

FTW04 RS485 Modbus

Room sensor for relative humidity and temperature

thermokon
Sensortechnik GmbH

Data Sheet

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Application

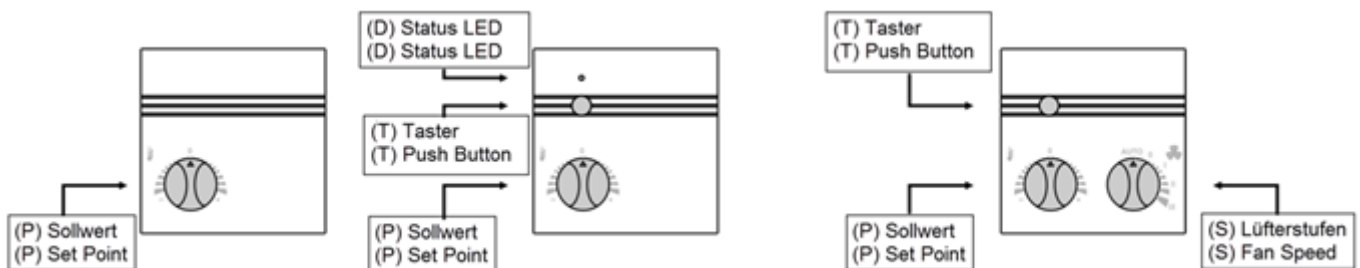
The sensor with display is designed for humidity/temperature detection and integrated manual control of HVAC applications (change set point, change occupancy, change fan speed).

The operating functions can be used very flexible depending on the room requirements. Thus, different types with various numbers of function keys are available.

The sensor has a RS485 MODBUS communication interface, by which the functions of the operating keys respectively the status LED can be inquired or controlled.

Types Available

- FTW04 LCD MODBUS AO2V Room sensor with 2 analogue outputs
- FTW04 LCD P MODBUS AO2V + with set point potentiometer (P)
- FTW04 LCD PTD MODBUS AO2V + with set point potentiometer (P) push button (T) and status LED (D)
- FTW04 LCD PST MODBUS AO2V + with set point potentiometer (P), rotary switch (S) and push button (T)



FTW04 P RS485 Modbus AO2V

FTW04 PTD RS485 Modbus AO2V

FTW04 PST RS485 Modbus AO2V

Security Advice – Caution



The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual



Notes on Disposal

As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most Thermokon products contain valuable materials that should be recycled rather than disposed as domestic waste. Please note the relevant regulations for local disposal.

Remarks to Room Sensors

Location and Accuracy of Room Sensors

The room sensor should be mounted in a suitable location for measuring accurate room temperature. The accuracy of the temperature measurement also depends directly on the temperature dynamics of the wall. It is important, that the back plate is completely flush to the wall so that the circulation of air occurs through the vents in the cover. Otherwise, deviations in temperature measurement will occur due to uncontrolled air circulation. Also the temperature sensor should not be covered by furniture or similar devices. Mounting next to doors (due to draught) or windows (due to colder outside wall) should be avoided.

The temperature dynamics of the wall will influence the temperature measurement. Various wall types (brick, concrete, dividing and hollow brickwork) all have different behaviors with regards to thermal variations.

Surface and Flush Mounting

The temperature dynamics of the wall influence the measurement result of the sensor. Various wall types (brick, concrete, dividing and hollow brickwork) have different behaviours with regard to thermal variations. A solid concrete wall responds to thermal fluctuations within a room in a much slower way than a light-weight structure wall. Room temperature sensors installed in flush boxes have a longer response time to thermal variations. In extreme cases they detect the radiant heat of the wall even if the air temperature in the room is lower for example. The quicker the dynamics of the wall (temperature acceptance of the wall) or the longer the selected inquiry interval of the temperature sensor is the smaller the deviations limited in time are.

Build-up of Self-Heating by Electrical Dissipative Power

Temperature sensors with electronic components always have a dissipative power, which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. This dissipative power has to be considered when measuring temperature. In case of a fixed operating voltage ($\pm 0,2$ V) this is normally done by adding or reducing a constant offset value. As Thermokon transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0..10 V / 4..20 mA have a standard setting at a operating voltage of 24 V =. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased or lowered by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

Remark: Occurring draft leads to a better carrying-off of dissipative power at the sensor. Thus temporally limited fluctuations might occur upon temperature measurement.

