RSMFMB-2R | MULTIFUNCTIONAL ROOM TRANSMITTER WITH BUZZER

Mounting and operating instructions

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SAFETY AND PRECAUTIONS

Read all the information, the datasheet, Modbus map, mounting and operating instructions and study the wiring and connection diagram before working with the product. For personal and equipment safety, and for optimum product performance, make sure you entirely understand the contents before installing, using, or maintaining this product.

For safety and licensing (CE) reasons, unauthorised conversion and / or modifications of the product are inadmissible.

The product should not be exposed to abnormal conditions, such as extreme temperatures, direct sunlight or vibrations. Long-term exposure to chemical vapours in high concentration can affect the product performance. Make sure the work environment is as dry as possible; avoid condensation.

All installations shall comply with local health and safety regulations and local electrical standards and approved codes. This product can only be installed by an engineer or a technician who has expert knowledge of the product and safety precautions.

Avoid contacts with energised electrical parts. Always disconnect the power supply before connecting, servicing or repairing the product.

Always verify that you apply appropriate power supply to the product and use appropriate wire size and characteristics. Make sure that all the screws and nuts are well tightened and fuses (if any) are fitted well.

Recycling of equipment and packaging should be taken into consideration and these should be disposed of in accordance with local and national legislation / regulations.

In case there are any questions that are not answered, please contact your technical support or consult a professional.

PRODUCT DESCRIPTION

The RSMFMB-2R is a multifunctional room sensor with integrated audible alarm, which measures temperature, relative humidity, CO_2 ranges and ambient light. It is Power over Modbus supplied and all parameters are accessible via Modbus RTU.

ARTICLE CODE

Article code	Supply	Connection	Imax
RSMFMB-2R	24 VDC, PoM	RJ45	70 mA

INTENDED AREA OF USE

- Monitoring temperature, relative humidity and CO_2 level in HVAC applications
- Suitable for residential and commercial buildings
- For indoor use only

TECHNICAL DATA

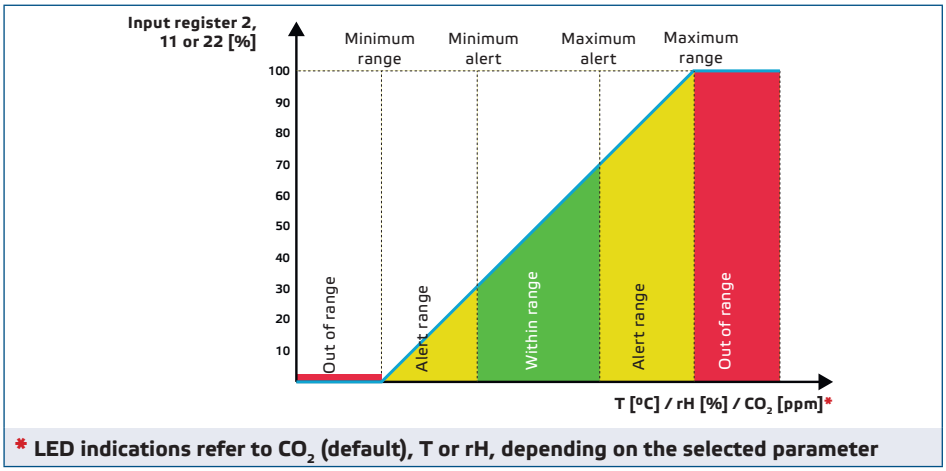
- Supply voltage: 24 VDC, Power over Modbus
- Selectable temperature range: 0—50 ºC
- Selectable relative humidity range: 0—100 %
- Selectable CO_2 range: 0—2.000 ppm
- Ambient light sensor with adjustable 'active' and 'standby' level
- Replaceable CO_2 sensor element
- Replaceable audible alarm module, settable via Modbus register 78 (OFF, continuous or pulsed)
- 3 LEDs for status indication with adjustable light intensity
- Accuracy: ±0,4 ºC (0—50 ºC); ±3% rH (0-100% rH)
- Enclosure:
  - Rear plate: plastic ABS, black (RAL 9004)
  - Front cover: ASA, ivory (RAL 9010)
- Protection standard: IP30 (according to EN 60529)
- Typical range of use:
  - Temperature: 0—50 ºC
  - Rel. humidity: 0—95 % rH, (non-condensing)
  - CO_2: 400—2.000 ppm
- Storage temperature: -10—60 ºC

