 ABB Schweiz AG CMC Low Voltage Products 8201 Schaffhausen	Technical Manual Functional Description for S800-RSU-H / S800-RSU-U 2CCC413022M0203	August 2010	Page: 1 / 11

Please use also the assembly instruction [S800-RSU-H Remote Switching Unit for S800 2CCC413020M0202](#)

SUBJECT TO ALTERATIONS

Index

1	Functionality	2
1.1	Operation and control	2
1.2	Environment	2
1.3	Functional Requirement	3
2	External Connections	4
2.1	Operating voltage	4
2.2	Inputs	4
2.3	Outputs	5
2.4	Circuit times	5
2.5	Pin assignment	6
2.5.1	In- and Output Allocation	6
2.5.2	Simplified Diagram of the control	7
3	Timing diagrams	8
3.1	OFF – ON / ON – OFF / ON – ON / OFF - OFF	8
3.2	Power up if contacts are open resp. closed	9
3.3	ON – Trip / Trip – OFF / Trip – ON / Power up - Trip	10

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1 Functionality

1.1 Operation and control

The objective is to move the manual operating lever of the S800 MCBs (miniature circuit breakers) in a quick, reliable and energy-conscious way using a trapezoidal spindle and a carriage that is connected by a nut. The controller interprets the two “ON” and “OFF” command inputs. The controller executes a switching command as soon as a positive edge is detected at one of the two command inputs and the signal subsequently remains stable for at least 10 ms. As soon as the normal position has been reached, the relevant feedback signal is activated. As soon as the normal position has been reached and the feedback signal has been enabled, a new positioning command can be triggered. If the MCB is moved to the “TRIP” position because of overload, short circuit or manual activation, this is registered and indicated by activation of the “TRIP” output. An “ON” or “OFF” switching command can be triggered directly from the “TRIP” position. When a trip movement is detected, the motor is moved in the “OFF” direction for reliable contact opening and to ensure that subsequent manual activation using the lever of the MCB is reliably prevented. No more than one output is active during normal operation. When the drive is in motion, no output is active. After executing the positioning command, the motor is deenergised so that the spindle can be rotated so that the external safety lock can snap in, or to make manual operation possible using a hand wheel or a screwdriver. If the spindle is rotated more than one turn from the current normal position, all outputs are enabled. Initialization does not take place until a switching command is detected. If necessary, the switching command is executed immediately after initialization. All outputs are active until initialization starts.

1.2 Environment

Operating Voltage	+24 VDC +10 % / -15 %
Current Consumption	2,5 A for 4-pole S800 HPMCBs switching <i>ABB recommends:</i> <i>ABB switching power supply CP-S 24/5.0</i>
Load Peaks	8A for 0.1ms at power up 3.5A for 250ms during operation
Standby Current	< 50 mA
Ambient operation temperature	
Coldness	Up to -25 °C according to IEC 60068-2-1:2007
Dry heat	Up to +70 °C according to IEC 60068-2-2:2007
Damp heat	Up to +55°C by 95% rel. hum. acc. to IEC 60068-2-30:2005
Relative humidity	< 85 % at 45 °C (No bedewing)
Dimensions	
Depth	134,2 mm (5,28 in)
Height	100,6 mm (3,96 in)
Unit width	54 mm (2,13 in)
Contact trip indicator	Yes (ON – TRIP – OFF)
Trip position of actuating lever	Yes
Mechanical Fixing	Field mountable and wireable on High Performance MCBs S802..., S803..., S804 via Allen head screw size 3 and mounting bracket. Required tightening torque 3 Nm
Maximum Cable length	Power supply: up to 10m with 0.5 mm ² (32 feet 9.7 in with AWG20) Control supply: up to 10m with 0.5 mm ² (32 feet 9.7 in with AWG20)
Guidelines	RoHS

Reference standards	IEC 60947-2 Annex N - IEC 61000-4-2 - IEC 61000-4-3 - IEC 61000-4-4 - IEC 61000-4-5 - IEC 61000-4-6 - IEC 61000-4-11 IEC / CISPR 22 EN 61000-6-2 - IEC 61000-4-8 EN 61000-6-4 - IEC / CISPR 16-2-3 - IEC / CISPR 22 EN 61000-4-16 (from 20kHz) UL489 sections 14, 16 60068-2-1 60068-2-2 60068-2-30
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1.3 Functional Requirement

