

RCTHH-2

Intelligent temperature and humidity room sensor



The RCTHH-2 are intelligent room sensors featuring adjustable temperature and relative humidity ranges. The used algorithm controls a single analogue / modulating output based on the measured temperature and humidity values, which can be used to directly control an EC fan, an AC fan speed controller or an actuator powered damper. They feature 24 VDC power supply and an ambient light sensor. All parameters are accessible via Modbus RTU.

Key features

- Spring contact terminal block or RJ45 connection
- Selectable temperature and relative humidity ranges
- Fan speed control based on temperature and humidity
- Bootloader for updating the firmware via Modbus RTU communication
- Ambient light sensor with adjustable 'active' and 'standby' level
- Modbus RTU communication
- Three LEDs with adjustable light intensity for status indication
- Long-term stability and accuracy

Technical specifications

Analogue / modulating output	0—10 VDC mode: $R_L \geq 50 \text{ k}\Omega$
	0—20 mA mode: $R_L \leq 500 \Omega$
	PWM (open-collector type) mode: 1 kHz, $R_L \geq 50 \text{ k}\Omega$, PWM voltage level: 3,3 VDC or 12 VDC
Typical field of use	Temperature range: 0—50 °C
	Relative humidity range: 0—95 % rH (non-condensing)
Accuracy	$\pm 0,4 \text{ }^\circ\text{C}$ (range 0—50 °C)
	$\pm 3\%$ rH (range 0—100 %)
Protection standard	IP30 (according to EN 60529)



Area of use

- Demand controlled ventilation based on measured temperature and relative humidity
- Suitable for residential and commercial buildings
- For indoor use only

Article codes

Article code	Supply voltage	Connection type	Imax
RCTHH-2	24 VDC	RJ45 or terminal block	40 mA

Wiring diagram

RJ45 socket (Power over Modbus)

Pin	Signal	Description
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		
Pin 8	GND	Ground, supply voltage



Terminal Block 1

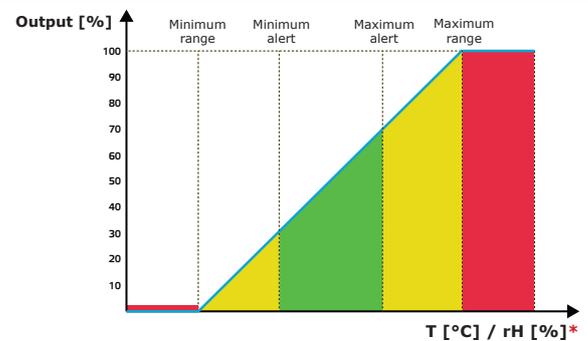
VIN	Supply voltage 24 VDC
GND	Supply voltage, ground
A	Modbus RTU communication, signal A
/B	Modbus RTU communication, signal /B

Terminal Block 2

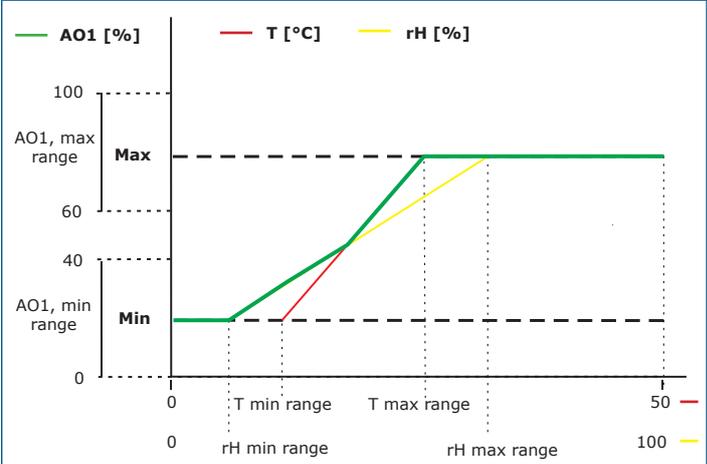
AO1	Analogue / modulating output for temperature or relative humidity (0—10 VDC / 0—20 mA / PWM)
GND	Ground AO1

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!