STANDARDS

- EMC directive 2014/30/EU: CE
  - EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements
  - EN 61000-6-1:2007 Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light industrial environments
  - EN 61000-6-3:2007 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments Amendments A1:2011 and AC:2012 to EN 61000-6-3
  - EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

- EN 61326-2-3:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria
- Low Voltage Directive 2014/35/EU
  - EN 60529:1991 Degrees of protection provided by enclosures (IP Code) Amendment AC:1993 to EN 60529
- RoHs Directive 2011/65/EC

OPERATIONAL DIAGRAMS



* LED indications refer to CO_2 (default), T or rH, depending on the selected parameter

WIRING AND CONNECTIONS

		RJ45 socket (Power over Modbus)
Pin 1 Pin 2	24 VDC	Supply voltage
Pin 3 Pin 4	A	Modbus RTU communication, signal A
Pin 5 Pin 6	/B	Modbus RTU communication, signal /B
Pin 7 Pin 8	GND	Ground, supply voltage

MOUNTING & OPERATING INSTRUCTIONS IN STEPS

Before you start mounting the unit, read carefully **"Safety and Precautions"**. Choose a smooth surface for installation (a wall, panel and etc.).

⚠ ATTENTION

Mount the sensor in a well-ventilated area, where it receives adequate airflow for proper operation and hide it from direct sunlight. Make sure it can be easily accessed for service.

Follow these steps:

1. Switch off the power supply.
2. Using a flat screwdriver, remove the front white cover by releasing the snap-fits on its both sides (see **Fig. 1** *Snap-fits release*).
3. Insert the cables through the opening on the rear plate (see **Fig. 2** *Mounting dimensions*).
4. Using suitable fastening materials (not supplied), mount the unit at least 1,5 m above the floor. Mind the correct mounting position and unit dimensions. See **Fig. 2** and **Fig. 3**.

Fig. 1 Snap-fits release

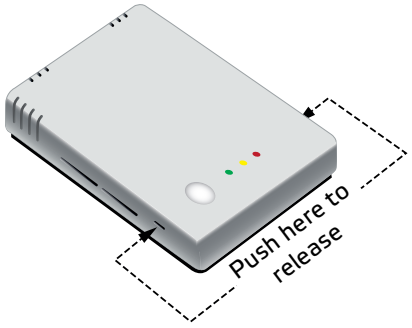


Fig. 2 Mounting dimension

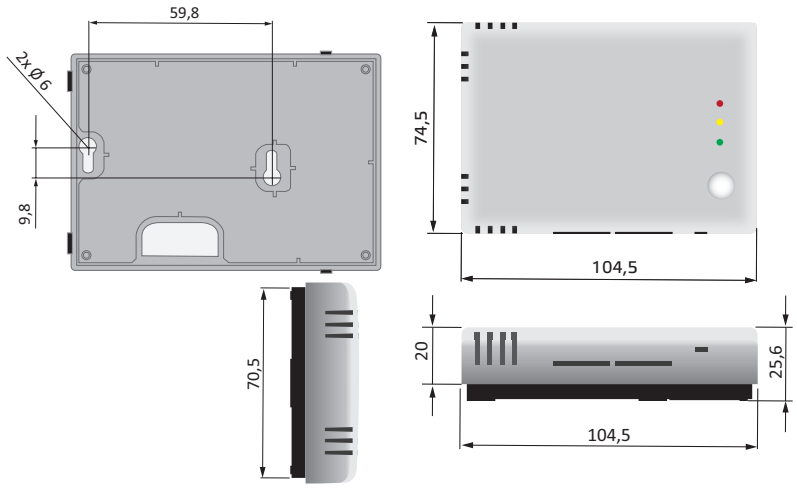
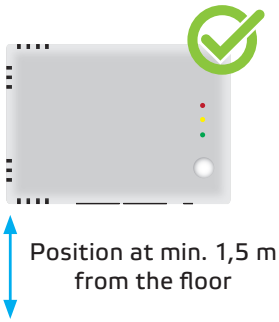
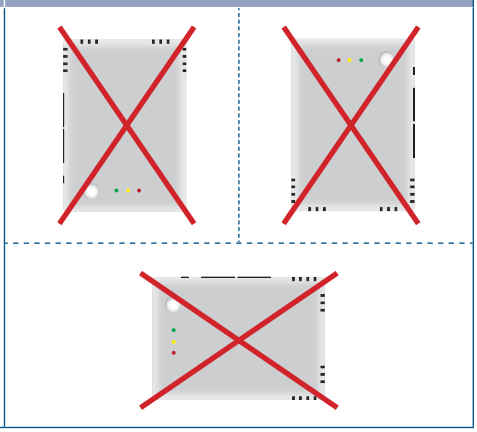


