SENTERA
C O N T R O L S

RSMFX-2R
Multifunctional CO_2 room transmitter

The RSMFX-2R series are multifunctional room transmitters which measure temperature, relative humidity, CO_2 concentration level and ambient light. They feature a wide range of low voltage power supply and three analogue / modulating outputs for temperature, relative humidity and CO_2. All parameters are accessible via Modbus RTU.

Key features

- Selectable temperature, relative humidity and CO_2 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 CO_2 sensor element
- Modbus RTU communication
- 3 LEDs with adjustable light intensity for status indication
- Long-term stability and accuracy

Area of use

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

Article codes

Article code	Supply voltage	Imax	Connection type
RSMFF-2R	18—34 VDC	110 mA	Terminal block
RSMFG-2R	18—34 VDC / 15—24 VAC ±10%	110 mA 115 mA	

Technical specifications

|	
3 analogue / modulating outputs	0—10 VDC mode: min. load 50 kΩ ($R_L \geq 50$ kΩ)
	0—20 mA mode: max. load 500 Ω ($R_L \leq 500$ Ω)
	PWM (open-collector type) mode: 1 kHz, min. load 50 kΩ ($R_L \geq 50$ kΩ), 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 ºC (0—50 ºC)
	±3 % rH (0—100 % rH)
	±30 ppm CO_2 (400—2.000 ppm)
Protection standard	IP30 (according to EN 60529)
CO_2 sensor stabilising time	35 seconds

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.

Settings and indications
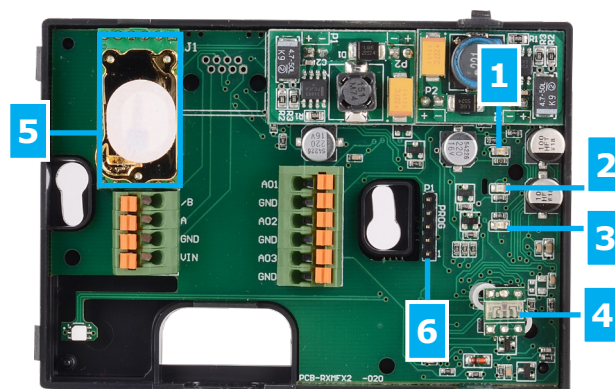
1 - Red LED	On	Measured temperature, relative humidity or CO_2 are out of range
	Blinking	Communication with one of the sensors fails
2 - Yellow LED	On	Measured temperature, relative humidity or CO_2 values are in the alert range
	Blinking	Modbus communication has stopped and HR8 is activated (Modbus timeout > 0 seconds)
3 - Green LED	On	Measured temperature, relative humidity or CO_2 are within range
4 - Ambient light sensor		Low light intensity / Active / Standby
5 - CO_2 sensor element		Replaceable in case of faulty operation
6 - PROG header, P1	1 2 3 4 5	Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters
	1 2 3 4 5	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 CO_2 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.*

Wiring and connections

Article type	RSMFF-2R	RSMFG-2R	
VIN	18—34 VDC	18—34 VDC	15—24 VAC ±10%
GND	Ground	Common ground	AC ~
A	Modbus RTU (RS485) communication, signal A		
/B	Modbus RTU (RS485) communication, signal /B		
AO1	Analogue / modulating output 1 for temperature measurement (0—10 VDC / 0—20 mA / PWM)		
GND	Ground AO1	Common ground	
AO2	Analogue / modulating output 2 for relative humidity measurement (0—10 VDC / 0—20 mA / PWM)		
GND	Ground AO2	Common ground	
AO3	Analogue / modulating output 3 for CO_2 measurement (0—10 VDC / 0—20 mA / PWM)		
GND	Ground AO3	Common ground	
Connections	Spring contact terminal blocks, cable cross section: 1,5 mm²		

Attention! The -F version of the product is not suited for 3-wire connection. It has separate grounds for power supply and analogue output. Connecting both grounds together might result in incorrect measurements. Minimum 4 wires are required to connect -F type sensors.

