

## Project Documentation | UMRR Serial Relay Option Data Sheet

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## 1 User Safety Warning Information

Read the instructions carefully before you start to work.

### Installation

Please observe the following advices when installing and connecting the sensors:

- Only use provided or approved equipment for installation. Use screws with metric thread M3x8.
- Only skilled and instructed persons shall install and connect the devices. Proper experience in working with mains voltage, electrical and electronic devices is required.
- Don't wire any connections while power is applied to the device.
- Ground the devices carefully to prevent electrical shock.
- All connectors are pin-coded and fit in only one position. Also note the arrows indicating the top side of sensor and SRO.
- After the SRO is connected to the sensor, don't turn or twist the SRO until all screws are tightened as this may damage the connector.
- Only use fully functional equipment (ladders, aerial work platform, ...) when working above ground. Staff shall be capable of working at heights.
- Use caution when installing the device on or around active roadways. Pay attention to moving traffic.
- Mount the devices carefully to prevent them from shifting or dropping.
- Make sure that your installation methods are in accordance with local safety policy and procedures and company practices.

### Technical service

Only use provided or approved equipment for operation.

Persons other than authorized and approved electrical technicians shall NOT attempt to connect this unit to a power supply, Traffic Management Interface Board and/or other controllers, as there is a risk of electrical shock by unsafe handling of the power source.

Do not attempt to service or repair this unit.

- No user-maintainable parts are contained within the device.
- To avoid electrical shock, do not remove or open the cover.
- Unauthorized opening will void all warranties.
- Smartmicro is not liable for any damages or harms caused by unauthorized attempts to open or repair the device.

### Operation

Using SRO does not influence sensor performance.

Do not operate the device if the device itself or any cables are damaged. The sensors are designed to work under different environment conditions (temperature, rain, dust, ...). Regular maintenance such as cleaning or recalibration is not required.

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## 2 Serial Relay Interface Option for UMRR-0A

The standard UMRR sensor (CAN or RS485 communication interface) can be extended with the here described additional hardware module that adds 8 hardware relays.

With the Relays Option Module you can implement your applications without the need of an additional controller unit.



Figure 1: SRO-00xxxx Module mounted to an UMRR Sensor (rear side)

### Features:

- no influence on the UMRR sensor performance
- no additional controller needed
- 8 configurable solid state relays
- Relays as normally-open (NO) or normally-closed (NC) contacts available

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**Table 1: Environmental and Mechanical Data (SRO-00xxxx)**

