

## OEM Alpha Thermostat direct Analog

The OEM Alpha Thermostat direct Analog is a high-quality room thermostat in modern design for the registration and regulation of the desired room temperature, offering maximum user comfort.

The OEM Alpha Thermostat direct Analog is available for the operating voltages 24 V and 230 V. A simple room-by-room temperature control is already possible with directly connected actuators. In conjunction with the connection unit OEM Alpha Basis direct, a perfectly matched overall system for surface temperature adjustment can be realized.

The desired room temperature can be set comfortably via a rotary control with soft ratchet. A set value calibration as well as a limitation of the setting range are also possible.

Two versions can be chosen in order to comply with the desired installation requirements. Depending on the selection, applications for heating or heating/cooling is possible. All versions of the OEM Alpha Thermostat direct Analog are marked by their high-quality appearance, integrating harmoniously into a modern room architecture not least due to its slim design. An optimum price-performance ratio is offered for rooms where only a very good temperature control is desired, without the comfort function of the display variant.



### 1.1 Features

- Available in two versions: Analogue and Analogue HK
- Versions in 24 V and 230 V
- Flat design and small dimensions (86 x 86 x 29 mm)
- Regulation in stand-alone or in the system
- Equipment for heating and cooling systems
- Reduction input for room temperature reduction
- Target value calibration
- Limitation of the target temperature setting range
- Valve and antifreeze protection function
- Change-over input
- High-quality, modern OEM design
- High functional security

The Möhlenhoff OEM product quality ensures easy, intuitive installation, operation and maintenance of the entire system.

### 1.2 Variants

In the basic version, the OEM Alpha Thermostat direct Analog will be delivered as neutral device without logo and in white. The subsequent list shows the available versions.

Type	Model	Operating voltage	Equipment	Scope of supply
R 40203-10N4	Analogue	24 V	Heating, fixed reduction temperature, reduction input, target value calibration, antifreeze function	<ul style="list-style-type: none"> <li>• OEM Alpha Thermostat direct Analog in individual packing</li> <li>• Instructions in 12 languages</li> </ul>
R 40203-40N4	Analogue HK	24 V	Heating/cooling, fixed reduction temperature, reduction input, change-over input, cooling blocking, target value calibration, valve protection function, antifreeze function	
R 20203-10N4	Analogue	230 V	Heating, fixed reduction temperature, reduction input, target value calibration, antifreeze function	
R 20203-40N4	Analogue HK	230 V	Heating/cooling, fixed reduction temperature, reduction input, change-over input, cooling blocking, target value calibration, valve protection function, antifreeze function	

### 1.3 Equipment

The OEM Alpha Thermostat direct Analog is offered in the versions 24 V and 230 V. Different versions are available; they differ in their functional equipment.

	Analogue	Analogue HK
Heating	✓	✓
Cooling		✓
Cooling block		✓
Change-over input		✓
Reduction input	✓	✓
Fixed setback difference	✓	✓
Set value calibration	✓	✓
Valve protection function		✓
Antifreeze function	✓	✓

### 1.4 Accessories

Type	Article description
Target value limitation	Insertable set point limiters for temperature range limitation

