FTP+ (LCD) RS485 Modbus

Room pendulum sensor for relative humidity and temperature

Thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

(Ausführung ohne LCD)

» APPLICATION

Sensor for measuring humidity and temperature in outdoor areas. In delivery condition, the sensor is designed for measuring temperature and relative humidity. Alternatively the output can be set to absolute humidity, enthalpy or dew point (changeable via Thermokon USEapp). A mounting base for mounting on a level surface and fixing material are included in delivery.

» TYPES AVAILABLE

Room pendulum sensor temperature + humidity – BUS
- FTP+ RS485 Modbus

» 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 a 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

» PRODUCT TESTING AND CERTIFICATION

Declaration of conformity
The declaration of conformity of the products are available on our website
https://www.thermokon.de/direct/en-gb/categories/ftpplus

» NOTES ON DISPOSAL

The crossed-out wheelie bin symbol indicates that the product or removable batteries must not be disposed of with household or commercial waste. Within the EU, you are legally obliged to dispose of the product separately and appropriately in accordance with the national laws of your country. Alternatively, please contact your supplier or Thermokon Sensortechnik GmbH. Further information can be found at: www.thermokon.com

» BUILD-UP OF SELF-HEATING BY ELECTRICAL DISSIPATIVE POWER

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 (±0,2 V) this is normally done by adding or reducing a constant offset value.

Thermokon transducers can be operated with variable operating voltages. The transducers are set at the factory with a reference operating voltage of 24 V =.

At this voltage, the expected measuring error of the output signal will be the least. Other operating voltages, can cause a measurement deviation changing power loss of the sensor electronics.

A recalibration can be carried out directly on the unit or via a software variable (app or bus).

Remark: Occurring draught 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

At regular environmental condition, it is recommended to calibrate the sensor annually to check the compliance with the accuracy required in the application. The following conditions can damage the sensor element or lead in long therm to loss of the specified accuracy:

- Mechanical stress
- Contamination (e.g. dust / fingerprints)
- Aggressive chemicals
- Ambient conditions (e.g. condensation on measuring element)

Do not touch the sensor elements!

Re-calibration or exchange of the sensor element are not subject of the general warranty.

» TECHNICAL DATA

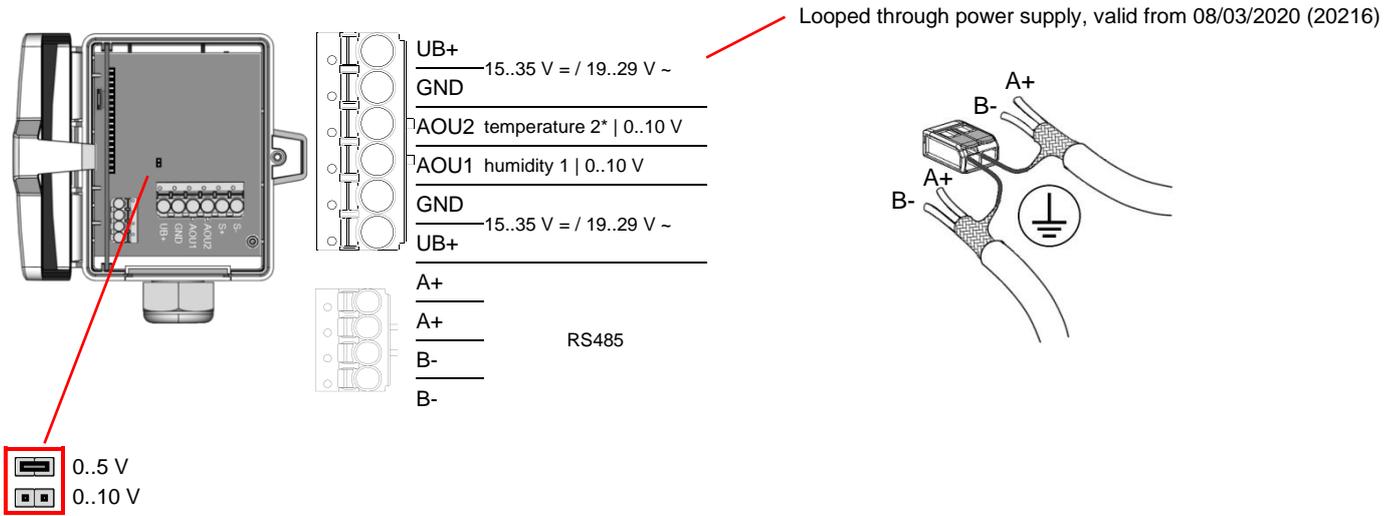|	
Measuring values	temperature, humidity (humidity output configurable)
Output voltage	2x 0..10 V or 0..5 V, min. load 10 kΩ (live-zero configuration via Thermokon USEapp)
Network technology	RS485 Modbus, RTU, half-duplex, baud rate 9.600, 19.200, 38.400 or 57600, parity: none (2 stopbits), even or odd (1 stopbit), **Fail-safe Biasing required**
Power supply	15..35 V = or 19..29 V ~ SELV *With alternating voltage, the correct polarity must be ensured*
Power consumption	max. 0,4 W (24 V =) | 0,8 VA (24 V ~)
Measuring range temp.	-20..+80 °C (default setting), optionally configurable via Thermokon USEapp
Measuring range humidity	0..100% rH non-condensing, optionally configurable via Thermokon USEapp (enthalpy, absolute humidity, dew point)
Accuracy temperature	±0,3 K (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	enclosure USE-M, PC, pure white, with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	M25 for cable max. Ø=7 mm, seal insert for fourfold cable entry
Connection electrical	**Mainboard** removable plug-in terminal, max. 2,5 mm²	**Plug-in card** removable plug-in terminal, max. 1,5 mm²
Pipe	PA6, with stainless steel weight, black, Ø=20 mm, Length 210 mm
Filter	stainless steel wire mesh
Ambient condition	-20..+70 °C, short term condensation

