

Product overview

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

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

The universal room operating panel has a wiring clamp, where the sensor or the operating element (potentiometer, rotary switch, push button, ...) is wired up.

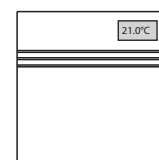
The device disposes of the following features

- Different function keys depending on the device type, e.g. for set point or adjustment occupancy or fan speed adjustment
- LCD display for indication of room temperature
- LED for status indication
- Integrated temperature sensor
- For wall mounting, mounting on standard installation box possible



Types available

Type code	Type	Description
EXT-TN-1066593	WRF04 LCD TRV3	0...10V, with LCD display



WRF04 LCD

Technical data

Standards	CE conformity	- 2004/108/EG Electromagnetic compatibility - 2001/95/EG Product safety
	EN conformity	- EN60730-1:2002 EMC - EN60730-1:2002 Product safety
General data	Power supply	DC 15-24V ($\pm 10\%$) or AC 24V ($\pm 10\%$)
	Power consumption	Typical 0.6W / 1.0VA
	Measuring range	TRV3 : 0°C...+50°C
	Output	0...10V, min. load 5k Ω
	Accuracy@21°C	1% of full scale
	Response time	15 minutes
	LCD display	29mm x 12mm, colour black/white
	Functions display	Room temperature
	Clamps	Terminal screws, max. 1.5mm ²
	Enclosure	Material ASA, colour pure white, similar to RAL9010
	Protection	IP30 according to EN60529
	Cable entry	From behind or side-mounted entry from top / bottom
	Ambient temperature	-35...70°C
	Transport	-35...70°C, max. 85% RH, non-condensing

Security advice

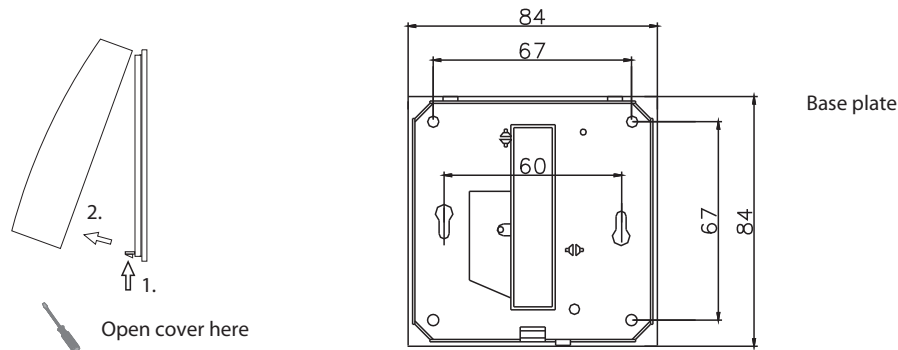
The installation and assembly of electrical equipment may only be performed by a skilled electrician.

The modules must not be used with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people or animals.

Mounting advice

The devices are supplied in an operational status. Installation is made by means of rawl plugs and screws (accessory) to the smooth wall surface. For wiring, the snap-on lid must be separated from the base plate.

Installation must be made on representative places for the room temperature, to avoid a falsification of the measuring result. Solar radiation and draught should be avoided. If the device is mounted on standard flush box, the end of the installation tube in the flush box must be sealed, so as to avoid any draught in the tube falsifying the measuring result.



Electrical connection

The devices are constructed for the operation of protective low voltage (SELV). For the electrical connection, the technical data of the corresponding device is valid. With regard to passive sensors (e.g. PT100 etc.) in 2 wire conductor versions, the wire resistance of the supply wire has to be considered. It is likely that the same has to be compensated by the following electronics. Due to the self-heating, the wire current affects the accuracy of the measurement. Therefore it should not exceed 1mA.

Sensing devices with transducers should in principle be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of the transducer electronics should be kept constant.

The transducers must be operated at a constant supply voltage ($\pm 0.2V$). When switching the supply voltage on/off, power surges must be avoided on site.

The adjustment of the measuring ranges is made by changing the bonding jumpers (see terminal connection diagram). The output value in the new measuring range is available after approximately 2 seconds.

Location and accuracy of room sensors

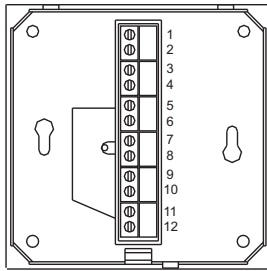
Besides a suitable representative mounting place, corresponding to the room temperature, the accuracy of the temperature measurement also depends directly on the temperature dynamics of the wall. It is important that the flush socket is completely closed at the wall side, so that the circulation of air may take place through the gaps in the cover. Otherwise, deviations in temperature measurement will occur due to uncontrolled air circulation. Furthermore, the temperature sensor should not be covered by furnitures, etc. A mounting place next to doors (occurring draught) or windows (colder outside wall) should be avoided.

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 brick work) have different behaviour 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 an extreme case, they detect the radiant heat of the wall even if the air temperature in the room is lower. The quicker the dynamics of the wall (temperature acceptance of the wall) or the longer the selected inquiry interval of the temperature sensor, the smaller are the deviations limited in time.

Build up of self heating by electrical dissipated power

Room temperature sensors with electronic components always have a dissipated 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 dissipated power has to be considered when measuring temperature. In case of a fixed operating voltage ($\pm 0.2V$), this is normally done by adding or reducing a constant offset value. As transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0...10V / 4...20mA have a standard setting at an operating voltage of DC 24V. At this voltage, the expected measuring error of the output signal will be the least. As 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 (For sensors with LON-interface, a re-calibration can be done via corresponding software variable SNVT). Remark: Occurred draft leads to a better carrying-off of dissipated power at the sensor. Thus, temporal limited fluctuations might occur upon temperature measurement.

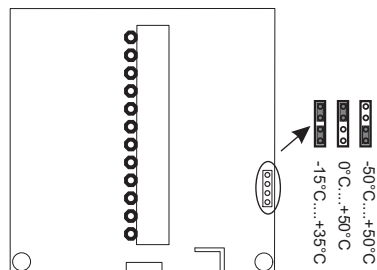
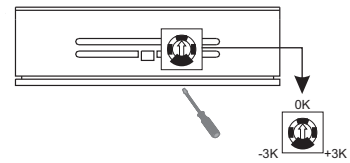
Terminal connection plan


- 1: GND
- 2: DC 15-24V or AC 24V
- 3: OUT Temperature 0-10V
- 4: OUT Set point 0-10V

Clamps depending on respective design


Notice

Depending on respective design, the device has different configuration of terminals. Please refer to connection plan attached to each device

Measuring range adjustment

Offset adjustment

Dimensions (mm)
