TG50, TG50EX, STL50, STL50EX, GS1000
Блоки сигнализации и управления / ПИД-регуляторы
GHM MESSTECHNIK

Технические характеристики

Temperature monitors	Description	Measuring input									Page
		Pt100	Pt1000	Type J Fe-CuNi	Type K NiCr-Ni	Type N NiCrSi-NiSi	Type S Pt10Rh-Pt	Bimetal	Micro switch	Others	
TG50	Temperature guard	●	●	●	●		●				**84**
TG50EX	Temperature guard	●	●	●	●		●				**86**
STL50	Safety temperature limiter	●		●	●	●	●				**91**
STL50EX	Safety temperature limiter	●		●	●	●	●				**93**
GS1000	Limit value relay	●		●	●		●				**95**

Produktinformation

Temperature Guard TG50

Characteristics

The Temperature-Guard TG50 has inputs for temperature probes RTD (Pt100/Pt1000) and thermocouple J, K, N and S. Simple programming, up to 4 alarm outputs (SPDT) and an available fully isolated free programmable analog output 0/4..20 mA; 0/2..10 V DC offers a lot of solutions for temperature monitoring. Peak value indication for minimum and maximum measured temperature are stored in the background and can be read out from the display at any time.

Technical data

Power supply

Supply voltage	:	230 V AC ±10 % 115 V AC ±10 % 24 V DC ±15 %
	:	< 5 VA
Operating temperature	:	-10..+55 °C
CE-conformity	:	EN 61326-1:2013 EN 60664-1:2007

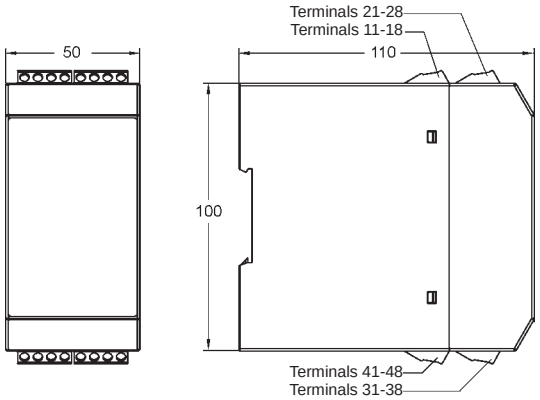
Input

Fault function	:	break of wire (RTD Pt100/1000, Thermocouple) and short-circuit (only Pt100/1000)
RTD	:	Pt100 (3-wire) -100.0..+600.0 °C Pt1000 (3-wire) -100.0..+300.0 °C
	:	Thermocouple (TC) type J -100.0..+800.0 °C type K -150..+1200 °C type N -150..+1200 °C type S -50..+1600 °C cold junction compensation integrated
Accuracy	:	<0.1 %, ±1 Digit
Display	:	Graphic LCD-Display, 128 x 64 Pixel, with white back-lite

Output

Alarm A1-A4	:	relay SPDT < 250 V AC < 250 VA < 2 A cos Phi ≥ 0.3 < 300 V DC < 40 W <2 A
Analog	:	0/4..20 mA burden ≤500 Ω 0/2..10 V burden >500 Ω isolated, automatic output changing (burden dependent)
- Accuracy	:	0.2 %;TK 0.01 %/K
Fault indication	:	for broken line or short circuit detection → analog output (programmable) 0 mA, < 3.6 mA or >21.5 mA → Alarm relays min. or max. function programmable
Case	:	Polyamide (PA) 6.6 , UL94V-0 TS35 acc. to DIN EN 60715
Weight	:	approx. 450 g
Connection	:	screw terminals 0.14..2.5 mm² AWG 26..AWG14
Protection class	:	case IP30, terminals IP20 acc. to BGV A3

Dimensions



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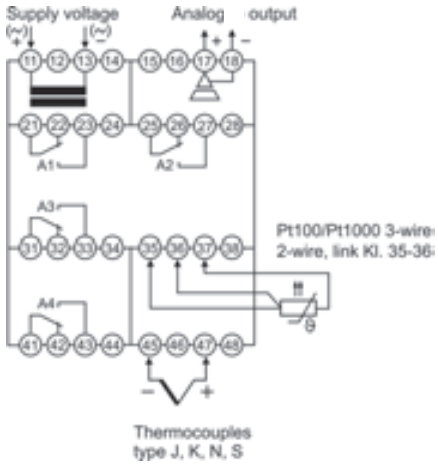
Connection diagram



