WRF07 RC (x) RS485 BACnet

Multifunction room controller panel

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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WRF07 P

WRF07 P TD

(Illustration shows. Insert switch programme with support ring, frame optionally available depending on switch programme)

» APPLICATION

The visually appealing flush-mounted room controller can be supplied in the most common switch ranges and various colour variants and serves for individual temperature control in living, hotel and office rooms. Possible operating elements are potentiometer, LEDs and buttons for set point adjustment, operating mode switching, presence detection and optical feedback. Depending on the type, continuous or 2-point valves for heating or cooling can be controlled. The removable terminal allows easy pre-wiring.

» TYPES AVAILABLE

WRF07 RC x RS485 BACnet

Room operating unit temperature + humidity (optional) – DI4 RS485 BACnet

- WRF07 x (rH) DI4

Room controller temperature + humidity (optional) – AO2V RS485 BACnet

- WRF07 RC x (rH) AO2V

Room controller temperature + humidity (optional) – RS485 BACnet with flush mounted-IO module

- WRF07 RC x (rH) DO2R
- WRF07 RC x (rH) DO2T
- WRF07 RC x (rH) OVR
- WRF07 RC x (rH) OVT

P = Potentiometer – Set point adjustment

optional operating elements
T = Button – Occupancy; D = LED – Status indicator

» 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/wrf07-rc-x

»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

»MOUNTING ADVISE ROOM SENSORS

The Accuracy of the room sensors are influenced by the technical specifications as well as the positioning and the installation type.

During Assembly:

- Seal mounting box (if present).
- Installation type, air draught, heat source, radiation heat or direct sunlight can affect the measurement.
- Bulding material specific properties of the installation place *(brick-, concrete-, partition wall, cavity wall, …)* can affect the measurement.

Assembly not recommendet in…

- Air draught (e.g.: close to windows / doors / fans …)
- Near heating sources,
- Direct sunlight
- Niches / between furniture / …

»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

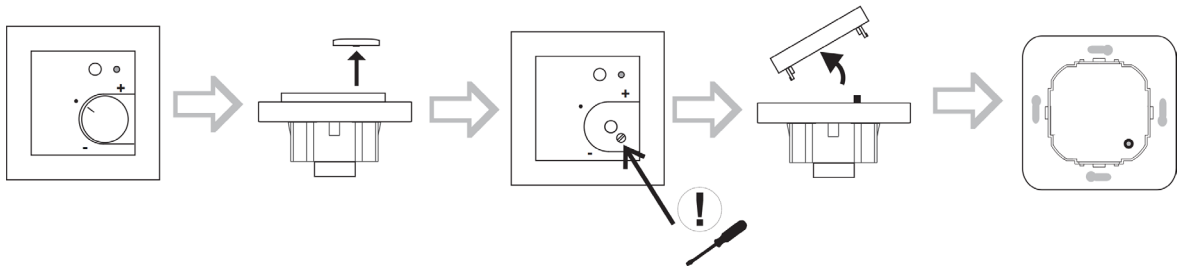
Measuring values *(optional)*	temperature, humidity	
Output Voltage *(type-dependent)*	**AO2V** 2x 0..10 V, heating & cooling, (min. load 10 kΩ)	
	OVR | OVT 1x 0..10 V cooling, (min. load 10 kΩ)	
Output switching contact *(type-dependent)*	**DO2R** 2x floating contact NO for 24 V =/~, load max. 3 A, heating & cooling	
	OVR 1x floating contact NO for 24 V =/~, load max. 3 A, heating	
	OVT 1x floating contact Triac for 24 V ~, load max. 1 A, cooling	
	DO2T 2x floating contact Triac for 24 V ~, load max. 1 A, heating & cooling	
Network technology	RS485 BACnet (MS/TP)	
Power supply *(type dependent)*	**AO2V | OVR | DO2R | DI4** 15..24 V = (±10%) or 24 V ~ (±10%)	**OVT | DO2T** 24 V ~ (±10%)
power consumption	typ. 0,9 W (24 V =) | 1 VA (24 V ~)	
Measuring range temperature	0..+50 °C	
Measuring range humidity	0..100% rH non-condensing	
Accuracy temperature	±0,5 K (typ. at 21 °C)	
Accuracy humidity	±2% between 10..90% (typ. at 21 °C)	
Inputs *(type-dependent)*	**AO2V | OVR | DO2R | OVT | DO2T** 2x inputs digital for floating contacts	**DI4** 4x inputs digital for floating contacts
Set point (P)	Potentiometer	
Button (T) *(optional)*	for presence detection	
LED (D) *(optional)*	for status feedback, green (standard), several LEDs possible (e.g. green, yellow, red)	
Protection	IP20 according to EN 60529	
Connection electrical	terminal block, max. 1,5 mm²	
Ambient condition	0..+50 °C, max. 85% rH non-condensing	
Mounting	flush mounted in standard EU box (Ø=60 mm, min. depth=45 mm), DO2T, DO2R, OVR, OVT with IO extension need 2 flush-mounting boxes (Ø=60 mm) and double frame (alternatively, the IO unit can be mounted in a deep flush-mounted box or be detached up to 10 m)	
Notes	for further variants see chapter room operating units, for other operating elements please request, for other frame designs please request	