When several BUS devices are supplied by one 24 V AC voltage supply, it is to be ensured that all "positive" operating voltage input terminals (+) of the field devices are connected and all "negative" operating voltage input terminals (-) (=reference potential) are connected (in-phase connection of field devices).In the case of reversed polarity at one field device, a supply voltage short-circuit would be caused by that device.
The consequential short-circuit current flowing through this field my cause damage to it. Therefore, pay attention to correct wiring.
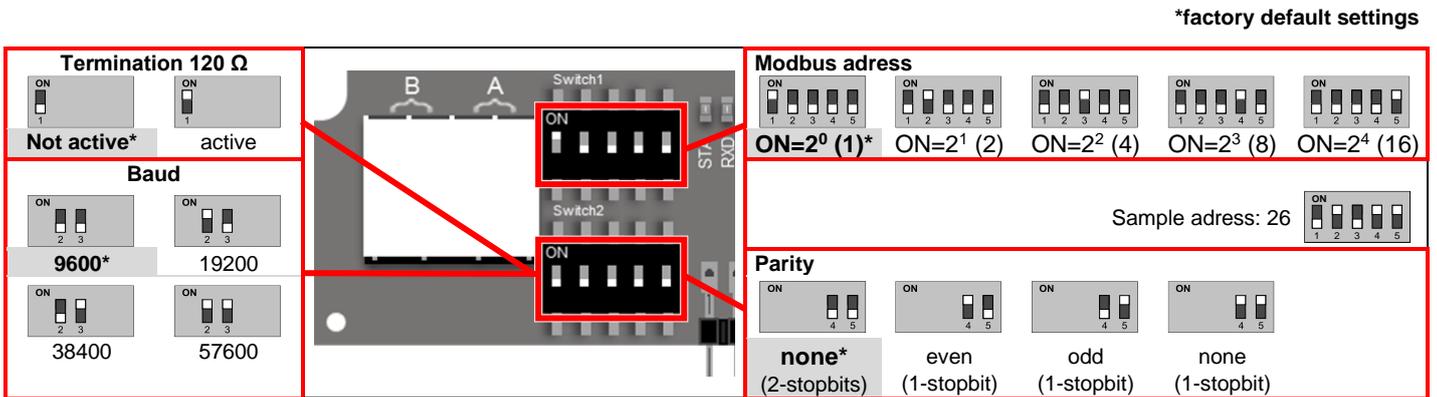
» CONNECTION PLAN

If the RS485 cable is looped through, connect both cable shields using the enclosed 2-pol. Connect terminal as shown.

FTP+ RS485

UB+ ── 15..35 V = / 19..29 V ~
GND
AOU2 temperature 2* | 0..10 V
AOU1 humidity 1 | 0..10 V
GND ── 15..35 V = / 19..29 V ~
UB+
A+
A+ ── RS485
B-
B-

Looped through power supply, valid from 08/03/2020 (20216)

0..5 V
0..10 V

» DIP-SWITCH-SETTINGS

*factory default settings

Termination 120 Ω
Not active*   active

Baud
9600*   19200
38400   57600

Modbus adress
ON=2^0 (1)*   ON=2^1 (2)   ON=2^2 (4)   ON=2^3 (8)   ON=2^4 (16)

Sample adress: 26

Parity
none*   even   odd   none
(2-stopbits) (1-stopbit)   (1-stopbit)   (1-stopbit)

