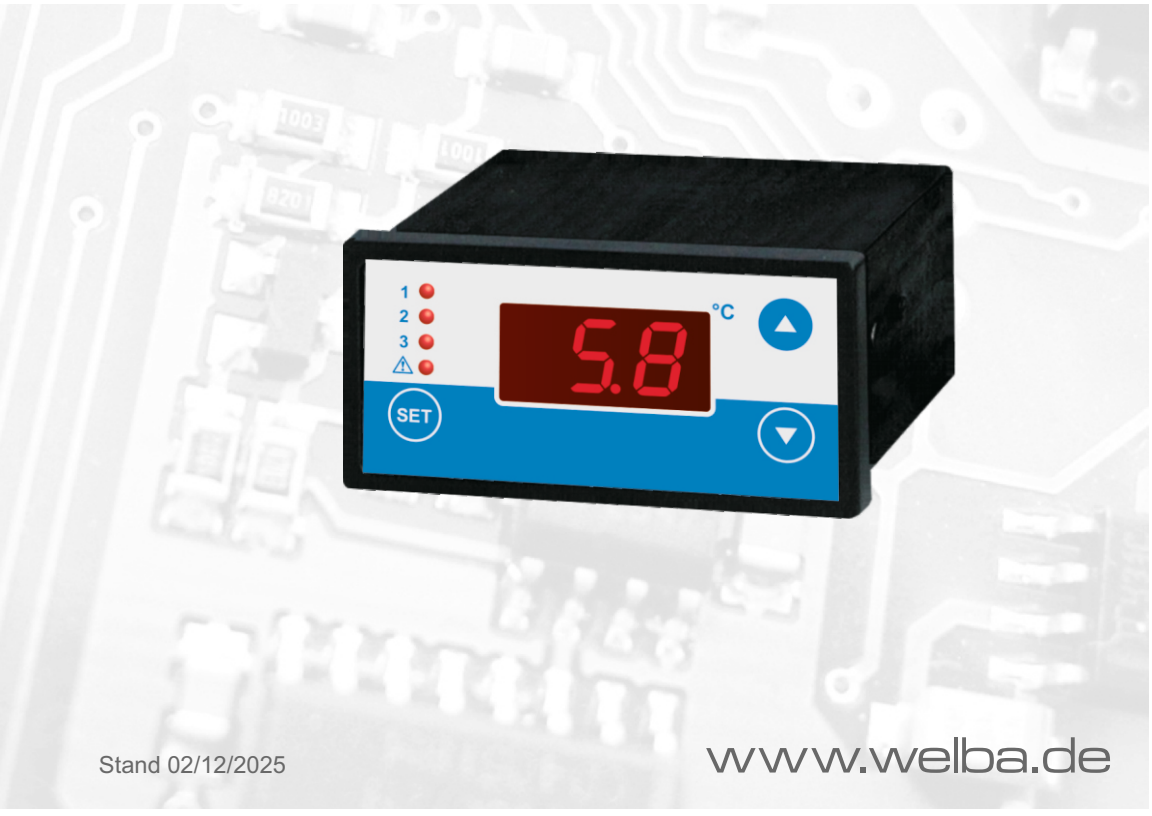
PRODUCT-INFO

Measuring - Controlling - Regulating
All from the same source

# UNIVERSAL TEMPERATURE REGULATOR MPR-A2




Stand 02/12/2025

www.welba.de

# 2-point temperature regulator MPR-A2

## Functions


**Universally configurable temperature regulator in standard mounting housing**

Designed to control heating and cooling processes in technical systems.