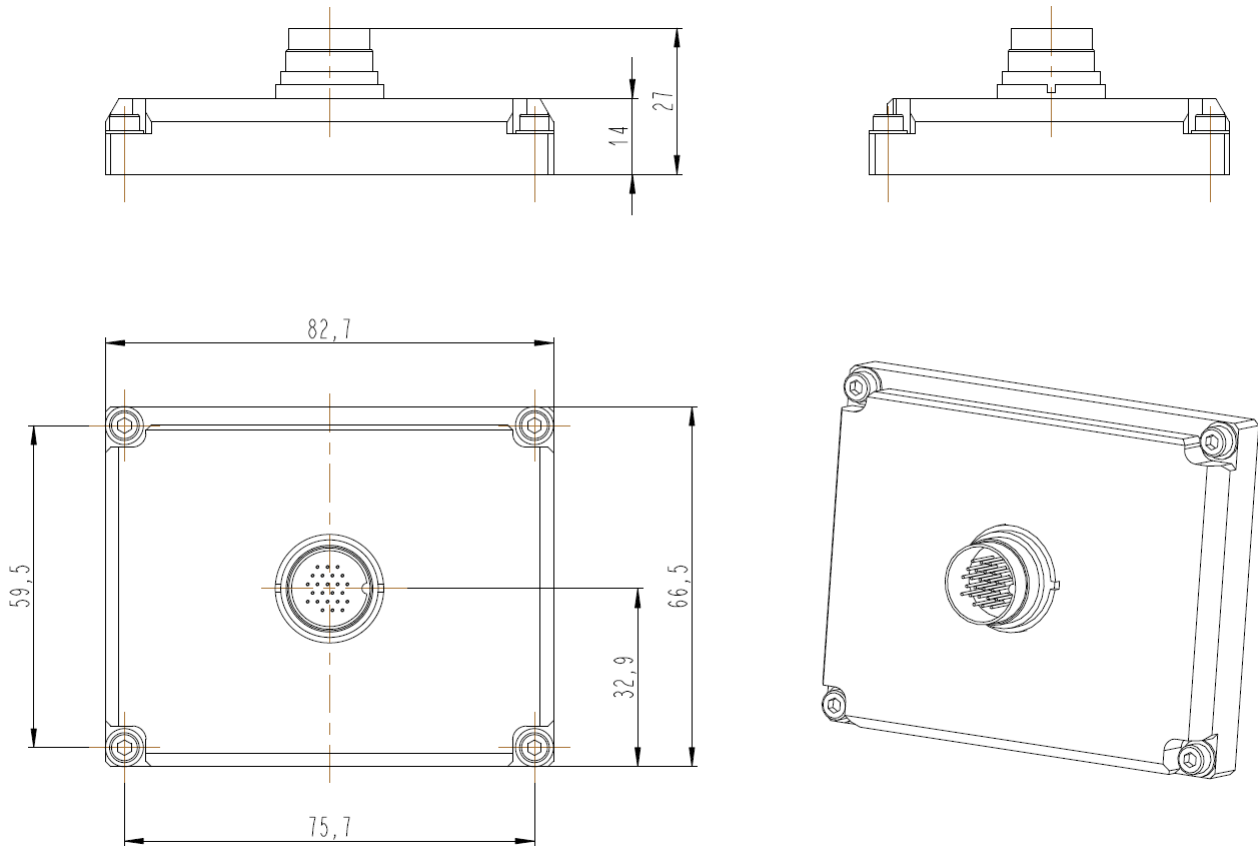
Parameter	Value	Unit
Ambient Temperature	-40 ... +85	degree C
Relay Voltage Band	-36V ... +36	V
Max.Switching Current	1000 <sup>I</sup>	mA
IP	67	
Weight	122 <sup>II</sup>	g
Dimensions	see Figure 2	
Housing Identification	SRO-000000/SRO-000100	
Connector	24 Pin Connector (Binder Series 423)	

<sup>I</sup> Load Current at 25°C and a switching cycle of 1 second

<sup>II</sup> Additional Weight to the UMRR Sensor

### 2.1.1 Module Dimensions

All values given in mm.



**Figure 2: SRO-00xxxx Module Dimensions**

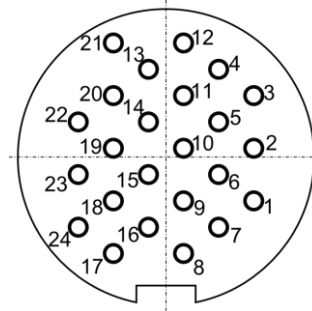
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### 2.1.2 Connector

The used sensor connector is a 24-pin male (plug) circular connector (water proof IP67, series 423, manufacturer Binder GmbH, Germany). A female counterpart (socket) has to be used to connect to the sensor. The pin numbering of the socket is shown in Figure 3, the pin description is given in Table 2.



**Figure 3: View on solder cup side of socket (rear view of female counterpart to be connected to sensor)**

**Table 2: SRO Sensor Connector pin out**

Pin	Function	Wire color
1	Relay 6 In	black
2	Relay 6 Out	violet
3	Relay 7 In	white/blue
4	Relay 7 Out	brown/blue
5	CAN_L	yellow
6	RS_485_L <sup>I</sup>	pink
7	Relay 5 Out	grey/pink
8	Relay 5 In	red/blue
9	RS_485_H <sup>I</sup>	grey
10	GND	blue
11	CAN_H	green
12	Relay 8 In	white/green
13	Relay 8 Out	brown/green
14	Vcc	red
15	GND	white
16	Relay 2 Out	white/yellow
17	Relay 2 In	yellow/brown
18	Relay 1 In	white/pink
19	Vcc	brown
20	Relay 3 Out	grey/brown
21	Relay 3 In	white/grey
22	Relay 4 In	white/red
23	Relay 4 Out	brown/red
24	Relay 1 Out	pink/brown

