

Alpha-Thermostat Comfort with external sensor AR 20.. K2E (230 V) | AR 40.. K2E (24 V)

The Alpha-Thermostat Comfort with external sensor is a digital room thermostat for the control of surface heating systems with thermal actuators (e. g. OEM actuator: A 2004 / A 4004). This thermostat is equipped with microprocessor technology; it shows excellent PI controlling behaviour with increased regulating comfort for the user. Apart from controlling the room temperature, an external sensor enables the adjustment of the minimum floor temperature.

The thermostat must be mounted to the pre-installed Alpha Mounting Base AS 1000, onto which it can be plugged at any time and to which it must be electrically connected. In order to avoid damage to this valuable thermostat during the construction phase, the system base is not included in the scope of delivery; it can be ordered already in advance for the necessary electric installation.



Features

- Internal sensor for room temperature regulation
- External sensor, e. g. for minimum floor temperature regulation
- Precise control response
- Antifreeze function 5 °C
- Valve protection function
- Overcharge protection
- Designs "normally closed" (NC) and "normally open" (NO)
- Operating mode selector switch
- Temperature setback 2 K (fixed)
- Rotary temperature control with 1/4 degree soft clicks
- Potentiometer for the set value of the external sensor
- Limitation of set room temperature
- Illuminated "Moon" symbol for temperature setback
- Just-in-time installation concept
- Simple screwed connection technology in the Alpha Mounting Base
- Functional design

Application

- Individual room control, specially adapted to surface heating applications with a simultaneous minimum setting of the floor temperature (e. g. bathrooms).
- Individual room control in public buildings. (The thermostat can be placed in an adjoining room and controls only with the external sensor.)

General Information

Type

AR 2010 K2E: Version 230 V – normally closed (pure white)
AR 4010 K2E: Version 24 V – normally closed (pure white)

Scope of delivery (Standard)

Version: Alpha-Thermostat Comfort 230 V / 24 V
with external sensor – normally closed:
1 x AR 2010 K2E or AR 4010 K2E
1 x external sensor with 3 m cable
1 x Installation instruction

Alternative design:

AR 2110 K2E: Version 230 V – normally open (pure white)
AR 4110 K2E: Version 24 V – normally open (pure white)
Housing colour on request

Accessories

Alpha Mounting Base AS 1000

Connection recommendations

-OEM actuator NC A 2004 / NC A 4004
 NO A 2104 / NO A 4104
-OEM base without pump control: B 2012 / B 4012
 with pump control: B 2022 / B 4022

Customer-specific version:

Customer-specific versions are available on request

Ordering information

Our staff will be glad to assist you in finding the Alpha-Thermostat fitting your application.
Call us under: +49 (0) 53 41 - 84 75 - 0

Function

The Alpha-Thermostat 20../40.. K2E is a PI thermostat for the control of thermoelectric actuators (e. g. OEM actuator), in particular for floor heating systems. An internal and an external sensor make regulation more comfortable to the user.

Internal sensor

The output voltage is switched on or off depending on the difference between the room temperature measured by the thermostat (actual value) and the desired temperature (set value). The bigger the difference is between set value and actual value, the longer are the switching cycles. When the room temperature approaches the set temperature, the switching cycles of the output voltage are reduced and find their balance at an almost constant value corresponding to the heating power for this room.

External sensor

Similar to this, the external sensor performs the temperature regulation in order to ensure a minimum temperature of the floor. The minimum floor temperature is set via a potentiometer below the set value element for the room temperature.

Note: The minimum floor temperature is also kept if the room temperature has reached or exceeded the set value. The temperature regulation operation controlled with the internal sensor can be switched off with the potentiometer; in this case, regulation is only performed with the external sensor.

Valve protection function (only NC)

If an actuator is not triggered during more than 24 hours of normal operation, the electronic system switches the actuator for 6 minutes once every 24 hours. This prevents the thermostat valves from clogging outside the heating season.

Antifreeze protection

If the set value element of the Alpha-Thermostat is set to the right stop (symbol *), a room temperature of 5 °C is set as target value in order to prevent the installation from freezing.