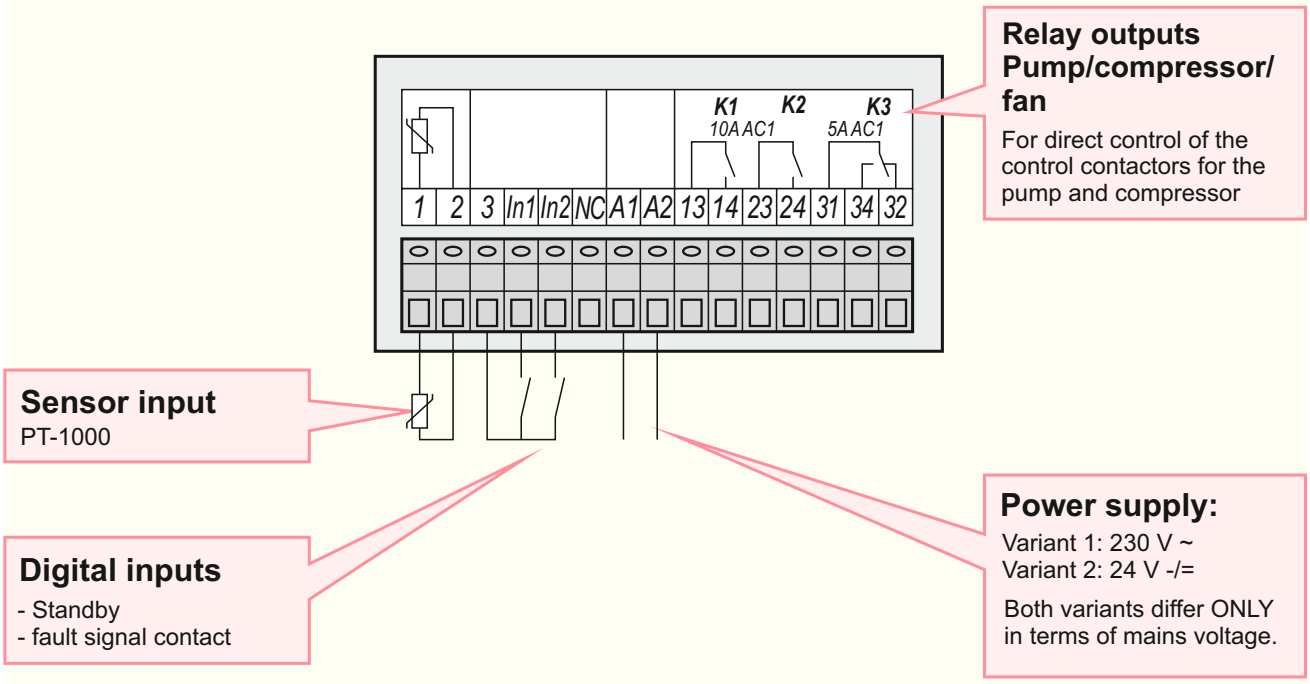
Wide range of programming options.

With three switching contacts for controlling compressors, heaters, alarm devices, etc.

- Easy operation via 3 working levels
- Digital input "fault indicator"
- Digital input "standby"
- Setpoint and hysteresis freely adjustable
- Hysteresis optionally one-sided/symmetrical
- Switching status display via LED
- Setpoint and hysteresis limit freely adjustable at bottom/top
- Heating/cooling switchable
- Buttons for setpoint temperature adjustment lockable
- Alarm message in case of sensor breakage/sensor short circuit (Switching status of the relay adjustable in case of fault)
- Minimum action and minimum pause time for the output relay separately adjustable

