LCT
Room Thermostat for surface mounting

Thermokon
Sensortechnik GmbH

Data Sheet

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Application

The electronic room thermostat is designed for controlling temperature in commercial, industrial and residential buildings and also underfloor heating applications.

LCD temperature display, dial set point and relay on/off output. Additional input is available for an external temperature sensor if required.

Security Advice – Caution

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

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

Before connecting devices with electrical power supply the installation must be isolated from the power source!

Notes on Disposal

The product is considered electrical and electronic waste and must be disposed accordingly.
Special treatment for specific components may be legally binding or ecologically sensible. The local and current applicable legislation must be followed.

Electrical Connection

The devices are powered by mains voltage (normally between 90 and 265 V). Please follow the technical data instructions on how to correctly power each device.

With regards to passive sensors with 2-wire conductor versions, the wire resistance of the supply wire has to be considered. If necessary the wire resistance should be compensated by the heat gain from the electronics. Due to self-heating, the wire current affects the measurement accuracy. So it should not exceed 1 mA.

The ambient temperature of the transducer electronics should be kept constant.
The transducers must be operated at a constant supply voltage (±0,2 V). When turning the supply voltage on/off, onsite power surges must be avoided.

When using lengthy wiring (depending on the cross section used) the supply may be compromised due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

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 behaviours 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.

Technical Data

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Power supply:	100..240 V ~ 50/60 HZ
Power consumption:	<0,5 W
Set point adjustment for room temperature	+5..+30 °C (+41..+90 °F)
Set point adjustment for floor temperature	+5..+40 °C (+41..+99 °F)
Accuracy:	±1 °C (±1,8 °F)
Display:	LCD for temperature and set point
Output:	250 V ~: 16 A, 30 V =: 10 A

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Cable entry:	from the rear
Clamps:	Terminal screw max 1,5 mm²
Protection:	IP20 according to EN 60529
Ambient temperature:	0..+50 °C (+32..+122 °F)
Colour:	White
Weight:	115 g

Mounting Advices

Always turn off power at the main power source by unscrewing fuse or switching circuit breaker to the off position before installing, removing, cleaning, or servicing this thermostat.

Installation has to be done at a suitable place within the range of validity of the local electrical installation laws and regulations.

Terminal Connection Plan
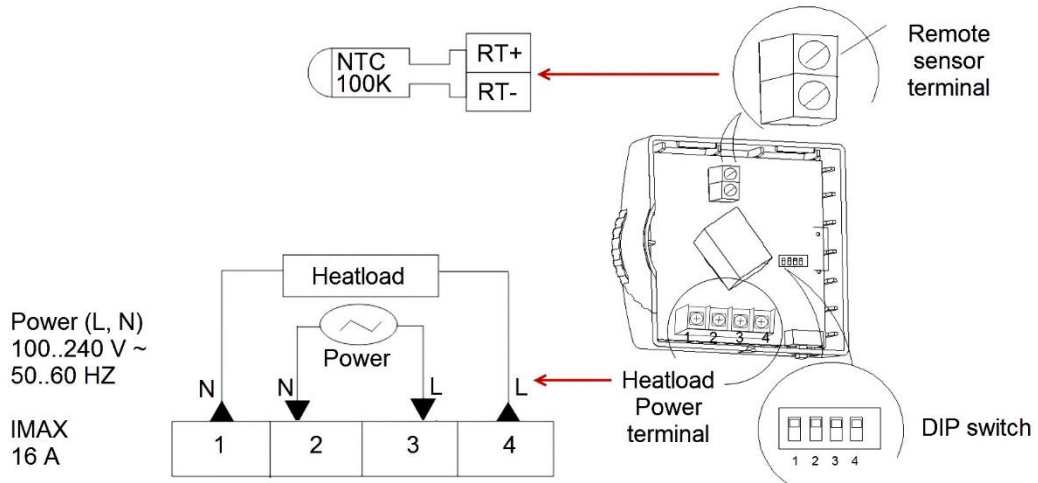
DIP switch settings
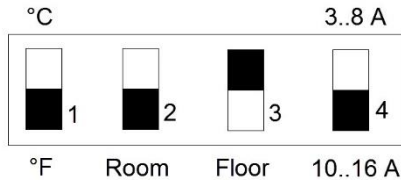
DIP switch 1: Toggle between °Fahrenheit (shown in picture) and °Celsius
DIP switch 2: Enable (shown) / disable room sensor
DIP switch 3: Enable / disable (shown) floor sensor
DIP switch 4: Select the output of load compensation between 3..8 A or 10..16 A (shown)

DIP switch 1 defines, whether temperature in the display will be shown in °C (default) or °F.

DIP switch 2 and 3 defines the type of heating and which sensors should be used.

DIP switch 4 defines the load compensation. It can be switched between 3..8 A and 10..16 A (default).

When setting DIP switch 2 to "Room enabled" and DIP switch 3 to "Floor disabled" (default), the product is used as Room Thermostat. This setting is used, if a external floor temperature sensor is not installed or cannot be installed. The unit will be controlled the integrated room sensor and the thermostat will determine to activate/deactivate heating mode, comparing set point temperature with the room temperature. When the room temperature is reached or is lower than the set point temperature, the thermostat will go into heat mode. When room temperature is reached or higher than set point heating mode will be deactivated.

