

Binary output and supervision 520CSD01

Connections and settings

Application, characteristics and technical data have to be taken from the hardware data sheet:

[520CSD01 Data sheet](#) 1KGT 150 922

Operation

The command output and supervision module 520CSD01 can be used for the control of 4 binary process commands using relay contacts. In addition it can be used if the output circuit of an object command has to be checked before the actual command is given. The 520CSD01 board executes a (1 out of n) check. It checks if only one interposing relay will be activated in the output circuit. Therefore all interposing relays connected to the check circuit must have the same resistance value.

Processing functions

The module 520CSD01 is able to process the following types of signals:

- Single or double commands (SCO or DCO) with 1 pole output without (1 out of n) check
- Single or double commands (SCO or DCO) with 1.5 pole output with (1 out of n) check
- Regulation step command (RCO), 1 pole
- Bitstring output, 1 Bit (BSO1)

The micro-controller on the module processes all time critical tasks of the parameterized processing functions. Moreover it carries out the interactive communication with the RTU I/O bus. All configuration data and processing parameters are loaded by the communication unit via the RTU I/O bus.

In connection with an I/O adapter (e. g. 520ADD01) or the RTU520 communication unit the module is interfaced to the RTU520 I/O bus.


The binary output unit can execute the following processing functions on the individual signal types:

- Control of the command output duration

Command monitoring functions:

- monitoring of the output bit patterns by reading back the output state
- switching voltage monitoring (24 V DC coil voltage) before and during output only together with (1 out of n) control module
- command output duration monitoring

During initialization and operation the module carries out a number of tests. If a fault occurs it is reported to the communication unit. All fault conditions impairing the function of the module are displayed as common fault signal by a red LED. A failure of the module is detected by the communication unit.

 Parameter name	Default	Parameter location
Command pulse length	1 sec	SCO, DCO, RCO - PDP parameters

value range: 0.1... 25.5 sec

Output monitoring and supervision

The sequence of a (1 out of n) check and the following pulse output is as follows. The 520CSD01 board receives a request from the CMU to do a (1 out of n) check and force the output.

Then the 520CSD01 will do the following steps:

- Check that no output is active.
- Adjustment of the measuring logic with the reference resistor.
- Activate check circuit (activate relay "CHECK" R09)
- Measuring of the resistance of the selected interposing relay (outside the module).
- Compare the measured resistance value against the parameterised upper and lower limit (see also RTUtil parameter).
- Check the relay voltage X3 (24 VDC) is available.
- Stop all other steps if the result is negative (negative acknowledgement to CMU).
- Changeover from "CHECK" to "SWITCH" position.
- Activate output pulse by switching relay the "GO" relay.
- Inform CMU that output is active.
- Monitoring that X3 is present during output.
- Stop output after the pulse duration time has elapsed by releasing the "GO" relay (see also RTUtil parameter).
- Stop output pulse if a failure is detected during output (Communication time out on the I/O bus)
- Switch "CHECK" relays off .
- Inform CMU that the output is finished.

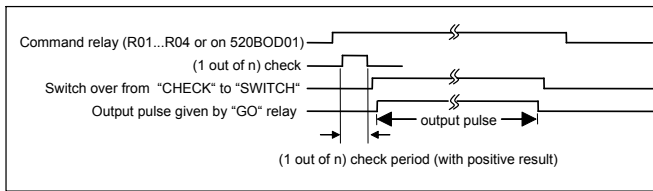


Figure 1: timing diagram (1 out of n) check

Parameter name	Default	Parameter location
Check circuit number	01	CSC - General
value range: 01... 32		
Individual number of the CSC within one RTU		
Low limit resistance	100 Ohm	CSC - General
value range: 100... 10000 Ohm		
High limit resistance	10000 Ohm	CSC - General
value range: 100... 10000 Ohm		

Settings

The device has no switches or jumpers.

Signaling

LED ERR

The module monitors and checks the own functionality as well as the dialog via the I/O bus. Detected errors are indicated by the red LED ERR on the front plate and transmitted via the I/O bus to the communication unit (CMU). Additional diagnostic messages are available using the Web-Server on the CMU.

The LED ERR indicates module errors or I/O bus errors:

- module runs initialization procedure
- module is performing a cold or warm start
- module has detected a memory error (RAM or Flash)
- micro-controller is faulty
- no dialog via the I/O bus for at least 2 minutes. The module is not polled by the CMU.