# 2-point temperature regulator MPR-A2

## Feature overview




**Relay outputs Pump/compressor/ fan**

For direct control of the control contactors for the pump and compressor

**Sensor input**

PT-1000

**Digital inputs**

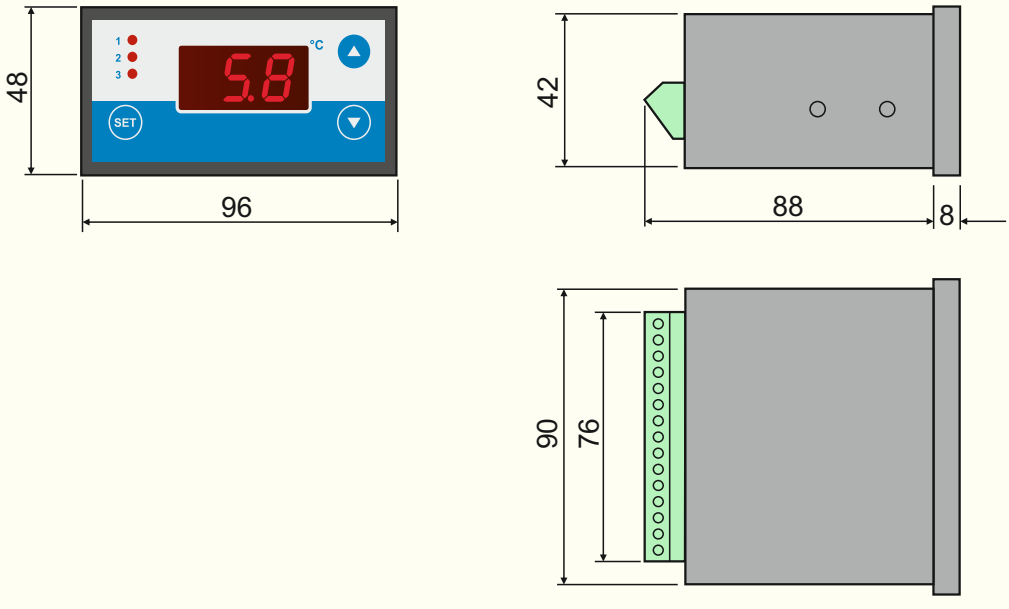
- Standby
- fault signal contact

**Power supply:**

Variant 1: 230 V ~
Variant 2: 24 V -/=

Both variants differ ONLY in terms of mains voltage.

## Dimensions



# 2-point temperature regulator MPR-A2

## Technical data

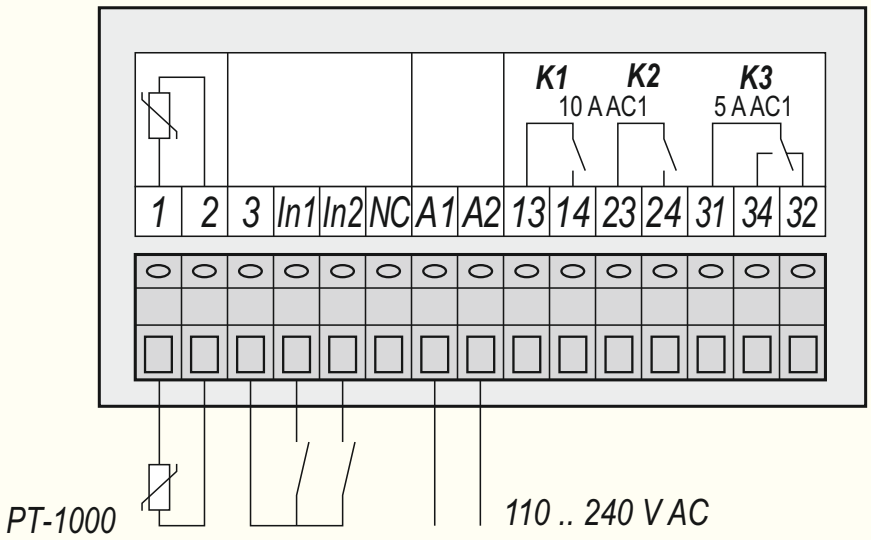

| | |
|---|---|
| Operating voltage | 110 .. 240 V AC, 50/60 Hz<br>or 24 V AC/DC |
| Relay contacts | 2 potential-free normally open contacts<br>1 potential-free changeover contact |
| Max. switching current | K1, K2 = 10 A AC1<br>K3= 5 A AC1 |
| Max. switching voltage<br>- 230V<br>- 24V | <br>250 V<br>30 V |
| Display | 3-digit LED display, 13 mm |
| Display range | -9,9 to 120° |
| Usable sensor | PT 1000 |
| Control behaviour | Two-point controller |
| Betriebsart | Heizen / Kühlen |
| Hysteresis | 0,1 K to 30K freely adjustable |
| Housing | |
| - Front dimensions | 48 x 96 mm |
| - Control panel cut-out | 42 x 90 mm |
| - Installation depth | 88 mm |
| Protection class | IP 64 (housing front) |
| Connection | plug-in terminal strip |
| Ambient temperature<br>- Operating temperature<br>- Storage temperature<br>- Max. humidity | <br>0° to +50°C<br>-20° to +70°C<br>75% (no condensation) |
| Degree of contamination | Conductive contaminants must not be allowed to enter the interior of the enclosure. |
| Overvoltage category | Categorie II |

Subject to technical changes.