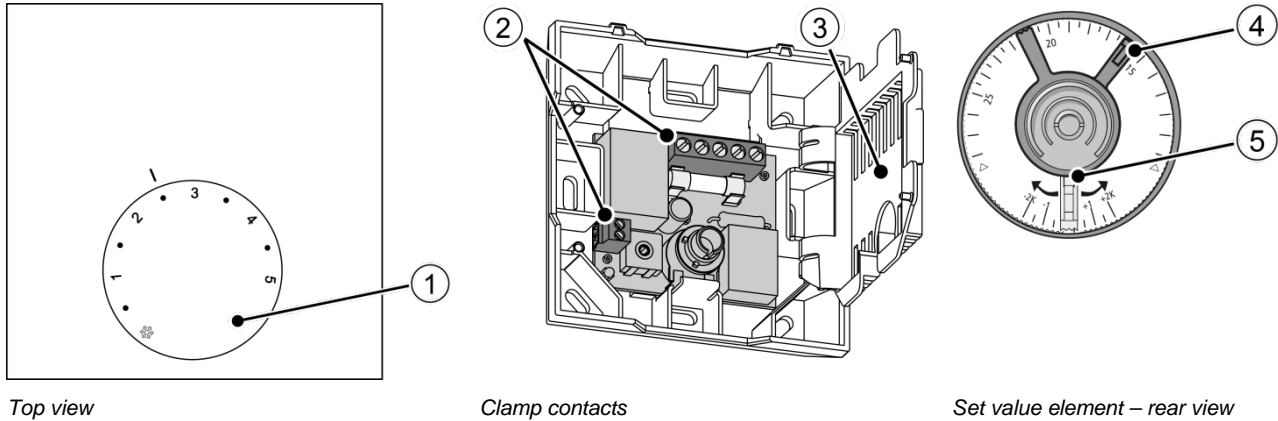
### 1.5 Optional differentiations to the basic version

Differentiation possibilities	
Packaging	Individual printing and manufacturing of packaging
Casing	Individual designs, e. g. square, upright, horizontal format, individual colour
Imprint on casing	Marking of the company logo and the individual type designation and the device designation
Installation bottom	Colour adaptation, form change
Please contact us if you have further wishes.	

## 2 Function

All room thermostats OEM Alpha Thermostat direct Analog have the same basic functions; further system functions depend on the version and the individual equipment.

### 2.1 Device overview (example – Alpha Thermostat direct Analogue HK)



Top view

Clamp contacts

Set value element – rear view

- |                                      |  |
|--------------------------------------|--|
| <b>1 Set value element</b>           | <ul style="list-style-type: none"> <li>Setting the target temperature</li> <li>- Fixed reduction temperature of 4 K</li> </ul>   |
| <b>2 Comfortable clamp terminals</b> | <ul style="list-style-type: none"> <li>Screw terminals</li> <li>- Quick connection of a multi-core connection line for voltage supply and signal transmission</li> </ul> |
| <b>3 Protective cover</b>            | <ul style="list-style-type: none"> <li>Protection against accidental contact of life components</li> </ul>   |
| <b>4 Target value limitation</b>     | <ul style="list-style-type: none"> <li>Specification of the minimum and maximum adjustable room temperature by mechanical limitation</li> </ul>                          |
| <b>5 Set value calibration</b>       | <ul style="list-style-type: none"> <li>Adjustment of the internal temperature sensor by <math>\pm 2</math> K</li> </ul>  |

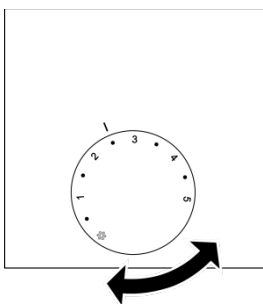
### 2.2 Protection functions

A valve and an antifreeze protection function are integrated into the thermostat for damage protection purposes:

- Valve protection function**
  - Cyclic activation of connected actuators, avoids the clogging of valves in times without temperature control
  - Will be activated once every 14 days for 6 minutes after the last triggering
- Antifreeze protection**
  - Avoids the freezing of lines during times without temperature control (e. g. in case of longer absence)
  - Inactive in cooling operation

### 2.3 Operation

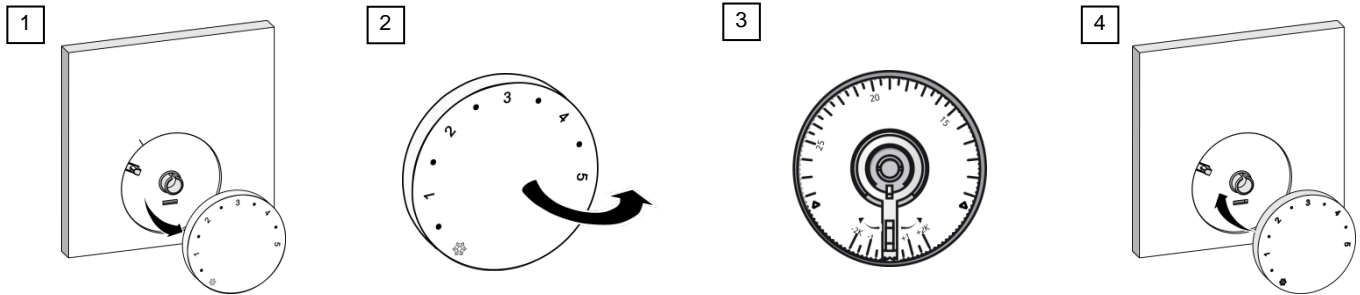
#### 2.3.1 Setting the comfort temperature