»TYPE OVERVIEW - FUNCTIONALITY

WRF07	Digital Inputs	Internal Controller	0..10 V Heating	0..10 V Cooling	Relay Heating	Relay Cooling	Triac Heating	Triac Cooling	6WV Heating&Cooling
DI4	4								
AO2V	2	•	•	•					•
OVR	2	•		•	•				
OVT	2	•		•	•				
DO2R	2	•			•	•			
DO2T	2	•					•	•	

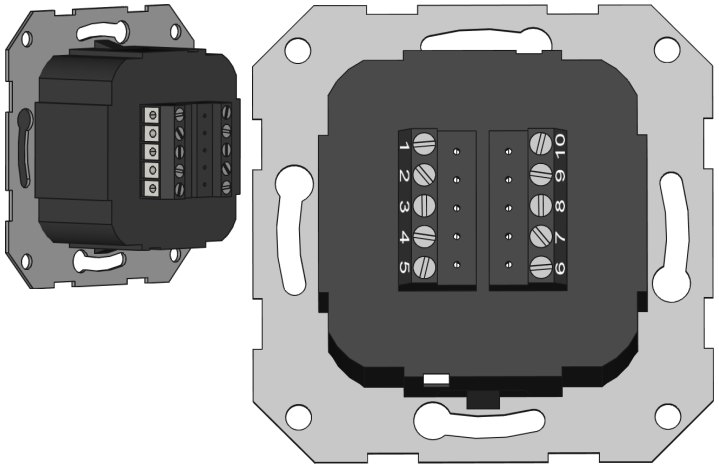
» MOUNTING ADVICES

The device is designed for mounting on a flush-mounted box. The bus cable is connected to the device by a terminal screw. For pre-wiring, the clamping screw can be removed. Due to the space for cabling, the use of deep installation boxes is recommended. The screws of the installation box (maximum torque of the screws 0.8 Nm) can fasten the lower part. The installation must be carried out in representative places for the room temperature, in order to avoid a falsification of the measuring result. Direct sunlight and drafts should be avoided. The end of the installation pipe in the flush-mounted box must be sealed in order to prevent drafts in the pipe. To ensure a smooth and accurate installation, it is essential that the installation boxes used are not jut out from the wall surface. The box must be flush with the wall or slightly recessed in the wall.