## Models

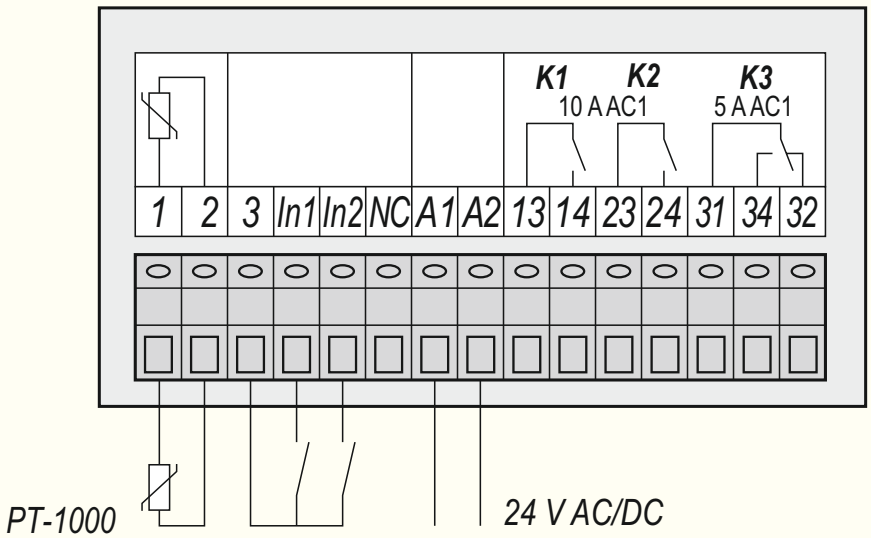
### MPR-A2-A

*110 .. 240 V AC*



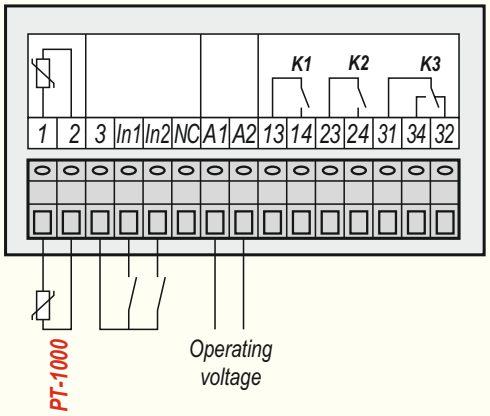

### MPR-A2-F

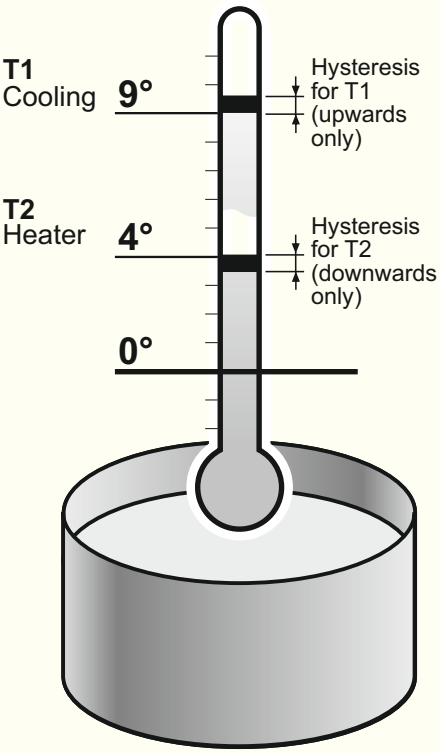
*24 V AC/DC*

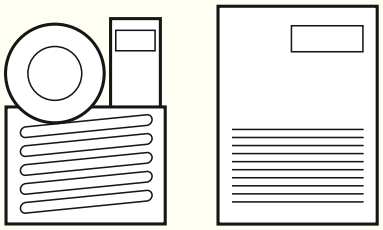


# Application example 1 (three-point control)

## for controlling a cooling and a heating unit

**K1**
Cooling

**K2**
Heater

A medium has to be maintained at a temperature of between 9°C and 4°C. The deviation must not exceed 0.5K.

