# Overview thermostat/ temperature controller

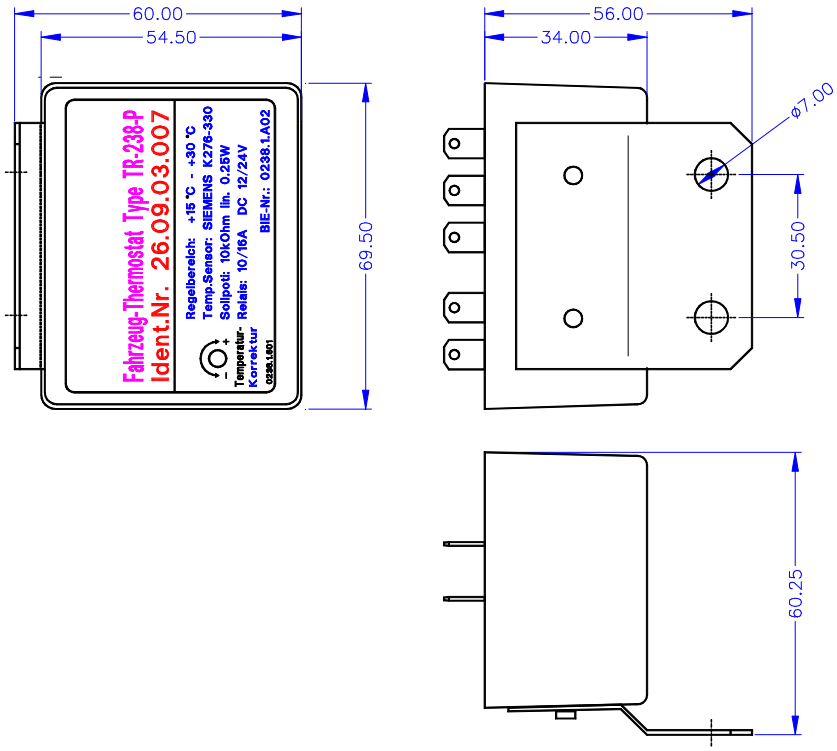
## Thermostat TR-238

The Thermostat TR-238 is a electronic two-level controller for controlling of heating and cooling in climate control units and vehicles.

| | |
|---|---|
| **Nominal voltage:** | 12 and 24V DC |
| **Voltage range (12V):** | 10 to 18V DC |
| **Voltage range (24V):** | 18 to 30V DC |
| **Control range:** | +15°C to +30°C |
| **Hystereses:** | 1K |
| **External setpoint:** | 10 kΩ -Potentiometer, linear |
| **Temperature sensor:** | NTC, Siemens K276 |
| **Relays contact:** | 1 potential-free 2-way contact |
| **Contact load open/close:** | 10/20A (resistive load) |
| **Operation temperature:** | -20°C to +70°C |
| **Storage temperature:** | -30°C to +85°C |
| **connector:** | 10 AMP- FASTON 6,3x0,8mm |
| **Protection class:** | IP20 |
| **weight:** | approx. 115g |

Notice: sensor- and potentiometer lines more than 2 meter length must be shielded or twisted!

**dimensiones (mm):**




Subject to technical modifications!

# Overview thermostat/ temperature controller

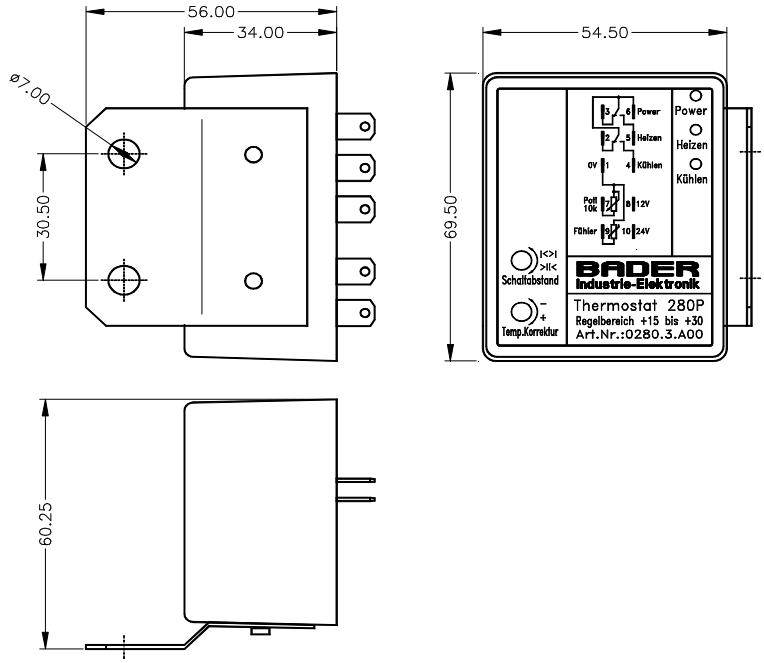
## Thermostat TR-280 (0280.3.A00) Seite 1