The -G version is intended for 3-wire connection and features a 'common ground'. This means that the ground of the analogue output is internally connected with the ground of the power supply. For this reason, -G and -F types cannot be used together on the same network. Never connect the common ground of -G type articles to other devices powered by a DC voltage. Doing so might cause permanent damage to the connected devices

Standards

- Low Voltage Directive 2014/35/EU

  CE

  - 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
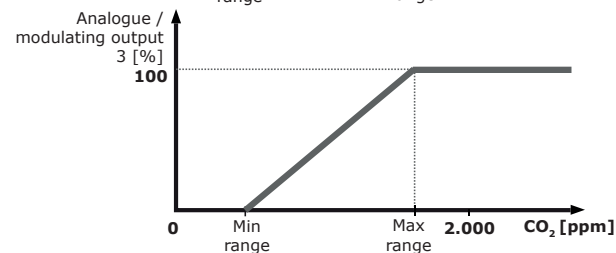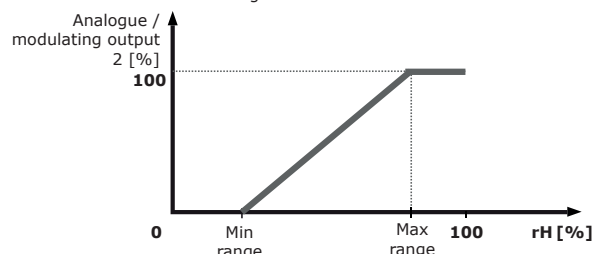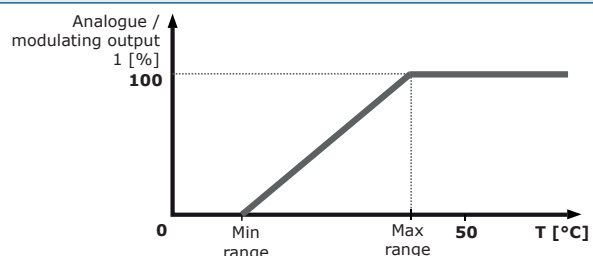
- WEEE 2012/19/EU

- RoHs Directive 2011/65/EU

Operational diagrams
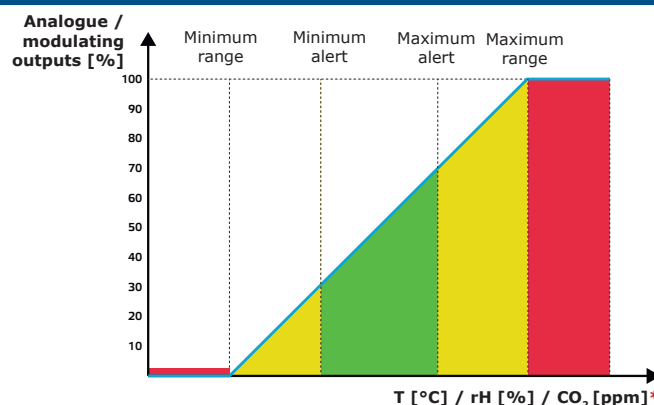
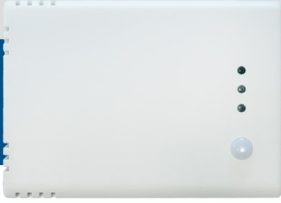*LED indications - CO_2 (default), T or rH
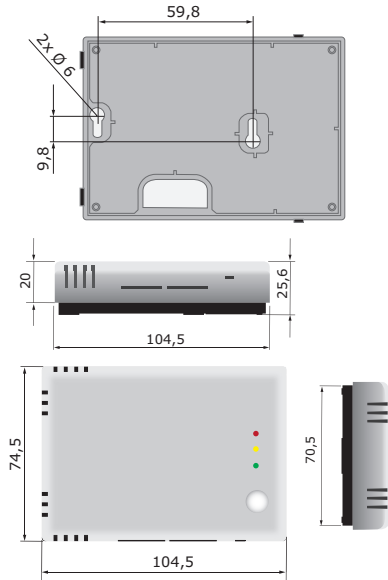

Global trade item numbers (GTIN)

Packaging	RSMFF-2R	RSMFG-2R
Unit	05401003011362	05401003011379
Carton	05401003301807	05401003301814
Box	05401003502624	05401003502631

Fixing and dimensions

Packaging
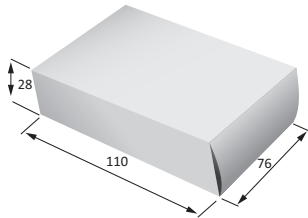
Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
RSMFF-2R **RSMFG-2R**	Unit (1 pc.)	110	76	28	0,095 kg	0,107 kg
	Carton (24 pcs.)	492	177	85	2,280 kg	2,718 kg
	Box (144 pcs.)	590	380	505	13,680 kg	17,247 kg