RDF18+ Temp_rH RS485 BACnet

Room sensor temperature and humidity, flush mounting at ceiling

thermokon®

HOME OF SENSOR TECHNOLOGY

USEapp ✓

ASHRAE **BACnet**™

» APPLICATION

Ceiling sensor for unobtrusive humidity and temperature measurement in the ceiling area of room and office spaces. Designed for control and monitoring applications.

» TYPES AVAILABLE

Ceiling sensor temperature + humidity – active BUS
- RDF18+ Temp_rH RS485 BACnet

Ceiling sensor with display temperature + humidity – active BUS
- RDF18+ Temp_rH LCD RS485 BACnet

» 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

CE

Declaration of conformity
The declaration of conformity of the products are available on our website
https://www.thermokon.de/direct/en-gb/categories/rdf18plus

»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

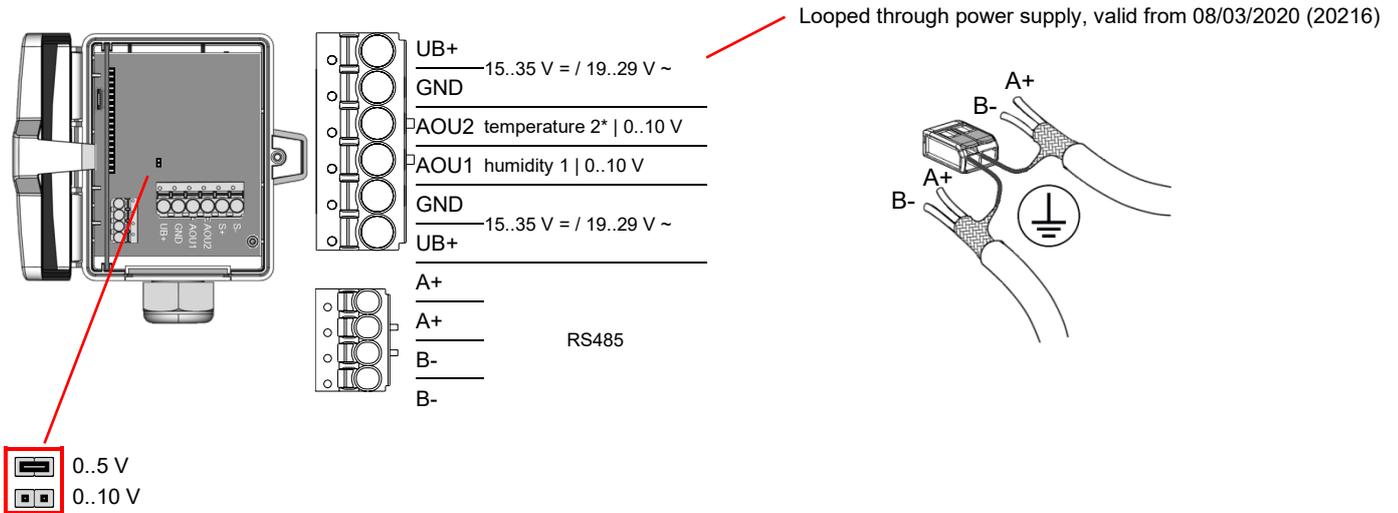|		
Measuring values	temperature, humidity (humidity output configurable)	
Output voltage	2x 0..10 V or 0..5 V, min. load 10 kΩ (live-zero configuration via Thermokon USEapp)	
Network technology	RS485 BACnet MS/TP, **Fail-safe Biasing required**	
Power supply	15..35 V = or 19..29 V ~ SELV *With alternating voltage, the correct polarity must be ensured*	
Power consumption	max. 2,5 W (24 V =) | 4,3 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)	
Display *(optional)*	LCD 29x35 mm with RGB backlight	
Enclosure	enclosure USE-M, PC, pure white, with removable cable entry	**with LCD Display (optional)** cover PC, transparent
Protection	**enclosure** IP65 according to EN 60529	**sensor head** IP30 according to EN 60529
Cable entry	M25 for cable max. Ø=7 mm, seal insert for fourfold cable entry	
Connection electrical	removable plug-in terminal (Mainboard: max. 2,5 mm² / Plug-in card: max 1,5 mm²); connection wire sensor head to plug RJ12: PVC 0,15 m; connection wire bush RJ12 to enclosure: PVC 3 m	
Sensor head	ABS, white, Ø=30 mm	
Ambient condition	-35..+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.
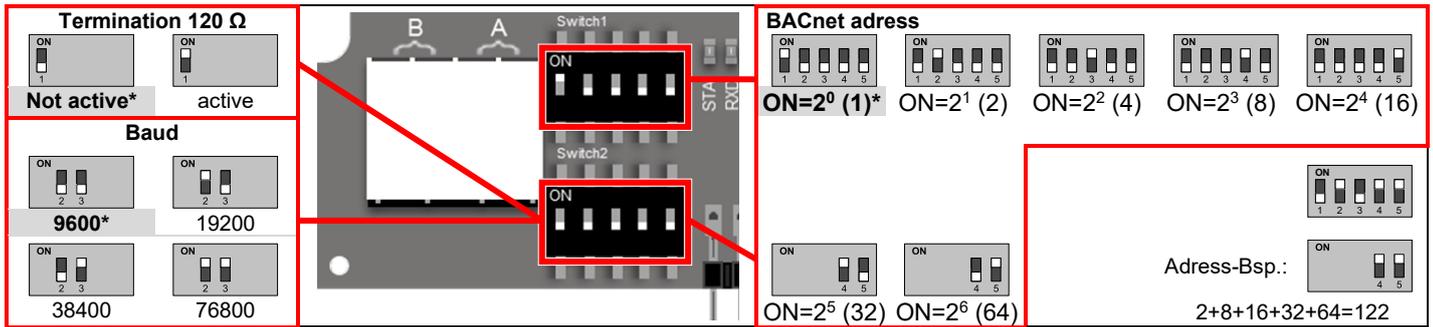
RDF18+ Temp_rH RS485 BACnet