The Thermostat TR-280 is a electronic three-level controller for controlling of heating and cooling in climate control units and vehicles.

| | |
|---|---|
| **Nominal voltage:** | 12V and 24V DC |
| **Voltage range (12V):** | 10V to 18V DC |
| **Voltage range (24V):** | 18V zo 30V DC |
| **Control range:** | +15°C to +30°C |
| **Hystereses relays:** | 1 K |
| **Reacting distance between relays:** | 1 K to 5 K adjustable |
| **External setpoint:** | 10 kΩ -Potentiometer, linear |
| **Temperature sensor:** | PTC, KTY-14 |
| **Relays contact:** | 2 potential-free 2-way contact |
| **Contact load open/close:** | 10/20A (resistive load) |
| **Operation temperature:** | -40°C to +85°C |
| **Storage temperature:** | -40°C to +85°C |
| **Connector:** | 11 AMP- FASTONr 6,3x0,8mm |
| **Protection class:** | IP20 |
| **weight:** | approx. 115g |
| **Interference immunity:** | According to DIN VDE 0839 part 1 |

Notice: sensor- and potentiometer lines more than 2 meter length must be shielded or twisted!

**Dimensiones:**

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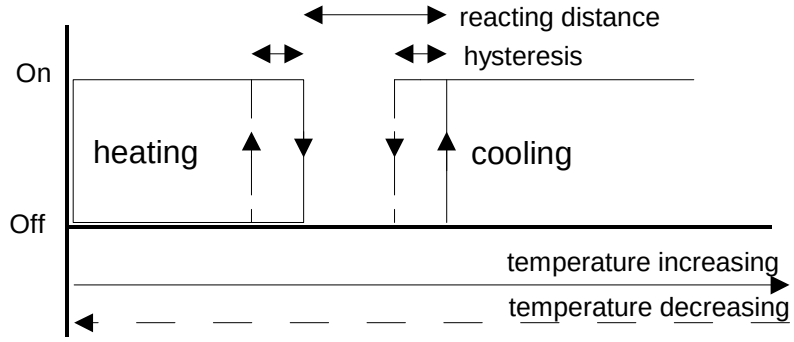
## Thermostat TR-280 (0280.3.A00) Seite 2

**Function**

The controller forms the difference between the **set point** ( adjustable with potentiometer )
and the **actual value** ( measured with external sensor ).
At positiv control deviations (set point – actual value) the relay „heating“ is activated,
at negativ control deviations the relay „cooling“.
The switch-point between the both relays is adjustable between 0,5 K and 5 K ( both relays off ).
The adjustment is done with the potentiometer „reacting distance“.
Each relay has a fixed hysteresis about 1 K, for avoid a permanent switching.

The potentiometer „Temp.correction“ gives the posibility to adjust the tolerances of the sensor.



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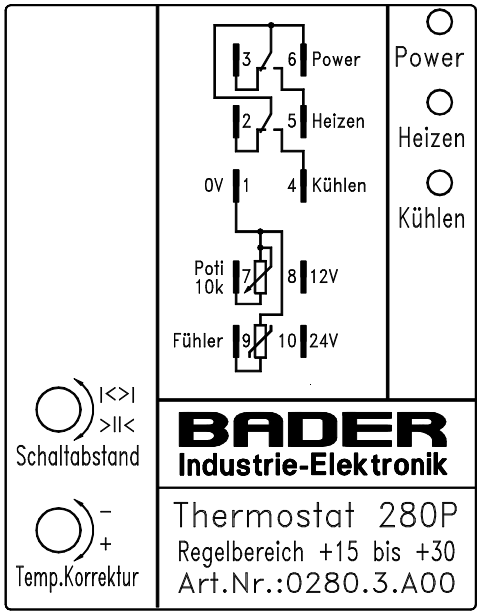
# Overview thermostat/ temperature controller

## Thermostat TR-280 (0280.3.A00) Seite 3

**Adjustements**

reacting distance relay →

correction sensor →




**connection**

| | | |
|---|---|---|
| Power | | heating normally closed contact |
| heating normally open contact | | cooling normally closed contact |
| cooling normally open contact | | ground |
| 12 V | | setpoint potentiometer |
| 24 V | | sensor |

One terminal of setpoint potentiometer and sensor must be contacted to ground.