Overcharge protection

The switching output of all Alpha-Thermostats with microprocessor technology is protected by an internal temperature monitoring system in order to prevent the system from overcharge damage. In case of an internal temperature rise due to overcharge the electronic system automatically disconnects the output until the inside temperature has dropped again to normal values.

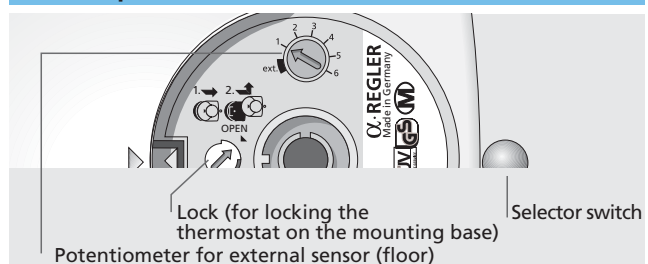
Selector switch

The desired operating mode can be selected with the selector switch. The operating modes "Normal" (sun symbol), "Economy" (moon symbol, e. g. for night operation) and "Timer" (clock symbol) are available.

Error code

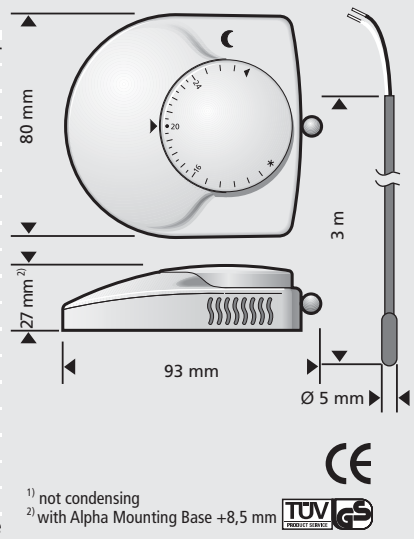
In case of a fault of the external sensor / of an undefined position of its set value potentiometer, this condition is indicated by a flashing of the illuminated symbol "moon" in a 1-second-cycle, for the duration of that condition.

Control panel



Technical data

Type	AR 2.10 K2E	AR 4.10 K2E
Version	Comfort with external sensor	Comfort with external sensor
Contact rating	max 5 OEM actuators 230 V	max 5 OEM actuators 24 V
Operating voltage	230 V +/- 10%, 50 Hz	24 V, (19,2 - 35 V) 50/60 Hz
Switched current	0,2 A (ohmic load)	1 A (ohmic load)
Control range (heating zone)	10 to 28°C	10 to 28°C
Temperature setback (heating zone)	2 K (fixed)	2 K (fixed)
Control range (floor)	15 to 28 °C	15 to 28 °C
Controlling precision	approx. 0,5 K	approx. 0,5 K
Valve interval switching if output is inactive for 24 h, once a day		
Antifreeze protection	5°C	5°C
Storage temperature	-25 to +70 °C	-25 to +70 °C
Ambient temperature	0 to +50 °C	0 to +50 °C
Relative humidity	max. 80% ¹⁾	max. 80% ¹⁾
Degree / class of protection	IP 30 / II	IP 30 / III
CE conformity according to	EN 60730	EN 60730
Housing	ABS	ABS
Externer Sensor	NTC with 3 m cable	NTC with 3 m cable
Number of housing colours	12	12
Weight	49 g without Alpha Mounting Base	49 g without Alpha Mounting Base

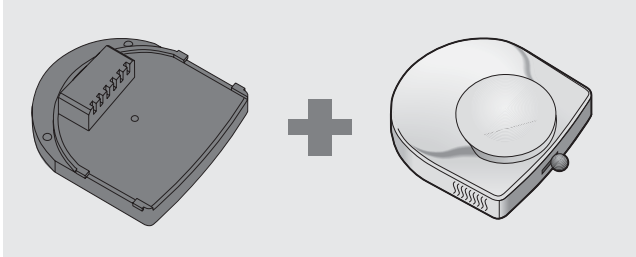


¹⁾ not condensing
²⁾ with Alpha Mounting Base +8,5 mm

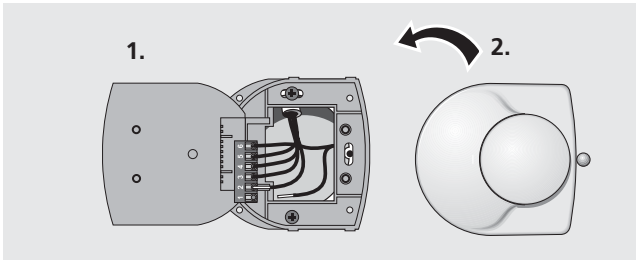
Further information can be found in the manual.