A cooling and a heating system is to be used (three point regulation). Proceed as fallows:

Programming level:
- Set parameter for target-temperature 1 [C1] to 9°C
- Set parameter for target-temperature 2 [C2] to 4°C
- Set hysteresis parameter for target-temp. 1 [C20] to 0.5K
- Set hysteresis parameter for target-temp. 2 [C21] to 0.5K

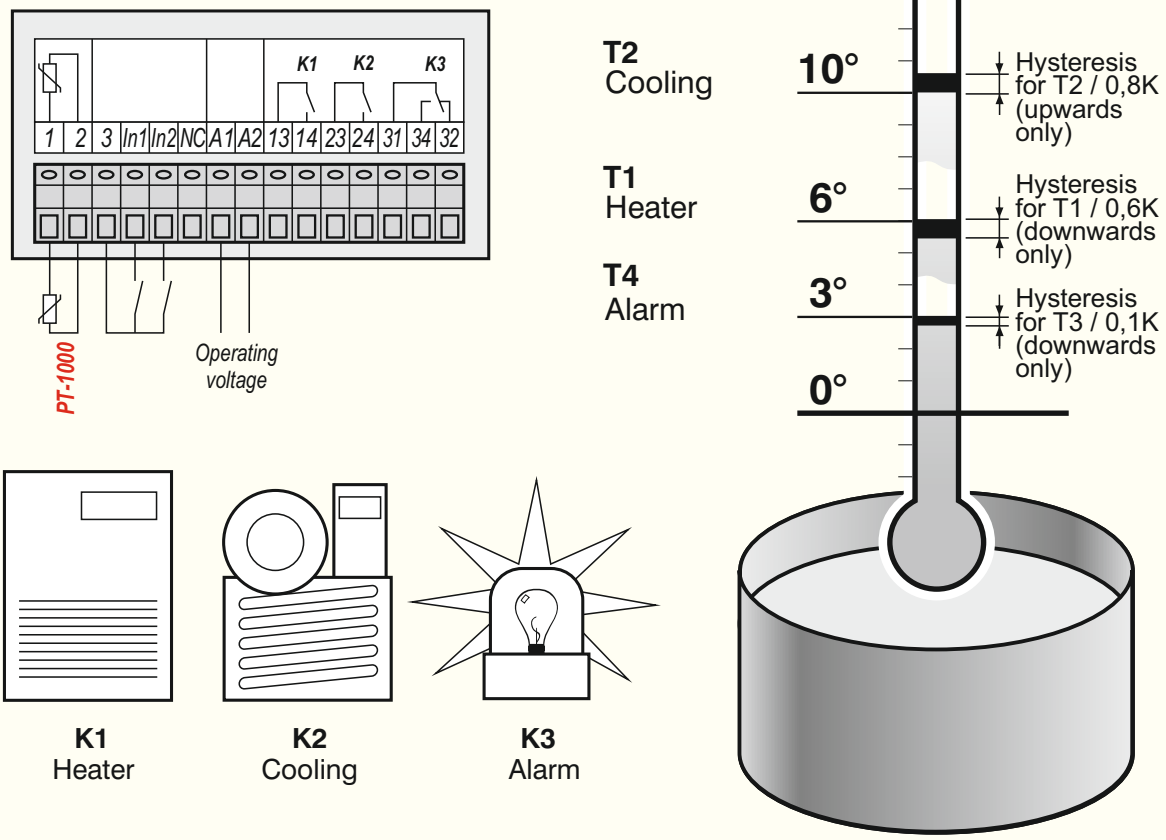
Configuration level:
- Set switch direction parameter for relay K1 [P1] to 1 (cooling contact)
- Set switch direction parameter for relay K1 [P2] to 0 (heating contact)
- Set parameters for function K1 and K2 for sensor failure [P10+P11] as desired
- Set hysteresis mode parameter for target 1 [P15] to 1 [mono-direction]
- Set hysteresis mode parameter for target 2 [P16] to 2 [mono-direction]
- Set the remaining parameters as desired

Operation
- If the temperature of the medium rises to 9.5°C, cooling is switched on, and then switched off again at 9°C
- If the temperature of the medium falls below 3,5°C, heating is switched on, and then switched off again at 4°C

# Application example 2



## to control of two cooling systems, a heating system and a alarm system




**Caution:**

The device is programmed so that the target temperature for heating can be changed at working level.