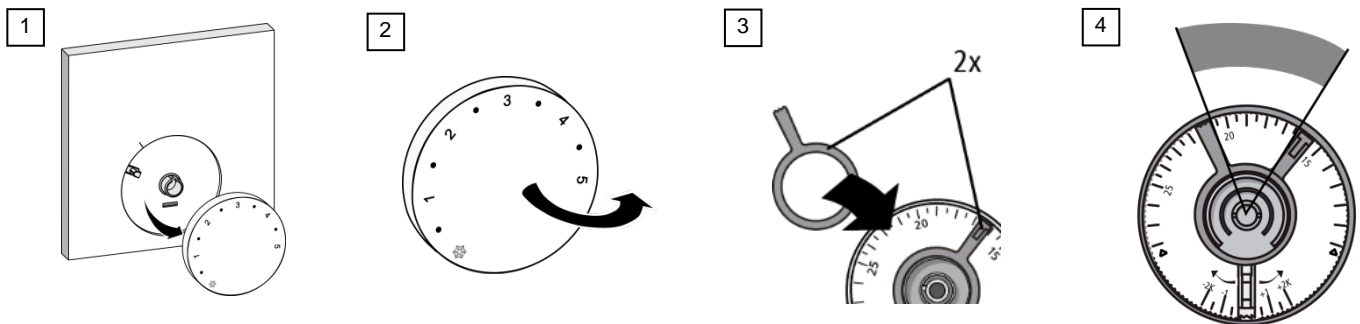
The thermostat can be operated comfortably via the set value element. The user sets the desired temperature by simple turning.

**2.3.2 Set value calibration**

The target value calibration integrated into the set value element allows a set value balance of -2 K to 2 K in 0.25 K increments.

**2.3.3 Limiting the temperature range**

Two set point limiters can be inserted into the removable set value element, allowing a limitation of the temperature range. One of the limiters sets the minimum, the other one the maximum settable room temperature.

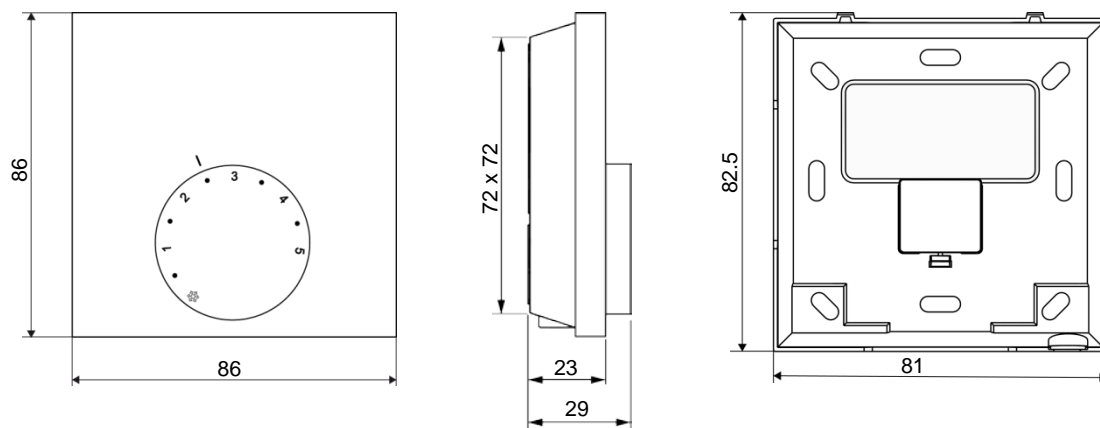


### 3 Technical data

The listed technical data relate to the maximum functional equipment of the OEM Alpha Thermostat direct Analog. Individual positions may be omitted depending on the model.