Ordering code

	1.	2.	3.	4.	5.	6.
TG50	-	-	-	-	-	

1. Device type/input

3	RTD Pt100, 3-wire, -100.0..+600.0 °C RTD Pt1000, 3-wire, -100.0..+300.0 °C Thermocouple J (Fe-CuNi), -100.0..+800.0 °C K (NiCr-Ni), -150..+1200 °C N (NiCrSi-NiSi), -150..+1200 °C S (Pt10Rh-Pt), -50..+1600 °C

2. Alarm output A1, A2

2R	2 relay SPDT

3. Alarm output A3, A4

00	not installed
2R	2 relay SPDT

4. Analog output

00	not installed
AO	0/4..20 mA, 0/2..10 V DC, isolated

5. Supply voltage

0	230 V AC, ± 10 % 50-60 Hz
1	115 V AC, ± 10 % 50-60 Hz
5	24 V DC, ± 15 %

6. Options

00	without option

Temperature Guard TG50Ex

Characteristics

The Temperature Guard TG50Ex offers intrinsically safe inputs for direct connection of temperature probes RTD (Pt100,Pt1000) and thermocouples type J, K, N or S, which are installed in the explosion endangered area.
Simple programming, 2 alarm outputs (SPDT) and an optional available fully free programmable isolated analog output 0/4..20 mA; 0/2..10 V DC offers a lot of solutions for temperature monitoring. The peak value indication for minimum and maximum measured temperature are stored in the background and can be read out from the display at any time.

Technical data

Power supply

Supply voltage	:	230 V AC ±10 % 115 V AC ±10 % 24 V DC ±15 % Um = 253 V AC or 125 V DC (terminals 11 and 13)
Power consumption	:	max. 5 VA
Operating temperature	:	-10..+55 °C
CE-conformity	:	ATEX-directive 2014/34/EU EN 60079-0:2006 EN 60079-11:2007 EN 61241-0:2006 EN 61241-11-0:2006
EMC-directive / standard	:	2014/30/EU / EN 61326-1:2013

Inputs

Explosions protection	:	II (1) G [Ex ia] IIC/IIB or II (1) D [Ex iaD]
Approval	:	TÜV 08 ATEX 554329
Fault detection	:	broken line (Pt100/1000 and thermo-couple) and short circuit (only Pt100/1000)
Input RTD	:	Pt100 (3-wire) -100.0..+600.0 °C Pt1000 (3-wire) -100.0..+300.0 °C (terminals 35, 36, 37)
Input TC	:	Thermocouple type J -100.0..+800.0 °C type K -150..+1200 °C type N -150..+1200 °C type S -50..+1600 °C cold junction compensation integrated (terminals 45 and 47)
Accuracy	:	<0.1 %, ±1 Digit
Temperature coefficient	:	0.01 %/K

Safety data

Max. voltage no load U_0	:	1,4 V	
Max. short circuit curr. I_0	:	2.5 mA	
Max. output power P_0	:	3 mW	
Resistance R	:	5600 Ω	
Characteristic curve	:	trapezoidal	
Internal inductivity	:	4 µH	
Internal capacity	:	135 nF	
Explosion protection		**Ex ia/IIC**	**ia/IIB**
Max. external inductivity	:	100 mH	100 mH
Max. external capacity	:	25 µF	120 µF

Outputs

Alarm outputs	:	relay SPDT < 250 V AC < 250 VA < 2 A cos Phi ≥ 0.3 < 300 V DC < 40 W <2 A (terminals 21, 22, 23; 25, 26, 27)
Analog output	:	0/4..20 mA burden ≤ 500 Ω 0/2..10 V burden > 500 Ω, isolated output changes automatically (burden depending)
- Accuracy	:	0.2 %; TK 0.01 % / K (terminals 17 and 18)
Fault function	:	for broken line or short circuit detection → analog output (programmable) 0 mA, < 3.6 mA or >21.5 mA → alarm relays min. or max. function programmable
Display	:	graphic-LCD-display, 128 x 64 Pixel with white LCD backlit
Case	:	Polyamide (PA) 6.6, UL94V-0 TS35 acc. to DIN EN 60715
Weight	:	approx. 450 g
Connection	:	screw terminals 0.14..2.5 mm² AWG 26..AWG14
Protection class	:	case IP30, terminals IP20 acc. to BGV A3