This is why the heating system is connected to relay contact K1.

A medium is to be maintained at a temperature of between 13°C and 6°C. The permissible temperature deviations are controlled by the hysteresis settings.

The temperature is to be controlled by a cooling system - a heating system will prevent the temperature from falling below 6°C.

An additional alarm is to be activated at 3°C

Proceed as follows:

Programming level:

- Set parameter for target temperature 1 [C1] to 6°C
- Set parameter for target temperature 2 [C2] to 10°C
- Set parameter for target temperature 3 [C3] to 3°C

- Set hysteresis parameter for target-temp. 1 [C20] to 0.6K
- Set hysteresis parameter for target-temp. 2 [C21] to 0.8K
- Set hysteresis parameter for target-temp. 3 [C23] to 0.1K

See next page.

## Application example 2



Configuration level

- Set switching direction param. for K1 [P1] to 0 (heating contact)
- Set switching direction param. for K2 [P2] to 1 (cooling contact)
- Set switching direction param. for K3 [P4] to 0 (heating contact)

- Set parameters for functions K1 to K3 for sensor failure [P10-P12] as desired

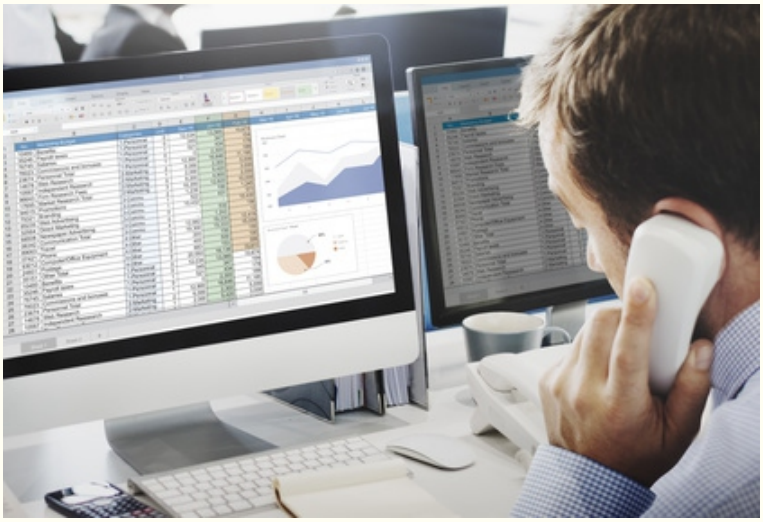
- Set hysteresis mode parameter for target 1 [P15] to 1 (mono-directional)
- Set hysteresis mode parameter for target 2 [P16] to 1 (mono-directional)
- Set hysteresis mode parameter for target 3 [P17] to 1 (mono-directional)
  Mono directional hysteresis mode means:
  - switching direction for cooling contact: hysteresis upwards
  - switching direction for heating contact: hysteresis downwards

- Set the remaining parameters as desired

Operation:

- If the temperature of the medium rises to 10.8°C, cooling system 1 is switched on, and then switched off again at 10°C.
- If the temperature of the medium falls below 5.4°C, the heating system is switched on, and then switched off again at 6°C.
- If the capacity of heating system is not sufficient, and the temperature continues to fall below 2,9°C, the alarm is triggered and continues until the temperature rises above 3,0°C.

# Customized developments



The development of solutions tailored to solve our clients' specific problems is one of Welba's major strengths. Here we can offer extensive experience, as well as excellent references.

On the basis of many previous development projects we are in a position to devise a solution to meet your specific needs. Nor is our know-how not restricted to temperature measurement technology; we can also develop solutions in completely different areas of measurement and regulation technology. We can often achieve the necessary simply by modifying our standard products.

In any event, we will always recommend the best solution for you.

A full service

In many cases we offer more than just development work.

At Welba we also understand service to include the development of concepts for the use of the new product by your own customers, the design and production of frontal foils or even housings, or the provision of operating instructions with your own corporate design.

Not always major developments...

For many of our clients we also develop and manufacture simple electronic systems for straightforward applications.