When setting DIP switch 2 to "Room disabled" and DIP switch 3 to "Floor enabled", the product is used as under floor Thermostat. This setting is used where constant temperature is required for underfloor heating where a comfortable warm surface is required. The unit will be controlled via external floor temperature sensor. It will determine to activate/deactivate heating system by comparing set temperature with actual floor temperature. When floor temperature reached or lower than setting temperature, the thermostat will start heat mode. When floor temperature reached or higher than setting temperature, heat mode will be deactivated.

When setting DIP switch 2 and 3 to the same position, the product is used as Room Thermostat with Floor Limitation (e.g. as it could be used in living rooms). The thermostat activates or deactivates heating system by comparing set temperature with the actual room temperature When floor temperature is ≤5 °C (≤41 °F) the thermostat will start heating until the temperature is >5 °C (>41 °F). When floor temperature is ≥40 °C (≥99 °F) the thermostat will stop heating until the temperature is <40 °C (<99 °F). Within the limitation it is working smoothly in normal operating conditions. When room temperature reached or lower than setting temperature, the thermostat will start heat mode. When room temperature is higher than setting temperature, it will stop heating.

Using DIP switch 4 the offset for temperature compensation because of self-heating is set. The value of the display will be decreased with a different value based on the setting of the switch, when the thermostat has operated. If load is shut off, this change will be slowly cancelled.

Configuration examples:
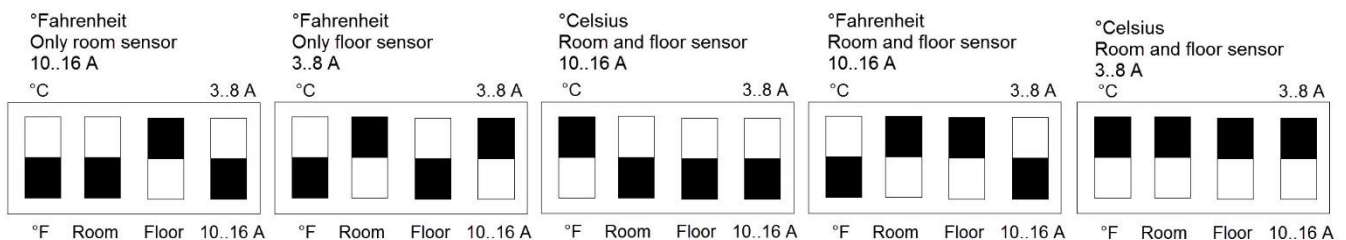
Installation
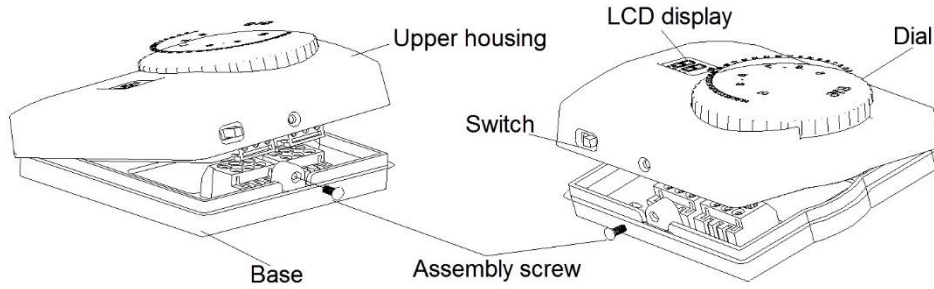
Remove assembly screws from the base of thermostat. Gently remove the cover. Forcing or prying on the thermostat will cause damage to the unit.

Connect wires (see Terminal Connection Plan).

The floor sensor cable must be installed to the terminal block. DIP switch 3 has to be set to enable floor sensor. Otherwise product will shut down heating output and display will show E3 indicating a floor sensor problem.
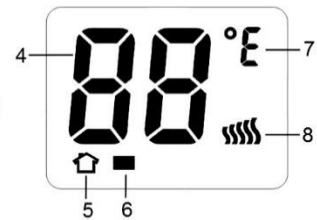
Push power base into.

Mount the back plate to the wall using mounting screws and replace the cover.

Commissioning
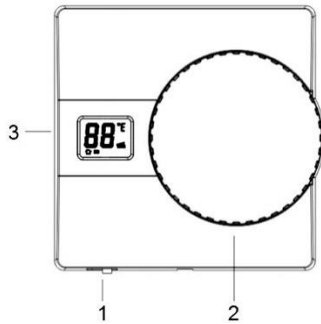
1   ON/OFF switch
2   Temperature setting knob
3   LCD display area
4   Current temperature - when flashing: set temperature
5   Shows room temperature mode
6   Shows floor temperature mode
7   °C / °F readout
8   Heating output indication

Setting Temperature Mode:

Turn on the thermostat, rotate the setting knob entering the temperature setting mode. The LCD starts flashing showing the current setting. No rotation within 5s, thermostat switches between room and floor temperature automatically. Rotate the setting knob to set the temperature.

Error Codes (with showing an error code the product will shut down every output):

E1 flashing in display: Room sensor short circuit.
E3 flashing in display: Floor sensor short circuit.

E2 flashing in display: Room sensor broken.
E4 flashing in display: Floor sensor broken.

Dimensions (mm)