Operational diagram(s)



*LED indications - T (default) or rH



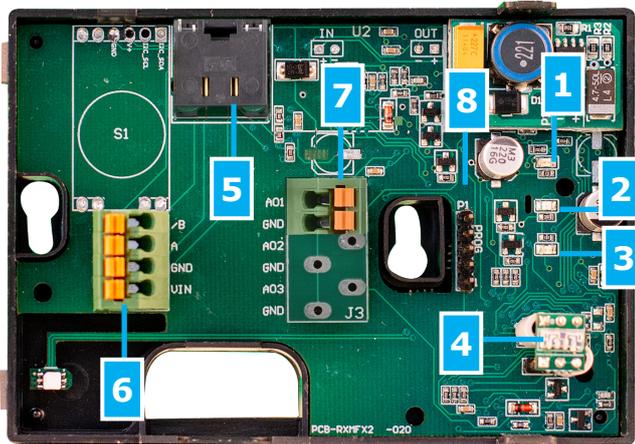
Note: The output changes automatically depending on the highest of the T or rH values, i.e. the highest of the two output values controls the output. See the green line in the operational diagram above. One or multiple sensors can be deactivated. E.g. it is also possible to control the output based on the measured temperature value only.

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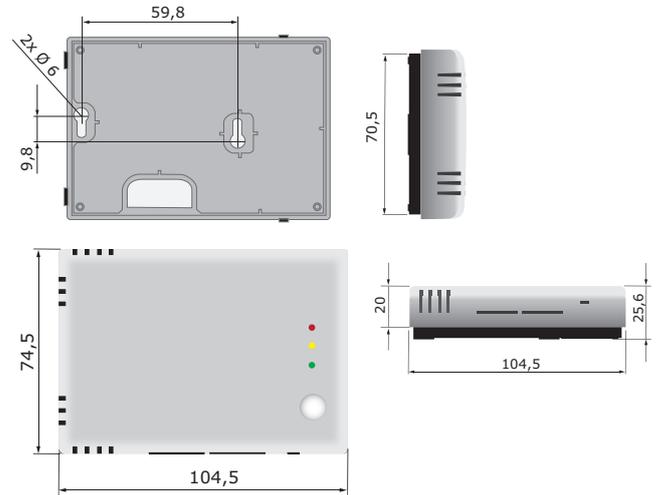
Settings and indications



1 - Red LED	On	Measured temperature or relative humidity values are out of range
	Blinking	Communication with one of the sensors fails
2 - Yellow LED	On	Measured temperature or relative humidity 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 or relative humidity 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 and relative humidity
8 - 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 power supply to enter bootloader mode

Note: By default, the LED indicators visualise the measured temperature 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



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 3SMobus 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.

Standards

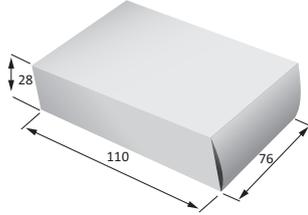
- Low Voltage Directive 2014/35/EC
- EN 60529:1991 Degrees of protection provided by enclosures (IP Code) Amendment AC:1993 to EN 60529
- EN 60730-1:2011 Automatic electrical controls for household and similar use - Part 1: General requirements
- EMC directive 2014/30/EC:
- EN 60730-1:2011 Automatic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



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Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
RCTHH-2	Unit (1 pc.)	110	76	28	0,080 kg	0,115 kg
	Carton (24 pcs.)	492	182	84	1,92 kg	2,76 kg
	Box (144 pcs.)	514	414	274	11,52 kg	16,56 kg

Global trade item numbers (GTIN)

Packaging	RCTHH-2
Unit	05401003017944
Carton	05401003302538
Box	05401003503676