Maintenance:	Maintenance free during lifetime
Maximum number of switching cycles:	10.000 mechanical switching operations if mounted on S800 High Performance MCB
Manual switch OFF:	If manual use is detected, inputs will be deactivated for 10 seconds. Outputs remain unchanged. If spindle is being turned more than once, all outputs become active until next command is accepted. Intuitive manual switch-off via lever is possible.
Manual switch ON:	If manual use is detected, inputs will be deactivated for 10 seconds. Outputs remain unchanged. If spindle is being turned more than once, all outputs become active until next command is accepted. Intuitive manual switch-on via lever is not possible.
Mechanical lock:	Mechanical fixation by secured lock slider blocking the actuation spindle independent of its position.

2 External Connections

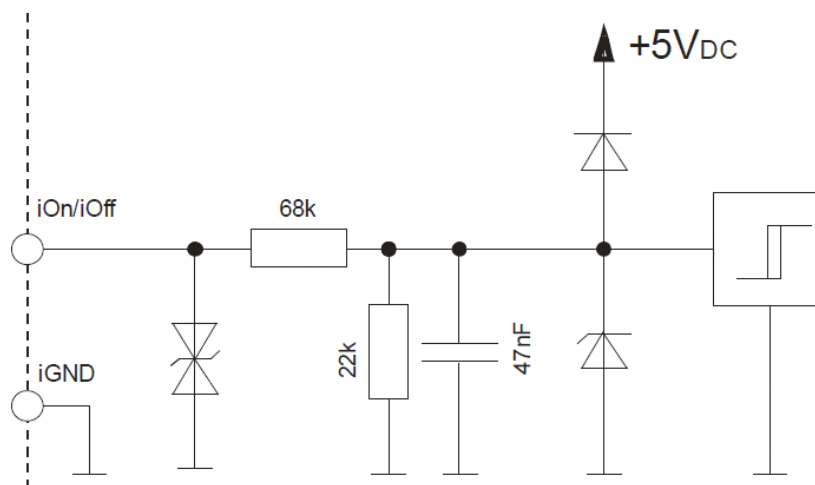
2.1 Operating voltage

We recommend the use of a normal commercial power supply with 24 V nominal voltage and nominal current carrying capacity of 5 A as the power supply for the 4-pole variant of the MCB. The power supply must be able to cover short spikes above the nominal current carrying capacity without the input voltage at the controller dropping below 20 VDC. A power supply with a lower nominal current carrying capacity can be used for the 2 and 3 pole MCB variants. The maximum current is only needed during the switch-on movement. The earths of the power supply and the digital inputs and outputs are connected to each other.

2.2 Inputs

Inputs can be connected to standard PLC/ SPC. Inputs can also be connected to mechanical contacts. Grounds of digital inputs are connected internally. Grounds of external supplies must be connected. Inputs are debounced by a time constant of 10 ms. For recognizing an input, signal time must exceed 10 ms at logic 0 followed by 10 ms logic 1.

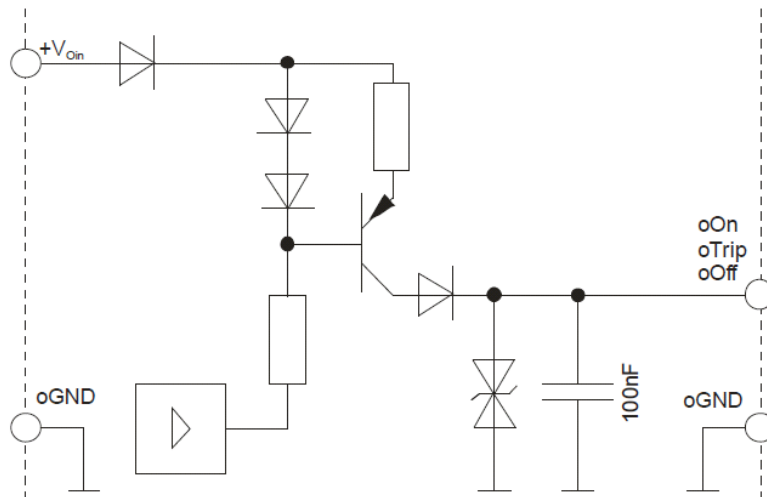
Function:	command ON, command OFF
Voltage range logic 0	0...4 V
Voltage range logic 1:	10...24 V
t_{min} :	ca. 20 ms
Input resistance:	ca. 93 k Ω
Input current at 24 VDC:	ca. 260 μ A
Electric filter delay time:	0.5 ms
Overvoltage capability:	\pm 27 V



2.3 Outputs

Outputs to be connected to standard PLC/ SPC. Outputs can also be connected to mechanical contacts.