Application Notice for Humidity Sensors

Refrain from touching the sensitive humidity sensor. Any touch of it will result in an expiration of warranty.

Under normal environmental conditions we recommend a recalibration interval of about 1 year to maintain the indicated accuracy. At high ambient temperatures and high humidity or when using the sensor in aggressive gases, an earlier recalibration or a change of the humidity sensor can become necessary. Such recalibrations or a probable sensor change are not part of the general warranty.

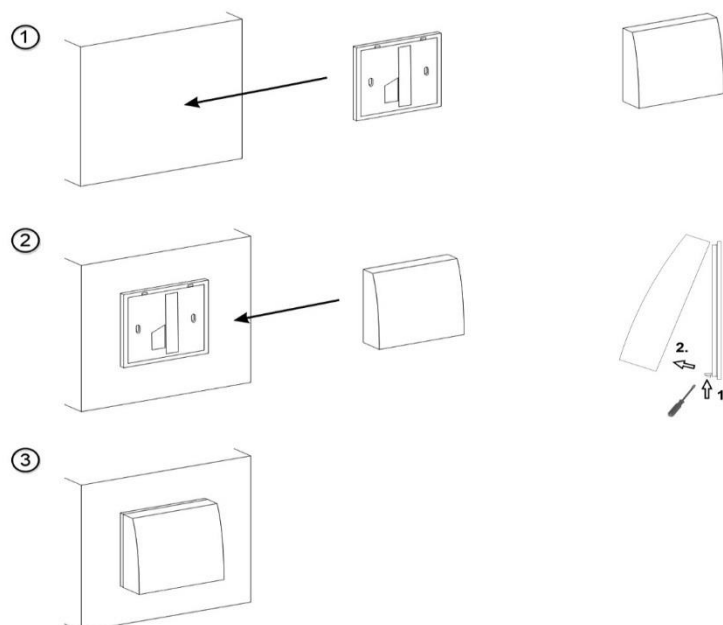
Technical Data

Measuring values	Temperature + humidity
Network technology	RS485 Modbus
	Baud rate, transmission method, parity configurable (look at DIP switch configuration), Mode half duplex, internal bus terminating resistor
Power supply	15..24 V = ($\pm 10\%$) or 24 V~ ($\pm 10\%$)
Power consumption	typ. 0,4 W (24 V = 0,6 VA (24 V =)
Measuring range temp	0..+50 °C
Measuring range humidity	0..100% rH non condensing
Accuracy temperature	$\pm 1\%$ of measuring range (typ. at 21 °C)
Accuracy humidity	$\pm 2\%$ at range 10..90% rH (typ. at 21 °C)
Inputs	2 digital inputs, dry contact, max. wire length 10 m
Control functions	Potentiometer (P), rotary switch (S), presence button (T), status LED (D)
Enclosure	ASA, pure white (similar to RAL9010)
Protection	IP30 according to EN 60529
Cable entry	from behind or side-mounted entry from top/bottom
Connection electrical	Terminal screws, max. 1,5 mm ²
Ambient conditions	-20..+70 °C, max. 85% rH, non condensing
Weight	95 g

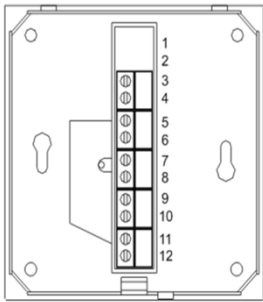
Mounting Advices

The device is supplied in an operational status.
Make sure that the device is power-off, if you install it!

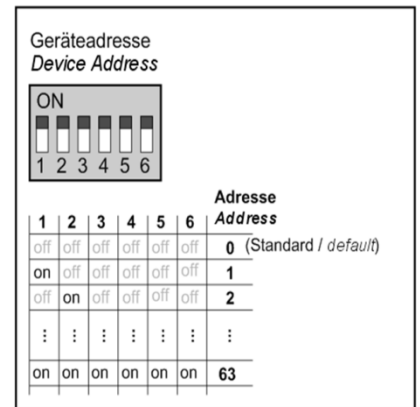
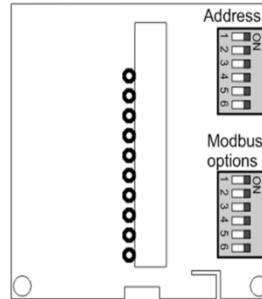
The device can be installed on a flush box or to the smooth wall surface.
If the device is mounted on flush box, the end of the installation tube in the flush box must be sealed, so to avoid any draught in the tube falsifying the measuring result.