<sup>I</sup>RS\_485 communication is only available for UMRR-0A

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### 3 Serial Relay Interface Option for UMRR-11 & UMRR-0C

The Sensor Relay Option (SRO) is an **add-on module to the standard UMRR**. It can be attached to the back of the sensor. The SRO offers **8 hardware relays and surge protection** in addition to the UMRR's CAN or RS485 or Ethernet communication interface.

With the Sensor Relay Option, you can implement your relay-based applications without the need of an additional controller unit.

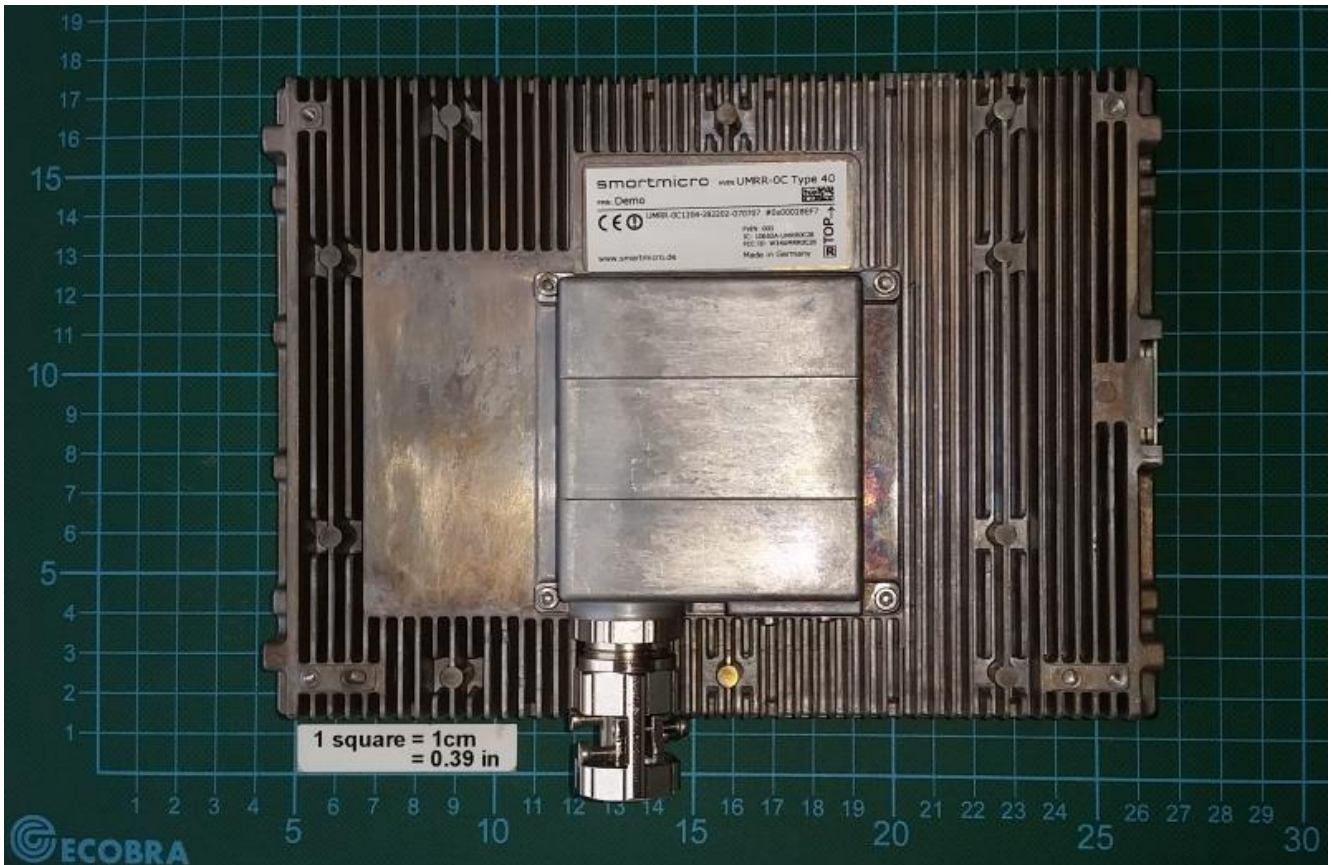


Figure 4: SRO-01xxxx Module mounted to an UMRR Sensor (rear side)

#### Features:

- **Works with standard UMRR-11 and UMRR-0C sensors**<sup>1</sup>
- No additional controller needed
- **8 configurable solid state relays**, normally closed (NC)<sup>2</sup>
- Provides an **easy-to-use** universal electrical interface through a terminal block.
- **Field installable**. Just insert cable, tighten and tighten the four captive screws.
- **Surge Protection** on power, communication and relay lines
