated
General information	
B&R ID code	0x20D9
Status indicators	I/O function per channel, operating state, module status
Diagnostics	
Module run/error	Yes, using status LED and software
Outputs	Yes, using status LED
Power consumption	
Bus	0.8 W
Internal I/O	-
Additional power dissipation caused by actuators (resistive) [W] ¹⁾	+0.3
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) FTZÜ 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
Digital outputs	
Variant	Relay / Changeover contact Channels are single-channel isolated
Nominal voltage	30 VDC / 115 VAC
Max. voltage	125 VAC
Switching voltage	Max. 110 VDC / 125 VAC
Rated frequency	DC / 45 to 63 Hz
Nominal output current	1 A at 30 VDC / 0.5 A at 115 VAC
Total nominal current	4 A at 30 VDC / 2 A at 115 VAC
Actuator power supply	External
Inrush current	Max. 2 A (per channel)
Contact resistance	75 mΩ at 6 VDC / 1A
Switching delay	
0 → 1	≤4 ms
1 → 0	≤4 ms
Isolation voltages	
Channel - Bus	Tested at 1500 VAC
Channel - Channel	Tested at 1000 VAC
Service life	
Electrical ²⁾	Min. 100 x 10 ³ ops.
Mechanical	Min. 50 x 10 ⁶ ops. (3 Hz)
Switching capacity	
Minimum	0.01 mA / 10 mV DC
Maximum	30 W / 62.5 VA
Protective circuit	
Internal	None
External	
AC	RC combination or VDR
DC	Inverse diode, RC combination or VDR
Electrical properties	
Electrical isolation	Channel isolated from channel and bus
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

Table 2: X20DO4529 - Technical data


Model number	X20DO4529
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
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: X20DO4529 - Technical data

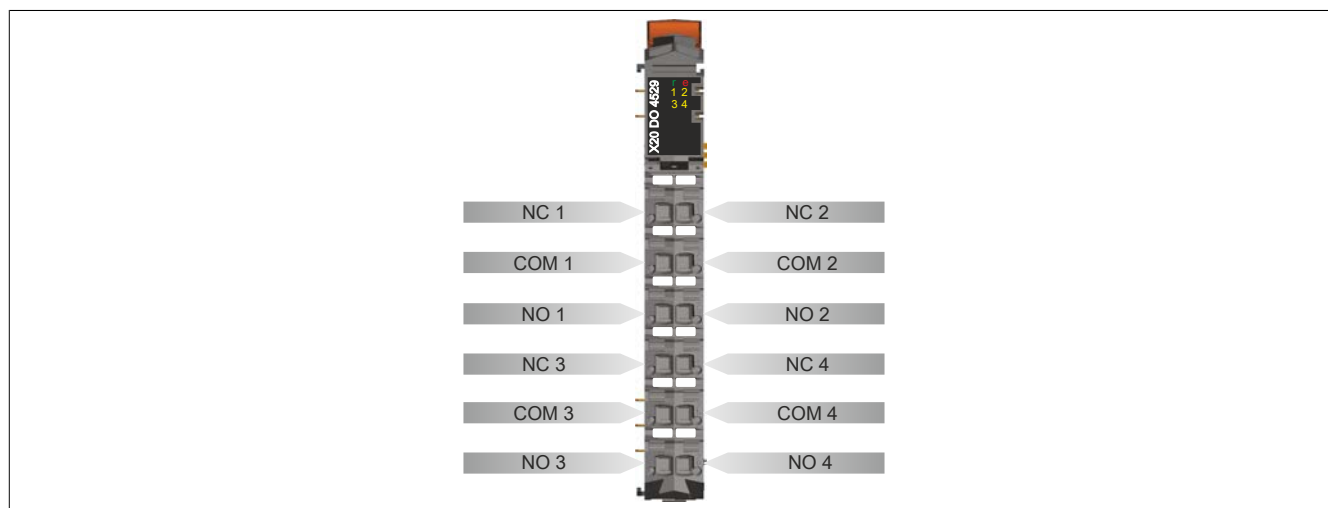
- 1) Number of outputs x Contact resistance x Nominal output current². For a calculation example, see section "Mechanical and electrical configuration" of the X20 system user's manual.
- 2) With a resistive load. See also section "Electrical service life"