The modbus address of the device is set in the range of 1 ... 31 (binary encoded) using a 5-pole DIP switch. With address 0 via DIP, an extended address range (32..247) is available via USEapp.
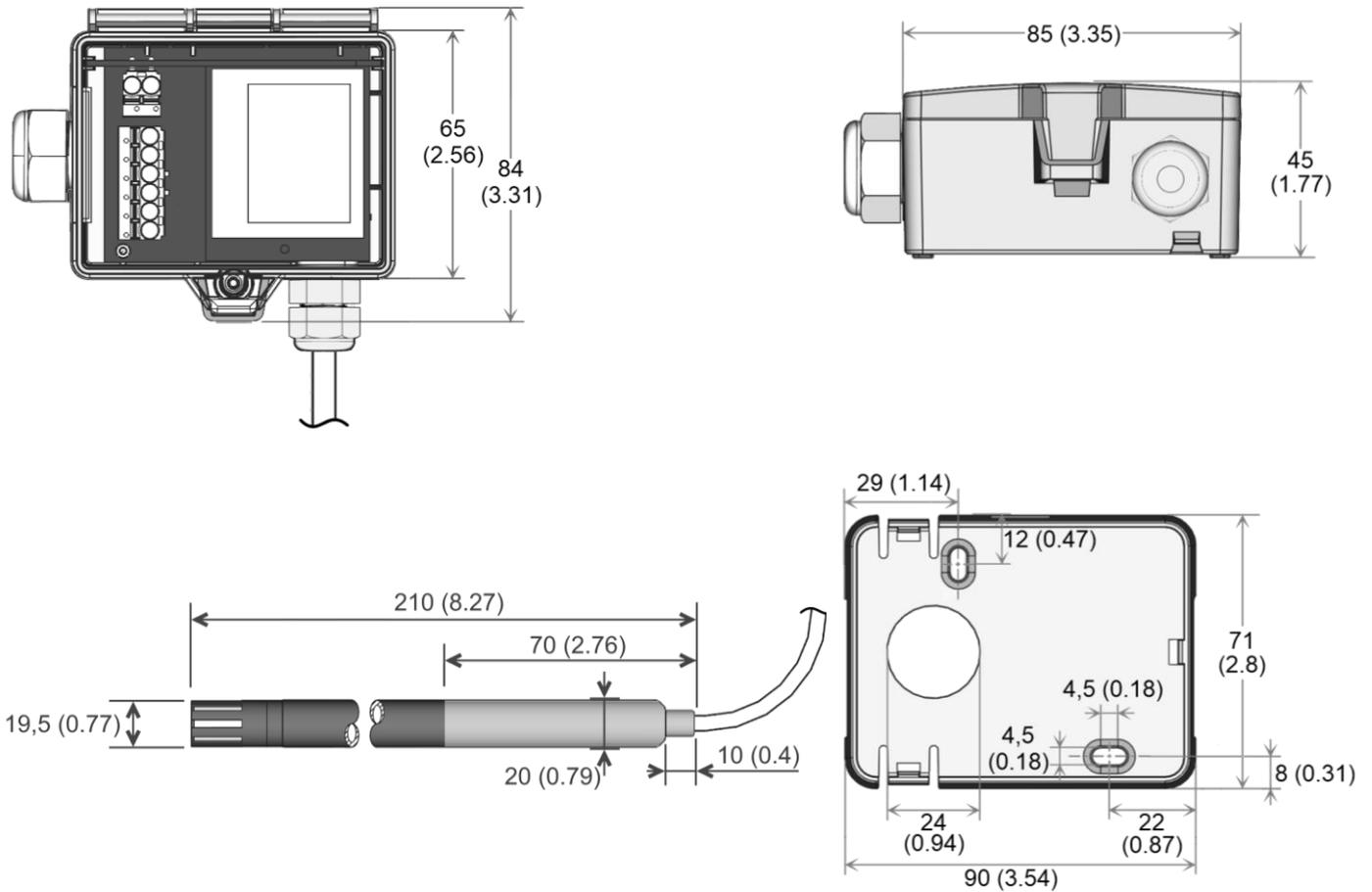
Address	Access	Description	Resolution / Unit	
1	R	**relative humidity**	0.1	%rF

Address	Access	Description	Register 400 = 1 (Unit SI)			Register 400 = 2 (Unit Imperial)		
			Resolution / Unit			Resolution / Unit		
0	R	Temperature	SI	0.1	°C	Imperial	0.1	°F
2	R	Absolute humidity	SI	0.01	g/m³	Imperial	0.01	Gr/ft³
3	R	Enthalpy	SI	0.1	kj/kg	Imperial	0.1	BTU/lb
4	R	Dew point	SI	0.1	°C	Imperial	0.1	°F

Modbus addresses:
USE-RS485 Modbus Interface

A detailed description of the Modbus addresses can be found under the following link: → **Download**

» DIMENSIONS (MM)

65 (2.56)
84 (3.31)

85 (3.35)
45 (1.77)

210 (8.27)
70 (2.76)
19,5 (0.77)
20 (0.79)
10 (0.4)

29 (1.14)
12 (0.47)
71 (2.8)
4,5 (0.18)
4,5 (0.18)
8 (0.31)
24 (0.94)
22 (0.87)
90 (3.54)

» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base	Item No. 631228
Mounting kit universal	Item No. 698511

• Cover screw + screw cover• 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

» ACCESSORIES (OPTIONAL)

Filter stainless steel, wire mesh	Item No. 231169
RS485 Biasing Adapter	Item No. 811378
USB RS485 Modbus RTU Logger	Item No. 809917
USB Interface RS485 (incl. driver CD)	Item No. 668293