

# Temperature Relay Type TR210

for 2 Temperature-Sensors or 0/4-20 mA, 0-10 V, 2 Limits, Analog-output

## TR210



C<sub>UL</sub> US

### Part numbers:

**T224071** AC/DC 24-240 V

Accessory: [Installation frame ER4 for panel mount](#)

**T224384** ER4



The control unit TR210 monitors up to 2 measuring inputs for Pt100 (RTD), Pt1000, thermocouples, or standard-signals 0/4-20 mA, 0-10 V.

The signals are monitored for up to 4 limits. The value of one or of both inputs can be read out at an analog output.

### Application:

The TR210 is very versatile and can thus be used in many applications. Nevertheless multiple preset programs allow an easy setting.

It can be used as a limit switch or as a controller for 2 limits (with day/night shift up to 4 limits).

As a measuring transducer it can convert signals from the temperature-sensors to standard-signals or change the scaling of standard-signals. The user can also select, if minimum or maximum of 2 signals or the difference of 2 signals is connected to the analog output.

For more applications see basic programs.

- Measuring and monitoring range -270...+1820 °C
- resolution 0,1°C (to 999.9 °C)
- Analog output (scaleable) for 1 input, min./max. of 2 inputs or difference of 2 sensors (no isolation between inputs and output)
- 2 relay outputs
- Shifting of day/night (selectable with contact at terminals Y1/Y2)
- Universal power supply AC/DC 24-240 V
- Easy setting with 3 buttons and preset programs
- Storing of min- and max-values of inputs
- Code-lock against manipulation of settings
- Terminals pluggable

### 2 Measuring-Inputs:

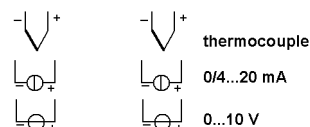
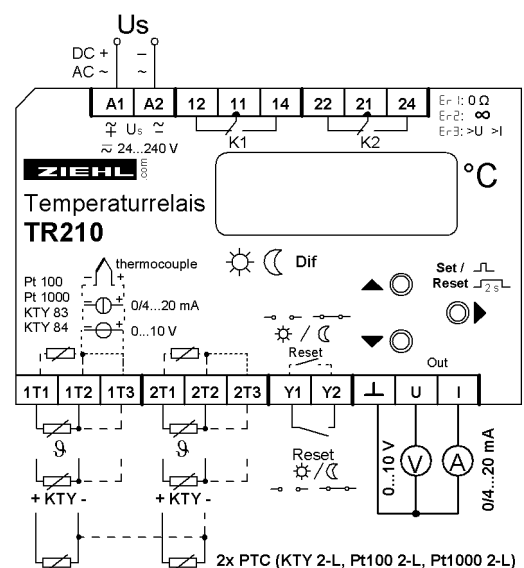
- Resistance-sensors Pt100 (RTD), Pt1000, KTY83/84 in 2- or 3-wire-connection
- Thermocouples types B, E, J, K, L, N, R, S or T
- different sensors at both inputs possible
- Standard-signals 0/4-20 mA, 0-10 V (scaleable)

### Displays:

- 4-digit for measuring value
- 2 LEDs for state of relays
- 3 LEDs sensor/difference
- 2 LEDs day/night

### Switching-Functions:

- 2 relays (co-contacts)
- 2-4 limits
- Warmest/coldest sensor switches relay
- Programmable for every relay:
  - hysteresis (+ or - = MIN- or MAX-function) -199.9...999.9 s
  - autoreset or electronic reclosing lock
  - delay-time for switching and switching back 0...9999 s
  - operating- or closed current-mode
  - cyclic check of function
- Monitoring of difference in temperature
- Preset basic programs



## Basic Programs

## Program 1:

**1 Temperature-sensor, 2 Limits**

Application: Monitoring of a temperature for 2 limits, e.g. over-temperature with warning and switching off or monitoring of a temperature-range (min/max).

## Program 2:

**2 Temperature-Sensors, 1 Limit for each Sensor**

Application: Monitoring of 2 temperatures for 1 limit each, e.g. over-temperature or as double electronic controller.

## Program 3:

**1 Temperature-Sensor, 2 Limits each day/night**

Application: Controlling of a temperature with first limit, different for day and night.

Monitoring of the same temperature with second limit, different for day and night.

## Program 4:

**2 Temperature-Sensors, each 1 Limit for day/night**

Application: Monitoring or controlling of 2 temperatures for 2 limits, depending on operation mode, e.g. controlling of 2 circulation pumps (day/night) or of processes (active/stand-by).

## Program 5:

**2 Temperature-Sensors for monitoring of differences in temperature, 2 Limits**

Application: Regulation or monitoring of the difference of 2 measuring-points for 2 limits, e.g. circulation pumps in solar systems.

## Program 6:

**1 Standard-Signal 0/4-20 mA or 0-10 V, 2 Limits**

Display can be scaled, e.g. measuring input 4-20 mA = display 0...1200 l/h.

Application: Monitoring of signals from a measuring transducer for 2 limits, e.g. over- or under-exceeding of limits with pre-alarm and alarm or monitoring of a signal-range (min/max) and/or as measuring-transducer.

In combination with any measuring-transducers, signals like pressure, volume-flow, pH-value, ... can be monitored.

## Program 7:

**2 Standard-Signals 0/4-20 mA or 0-10 V, 1 Limit each**

Display can be scaled, e.g. measuring input 4-20 mA = display 0...1200 l/h.

Application: Monitoring of signals from 2 measuring transducers, each for 1 limit, e.g. over- or under-exceeding of a limit as double electronic controller.

## Program 8:

**2 Standard-Signals 0/4-20 mA or 0-10 V for monitoring of differences of signals**

Application: Regulation or monitoring of the difference of 2 analog signals for 2 limits, e.g. levels of liquids.

## Program 9:

**2 Temperature-Sensors, 2 shared Limits**

Application: Coldest (MIN) or warmest (MAX) sensor switches relay. Monitoring of 2 bearings for pre-alarm and alarm.

Application as Measuring-Transducer:

At programs **with 1 measuring-input** the output can be scaled for this input, e.g. 0...200.0 = 4-20 mA.

At programs **with 2 measuring-inputs** the output can be scaled for 1 input or min- or max- value of both inputs.

At programs **for measuring of differences** output can be scaled for 1 signal or for the difference input 2 minus input or for min- or max- value of both inputs.

Thus the TR 210 can be used as limit value switch and/or measuring-transducer simultaneously. The measured values can be forwarded to e.g. a remote display or a superior control.

## Technical Data

Rated supply voltage	AC/DC 24-240V, <3W, <7VA (AC 20-264 V, DC 20,4-297 V)
2 Measuring inputs	Pt 100, Pt 1000 according to EN 60 751 Thermocouples types B, E, J, K, L, N, R, S, according to EN 60 584, DIN 43 710 0/4-20 mA (22Ω), 0-10 V (13 kΩ)
Measuring-time	<2,5 s to 5 s, depending on speed of change of signal
Analog output	0/4-20 mA, max. 500 Ω. 0-10 V, max. 10 mA (without isolation to inputs)
Relay output	type 3, see "general technical informations" 2 x 1 co- (change-over) contact
Test conditions	see "general technical informations"
Rated ambient temp.range	-20...+65°C
Housing / Installation Frame	Design V4 / Front mounting kit Type ER4
Dimensions h x w x d	90x70x58 [mm], mounting height 55 mm
Protection housing / terminals	IP 30 / IP 20 (terminals pluggable)
Weight	app. 200 g
Attachment	on 35 mm DIN-rail or with screws M 4