	24 V variant		230 V variant	
	Analogue	Analogue HK	Analogue	Analogue HK
Type	R 40203-10N4	R 40203-40N4	R 20203-10N4	R 20203-40N4
Operating mode	Heating	Heating/Cooling	Heating	Heating/Cooling
Operating voltage	24 V $\pm$ 20 % 50 Hz		230 V $\pm$ 10 % 50 Hz	
Voltage supply	via base/transformer		via base/mains connection	
Power consumption in idle operation	<0.3 W			
Switching element	Triac	Triac	Relay	Relay
Switching power	1 A ohmic load		1.8 A ohmic load, 200 VA inductive	
Fuse	T1A		T2AH	
max. number of connectible actuators	5 (max. 3 W/actuator)		10 (max. 3 W/actuator)	
Rated current w/o valve drives	$\leq$ 20 mA	$\leq$ 20 mA	$\leq$ 2 mA	$\leq$ 2 mA
Max current draw allowed with connected valve drives	1 A	1 A	1.8 A	1.8 A
Control direction of actuators to be connected	NC			
Target temperature setting range:	10 °C to 28 °C			
Target temperature resolution	0.25 °C			
Actual temperature registration (int. sensor)	0 – 40°C			
Measuring accuracy of internal NTC	$\pm$ 0.5 K			
Set value calibration	$\pm$ 2 K			
Change-over input	-	switchable via potential-free contact	-	switchable via potential-free contact
Cooling block	-	Yes	-	Yes
Reduction input	Yes			
Reduction temperature	2 K			
Antifreeze temperature	Normal operation: 10 °C / Reduction 8 °C			
Valve protection function	-	once every 14 days for 6 minutes	-	once every 14 days for 6 minutes
Admissible ambient temperature	0 to 50°C			
Admissible storage temperature	-25 to +75 °C			
Admissible ambient humidity	80%, not condensing			
Temperature for ball pressure test	Terminals: 100 °C Plastic enclosure: 75 °C			
Type of installation	On-surface wall installation			
Connection line	NYM-J 5 x 1.5 mm <sup>2</sup>	NYM-O 5 x 1.5 mm <sup>2</sup>	NYM-J 5 x 1.5 mm <sup>2</sup>	NYM-O 5 x 1.5 mm <sup>2</sup>
Connection terminals	Analogue	5 screw terminals - 0.22 mm <sup>2</sup> to 1.5 mm <sup>2</sup>		
	Analogue HK	7 screw terminals - 0.22 mm <sup>2</sup> to 1.5 mm <sup>2</sup>		
Protection class	III		II	
Rated impulse voltage	1500 V			
Pollution degree	2			
Type action	Type 1	Type 1	Type 1.C	Type 1.C
Degree of protection	IP 20			
Material	PC + ABS			
Surface structure	anodised			
Colour	set value element	Signal white (RAL 9003)		
	Casing	Signal white (RAL 9003)		
Weight	90 g			
Dimensions (W x H x D)	86 x 86 x 29 mm			

### 3.1 Dimensions



All indications in mm

### 3.2 Approvals and certificates

In addition to our numerous internal function and quality tests, all Möhlenhoff products are tested by independent testing institutes.



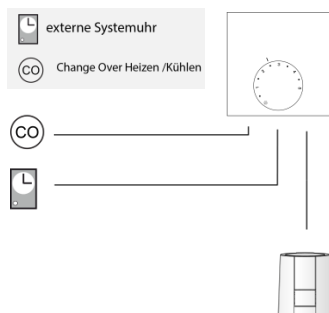
The product is certified by the TÜV Rheinland.

