

Alpha-Thermostat Heating/Cooling AR HK 40.. K (24 V)

The Alpha-Thermostat Heating/Cooling is a room thermostat to control Alpha-Actuators using pulse width modulation.

Due to this type of control, the Alpha-Thermostat provides excellent and precise control response and is designed for heating/cooling operation within a system (e.g. underfloor heating). Temperature pre-selection is in 1/4 degree steps. The operating mode selector switch allows setting the economy mode to ON, OFF or AUTOMATIC.

Installation and connection is done the pre-installed AS 3 Alpha-Mounting Base to which the thermostat can be plugged at any time. The Alpha-Mounting Base is not included in the scope of supply and must be ordered separately.



Features

- Rotary temperature control with 1/4 degree soft clicks
- Illuminated MOON symbol for economy mode
- ICE CRYSTAL symbol for cooling operation
- Operating mode selector switch
- Limitation of set temperature range
- Just-in-Time installation concept for direct wall or electric box installation
- Switchable economy mode (temperature setback in heating operation, temperature increase in cooling operation)
- Adjustment of temperature setback/setup (2-6 K)
- External signal input for heating/cooling operation switch-over (CO input)
- Simple clamping screw connection technology to the pre-installed Alpha-Mounting Base
- One common output for heating and cooling
- Precise control response
- Functional design

Application

- Individual room control, specially designed in connection with concealed, radiator and convector heating systems used for heating and cooling. There is one common heating and cooling circuit.

General information

Type

AR HK 40.. K

↑ Housing colour
10 Standard pure white

Scope of Supply

1x Alpha-Thermostat AR HK 40.. K
1x Installation instructions

Accessories

- Alpha-Mounting Base AS 1000
A heating/cooling module AB HK 4000 is required in connection with the Alpha-Basis AB 4001.

Ordering information

Our staff will be glad to assist you in finding the Alpha-Thermostat fitting your application.

Call us at: +49 - 53 41 - 84 75 - 0

Function

Control Response

The Alpha-Thermostat is a PI controller offering optimum control of the Alpha-Actuator (thermoelectric actuator) by means of a pulse width modulation. By wiring L1 to the CO input, the control response is switched over from heating operation to cooling operation. In cooling operation, the thermostat assumes that cooling water is flowing through the system. In this case, lowering the room temperature is achieved by extending the switch-on pulses. The bigger the difference between set value and actual value, the longer the Alpha-Actuator is switched on. When the room temperature approaches the set temperature, the pulses become shorter and shorter. In settled condition, usually few switch-on pulses per hour will be sufficient to maintain the set temperature.

Selector Switch

The selector switch allows setting the economy mode to ON, OFF or AUTOMATIC.

In the AUTOMATIC mode, the economy mode can be controlled by an external time program.

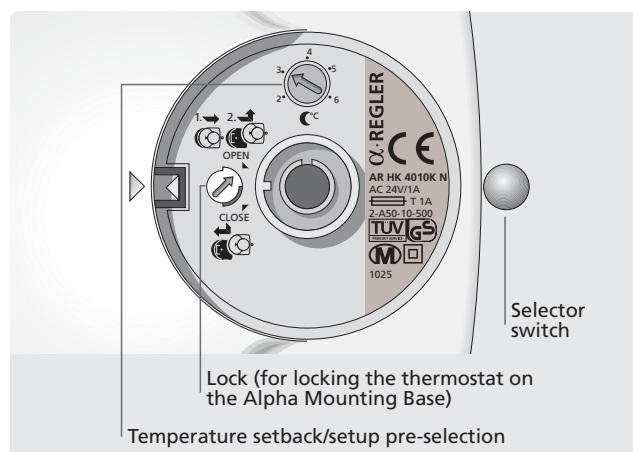
Basis Module

The AR 40.. K can also be used together with the AB HK 4000 (see also data sheet AB HK 4000).

Special function in conjunction with the HK 4000

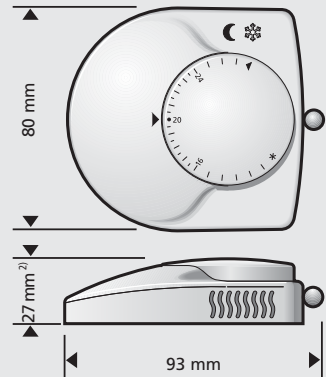
The jumper between L1 and the CO input allows blocking the COOLING function. As long as the HK 4000 is in the COOLING mode, the output of the AR HK 4010 K remains inactive. Individual rooms can therefore be excluded from cooling operation.

Control panel



Technical Data

Type	AR HK 40.. K
Version	Heating/Cooling
Contact rating	5 Alpha Actuators 24 V max.
Operating voltage	24 V, 50/60 Hz, -10%.. +20%
Switched current	1 A (resistive load)
Control range	10 to 28°C
Economy mode	adjustable from 2 K to 6 K
Switching temperature difference	approx. 0.2 K
Storage temperature	-25 to +70 °C
Ambient temperature	-25 to +40 °C
Relative humidity	80% max. ¹⁾
Degree / class of protection	IP 30 / III
CE conformity according to	EN 60730
Housing material	ABS
Weight	50 g without Alpha-Mounting Base