Planning and installation notes

Installation note

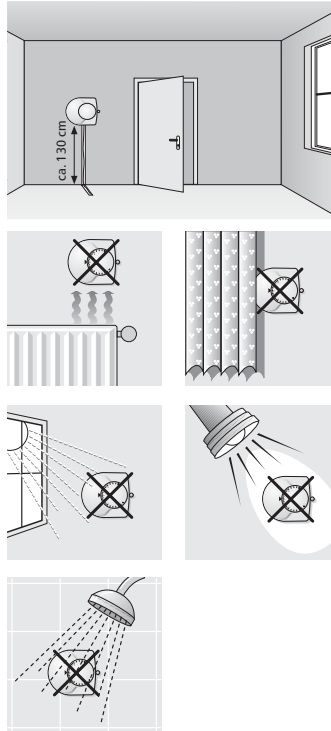


Installation and electric connection are only possible using the system base AS 1000. The system base is not included in the scope of supply and must be ordered separately; it fits all wired types of the Alpha-Thermostat scope.



Installation can be performed directly to the wall or on a flush-type box. A 5-wire line (5 x 1.5 NYM) is recommended for the electric connection.

Recommended place of installation



Note!

In order to ensure a trouble-free and thus optimum control operation, a room thermostat should be installed behind the door in a quiet zone - free from environment influence as draught, humidity, direct sunlight exposure or other sources of heat; furthermore, it should not be covered by curtains. Otherwise it may occur that the set room temperature is exceeded or not achieved, depending on the respective environment influence.

- not to be positioned on the exterior walls of a room
- 2 to 8 cm distance from the heating system (e. g. floor heating tube)
- installation of the remote sensor in empty tube
- Only the temperature at the position of the remote sensor is measured.

Electric installation

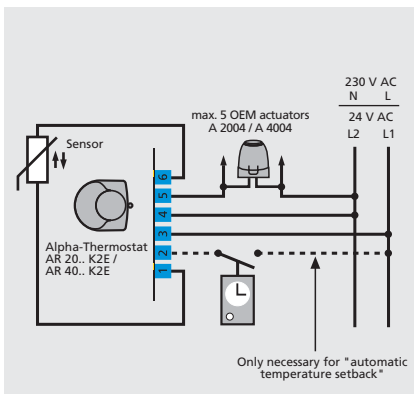


Diagram for "automatic temperature setback" with central time-switch

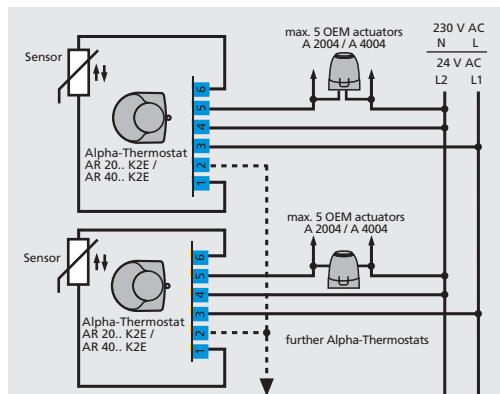
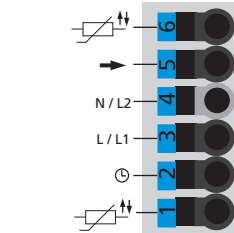


Diagram for "automatic temperature setback" with central time-switch

Wire configuration



Connecting symbols

- ⊙ : Automatic temperature setback
- L / L1 : Operating voltage
- N / L2 : Operating voltage
- : Switching output
- ⊕ : External Sensor