# Overview thermostat/ temperature controller

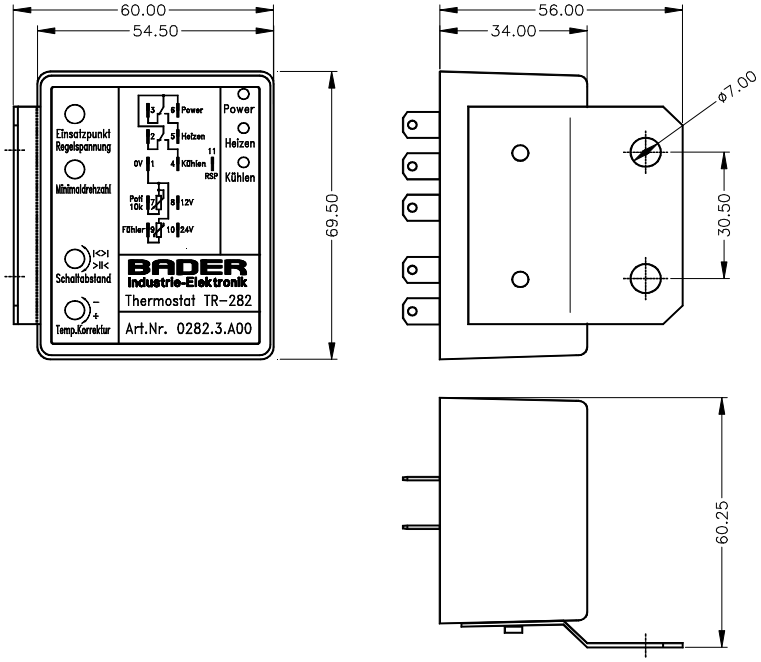
## Thermostat TR-282 (0282.3.A00) Seite 1

The Thermostat TR-282 is a electronic three-level controller for controlling of heating and cooling in climate control units and vehicles.

| | |
|---|---|
| **Nominal voltage:** | 12V and 24V DC |
| **Voltage range (12V):** | 10V to 18V DC |
| **Voltage range (24V):** | 18V to 30V DC |
| **Control range:** | +15°C to +30°C |
| **Hystereses relays:** | 1 K |
| **Reacting distance between relays:** | 0,5 K to 5 K adjustable |
| **External setpoint:** | 10 kΩ -Potentiometer, linear |
| **Temperature sensor:** | PTC, KTY-14 |
| **Relays contact:** | 2 potential-free 2-way contact |
| **Contact load open/close:** | 10/20A (resistive load) |
| **Analog output:** | 0 to supply voltage -2V, current 5mA |
| **Operation temperature:** | -40°C to +85°C |
| **Storage temperature:** | -40°C to +85°C |
| **Connector:** | 11 AMP- FASTON 6,3x0,8mm |
| **Protection class:** | IP20 |
| **weight:** | approx. 115g |
| **Interference immunity:** | according to DIN VDE 0839 part 1 |

Notice: sensor- and potentiometer lines more than 2 meter length must be shielded or twisted!

**Dimensiones:**

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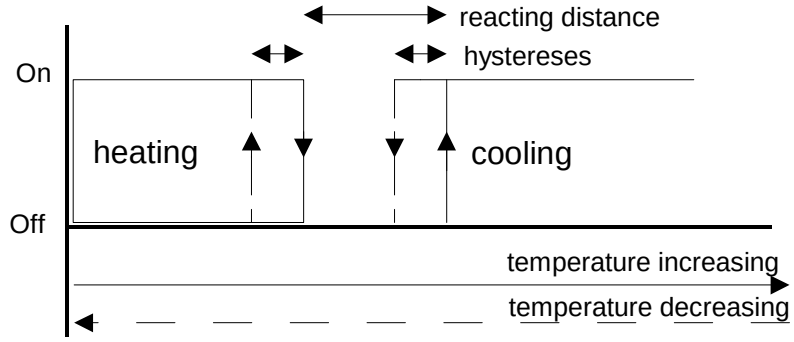
## Thermostat TR-282 (0282.3.A00) Seite 2