- **Robust**: The SRO-01xxxx is watertight and almost unbreakable.
- Integrates into smartmicro's BRACKETs.

<sup>1</sup> UMRR-11 is supported for units delivered starting May 2018

<sup>2</sup> Normally Open available on request.

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**Table 3: Environmental and Mechanical Data (SRO-01xxxx)**

<b>Mode No.</b>	<b>SRO-0110xx / SRO-0111xx</b>
<b>Mechanical</b>	
Weight	205 <sup>II</sup> g, excluding cable.
Height	79.8 mm excluding cable outlet ca. 116 mm including cable outlet
Width	84 mm
Depth	29 mm
<b>Supported Cables</b>	
Supported cable diameter	9 mm – 13 mm (smaller diameter available on request)
Supported conductor cross section range	0.25 mm <sup>2</sup> – 0.75 mm <sup>2</sup> AWG24 - AWG20
<b>Surge Protection</b>	
Surge protection of power lines	Compliant to IEC 61000-4-2 (ESD) and IEC 61000-4-4 (fast transients)
Surge protection of data lines and relay channels	Compliant to IEC 61000-4-2 (ESD) and IEC 61000-4-4 (fast transients)
<b>Relay Channels</b>	
Relay Voltage Band	-36V ... +36V
Max. Switching Current	1000mA <sup>I</sup>
<b>Other</b>	
Ambient Temperature	-40°C ... +85°C
IP	67