## 4 System visualisations

A selection of possible system variants for the realization of a room-by-room temperature control is shown in the following. A stand-alone system can already be performed with one OEM Alpha Thermostat direct Analog and with directly connected actuators. The connection of up to ten actuators is possible depending on the voltage version of the thermostat. An individualisation of the room-by-room temperature control can be realized by adding to the system of compatible components, as e. g.

- the OEM Alpha Basis direct,
- the OEM Alpha Thermostat direct Display, and
- the thermal actuator of the type A 20x05 (230 V) or A 40x05 (24 V) with a power input of 1 watt

### 4.1 Stand-alone Heating/Cooling – 230 V version

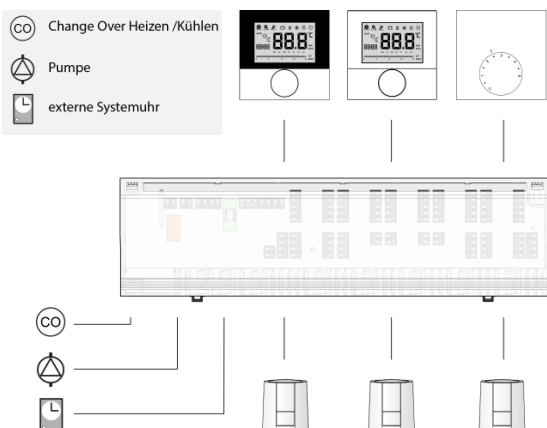


Characteristic	
Heating	✓
Cooling	✓ <sup>1</sup>
Simple pump control	
Extended pump/boiler control with lead time and follow-up time	
Connection for external system clock	✓ <sup>2</sup>
Internal timer of an OEM Alpha Thermostat direct Display	
Temperature limiter or dew point sensor	
OEM Alpha Thermostat direct Analogue	✓
OEM Alpha Thermostat direct Analogue HK	✓
OEM Alpha Thermostat direct Standard	
OEM Alpha Thermostat direct Control	

<sup>1</sup>Only version Analogue HK

<sup>2</sup>not in combination with the external timer of an OEM Alpha Thermostat direct Control

### 4.2 Thermostat with OEM Alpha Basis direct Standard PLUS – 230 V version

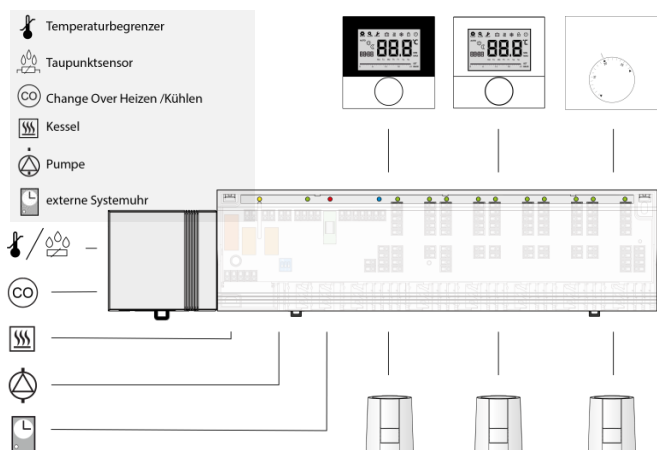


Characteristic	
Heating	✓
Cooling	✓
Simple pump control	✓
Extended pump/boiler control with lead time and follow-up time	
Connection for external system clock	✓ <sup>2</sup>
Internal timer of an OEM Alpha Thermostat direct Display	✓ <sup>1</sup>
Temperature limiter or dew point sensor	✓
OEM Alpha Thermostat direct Analogue	
OEM Alpha Thermostat direct Analogue HK	✓
OEM Alpha Thermostat direct Standard	
OEM Alpha Thermostat direct Control	✓

<sup>1</sup>not in combination with an external system clock

<sup>2</sup>not in combination with the external timer of an OEM Alpha Thermostat direct Control

