



RSMFH-2R

Multifunctional CO₂ room transmitter

The RSMFH-2R series are multifunctional room transmitters which measure temperature, relative humidity, CO₂ concentration level and ambient light. They feature 24 VDC power supply and three analogue / modulating outputs - one for temperature, one for relative humidity and one for CO₂ level. All parameters are accessible via Modbus RTU.

Key features

- Spring contact terminal block or RJ45 connection
- Selectable temperature, relative humidity and CO₂ ranges
- 3 selectable analogue / modulating outputs
- Bootloader for updating the firmware via Modbus RTU communication
- Ambient light sensor with adjustable 'active' and 'standby' level
- Replaceable CO₂ sensor element
- Modbus RTU communication
- 3 LEDs with adjustable light intensity for status indication
- Long-term stability and accuracy

Technical specifications

3 analogue / modulating outputs	0—10 VDC mode: min. load 50 kΩ ($R_L \geq 50 \text{ k}\Omega$)	
	0—20 mA mode: max. load 500 Ω ($R_L \leq 500 \Omega$)	
	PWM (open-collector type) mode: 1 kHz, min. load 50 kΩ ($R_L \geq 50 \text{ k}\Omega$), PWM voltage level: 3,3 VDC or 12 VDC	
Typical range of use	Temperature	0—50 °C
	Relative humidity	0—95 % rH (non-condensing)
	CO ₂ range	400—2.000 ppm
Accuracy	±0,4 °C (0—50 °C)	
	±3 % rH (0—100 % rH)	
	± 30 ppm CO ₂ (400—2.000 ppm)	
CO ₂ sensor stabilising time	35 seconds	
Protection standard	IP30 (according to EN 60529)	

Article codes

Article code	Supply	Imax	Connection type
RSMFH-2R	24 VDC	110 mA	RJ45 or terminal block

Standards

- Low Voltage Directive 2014/35/EU
 - EN 60529:1991 Degrees of protection provided by enclosures (IP Code) Amendment AC:1993 to EN 60529
 - EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements
- EMC Directive 2014/30/EU:
 - 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 for transducers with integrated or remote signal conditioning
- WEEE 2012/19/EU
- RoHS Directive 2011/65/EU



Area of use

- Monitoring indoor temperature, relative humidity and CO₂ level in HVAC applications
- Suitable for residential and commercial buildings
- For indoor use only

Wiring diagram

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



Terminal Block 1

VIN	Supply voltage 24 VDC
GND	Supply voltage, ground
A	Modbus RTU communication, signal A
/B	Modbus RTU communication, signal /B

Terminal Block 2

AO1	Analogue / modulating output 1 for temperature measurement (0—10 VDC / 0—20 mA / PWM)
GND	Ground AO1
AO2	Analogue / modulating output 2 for relative humidity measurement (0—10 VDC / 0—20 mA / PWM)
GND	Ground AO2
AO3	Analogue / modulating output 3 for CO ₂ measurement (0—10 VDC / 0—20 mA / PWM)
GND	Ground AO3

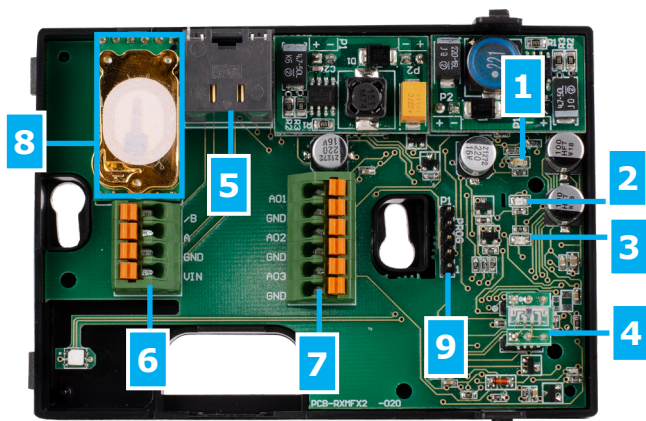
Attention! The unit needs to be supplied via the RJ45 connector or via the connection terminals. Do not connect the device via the RJ45 connector and the terminal block simultaneously!

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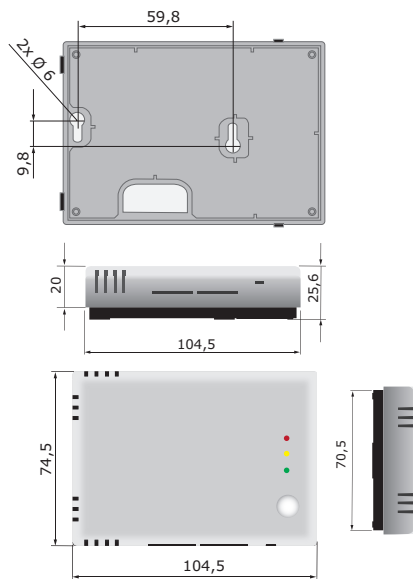
Settings and indications