Fig. 3 Mounting position

Correct

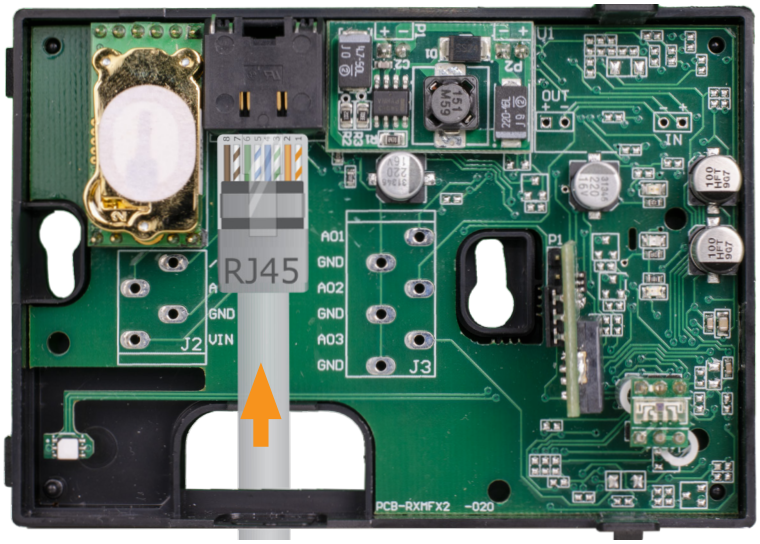


Incorrect



5. Do the wiring according to the wiring diagram (see **Fig. 4**).

Fig. 4 Wiring



6. Put back the cover.
7. Switch on the mains supply.
8. Customise the factory settings to the desired ones via the 3SModbus software or Sensistant (if necessary). For the default factory setting refer to the product *Modbus register map*.

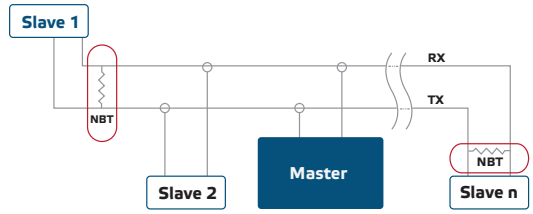
NOTE

For the complete Modbus register data, refer to the product Modbus Register Map, which is a separate document attached to the article code on the website and contains the registers list. Products with earlier firmware versions may not be compatible with this list.

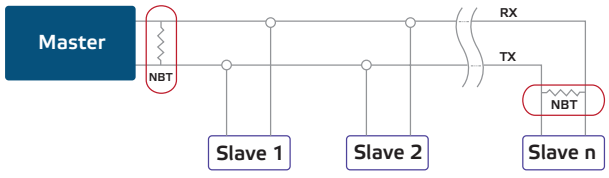
Optional settings

To assure correct communication, the NBT needs to be activated in only two devices on the Modbus RTU network. If necessary, enable the NBT resistor via 3SModbus or Sensistant (*Holding register 9*).