4 Status LEDs

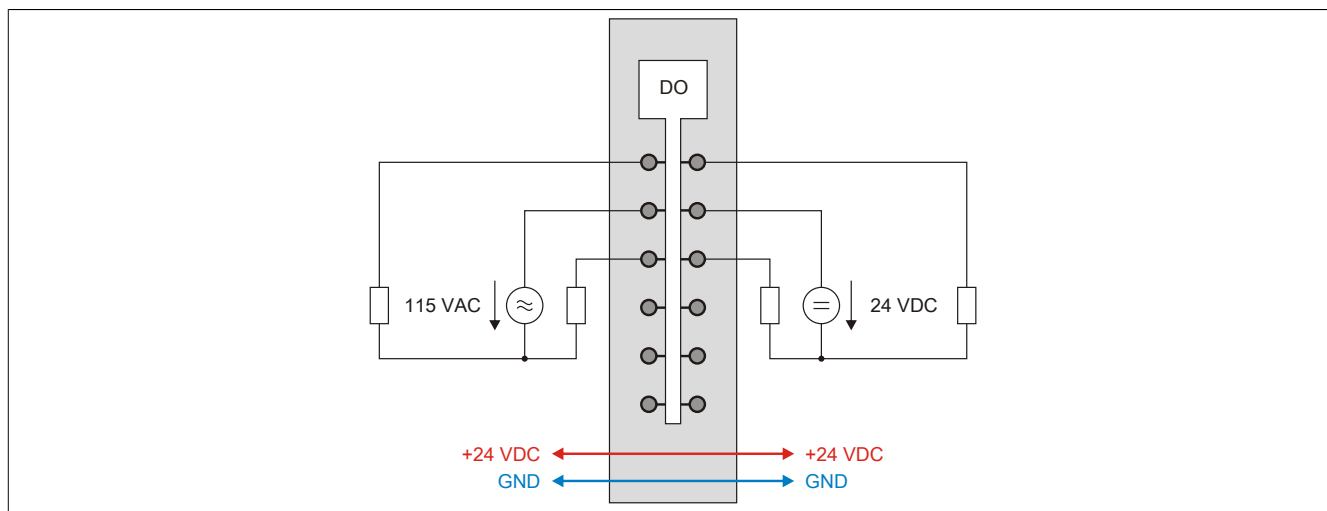
For a description of the various operating modes, see section "Additional information - Diagnostic LEDs" of the X20 system user's manual.

Figure	LED	Color	Status	Description
	r	Green	Off	Module supply not connected
			Single flash	RESET mode
			Blinking	PREOPERATIONAL mode
			On	RUN mode
	e	Red	Off	Module supply not connected or everything OK
			On	Error or reset status
	e + r	Red on / Green single flash		Invalid firmware
	1 - 4	Orange		Output status of the corresponding digital output