LED BO1... BO4

The 520CSD01 has 4 yellow LED's on the front plate indicating the state of the outputs.

The LEDs are ON for the time an output is active (pulse or persistent).

LED 'PER'

The red LED indicates that the 24V input (U_E) for the output relays are missing.

LED 'PGO'

Die grüne LED zeigt an, dass die Prozess-Spannung (U_P) eingeschaltet ist und die Prozessausgabe erfolgt.

Connections

I/O bus connection

The module is connected to the RTU I/O bus via the connectors X1 and X2.

ADVICE

To prevent damage on the connected modules de-energize the system before plugging or unplugging the I/O bus connectors.

ADVICE

To prevent unintended disconnection of the I/O bus connectors end stops (e. g. BAM3 1SNK900001R0000) shall be used at both ends of the I/O assembly.

Power supply U_E

The electronic circuits on the process side are supplied by an external 24 V DC voltage input U_E . The voltage input U_E is connected at.

ADVICE

For the operation of the module addition 24 V DC (U_E) is required (e. g. from 560PSU40/41). This voltage U_E has to be supplied from external and wired to the U_E connector

Process Connection

The command output will be connected to the screw terminals X4b.


The process voltage input (U_{Pin}) and the process voltage output (U_{Pout}) will be connected to the screw terminals X4a (see Fig. 3).

The 1 pole connection is described in Fig. 9.

The 1.5 pole connection with (1 out of n) check is described in Fig. 8.

Safety instructions

Dangerous process voltages

 DANGER
Hazardous voltage.
Contact with live circuits will cause electric shock or burn.
Verify that all terminals feeding dangerous contact voltages (supply voltage, input or output channels) is in secure OFF state before connecting or withdrawing the terminals.

Process voltage > 60 V DC

ADVICE
For process voltages > 60 V DC it is mandatory to use a galvanic isolated power supply (OCII e.g. 560PSU40). Connecting with other SELV circuits is not allowed.

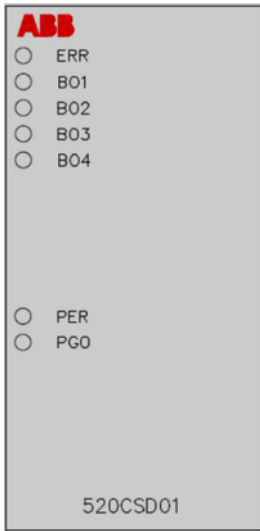


Figure 2: 520CSD01 Front plate

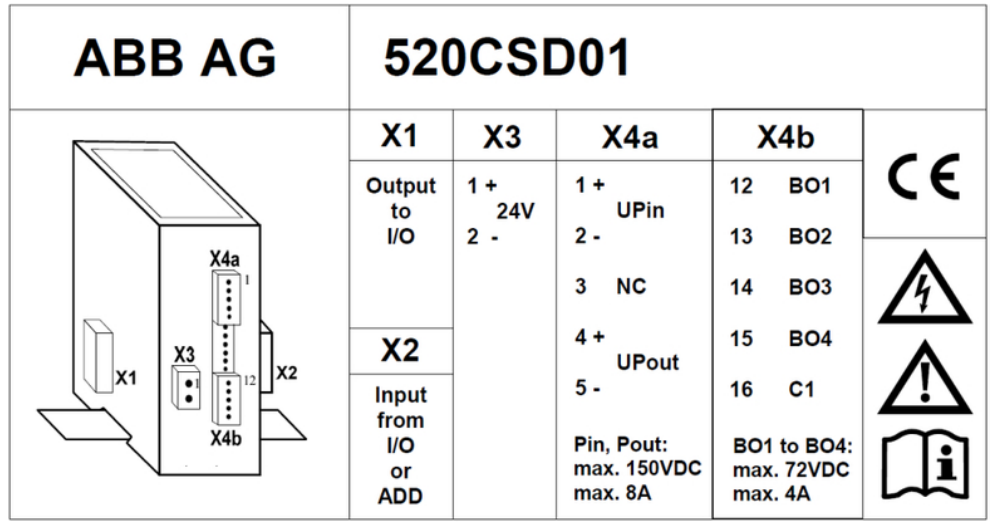


Figure 3: Position of the connections and settings elements

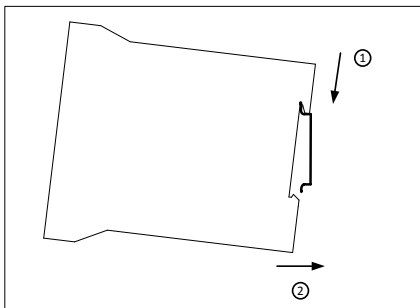


Figure 4: RTU520 DIN rail mounting - step 1

- 1 Insert upper edge into DIN rail and push downwards
- 2 Push lower edge towards DIN rail and snap in the module

