Switching the 3VA2 ON or OFF via communication networks using EFB300 and MO320

Goal:

The SEO520 is equipped with two spring packages (for very fast switch actions) and a communication interface. This interface enables the SEO520 to switch the breaker without any additional external wiring, it just needs the power supply.

Another option to remotely switch the 3VA2 is to use a combination of the standard motor operator MO320 and a digital output module on a network (like ET200S on PROFIBUS). Disadvantage is always the missing logical link between COMx00 and this additional module. Suggested proposal: The external function box EFB300 offers 4 digital outputs. Two of them can be used to operate the MO320 when they are connected as shown in the drawing attached in this FAQ.

Precondition:

- 3VA2 with ETU 5 or 8-series and firmware release 4.2 or higher (check with product versions Exy noted at the front of the ETU, depending on I_n and type of ETU)

	I_n			
	bis 250A	400-500A	630A	1000A
ETU550	E07	E04	E03	E04
ETU560	E07	E04	E03	E04
ETU550M	E03	E03	E03	E03
ETU850	E07	E04	E03	E04
ETU860	E07	E04	E03	E04
ETU860M	E03	E03	E03	E03

- COM060 with firmware release 4.2 or higher (download available FW-Update from SIOS)
- COM800/100 with firmware 4.2 or higher (download available FW-Update from SIOS)
- EFB300
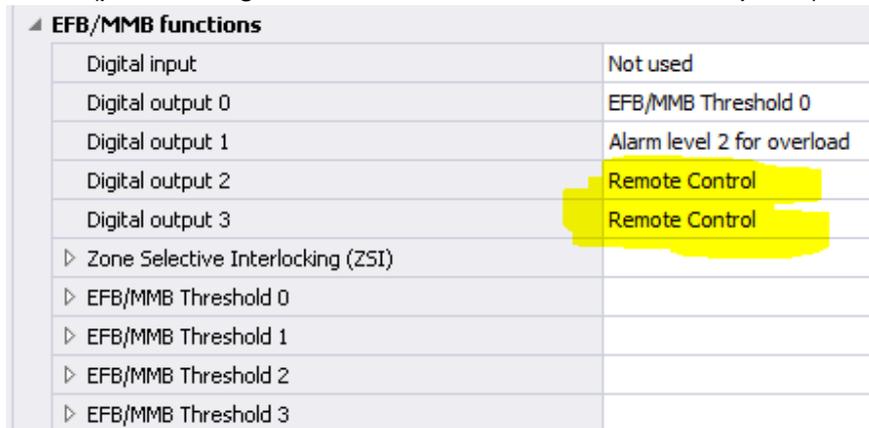- MO320 (DC24 … 60V, AC110 … 230V or DC110 … 250V)

Drawing:
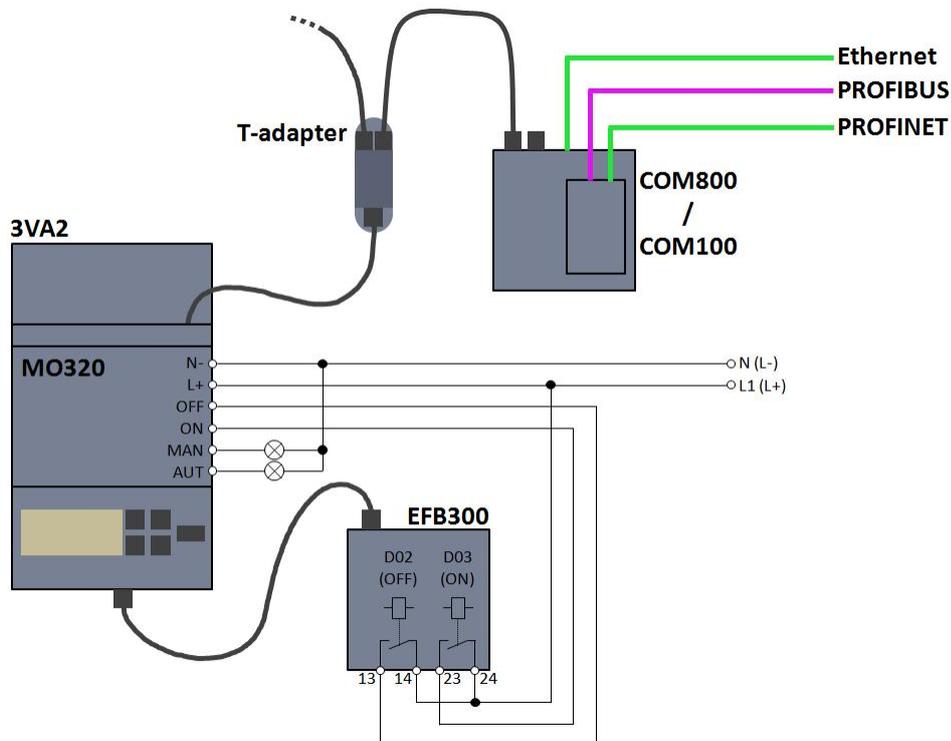
Description:

The outputs DO2 and DO3 of the EFB300 are used to control the inputs of the MO320; only the relay outputs can be used. The parts for MAN and AUT in the drawing are optional.
To switch the breaker via MO320 the outputs must be controlled like shown below:

DO2	DO3	action
0	0	nothing
0	1	Switches on
1	0	Switches off
1	1	n.d.

The settings of the EFB300 must be configured in order to use the outputs to control the breaker. Please configure the digital output 2 and 3 as shown in the screenshot from powerconfig 3.11 below (powerconfig is available for download in the SIOS portal).

Control the outputs via Ethernet (Modbus TCP)

To control the outputs, the command 0x06 in Modbus Register EFB_MMB_OUT_REMOTE (0x9CCB) has to be used.
Bit 00: DO0 set (0x01)
Bit 01: DO0 reset (0x02)
Bit 02: DO1 set (0x04)
Bit 03: DO1 reset (0x08)
Bit 04: DO2 set (0x10)   → switches OFF
Bit 05: DO2 reset (0x20)   → reset OFF command
Bit 06: DO3 set (0x40)   → switches ON
Bit 07: DO3 reset (0x80)   → reset ON command
Bit 08 – 15 reserved
Note: As know, for Modbus, the address has to be decreased by 1.
Example: EFB_MMB_OUT_REMOTE turns from 0x9CCB to 0x9CC**A**

Control the outputs via PROFIBUS or PROFINET
The intended bits to control the breaker in the cyclic channel can only be used with SEO520.

To control the EFB300 outputs an acyclic service has to be used.
The content of a data block must be written using data set DS48. This is done in the S7 with the following call.
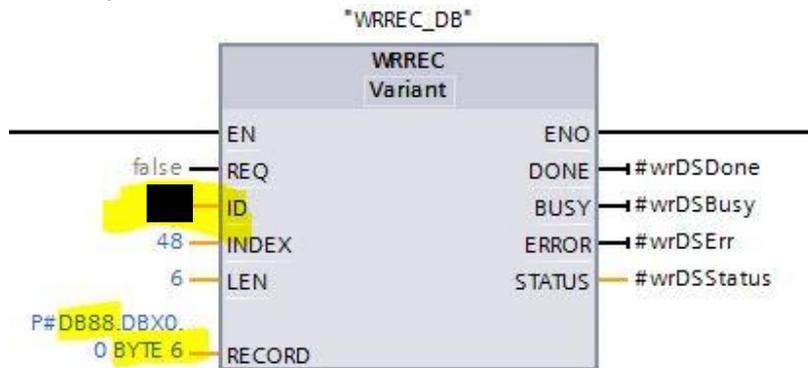
This example shows how the call works. The content of data block DB88 with the length of 6 byte is written to the PROFIBUS/PROFINET of COM800/COM100 module using DS48 and the corresponding ID (identification number given in hardware config).

The content of DB88 (where 88 is just an example) must be:

		Name	Datentyp
DB88			
1		Static	
2		REG_ADDR	Word
3		BREAKER_ADDR	Byte
4		REG_CNT	Byte
5		CONTROL_VALUE	Word

Explanation:
REG_ADDR must be filled with 0x9CCA (Modbus Register)
BREAKER_ADDR is the address of the breaker on the 3VA-line. Only addresses 1 to 8 are allowed
REG_CNT must be filled with 0x01
CONTROL_VALUE contains the data which is going to be sent to EFB_MMB_OUT_REMOTE

It is also possible to control multiple breakers at the same time with just one acyclic telegram. To do so, the DB88 has to be extended with the exact same principles for every single breaker and the WRREC has to be adjusted.