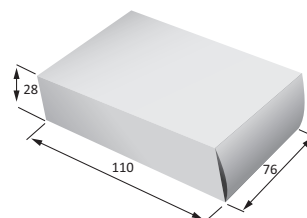
1 - Red LED	On	Measured temperature, relative humidity or CO ₂ values are out of range
	Blinking	Communication with one of the sensors fails
2 - Yellow LED	On	Measured temperature, relative humidity or CO ₂ values are in the alert range
	Blinking	Modbus communication has stopped and HR8 is activated (Modbus timeout > 0 seconds)
3 - Green LED	On	Measured temperature, relative humidity or CO ₂ values are within range
4 - Ambient light sensor		Low light intensity / Active / Standby
5 - RJ45 socket		Modbus communication with connected Master devices and PoM-voltage supply (24 VDC)
		Blinking LEDs indicate that packages are transmitted via Modbus RTU communication
6 - Terminal block input connection		24 VDC supply voltage and Modbus RTU signal
7 - Output connection		AO1 - temperature measurement
		AO2 - relative humidity measurement
		AO3 - CO ₂ measurement
8 - CO ₂ sensor element		Replaceable in case of faulty operation
9 - PROG header, P1		Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters
		Put a jumper onto pins 3 and 4 and restart the supply to enter bootloader mode

Note: By default, the LED indicators visualise the measured CO₂ level. When the sensor is in bootloader mode, the green and yellow LEDs flash alternately. During the firmware download, the red LED is flashing additionally.

Fixing and dimensions



Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
RSMFH-2R	Unit (1 pc.)	110	76	28	0,122 kg	0,122 kg
	Carton (24 pcs.)	492	182	84	2,94 kg	2,94 kg
	Box (144 pcs.)	510	410	270	17,69 kg	17,69 kg

Modbus registers

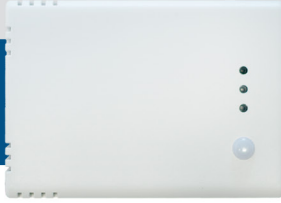


The Sensistant Modbus configurator allows you to easily monitor and/or configure Modbus parameters.

The parameters of the unit can be monitored / configured through the 3SModbus software platform. You can download it from the following link:

<https://www.sentera.eu/en/3SMCenter>

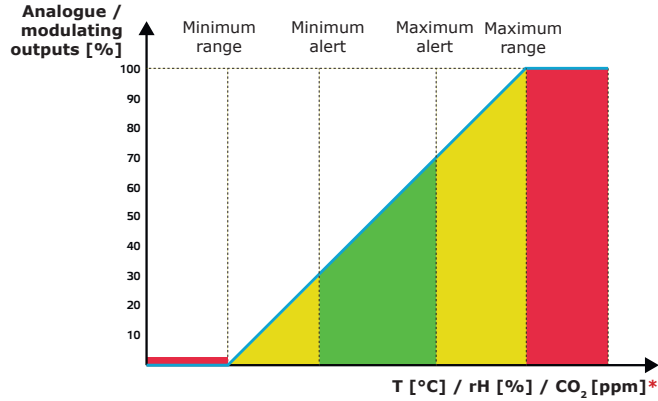
For more information about the Modbus registers, please refer to the product Modbus Register Map.



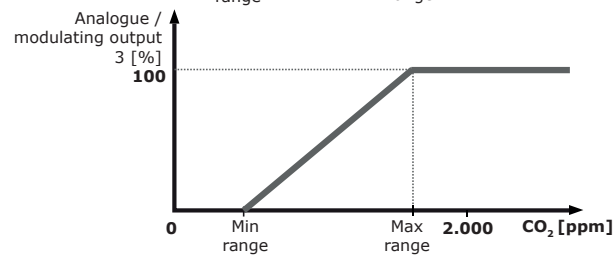
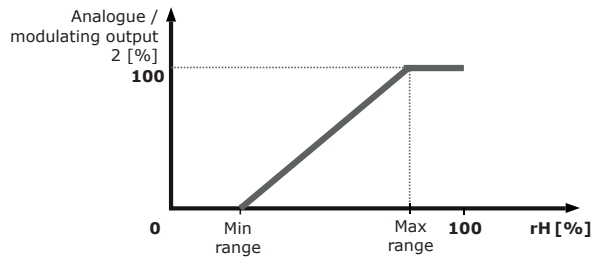
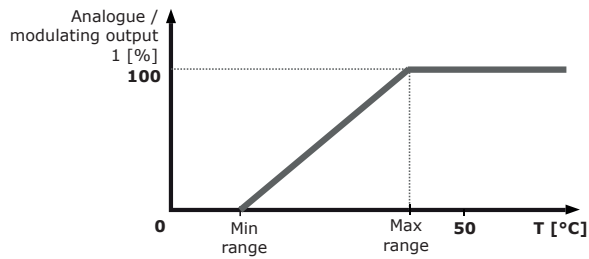
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Operational diagrams



*LED indications - CO₂ (default), T or rH



Global trade item numbers (GTIN)

Packaging	RSMFH-2R
Unit	05401003011386
Carton	05401003301821
Box	05401003502648