**Function**

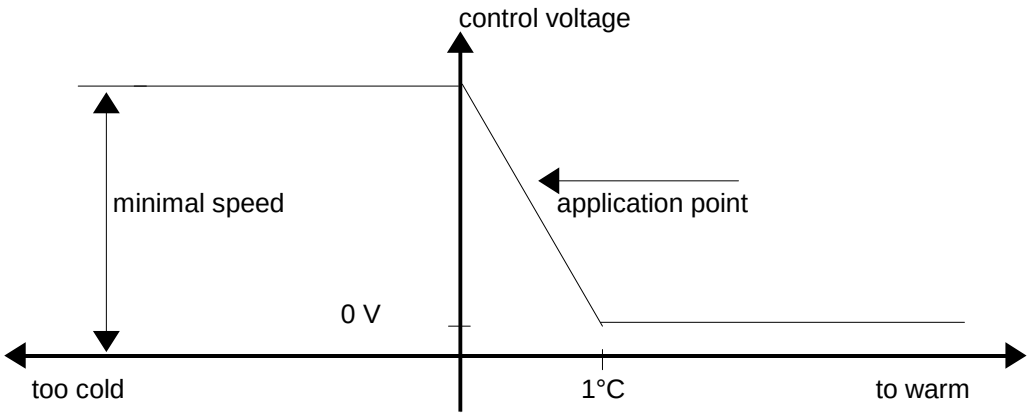
The controller forms the difference between the **set point** ( adjustable with potentiometer )
and the **actual value** ( measured with external sensor ).
At positiv control deviations (set point – actual value) the relay „heating“ is activated,
at negativ control deviations the relay „cooling“.
The switch-point between the both relays is adjustable between 0,5 K and 5 K ( both relays off ).
The adjustment is done with the potentiometer „reacting distance“.
Each relay has a fixed hysteresis about 1 K, for avoid a permanent switching.

The potentiometer „Temp.correction“ gives the posibility to adjust the tolerances of the sensor.




The thermostat comes with a aditional analog output, e.g. for controlling of blower moduls.
The voltage decreases proportionately to the control deviacion. With a suitable blower modul
this causes to increase the rotation speed of the blower.

Adjustable is the „zero point“ (application point), movable over the complete controlling range,
as well as the heights of the output voltage ( minimal speed ), adjustable from 0V to Ubatt – 2,5 V



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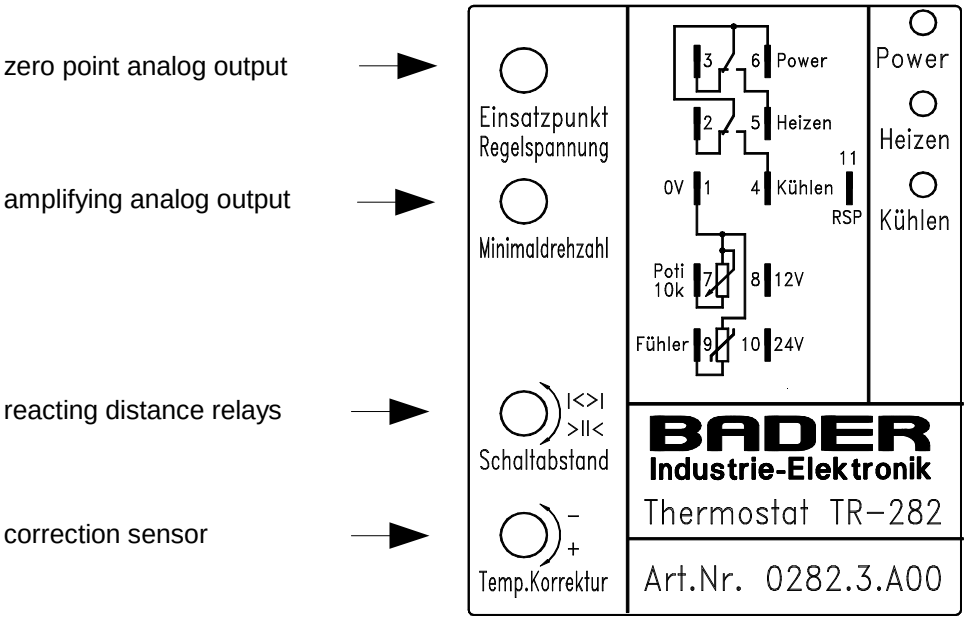
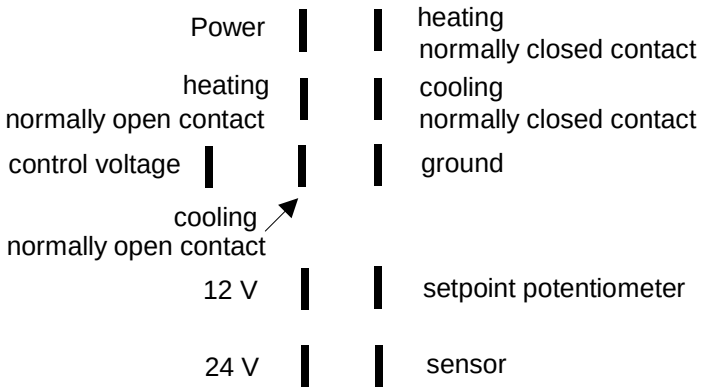
# Overview thermostat/ temperature controller