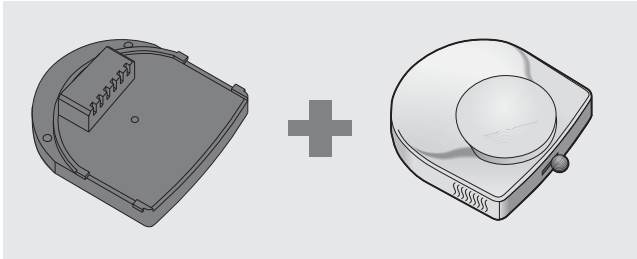


¹⁾ not condensing
²⁾ with Alpha-Mounting Base + 8,5 mm

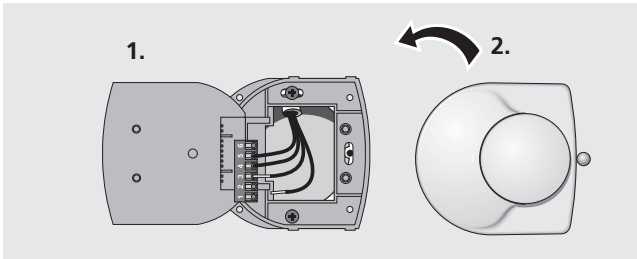


Planning and Installation Notes

Installation Note

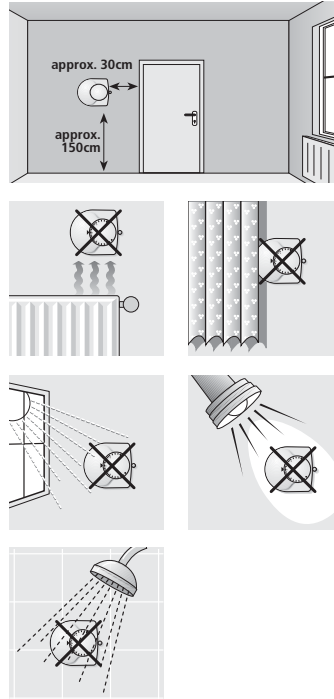


Installation and electric connection are only possible using the Alpha-Mounting Base AS 1000. The Alpha-Mounting Base is not included in the scope of supply and must be ordered separately; it also fits all types of Alpha-Thermostats.



Direct wall or electric box installation possible.
 A 5-wire line (5 x 1.5 NYM) is recommended for the electric connection
 Applicable wire sections:
 solid wire: 0.5 -1.5 mm²
 flexible wire: 1.0 -1.5 mm².

Recommended Place for Installation

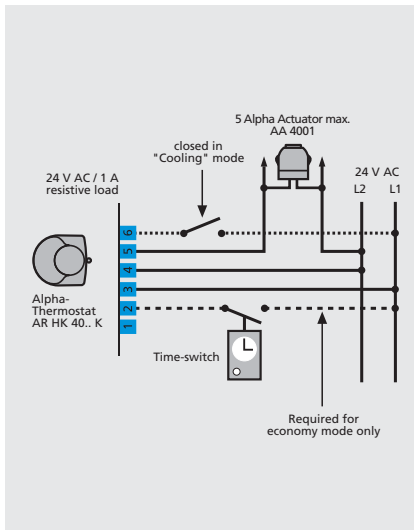


Note!

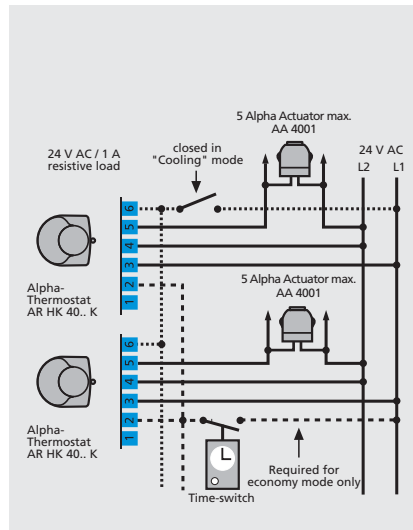
In order to ensure a trouble-free and thus optimal operation of the thermostat, this device should be located behind a door in a calm zone – free of ambient influences as e. g. draught, direct sunlight or other sources of heat; it must not be covered by curtains nor be exposed to humidity. Otherwise, there is a danger of not reaching or exceeding the adjusted room temperature, depending on the respective ambient condition.

Planning and Installation Notes

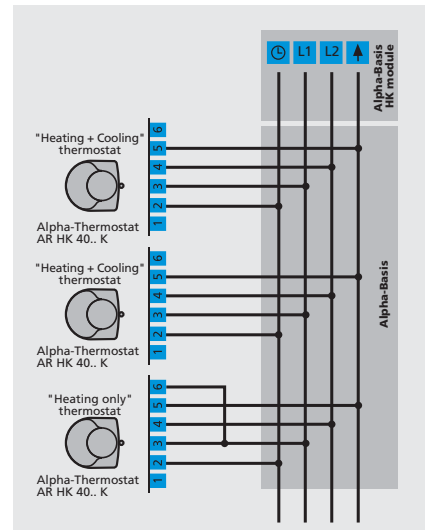
Electric Installation



Wiring diagram for automatic temperature setback with central time-switch.

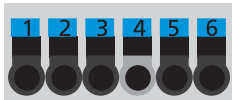


Wiring diagram for automatic temperature setback with central time-switch.



Wiring diagram for "block cooling" when using the Alpha-Basis and the Alpha-Basis HK module

Wire Configuration



Alpha-Thermostat	Terminal assignment					
	1	2	3	4	5	6
AR HK 4010 K	not used	Ⓢ	L1	L2	🔌/🌡️	CO

Connecting symbols

- 🔌/🌡️ : Heating/Cooling output
- Ⓢ : Automatic temperature setback
- CO : Change-Over input
- L1 : Operating voltage
- L2 : Operating voltage