Function:	Feedbacks ON, OFF, TRIP
Voltage range:	12...26.4 VDC
Maximum load	10 mA
Maximum capacitive load:	1 μ F
Logic 0 leakage current	< 100 μ A
Output voltage at 24 VDC, 10 mA	> 23 VDC

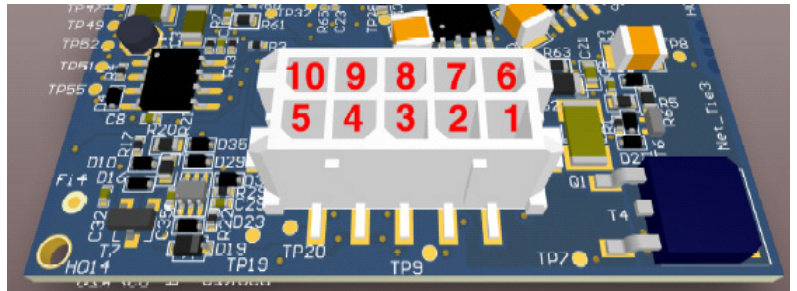


2.4 Circuit times

Duration of closing operation of S800 contacts from signal on (OFF→ON):	< 500 ms
Duration of opening operation of S800 contacts from signal on (ON→OFF):	< 250 ms
Duration of closing operation of S800 contacts from signal on (TRIP→OFF→ON):	< 1500 ms
Number of switching attempts in case of thermal or magnetic fault on S800 before lock:	15 minutes (\pm 5 %) lock after three switching attempts without supply voltage interrupt.
Number of switching attempts when lock slider is in locked position	One minute lock after one attempt per minute
Switching force:	ca. 120 N
Degree of protection:	IP20 if mounted

2.5 Pin assignment

The black Microfit female (e.g. Molex series 43045) is numbered from down right to top left as seen in the pictures below



2.5.1 In- and Output Allocation

Supply voltage:

Pin 1	+24 V d. c.:	Supply voltage
Pin 6	GND:	Supply voltage, ground

Inputs:

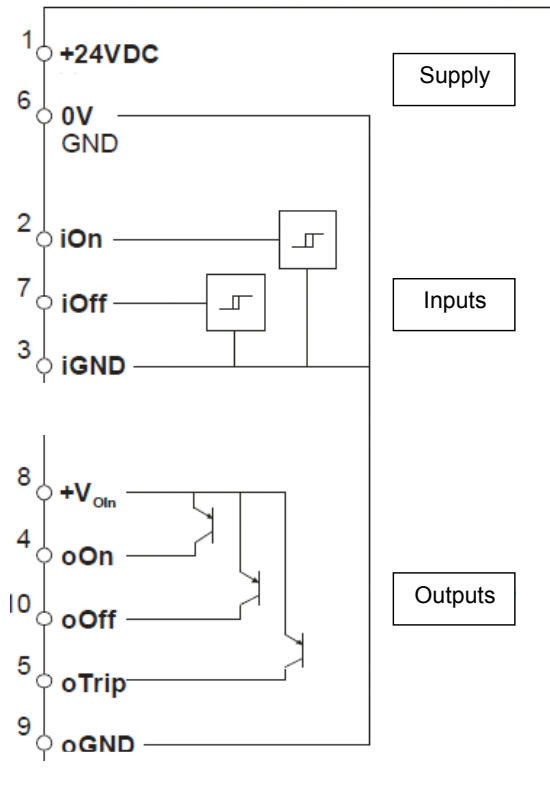
Pin 2	iOn:	Control input "ON"
Pin 7	iOff:	Control input "OFF"
Pin 3	iGND:	Control supply voltage, ground

Outputs:

Pin 4	oOn:	Feedback output "ON"
Pin 10	oOff:	Feedback output "OFF"
Pin 5	oTrip:	Feedback output "TRIP"
Pin 8	+VoIN:	Output supply voltage
Pin 9	oGND:	Output supply voltage, ground

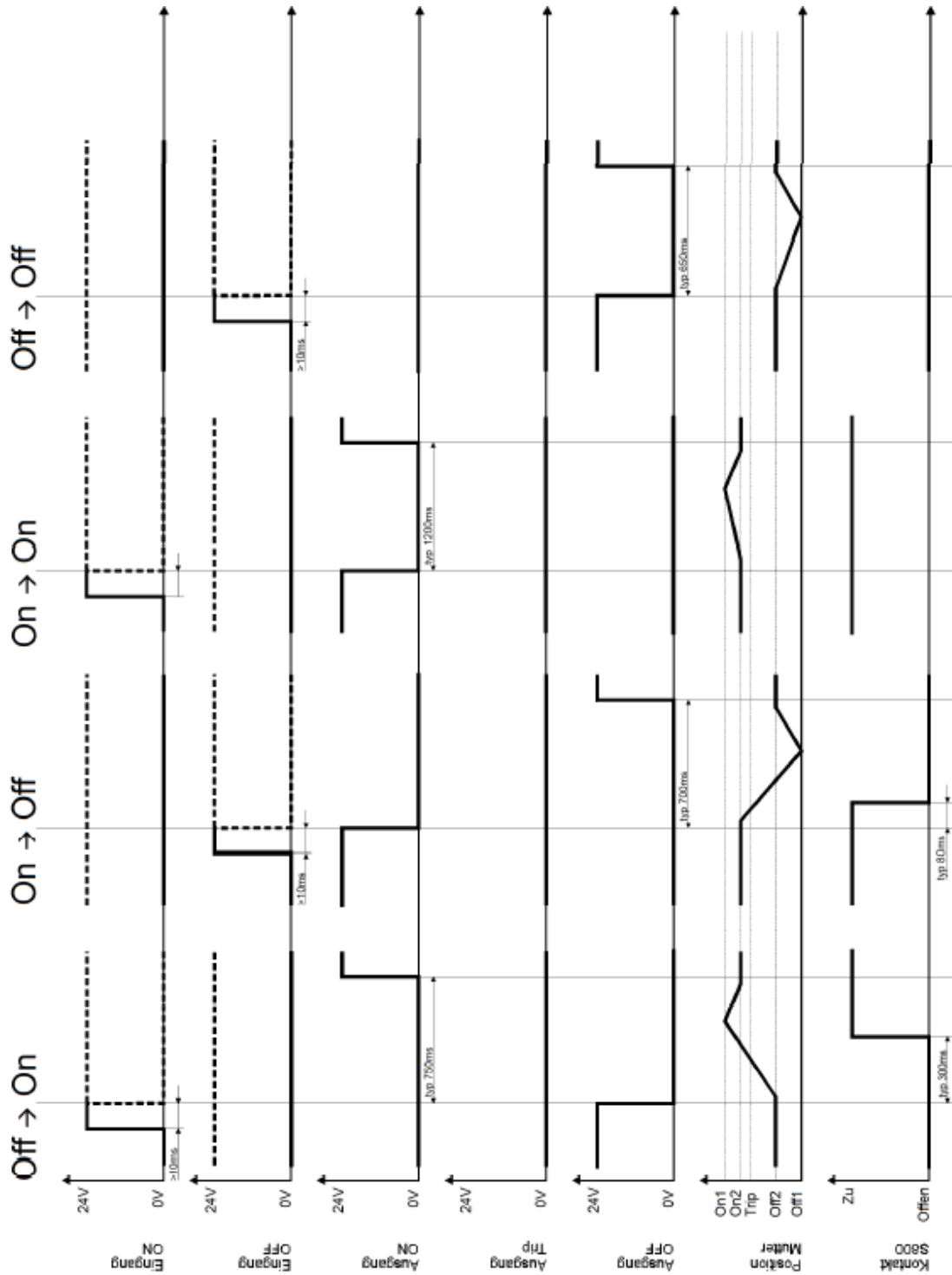
Connections 3, 6 and 9 are internally connected.