Connection Plan



- 3: Digitaler Eingang 1 / *digital input 1*
 4: Digitaler Eingang 2 / *digital input 2*
 5: GND
 6: Ausgang 1 heizen / *output 1 heating*
 7: Ausgang 2 kühlen / *output 2 cooling*
 8: GND
 9: B-
 10: A+
 11: GND
 12: Uv 15-24VDC / 24VAC



Optionen
Options

ON

1	2	3	4	5	6
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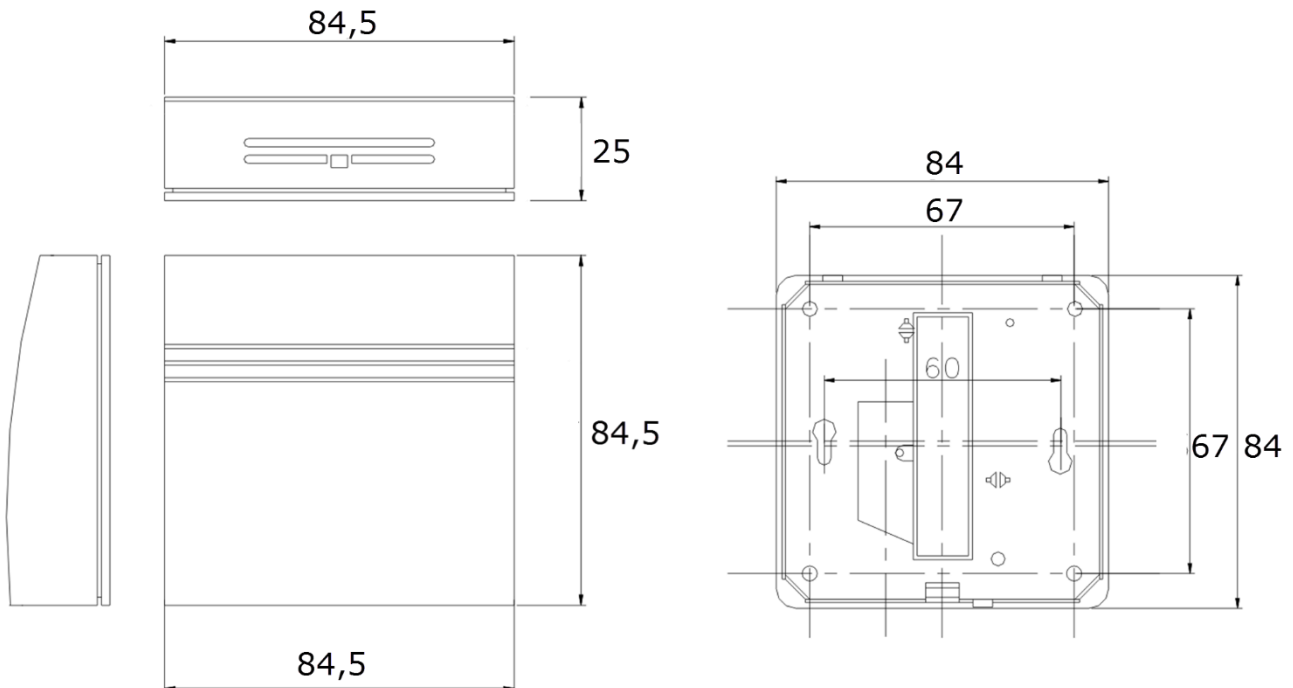
1	Modus / Mode	2	3	Baud	4	5	Parität / Parity	6	Abschluss / Termination
off	RTU (Standard / default)	off	off	9600 (Standard / default)	on	off	even (Standard / default)	off	inaktiv (Standard / default)
on	ASCI	off	on	19200	off	on	odd	on	120Ohm
		on	on	38400	off	off	no		
				57600					

RS485 Modbus registers

Software and detailed description of the RS 485 Modbus registers are available for download at the website of Thermokon. The necessary file got the name "WRF04_CO2_RS485_Modbus_Software_en.zip".



Dimensions (mm)



Accessories (optional)

(D+S) 1 Set (2 pieces each) rawl plugs and screws