## Thermostat TR-282 (0282.3.A00) Seite 3

**Adjustment**




**connection drawing**




One terminal of setpoint potentiometer and sensor must be contacted to ground.

# Overview thermostat/ temperature controller

## Thermostat TR-285P

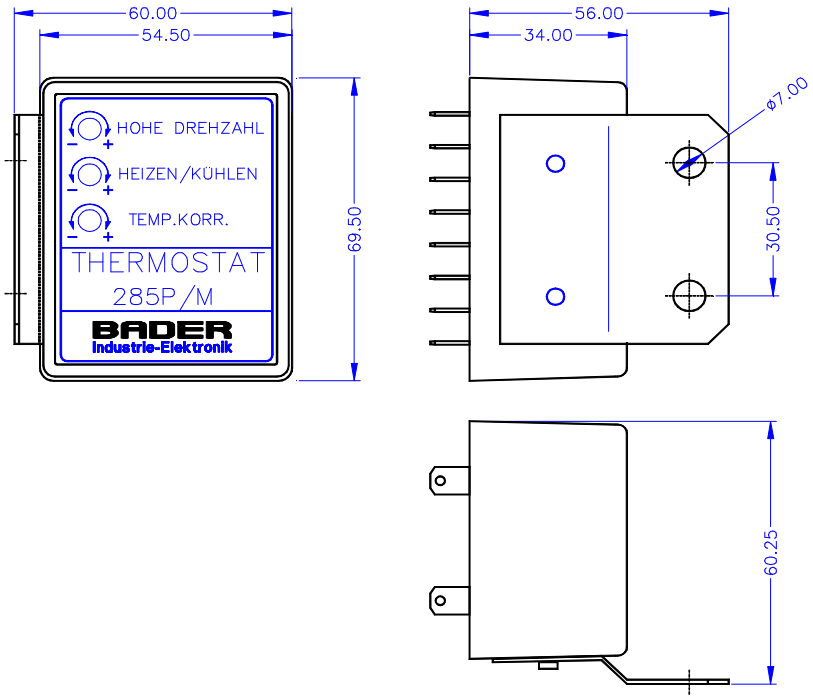


The Thermostat TR-282 is a electronic four-level controller for controlling of heating and cooling in climate control units and vehicles. He works like a three-level controller with one addcional contact.

| | |
|---|---|
| **Nominal voltage:** | 12V and 24V DC |
| **Voltage range (12V):** | 10V to 18V DC |
| **Voltage range (24V):** | 18V to 30V DC |
| **Control range:** | +15°C to +30°C |
| **Hystereses:** | ±0,5K to 5K adjustable |
| **External setpoint:** | 10 kΩ -Potentiometer, linear |
| **Temperature probe:** | NTC, KTY-14 |
| **Relays contact:** | 3 potential-free 2-way contact |
| **Contact load open/close:** | 10/ 20A (resistive load) |
| **Operation temperature:** | -40°C to +85°C |
| **Storage temperature:** | -40°C to +85°C |
| **Connector:** | 14 AMP- FASTON 6,3x0,8mm |
| **Protection class:** | IP20 |
| **weight:** | approx. 120g |
| **Interference immunity:** | According to DIN VDE 0839 part 1 |
| **Article no. 12V version** | 0285.1.A00 |
| **Article number 24V version** | 0285.2.A00 |

Notice: sensor- and potentiometer lines more than 2 meter length must be shielded or twisted!