Example 1



Example 2



NOTE

On a Modbus RTU network, two bus terminators (NBTs) need to be activated.

OPERATING INSTRUCTIONS

Calibration procedure:

Sensor calibration is not necessary. All sensor elements are calibrated and tested in our factory.
In the unlikely event of CO_2 sensor element failure, this component can be replaced.

Bootloader

Thanks to the bootloader functionality, the sensor firmware can be updated via Modbus RTU communication. To enter 'Boot mode", put a jumper onto pins 3 and 4 of the P1 header and restart the power supply. Once 'Boot mode' is activated, the firmware can be updated via SM Boot application (part of 3SModbus software suite) or Sensistant.

NOTE

Make sure the power supply does not get interrupted during "bootload" procedure, otherwise you risk losing unsaved data.

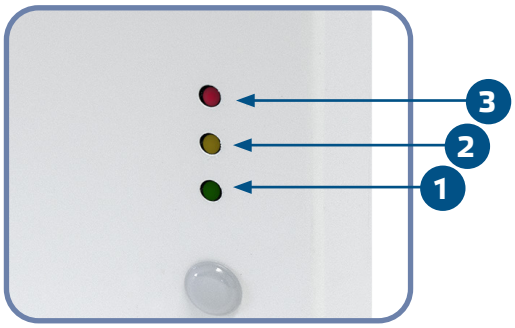
LED indications and audible alarm module:

1. When the green LED is on, the measured value (temperature, relative humidity or CO_2) is between the minimum and maximum alert range values. In this case the audible alarm is OFF (**Fig. 5 - 1**).
2. When the yellow LED is on, the measured value (temperature, relative humidity or CO_2) is in the alert range.In this case the audible alarm is ON (**Fig. 5 - 2**).
3. When the red LED is on, the measured value (temperature, relative humidity or CO_2) is below the minimum measurement range value or above the maximum value. In this case the audible alarm is ON. Blinking red LED indicates loss of communication with a sensor (**Fig. 5 - 3**).

NOTE

The audible alarm output can be set via Holding register 78. By writing 0 in Holding register 78, the audible alarm will be disabled. By default, the audible alarm function is set to 'continuous'. By writing 2 in Holding register 78, the audible alarm will change to 'pulsed'.

Fig. 5 LED indications



NOTE

By default, the LED indication refers to the CO_2 measurement. This can be changed to relative humidity or temperature values via Modbus Holding Register 79 (see **Table** *Holding registers).*

NOTE

The intensity of the LEDs can be adjusted between 0 and 100 % with step of 10 % according to the value set in Holding register 80.

Ambient light sensor

The measured light intensity in lux is available in Input Register 41. Additionally, an active and standby level can be defined in Holding registers 35 and 36. Input Register 42 indicates if the measured value is below standby level, above active level or in between both levels:

- Ambient light level < standby level: Input Register 42 indicates "Standby".
- Ambient light level > active level: Input Register 42 indicates "Active".
- Standby level < Ambient light level < Active level: Input Register 42 indicates "Low intensity".

VERIFICATION OF INSTALLATION INSTRUCTIONS

After switching on the power supply one of the LEDs lights up according to the status of the measured variable. If this is not the case, check the connections.

TRANSPORT AND STORAGE

Avoid shocks and extreme conditions and direct sunlight; stock in original packing.

WARRANTY AND RESTRICTIONS

Two years from the delivery date against defects in manufacturing. Any modifications or alterations to the product after the date of publication relieve the manufacturer of any responsibilities. The manufacturer bears no responsibility for any misprints or mistakes in this data.

MAINTENANCE

In normal conditions this product is maintenance-free. If soiled, clean with a dry or damp cloth. In case of heavy pollution, clean with a non-aggressive product. In these circumstances the unit should be disconnected from the supply. Pay attention that no fluids enter the unit. Only reconnect it to the supply when it is completely dry.