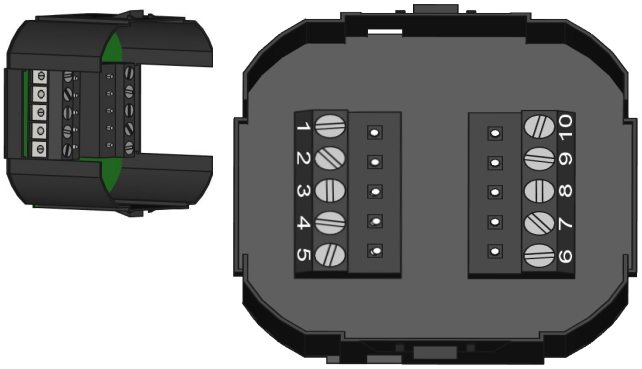


» CONNECTION PLAN

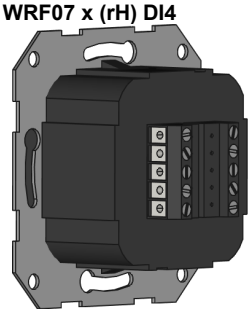
Flush-mounted device

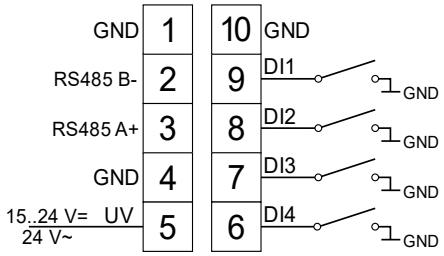


In-wall IO module

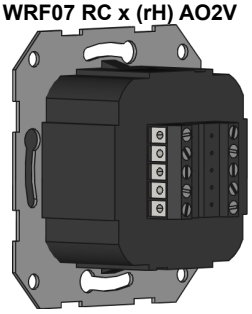


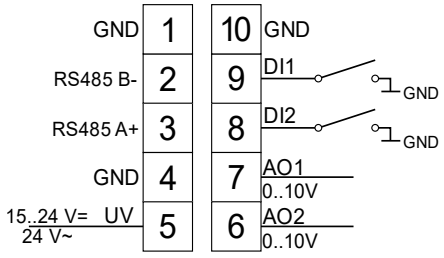
WRF07 x (rH) DI4



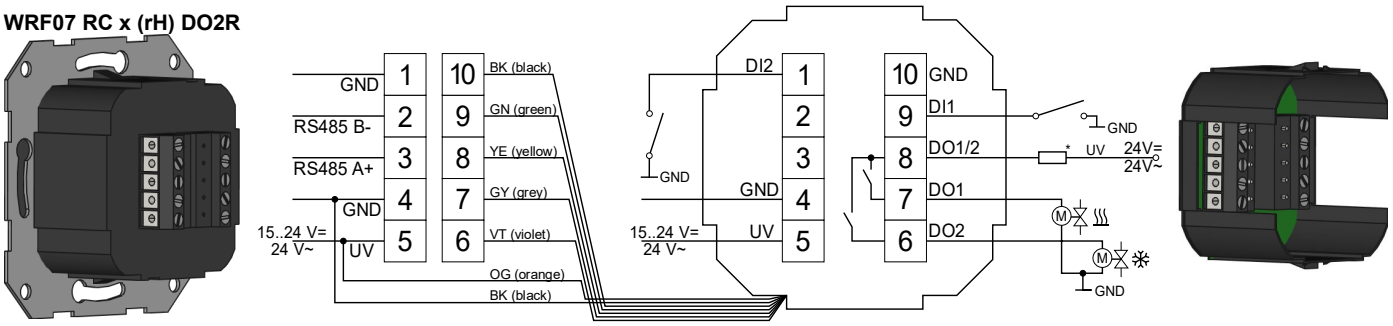


WRF07 RC x (rH) AO2V



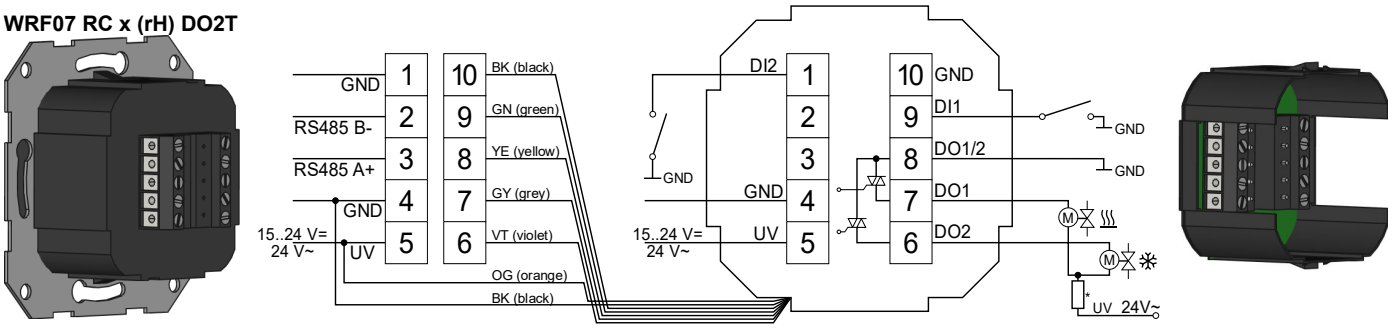


WRF07 RC x (rH) DO2R



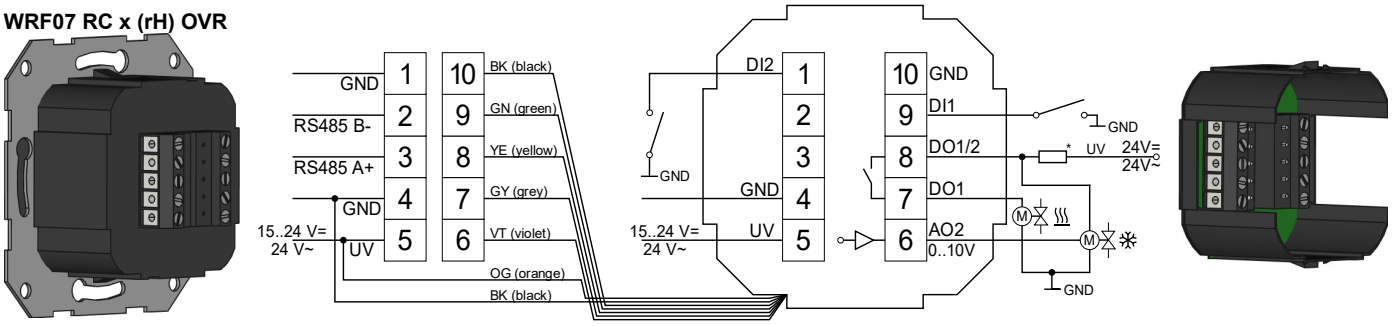