Dimensiones:




Subject to technical modifications!

Revision: Sept. 2011



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# Overview thermostat/ temperature controller

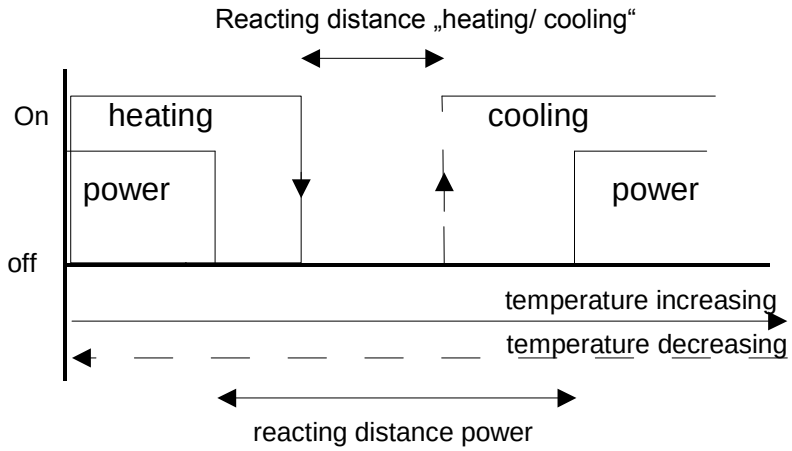
## Thermostat TR-285 Seite 2

**Function**

The controller forms the difference between the **set point** ( adjustable with potentiometer )
and the **actual value** ( measured with external sensor ).
At positiv control deviations (set point – actual value) the relay „heating“ is activated,
at negativ control deviations the relay „cooling“.
The switch-point between the both relays is adjustable between 0,5 K and 5 K ( both relays off ).
The adjustment is done with the potentiometer „reacting distance“.
Each relay has a fixed hysteresis about 1 K, for avoid a permanent switching.

The potentiometer „Temp.correction“ gives the posibility to adjust the tolerances of the sensor.

Increases the control deviation an adjustable value, a more relay is switched( increased efficiency ).
The relay works in both direction, thus to increase the heating power as well as the cooling power.
The switch point is adjustable with the potentiometer „power“.
When reaching the setpoint, all relays are switched off.




**connection**

| | | | | | |
|---|---|---|---|---|---|
| 24 V | 10 | 6 | Schaltspannung | | |
| 12 V | 8 | | | | |
| ground | 1 | 11 | normal open contact | power | |
| | | 12 | normal closed contact | | |
| ground | 1 | 4 | normal open contact | cooling | |
| ground | 1 | 2 | normal closed contact | | |
| setpoint potentiometer | 7 | 3 | normal open contact | heating | |
| sensor | 9 | 5 | normal closed contact | | |

One terminal of setpoint potentiometer and sensor must be contacted to ground..



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# Overview thermostat/ temperature controller

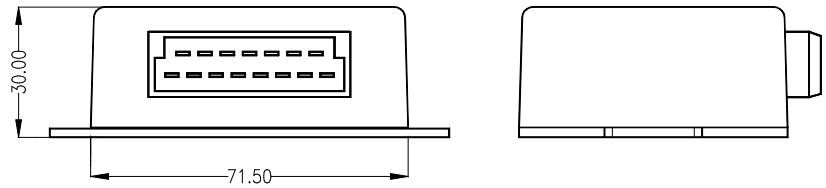
## Thermostat TR-330

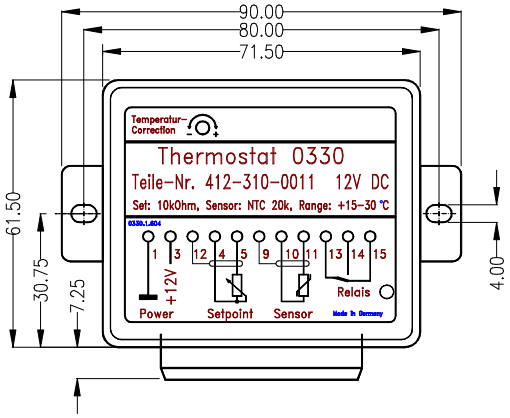
The Thermostat TR-330 is a electronic two-level controller for controlling of heating and cooling in climate control units and vehicles.

