Temperature monitoring via Pt100 sensors (2- and 3-wire connection)

G2TMPT100L20 24-240V

Monitoring relays - GAMMA series

Multifunction

Monitoring of short circuit or line break of sensor line

Fault latch

Zoom voltage 24 to 240V AC/DC

2 change-over contacts

Width 22.5mm

Industrial design



Technical data

1. Functions

Temperature monitoring via Pt100 sensors according to EN60751 (2- and 3-wire connection) with adjustable thresholds, adjustable start-up suppression time and the following functions (selectable by means of rotary switch)

OVER	Overtemperature monitoring
OVER+LATCH	Overtemperature monitoring with fault latch
UNDER	Undertemperature monitoring
UNDER+LATCH	Undertemperature monitoring with fault latch
WIN	Monitoring the window between Min and Max
WIN+LATCH	Monitoring the window between Min and Max with fault latch

2. Time ranges

	Adjustment range
Start-up suppression time:	0min 30min
Tripping delay:	-

3. Indicators

Green LED ON:	indication of supply voltage
Green LED flashing:	indication of start-up suppression time
Yellow LED ON/OFF:	indication of relay output
Red LED ON/OFF:	indication of failure of the corresponding threshold
Red LED Sense ON:	indication of line break or short circuit of the sensor line or temperature out of range

4. Mechanical design

Self-extinguishing plastic housing, IP rating IP40
Mounted on DIN-Rail TS 35 according to EN 50022
Mounting position: any
Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20
Tightening torque: max. 1Nm
Terminal capacity:
- 1 x 0.5 to 2.5mm² with/without multicore cable end
- 1 x 4mm² without multicore cable end
- 2 x 0.5 to 1.5mm² with/without multicore cable end
- 2 x 2.5mm² flexible without multicore cable end

5. Input circuit

Supply voltage:	
24 to 240V AC/DC	terminals A1-A2 (galvanically separated)
Tolerance:	
24 to 240V DC	-20% to +25%
24 to 240V AC	-15% to +10%
Rated frequency:	
24 to 240V AC	48 to 400Hz
48 to 240V AC	16 to 48Hz
Rated consumption:	4.5VA (1W)
Duration of operation:	100%
Reset time:	500ms
Wave form for AC:	Sinus
Residual ripple for DC:	10%
Drop-out voltage:	>30% of the supply voltage
Overvoltage category:	III (according to IEC 60664-1)
Rated surge voltage:	4kV

6. Output circuit

2 potential free change-over contacts

Rated voltage:	250V AC
Switching capacity (distance <5mm):	750VA (3A / 250V AC)
Switching capacity (distance >5mm):	1250VA (5A / 250V AC)
Fusing: 5A fast acting	
Mechanical life:	20 x 10^6 operations
Electrical life:	2 x 10^5 operations at 1000VA resistive load
Switching frequency:	max. 60/min at 100VA resistive load max. 6/min at 1000VA resistive load (according to IEC 947-5-1)
Overvoltage category:	III (according to IEC 60664-1)
Rated surge voltage:	4kV

7. Measuring circuit

Measured variable:	-50 to +200°C, terminals T1-T2-T3
Switching threshold	
Measuring range (Offset):	-50, 0, +50 and +100°C
Max:	Offset+5 to Offset+100K
Min:	Offset+0 to Offset+95K
Open-circuit voltage:	5V
Sensor current:	approx. 1mA
Resistance of sensor line:	max. 10Ω / line
Disconnection (short circuit sensor):	yes, <70Ω
Rated surge voltage:	4kV

8. Accuracy

Base accuracy:	±5°
Frequency response:	-
Adjustment accuracy:	≤5% (of maximum scale value)
Repetition accuracy:	±2%
Voltage influence:	-
Temperature influence:	≤0.02% / °C
Switching point correction (2-wire connection only):	2.6°C / Ω line resistance

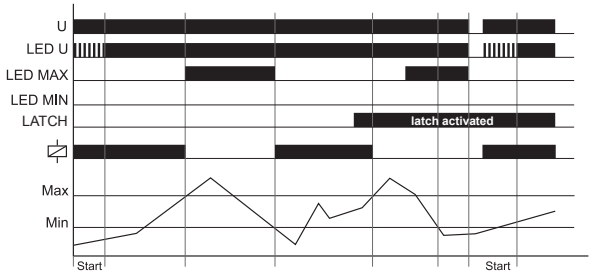
9. Ambient conditions

Ambient temperature:	-25 to +55°C (according to IEC 68-1) -25 to +40°C (according to UL 508)
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85% (according to IEC 721-3-3 class 3K3)
Pollution degree:	3 (according to IEC 60664-1)
Vibration resistance:	10 to 55Hz 0.35mm (according to IEC 68-2-6)
Shock resistance:	15g 11ms (according to IEC 68-2-27)

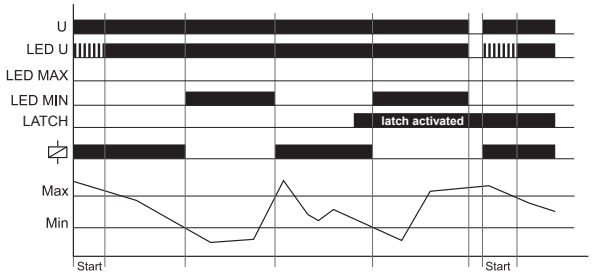
Functions

When the supply voltage U is applied, the output relays switch into on-position (yellow LED illuminated) and the set interval of the start-up suppression (START) begins (green LED U flashes). Changes of the measured temperature during this period do not affect the state of the output relay. After the interval has expired the green LED is illuminated steadily. For all the functions the LEDs MIN and MAX are flashing alternating, when the minimum value for the measured temperature was chosen to be greater than the maximum value.