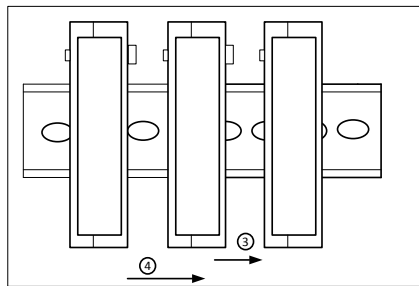


Figure 5: RTU520 DIN rail mounting - step 2

- 3 + 4: Shift one module connector into the other starting from right to left

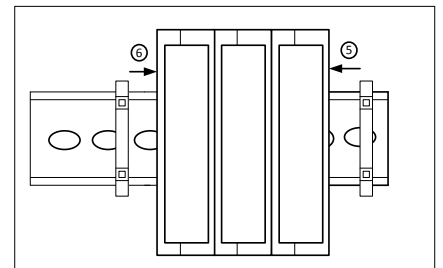


Figure 6: RTU520 DIN rail mounting - step 3

- 5 + 6: Mount end stops at the left and right side

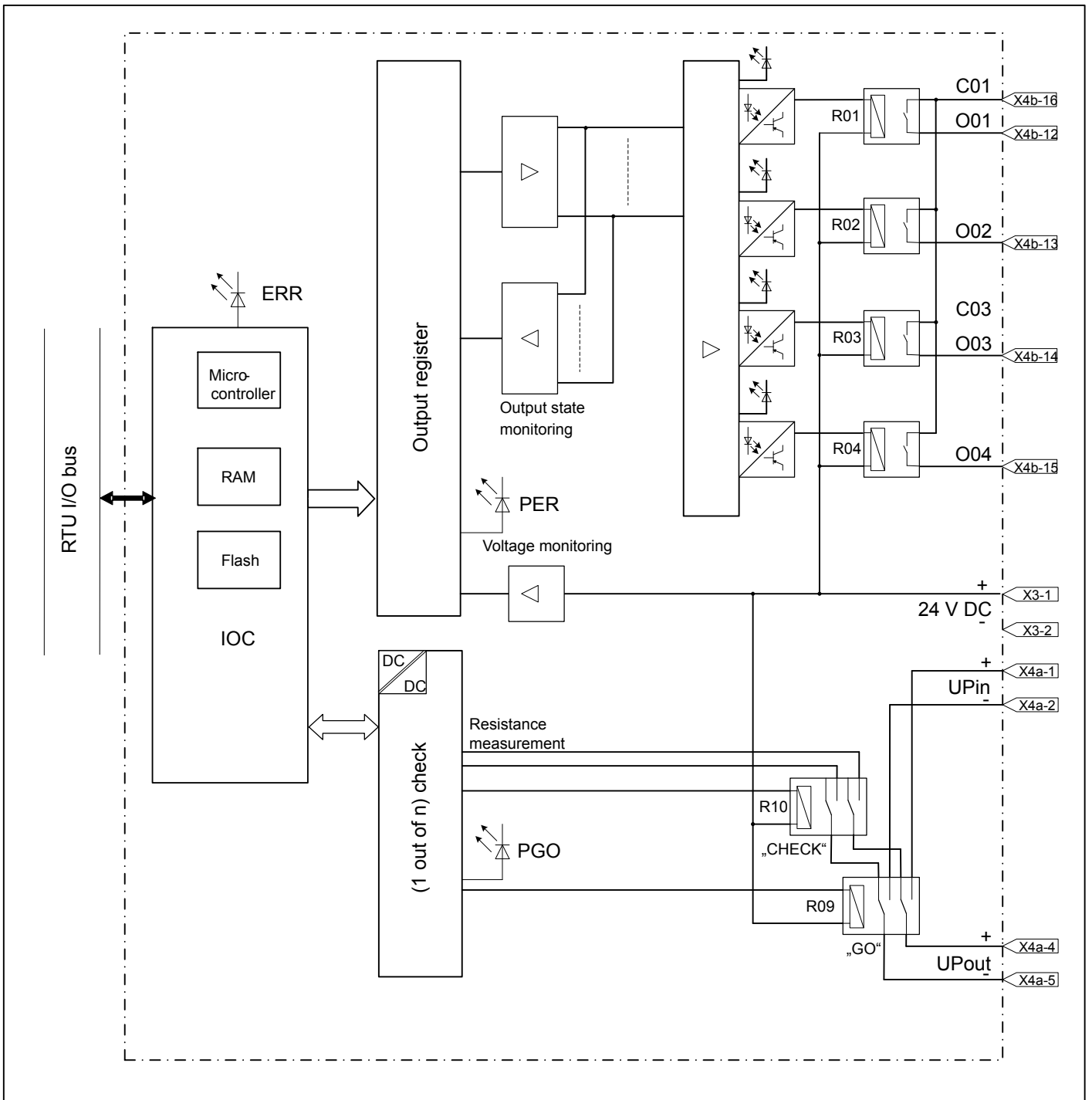


Figure 7: 520CSD01 connection diagram

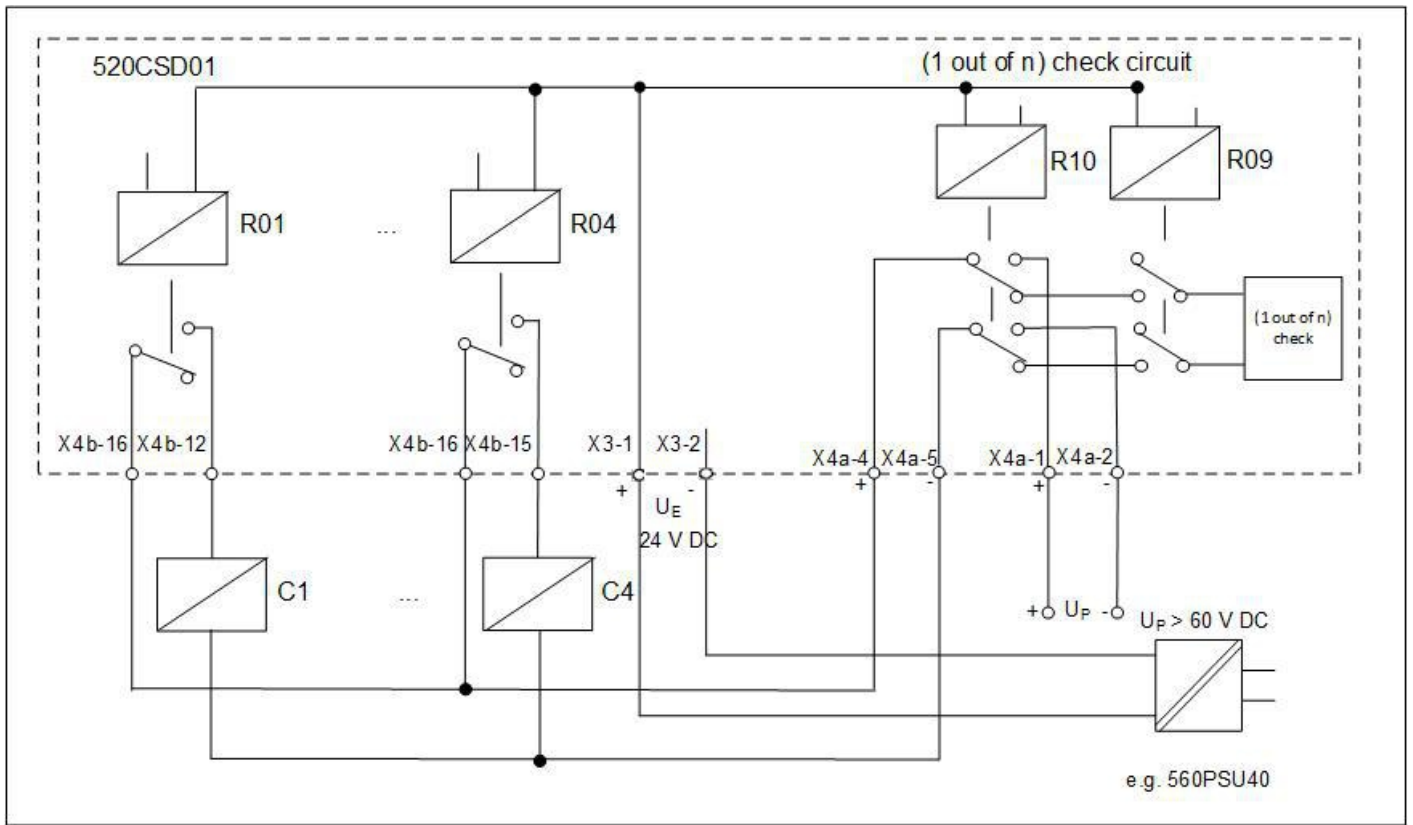


Figure 8: 1.5 pole connection with (1 out of n) control

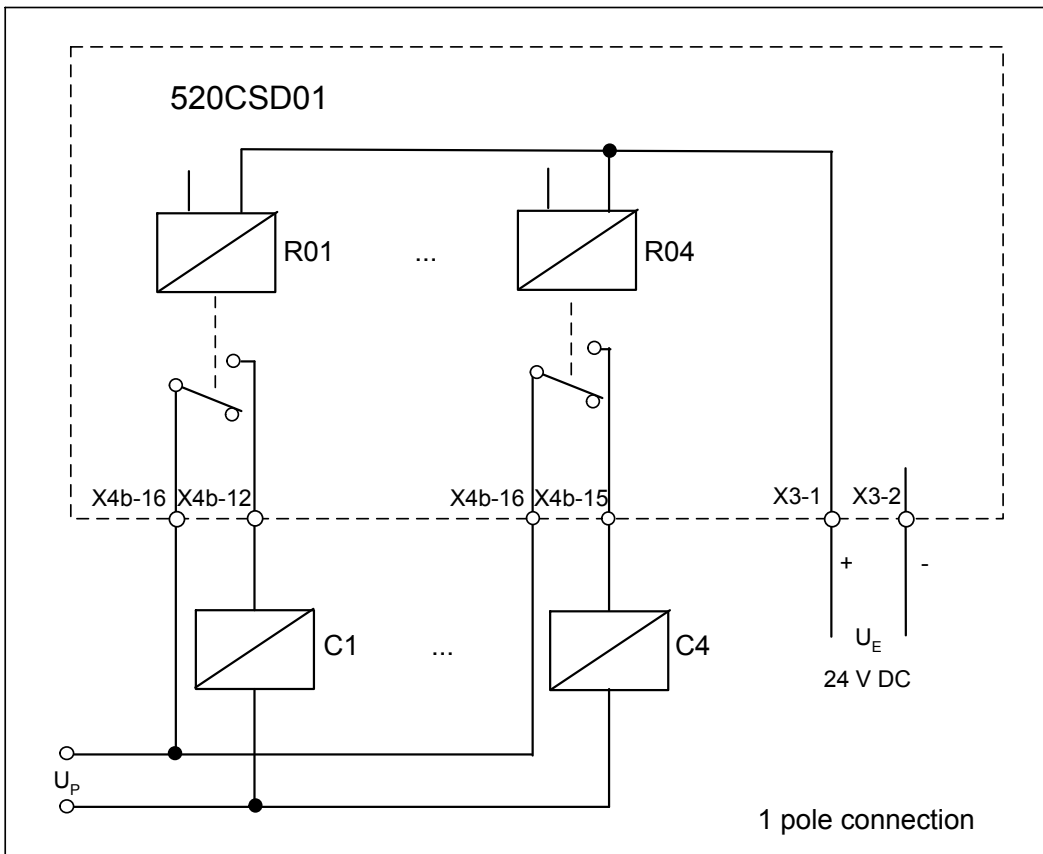


Figure 9: 1 pole connection without (1 out of n) control

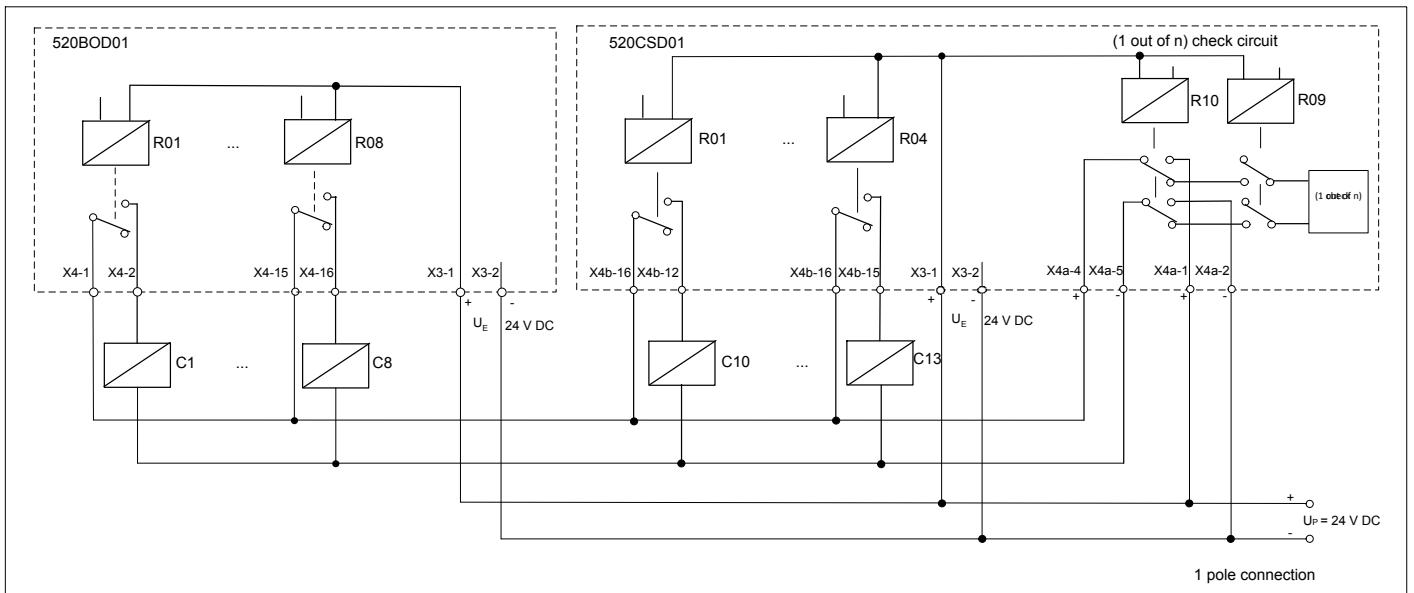


Figure 10: connection with (1 out of n) control and 520BOD01 ($U_P = U_E = 24 \text{ V DC}$)



Note:

The specifications, data, design or other information contained in this document (the "Brochure") - together: the "Information" - shall only be for information