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

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+
B-
B-
RS485

0..5 V
0..10 V

»DIP SWITCH CONFIGURATION (PLUG-IN CARD)

The BACnet address of the device is set binary coded in the range of 1 ... 127 via 7 dip-switches. (the address 0 is reserved and cannot be selected).

*factory default settings

**Termination 120 Ω**

Not active*   active

Baud

9600*   19200

38400   76800

BACnet adress

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

ON=2^5 (32)   ON=2^6 (64)

Adress-Bsp.:   2+8+16+32+64=122

Object	Access	Description	COV Increment	Unit
AI-1	R	**Relative Humidity**	0..100 %	%rF

Object	Access	Description	Object AV-38 = 1 (Unit SI)		Object AV-38 = 2 (Unit Imperial)	
			COV increment / Unit		COV increment / Unit	
AI-0	R	**Temperature**	0..+250	°C	0..+480	°F
AI-2	R	**Absolute humidity**	0..80	g/m³	0..35	gr/ft³
AI-3	R	**Relative humidity**	0..85	KJ/kg	0..40	BTU/lb
AI-4	R	**Dew point**	0..80	°C	0..200	°F

BACnet Objects, PICS and BIBBs:
USE-RS485 BACnet interface
A detailed description of the BACnet interface can be found at the following link:
https://thermokon.de/direct/files/use-rs485-bacnet-manual.zip

» DIMENSIONS (MM)
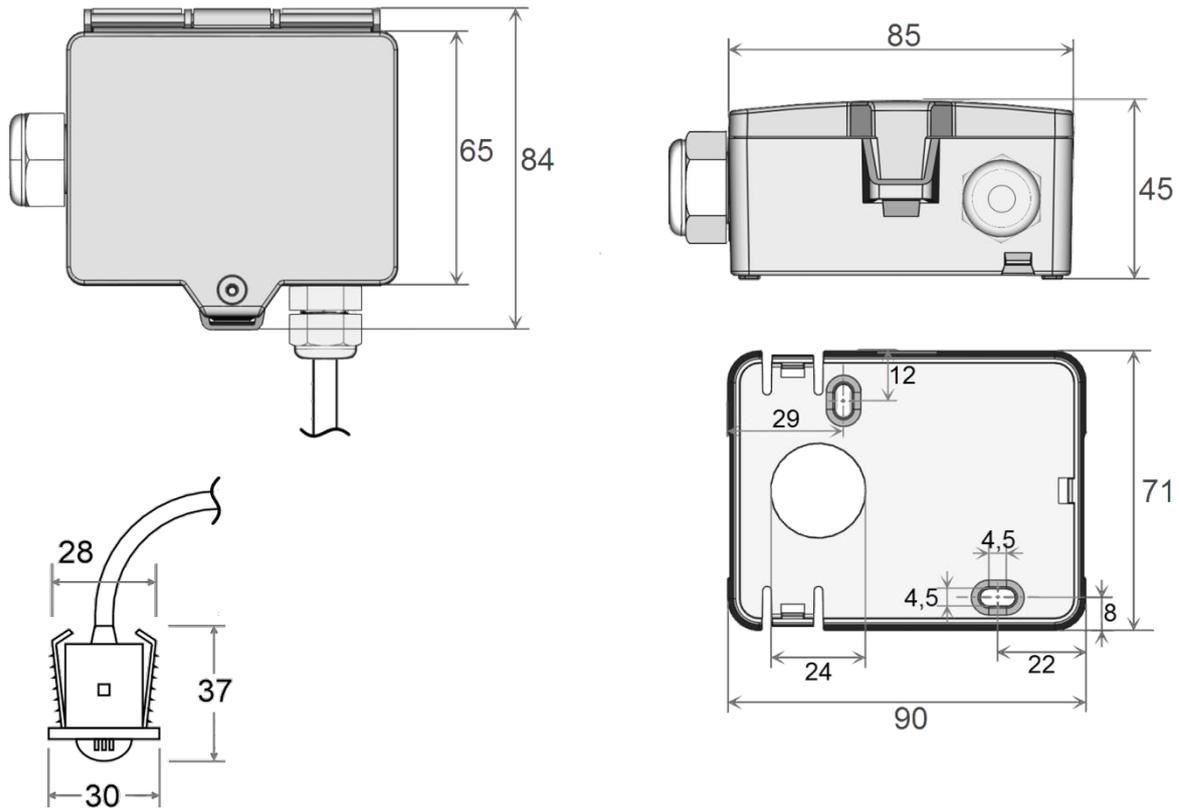
» ACCESSORIES (INCLUDED IN DELIVERY)

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)

Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	Item No. 641364
Filter stainless steel, wire mesh	Item No. 231169
RS485 Biasing Adapter	Item No. 811378
USB Interface RS485 (incl. driver CD)	Item No. 668293

M16 Sealing inserts cable entry (packaging unit 10 pcs.)

for wire with Ø	8 mm
Item No	641340