| | |
|---|---|
| **Nominal voltage:** | 12V and 24V DC |
| **Voltage range (12V):** | 10V to 18V DC |
| **Voltage range (24V):** | 18V to 30V DC |
| **Control range:** | +15°C tos +30°C |
| **Hystereses:** | approx. 2K |
| **External set point:** | 10 kΩ -Potentiometer, linear |
| **Temperature sensor:** | NTC 20kΩ |
| **Relays contact:** | 1 potential-free 2-way contact |
| **Contact load open/ close at 23°C:** | 30/ 45A (resistive load) |
| **Contact load open/ close at 23°C:** | 25/ 30A (resistive load) |
| **Operation temperature:** | -25°C to +85°C |
| **Storage temperature:** | -25°C to +90°C |
| **Connector:** | 11 AMP- FASTON 6,3x0,8mm |
| **Protection class:** | IP53 |
| **Weight:** | approx. 90g |
| **Interference immunity:** | According to DIN VDE 0839 part 1 |

Notice: sensor- and potentiometer lines more than 2 meter length must be shielded or twisted!

**Dimensiones:**




Subject to technical modifications!

# Overview thermostat/ temperature controller

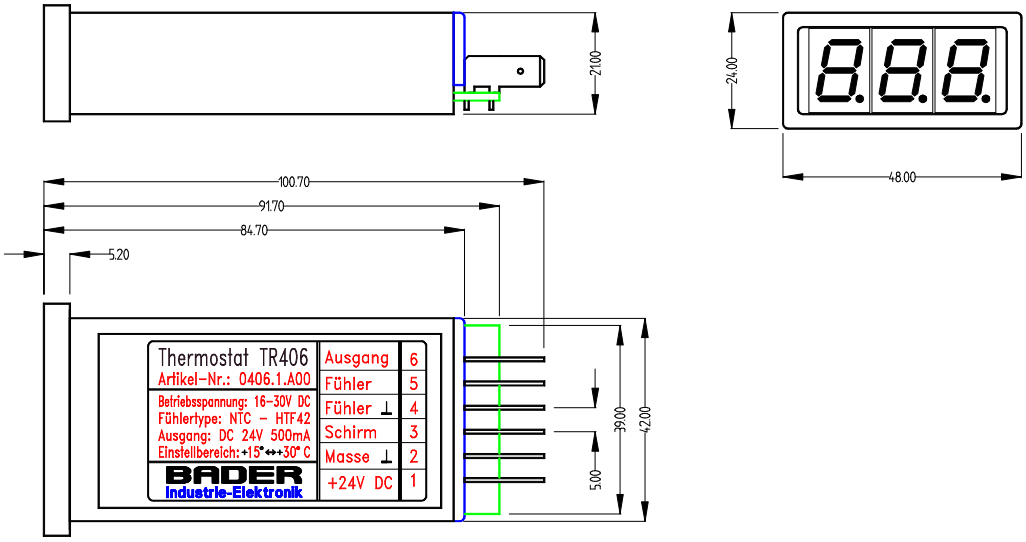
## Thermostat TR-406

The Thermostat TR-282 is a electronic three-level controller for controlling of heating and cooling in climate control units and vehicles. Microproceccor- controlled, with triple-digit 7segm LED.

| | |
|---|---|
| **Nominal voltage:** | 24V DC |
| **Voltage range:** | 16V to 30V DC |
| **Control range:** | +15°C to +30°C or 59°F to 88°F |
| **Hystereses:** | approx. 2K |
| **Temperature sensor:** | NTC 20kΩ |
| **Digital output:** | 24V DC/ 0,5A kurzschlussfest |
| **Power consumption without load** | approx. 40mA |
| **Operation temperature:** | -40°C to +85°C |
| **Storage stemperature:** | -40°C to +85°C |
| **Connector:** | 6 AMP- FASTON 6,3x0,8mm |
| **Weight:** | approx. 65g |

Notice: sensor- and potentiometer lines more than 2 meter length must be shielded or twisted!

**Dimensiones:**

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