### 4.3 Thermostat with OEM Alpha Basis direct Comfort – 24 V version



Characteristic	
Heating	✓
Cooling	✓
Simple pump control	
Extended pump/boiler control with lead time and follow-up time	✓
Connection for external system clock	✓ <sup>2</sup>
Internal timer of an OEM Alpha Thermostat direct Display	✓ <sup>1</sup>
Temperature limiter or dew point sensor	✓
OEM Alpha Thermostat direct Analogue	
OEM Alpha Thermostat direct Analogue HK	✓
OEM Alpha Thermostat direct Standard	
OEM Alpha Thermostat direct Control	✓

<sup>1</sup>not in combination with an external system clock

<sup>2</sup>not in combination with the external timer of an OEM Alpha Thermostat direct Control or timer module

## 5 Installation notes



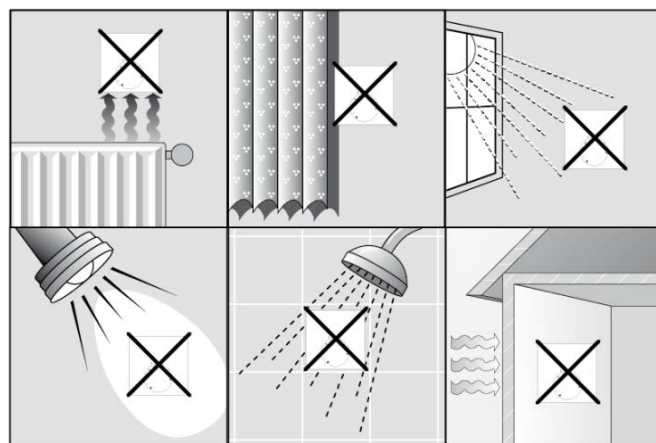
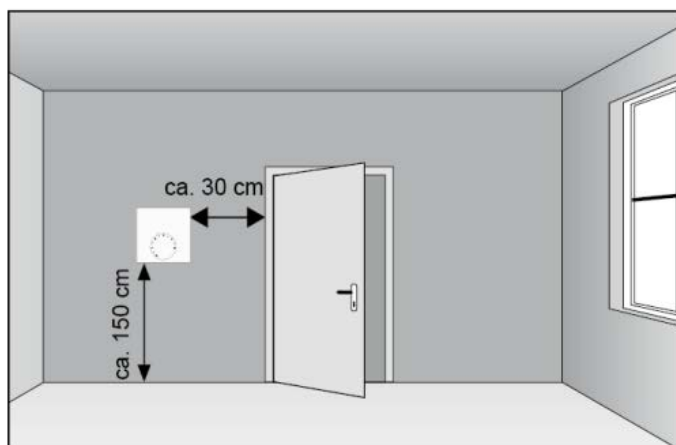
### Planning document for electrical installations

The electrical installations must be performed according to the current national VDE regulations as well as according to the regulations of your local electric power utility company, by an authorised and trained electrician, and in de-energised state.

The installation of the OEM Alpha Thermostat direct Analog can be performed in a few simple, comfortable and intuitive steps.