2.5.2 Simplified Diagram of the control



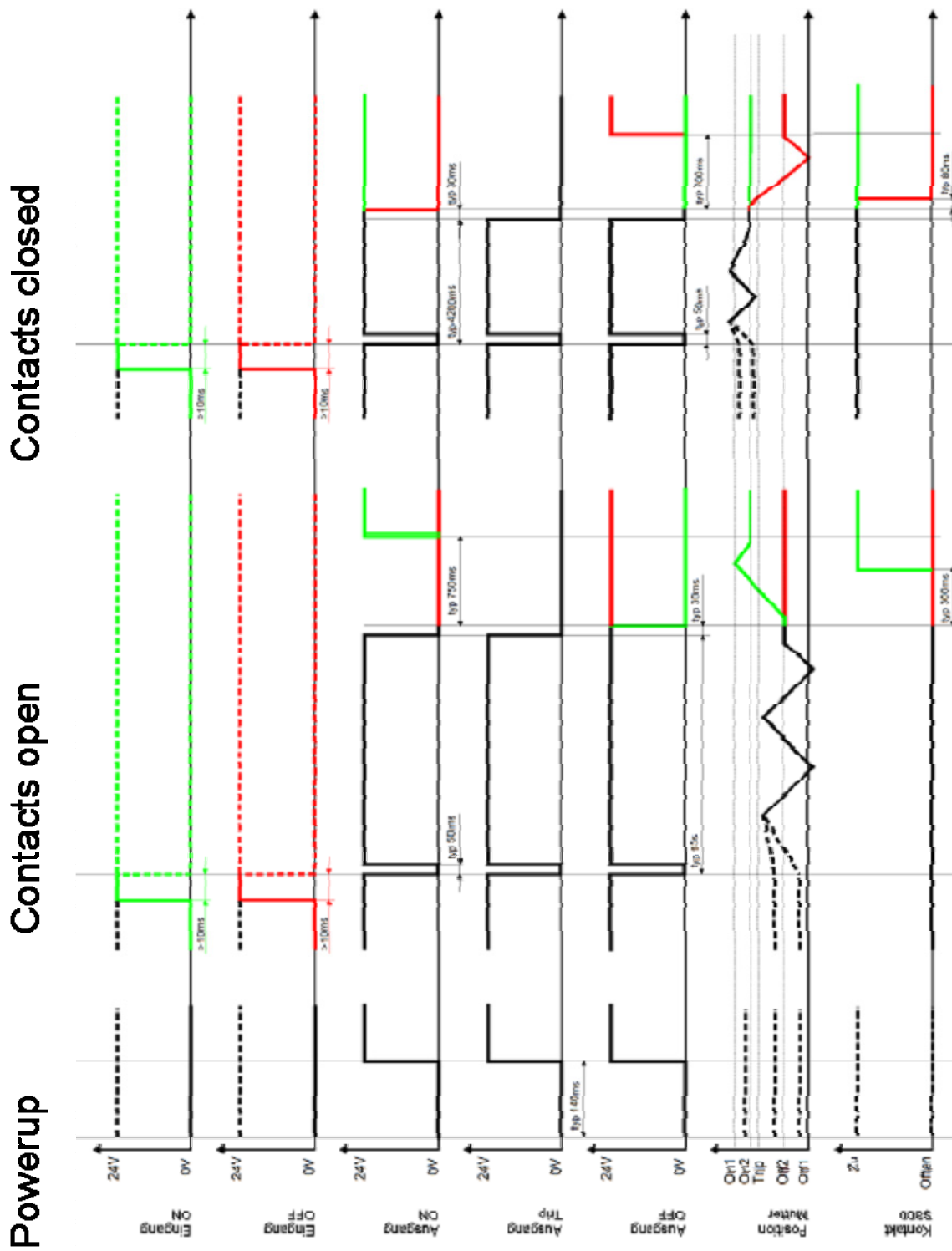
3 Exemplary Timing diagrams

3.1 OFF – ON / ON – OFF / ON – ON / OFF - OFF

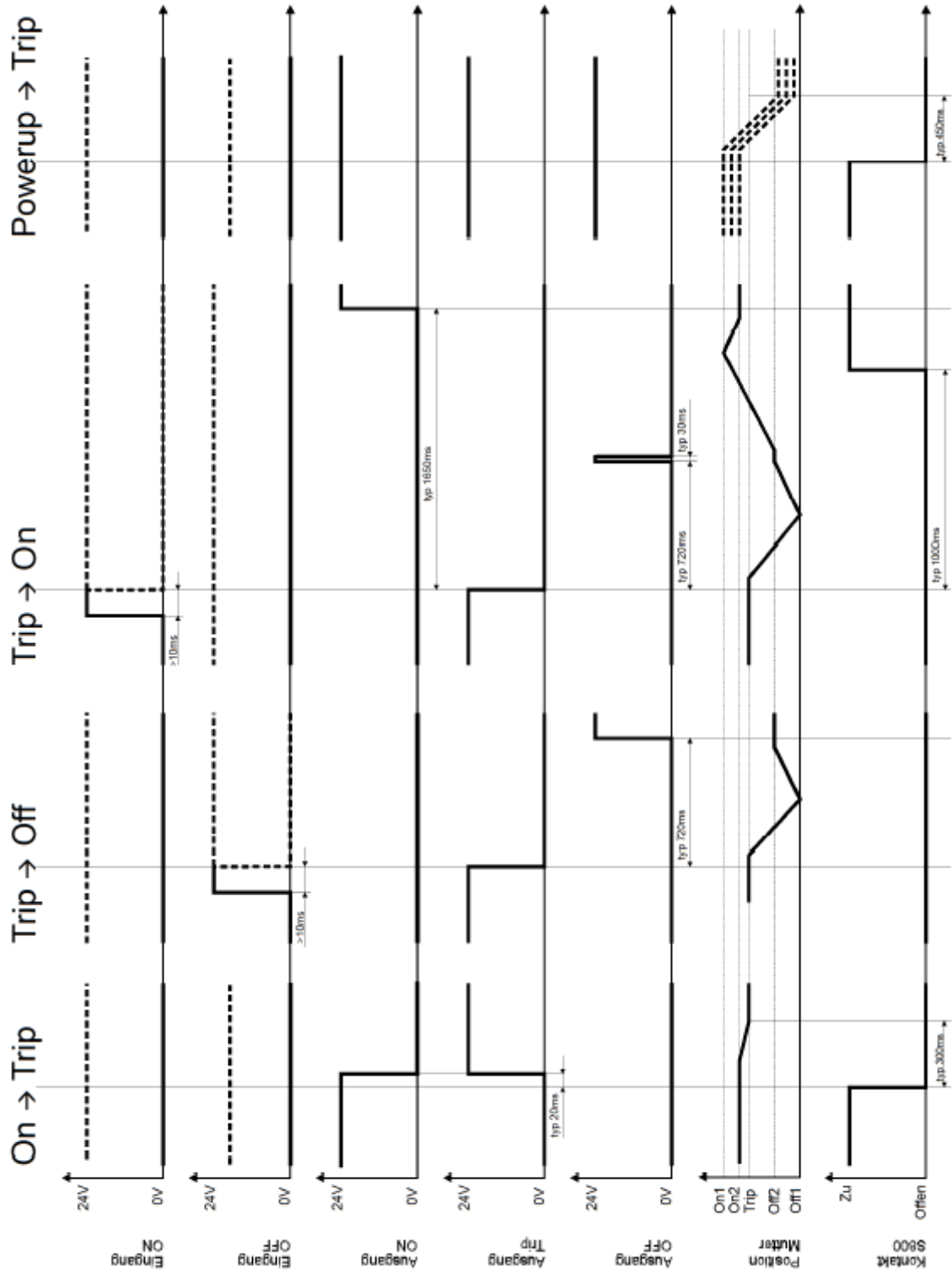


Erstellt mit Software Firmware - mmc DEC 242.2 Fernbedienheit (MMC_FIRMVARE - 000187 - 1 - 03) vom 3. November 2000

3.2 Powerup if contacts are open resp. closed



3.3 ON – Trip / Trip – OFF / Trip – ON / Powerup - Trip



Erstellt mit Software "Firmware - mnc DEC 242.2 Fernbedienheit (MNC_FIRMWARE - 000187 - 1 - 03)" vom 3. November 2009