purposes and shall in no respect be binding. The Brochure does not claim to be exhaustive. Technical data in the Information are only approximate figures. We reserve the right at any time to make technical changes or modify the contents of this document without prior notice. The user shall be solely responsible for the use of any application example or information described within this document. The described examples and solutions are examples only and do not represent any comprehensive or complete solution. The user shall determine at its sole discretion, or as the case may be, customize, program or add value to the ABB products including software by creating solutions for the end customer and to assess whether and to what extent the products are suitable and need to be adjusted or customized.

This product is designed to be connected to and to communicate information and data via a network interface. It is the users sole responsibility to provide and continuously ensure a secure connection between the product and users or end customers network or any other network (as the case may be). The user shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information. ABB AG is not liable for any damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

ABB AG shall be under no warranty whatsoever whether express or implied and assumes no responsibility for the information contained in this document or for any errors that may appear in this document. ABB AG's liability under or in connection with this Brochure or the files included within the Brochure, irrespective of the legal ground towards any person or entity, to which the Brochure has been made available, in view of any damages including costs or losses shall be excluded. In particular ABB AG shall in no event be liable for any indirect, consequential or special damages, such as – but not limited to – loss of profit, loss of production, loss of revenue, loss of data, loss of use, loss of earnings, cost of capital or cost connected with an interruption of business or operation, third party claims. The exclusion of liability shall not apply in the case of intention or gross negligence. The present declaration shall be governed by and construed in accordance with the laws of Switzerland under exclusion of its conflict of laws rules and of the Vienna Convention on the International Sale of Goods (CISG).

ABB AG reserves all rights in particular copyrights and other intellectual property rights. Any reproduction, disclosure to third parties or utilization of its contents - in whole or in part - is not permitted without the prior written consent of ABB AG.

© Copyright ABB 2016

All rights reserved