DO = Relay

WRF07 RC x (rH) DO2T



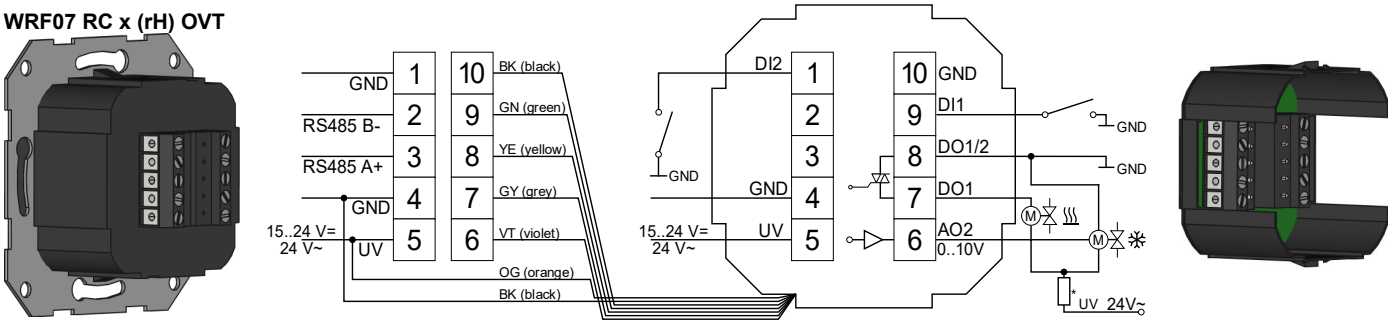
DO = Triacs

WRF07 RC x (rH) OVR



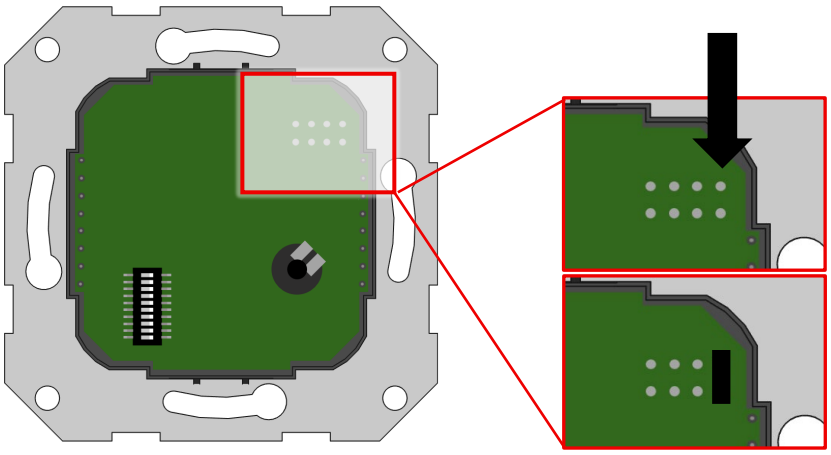
DO = Relay

WRF07 RC x (rH) OVT



DO = Triacs

»DIP SWITCH CONFIGURATION / TERMINATION



Don´t forget the BUS termination **(120 Ω)** at the last device of the line**!**

Jumper not set:
Termination not active

Jumper set:
Termination active

Modbus address - DIP 1..7 (binary coded)