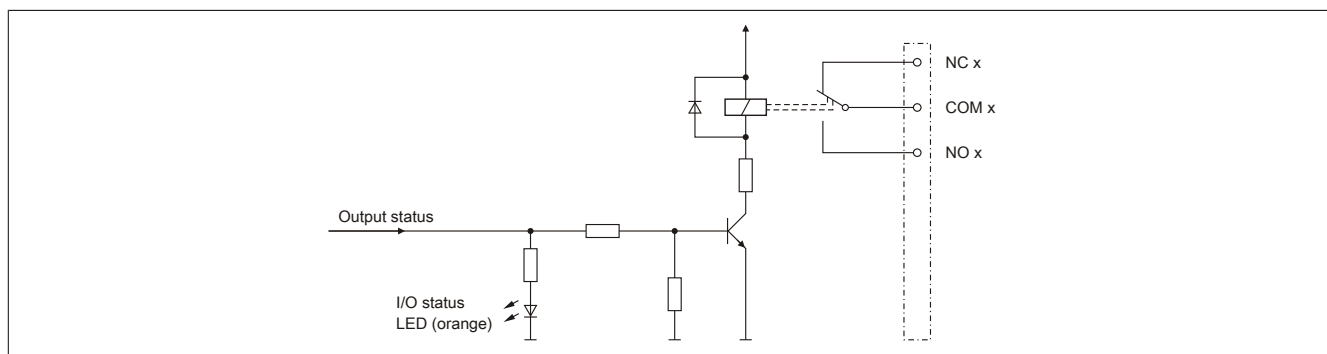
5 Pinout



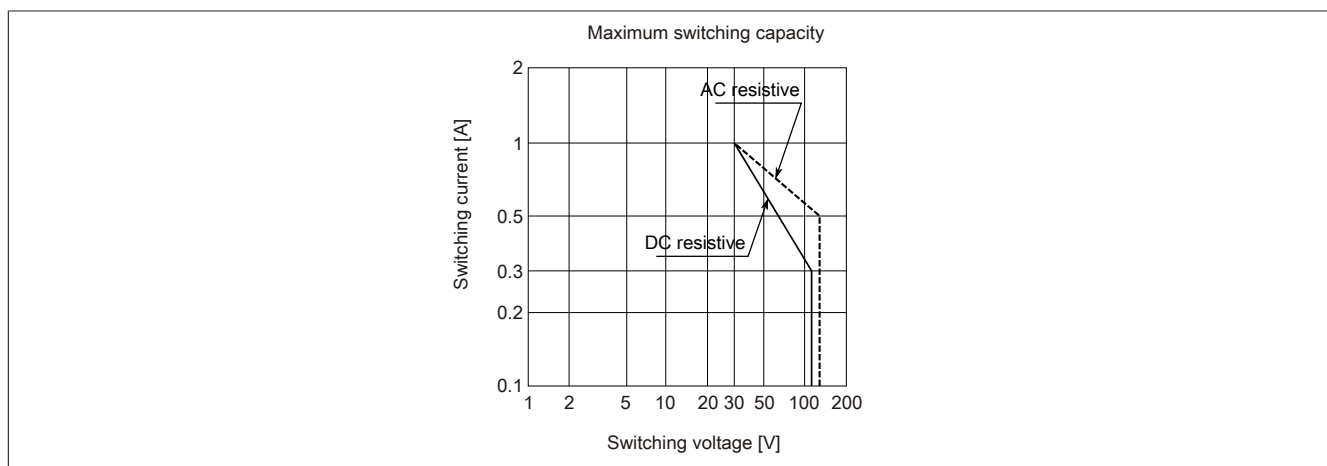
6 Connection example



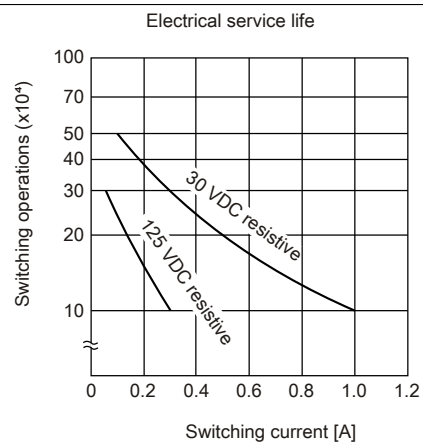
7 Output circuit diagram



8 Maximum switching power



9 Electrical service life



10 Register description

10.1 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.

10.2 Function model 0 - Standard

Register	Fixed offset	Name	Data type	Read		Write	
				Cyclic	Acyclic	Cyclic	Acyclic
2	0	DigitalOutput	USINT			•	
		DigitalOutput01	Bit 0				
					
		DigitalOutput04	Bit 3				

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.

10.3 Function model 254 - Bus controller

Register	Offset ¹⁾	Name	Data type	Read		Write	
				Cyclic	Acyclic	Cyclic	Acyclic
2	0	Switching state of digital outputs 1 to 4	USINT			•	
		DigitalOutput01	Bit 0				
					
		DigitalOutput04	Bit 3				

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

10.3.1 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).

10.3.2 CAN I/O bus controller

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

10.4 Digital outputs

The output status is transferred to the output channels with a fixed offset (<60 µs) based on the network cycle (SyncOut).

10.4.1 Switching state of digital outputs 1 to 4

Name:

DigitalOutput

DigitalOutput01 to DigitalOutput04

This register is used to store the switching state of digital outputs 1 to 4.

Only function model 0 - Standard:

Setting "Packed outputs" in the Automation Studio I/O configuration determines whether all bits of this register should be applied individually as data points in the Automation Studio I/O assignment ("DigitalOutput01" to "DigitalOutput0x") or whether this register should be displayed as a single USINT data point ("DigitalOutput").

Data type	Values	Information
USINT	0 to 15	Packed outputs = On
	See the bit structure.	Packed outputs = Off or function model ≠ 0 - Standard.

Bit structure:

Bit	Description	Value	Information
0	DigitalOutput01	0	Digital output 01 reset
		1	Digital output 01 set
...
3	DigitalOutput04	0	Digital output 04 reset
		1	Digital output 04 set

10.5 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 µs

10.6 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
Equal to the minimum cycle time