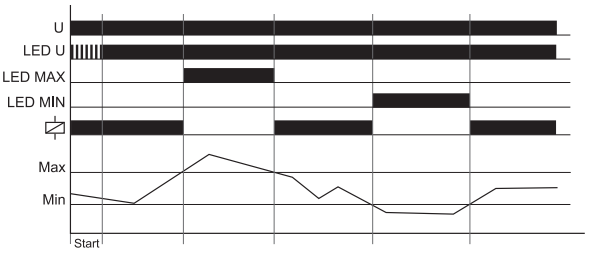
Overtemperature monitoring (OVER, OVER+LATCH)
When the measured temperature exceeds the value adjusted at the MAX-regulator (red LED MAX illuminated), the output relays switch into off-position (yellow LED not illuminated). The output relays again switch into on-position (yellow LED illuminated), when the measured temperature falls below the value adjusted at the MIN-regulator (red LED MAX not illuminated). If the fault latch is activated (OVER+LATCH) and the measured temperature exceeds the MAX-value, the output relays remain in the off-position even if the measured temperature falls below the value adjusted at the MIN-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).



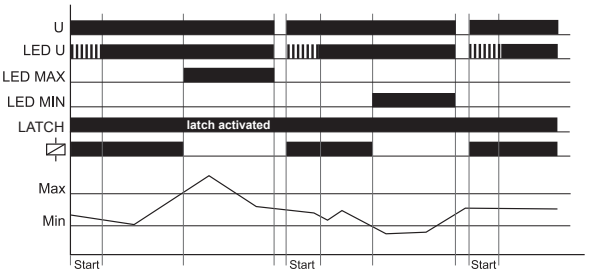
Undertemperature monitoring (UNDER, UNDER+LATCH)
When the measured temperature falls below the value adjusted at the MIN-regulator (red LED MIN illuminated), the output relays switch into off-position (yellow LED not illuminated). The output relays again switch into on-position (yellow LED illuminated), when the measured temperature exceeds the value adjusted at the MAX-regulator.
If the fault latch is activated (UNDER+LATCH) and the measured temperature falls below the MIN-value, the output relays remain in the off-position even if the measured temperature exceeds the value adjusted at the MAX-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).



Window function (WIN, WIN+LATCH)
The output relays switch into on-position (yellow LED illuminated) when the measured temperature exceeds the value adjusted at the MIN-regulator. When the measured temperature exceeds the value adjusted at the MAX-regulator (red LED MAX illuminated), the output relays switch into off-position (yellow LED not illuminated). The output relays again switch into on-position (yellow LED illuminated) when the measured temperature falls below the value adjusted at the MAX-regulator (red LED MAX not illuminated). When the measured temperature falls below the value adjusted at the MIN-regulator (red LED MIN illuminated), the output relays switch into off-position (yellow LED not illuminated).



If the fault latch is activated (WIN+LATCH) and the measured temperature falls below the MIN-value, the output relays remain in the off-position even if the measured temperature exceeds the value adjusted at the MIN-regulator. If the measured temperature exceeds the MAX-value, the output relays remain in the off-position even if the measured temperature falls below the value adjusted at the MAX-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).

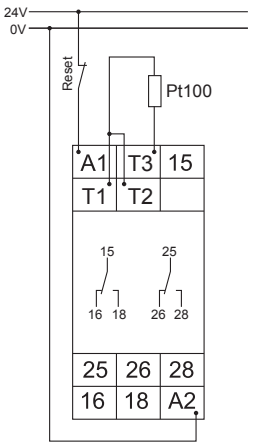


Monitoring of short circuit and line break of sensor line
In case of a short circuit or a line break of the sensor line the output relays switch into off-position (red LED SENSE illuminated). Under these conditions however the output relays do not change their state after disconnecting and re-applying the supply voltage.
The fault latch is not active for this of fault.

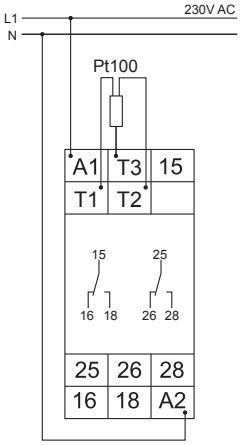
Temperature out of range
If the measured temperature is outside of the spezified range the output relays switch into off-position (red LED SENSE illuminated). Under these conditions however the output relays do not change their state after disconnecting and re-applying the supply voltage.

Connections

2-wire connection, supply voltage 24V AC/DC and fault latch



3-wire connection, supply voltage 230V AC without fault latch



Dimensions