<sup>I</sup> Load Current at 25°C and a switching cycle of 1 second

<sup>II</sup> Additional Weight to the UMRR Sensor

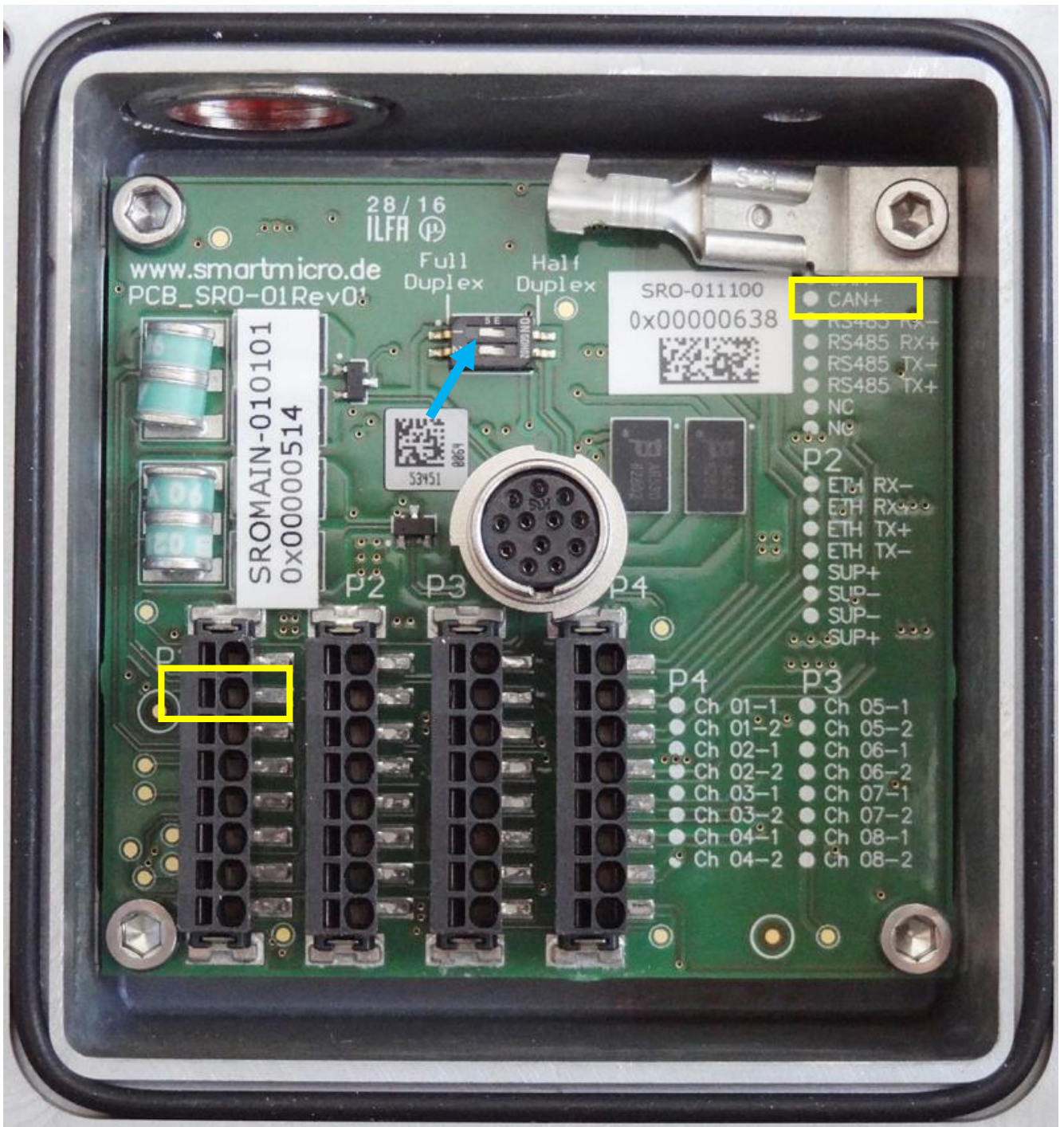
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### 3.1 Pinout

The pinout is printed on the SRO board. The signal names in the upper right directly correspond to the terminal blocks in the lower left.

**Example:** the yellow boxes in Figure 5 indicate the terminal block for "CAN High" signal.



**Figure 5: SRO-01xxxx pinout and jumpers**

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### 3.2 Variants

See Table 4 for a list of SRO-01xxxx variants and the sensor types they support.

Note: the variant can be changed by the user by rotation of the PCB inside the housing by 180 degrees.

SRO variant	Supported UMRR
<b>SRO-011000</b>	UMRR-11 Type 44 UMRR-11 Type 45
<b>SRO-011100</b>	UMRR-0C Type 40 UMRR-0C Type 42

**Table 4: Junction Box variants**

### 3.3 Dip Switches

Refer to Figure 5 to find the 2 blue marked dip switches.

The two dip switches are bridges between pins 3 and 5 / pins 4 and 6 of the terminal block. Those bridges must be **open for full duplex RS485** operation and must be **closed for half-duplex RS485**.

Please note **dip switches are set for full duplex RS485** as delivered. Change the switches to "half duplex" for half-duplex RS485 operation.

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## **4 Field Cable for SRO and SRO2**

Smartmicro approved unique cable type of Medikabel, manufacturer part no. 9DB281231C01 for use with SRO and SRO2. For more details please contact [info@smartmicro.de](mailto:info@smartmicro.de).

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