Please use also the assembly instruction S800-RSU-H Remote Switching Unit for S800 2CCC413020M0204

SUBJECT TO ALTERATIONS

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1 Functionality

1.1 Operation and control

The intention is the fast, secure and energy-aware moving of the lever of S800 High Performance MCB. The controller interprets the two command inputs ON and OFF. The controller does a switching command when a positive edge at one of the two command inputs is detected and the signal is for at least 10ms stable. Once the home position is reached after switching operation, the corresponding feedback signal is activated. Once the home position is reached and the feedback signal is turned on, a new control command can be initiated.

When the S800 triggers due to overload, short circuit or manual activation, this is registered and issued by activating the "TRIP".

A "ON" or "OFF" switching command can be triggered directly from the "TRIP" position. When detection a trip movement the motor moves into OFF-position to secure the contact opening and to prevent a subsequent manually switching of the S800 via lever.

Under normal operation, it is always only one output active. If the motor is in motion, no output is active.

The motor switches powerless after executing the control command. Thus a twist of the spindle to snap the external safety lock or manual actuation by screwdriver is possible.

If the spindle is moved by more than one rotation from the current position, all outputs are turned on. If the spindle only slightly rotated manually (> 7.5°) for 10 seconds no commands will be accepted. The initialization takes place when a switching command is detected only. The switching command is executed after initialization. Until the beginning of the initialization, all outputs are active.

1.2 Environment

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
<td>+24 VDC +10 % / -15 %</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>2.5 A</td>
</tr>
<tr>
<td></td>
<td>ABB recommends:</td>
</tr>
<tr>
<td></td>
<td>ABB switching power supply CP-S 24/5.0</td>
</tr>
<tr>
<td></td>
<td>(The power supply needs at least a nominal current rating of 5A. Furthermore it must be able to cover short spikes above the rated current rating without decreasing the input voltage under 20V DC)</td>
</tr>
<tr>
<td>Load Peaks</td>
<td>8A for 0.1ms at power up</td>
</tr>
<tr>
<td></td>
<td>3.5A for 250ms during operation</td>
</tr>
<tr>
<td>Standby Current</td>
<td>&lt; 50 mA</td>
</tr>
<tr>
<td>Ambient operation temperature</td>
<td></td>
</tr>
<tr>
<td>Coldness</td>
<td>Up to -25 °C according to IEC 60068-2-1:2007</td>
</tr>
<tr>
<td>Dry heat</td>
<td>Up to +70 °C according to IEC 60068-2-2:2007</td>
</tr>
<tr>
<td>Damp heat</td>
<td>Up to +55°C by 95% rel. hum. acc. to IEC 60068-2-30:2005</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>&lt; 85 % at 45 °C (No bedewing)</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>134,2 mm (5,28 in)</td>
</tr>
<tr>
<td>Height</td>
<td>100,6 mm (3,96 in)</td>
</tr>
<tr>
<td>Unit width</td>
<td>54 mm (2,13 in)</td>
</tr>
<tr>
<td>Contact trip indicator</td>
<td>Yes (ON – TRIP – OFF)</td>
</tr>
<tr>
<td>Trip position of actuating lever</td>
<td>Yes</td>
</tr>
<tr>
<td>Mechanical Fixing</td>
<td>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</td>
</tr>
</tbody>
</table>
Maximum Cable length

- Power supply: up to 10m with 0.5 mm² (32 feet 9.7 in with AWG20)
- Control supply: up to 10m with 0.5 mm² (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

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 (> 7.5°), 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 (> 7.5°), 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

Referencing by startup

- By startup the S800-RSU-H / S800W-RSU refers unique

Referencing after voltage interruption

- When operating voltage is restored a unique referencing take place. Regardless of the switching position of the High Performance MCB S800 the referencing held in the OFF 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 version of S800. During simultaneous control of several S800-RSU-H / S800W-RSU, the power supply has be configured concerning current carrying capacity. 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

The inputs are designed for connection to a standard PLC, which switches the positive side of the outputs. The inputs can be connected directly via a mechanical or electronic contact with the supply voltage to trigger a control command. An open, non-connected input is interpreted as a logic 0. The masses of the digital inputs and the operating voltage supply are connected internally. The masses of different external power supplies must also be connected.

The input will be internally debounced with a time constant of about 10 ms. To recognize an operation command, the input signal has be for at least 10ms logical 0 and then for at least 10 ms logical 1. Thus the software debouncing can be effectively and detects a level change from logic 0 to logic 1.

Function: command ON, command OFF

<table>
<thead>
<tr>
<th>Voltage range logic 0</th>
<th>0…4 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage range logic 1:</td>
<td>10…24 V</td>
</tr>
<tr>
<td>( t_{\text{min}} ):</td>
<td>ca. 20 ms</td>
</tr>
<tr>
<td>Input resistance:</td>
<td>ca. 93 k( \Omega )</td>
</tr>
<tr>
<td>Input current at 24 VDC:</td>
<td>ca. 260 ( \mu A )</td>
</tr>
<tr>
<td>Electric filter delay time:</td>
<td>0.5 ms</td>
</tr>
<tr>
<td>Overvoltage capability and inverse-polarity protection:</td>
<td>( \pm 27 \text{ V} )</td>
</tr>
</tbody>
</table>
2.3 Outputs
The outputs are designed for connection to a standard PLC or the direct switching of small loads.

Function: Feedbacks ON, OFF, TRIP
Voltage range: 12...26.4 VDC
Maximum load: 10 mA
Logic 0 leakage current < 100 µA
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 (± 5 %) lock after three switching attempts without supply voltage interruption / switching-off

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.

NOTE:
When connecting the cable please make sure that the individual strands are not exposed to mechanical stress.

2.5.1 In- and Output Allocation

Supply voltage:
- Pin 1 +24 V d. c.: Supply voltage, operating voltage 24V DC
- 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 +VolN: Output supply voltage, operating voltage 24V DC
- Pin 9 oGND: Output supply voltage, ground

Connections 3, 6 and 9 are internally connected.
2.5.2 Simplified Diagram of the control

![Simplified Diagram of the control](image)
3 Exemplary Timing diagrams

3.1 OFF – ON / ON – OFF / ON – ON / OFF - OFF
3.2 Powerup if contacts are open resp. closed

Contacts are closed

Contacts are open

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