Dip switch	1 = on	2 = on	3 = on	4 = on	5 = on	6 = on	7 = on
Value	2^0 (1)	2^1 (2)	2^2 (4)	2^3 (8)	2^4 (16)	2^5 (32)	2^6 (64)

Baud rate - DIP 8..10

8	9	10	Baud rate
off	off	off	**9600**
on	off	off	**19200**
off	on	off	**38400**
on	on	off	**57600**
off	off	on	**76800**
on	off	on	**115200**
off	on	on	
on	on	on	

Via the integrated LEDs the current operating status of the Modbus interface is indicated.

LED	Colour	Description
STA	Green	Lights up permanently during normal operation
RXD	Yellow	Blinks when RS485 Modbus telegrams are received
TXD	Yellow	Blinks when RS485 Modbus telegrams are sent
ERR	Red	Lights up in case of a corrupt bus configuration and internal errors

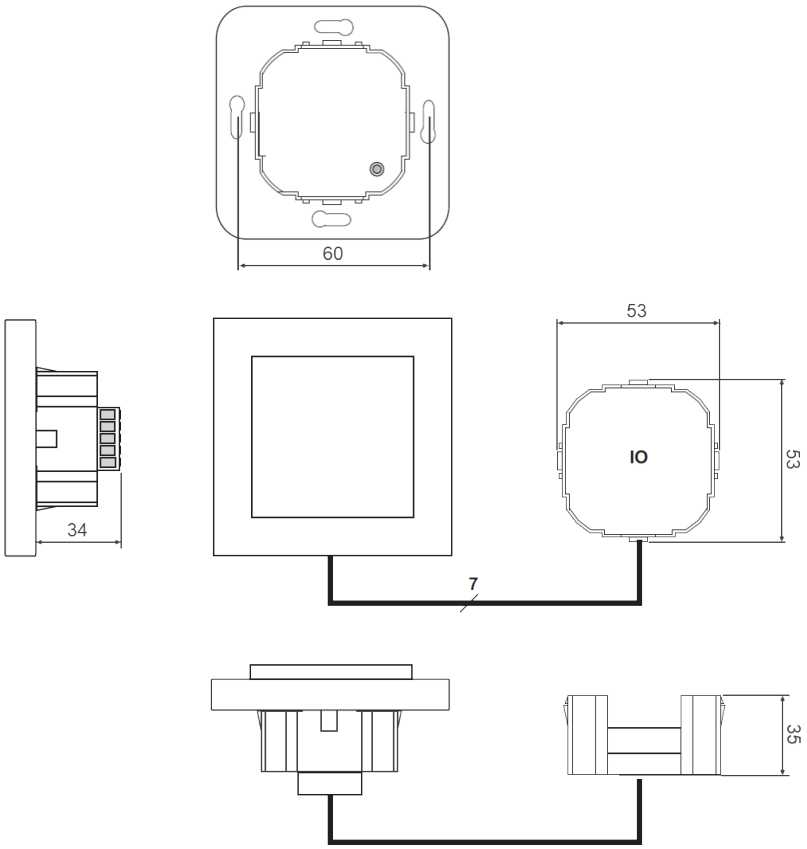
Note: During startup, all 4 LEDs blink for a few seconds.

»CONFIGURATION SOFTWARE AND PROTOCOL DESCRIPTION

BACnet Objekcs / BIBBs und PICS:
RS485 BACnet Interface
A detailed description of the Modbus addresses can be found under the following link:
https://www.thermokon.de/direct/files/wrf0x-rc-bacnet-manual.zip

» DIMENSIONS (MM)

Outside dimensions are depending on the frame of the respective switch range.



» ACCESSORIES (OPTIONAL)

PSU-UP 24 – power supply flush mount 24 V (AC Input 80..240 V ~ DC Output 24 V = 0,5 A) Item No.: 645737