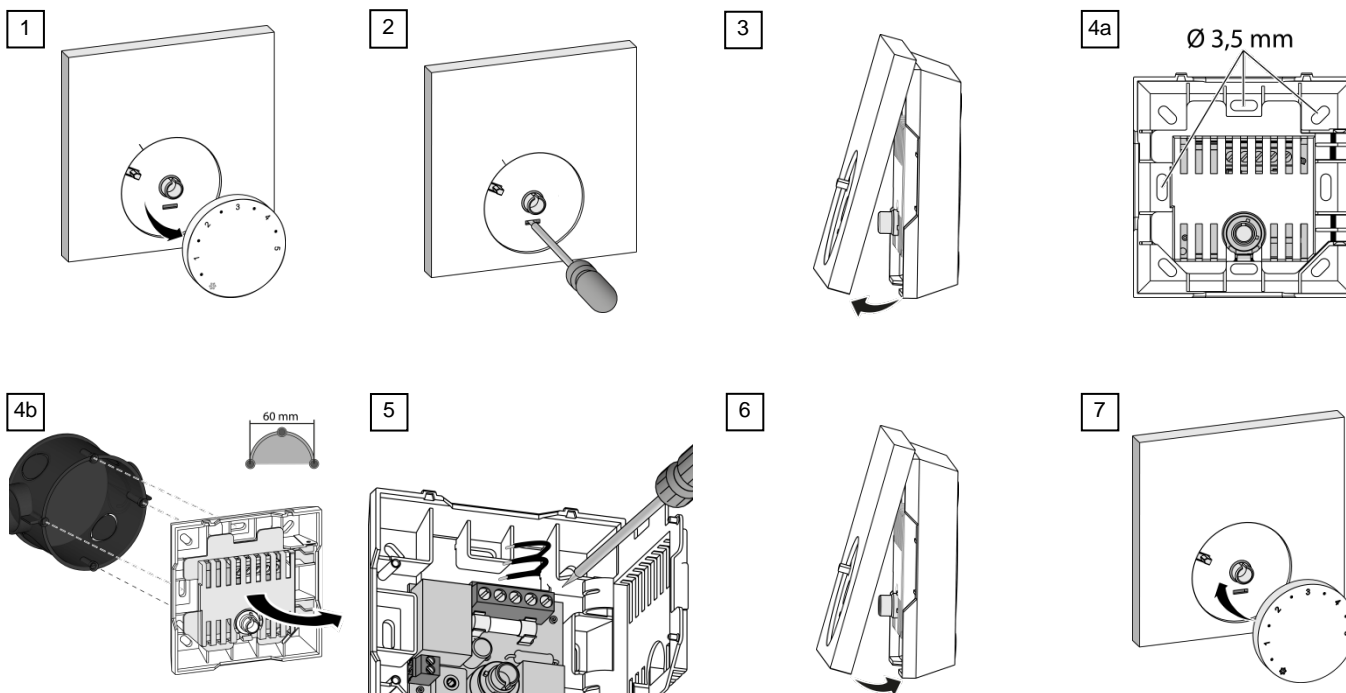
### 5.1 Installation place

A freely accessible area is recommended for installation in order to allow the OEM Alpha Thermostat direct Analog to detect the correct room temperature. There must be no additional heat sources at the installation position which could affect the thermostat.



### 5.2 Installation

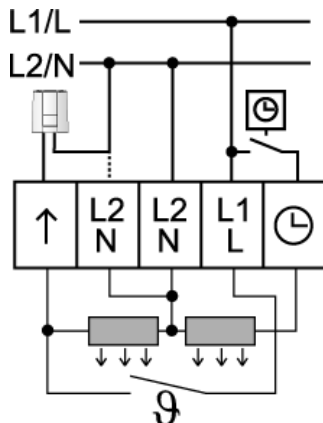
The OEM Alpha Thermostat direct Analog is installed comfortably on-surface or in a flush-type box in a few simple steps.



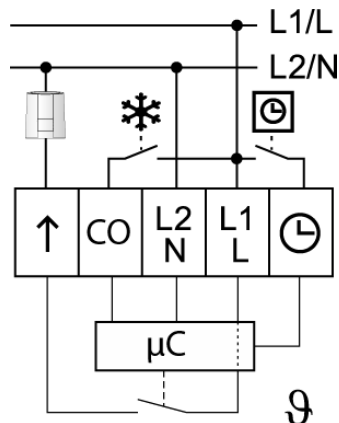
### 5.3 Electric connection

The wiring between the OEM Alpha Thermostat direct Analog and the components to be connected is realised with a multi-core cable.

#### Analogue



#### Analogue HK



- Mains connection
  - Voltage supply via OEM Alpha Basis direct or via an external voltage source
- Reduction input
  - Reception of an external reduction signal for the time-controlled reduction of the room temperature, from an OEM Thermostat Alpha direct Control, or an OEM Alpha Basis direct Control, or an external system clock.
- Change-over input
  - Toggle between heating and cooling via an external signal (potential-free contact)
- Connection for actuators

### 5.4 Blocking of cooling

For the room thermostats Analogue HK, the cooling function can be blocked by inserting a cable bridge. For this, the two contacts of the lower left two-fold terminal must be bridged.