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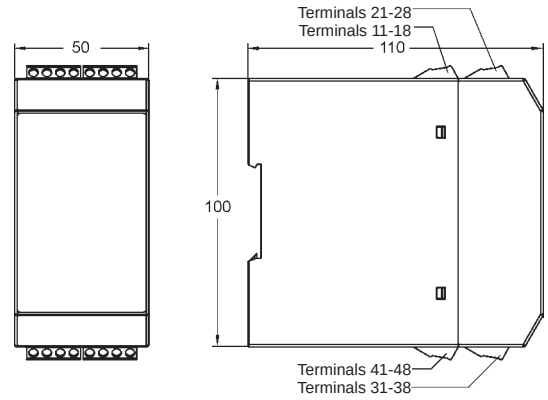
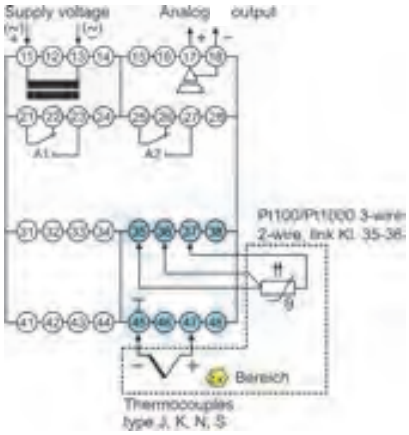
Dimensions



Connection diagram



Ordering code

TG50Ex - 1. - 2. - 3. - 4. - 5. - 6.

1.	**Device type/input**	
	3	RTD Pt100, 3-wire, -100.0..+600.0 °C RTD Pt1000, 3-wire, -100.0..+300.0 °C Thermocouple J (Fe-CuNi), -100.0..+800.0 °C K (NiCr-Ni), -150..+1200 °C N (NiCrSi-NiSi), -150..+1200 °C S (Pt10Rh-Pt), -50..+1600 °C
	Inputs intrinsically safe	EX II (1) G [Ex ia] IIC/IIB EX II (1) D [Ex iaD]
2.	**Alarm outputs A1, A2**	
	2R	2 relay SPDT
3.	**Alarm outputs A3, A4**	
	00	not available
4.	**Analog output**	
	00	not installed
	AO	0/4..20 mA, 0/2..10 V DC, isolated
5.	**Supply voltage**	
	0	230 V AC, ± 10 % 50-60 Hz
	1	115 V AC, ± 10 % 50-60 Hz
	5	24 V DC, ± 15 %
6.	**Options**	
	00	without option

Safety Temperature Limiter STL50

(acc. to DIN EN 14597, SIL 2)

- **Useful as Temperature Limiter/-Guard and Exhaust gas Temperature Limiter**
- **Certified according to DIN EN 14597 SIL 2**
- **Inputs RTD Pt100 or double-thermocouple**
- **Alarm output 1 relay SPDT**
- **Programming via backlit LCD-graphic-Display**

Characteristics

The STL50 safety temperature limiter is used where ever thermal processes must be monitored and the system must be transferred into a safe operational state in case of fault. If the permissible temperature limit value is reached, or if a fault occurs within the permissible temperature range on the monitoring equipment (sensor open, sensor short-circuit, failure of a component part in the device, fault in the software, failure or inadmissible value of the supply voltage etc.), the STL50 switches off without delay.
The alarm contact is activated, the LED ALARM on the front panel and the back-lighting of the display light up, and the error cause is indicated as plain text on the display. In addition, there is a 24 V DC signal present on the terminals 17-18 for an external alarm signal.

Description

Programming
The device is programmable via front side buttons in connection with the graphic display.

Operating modes
The device can be used as:
STB ➔ Maximum- or minimum-monitoring with hold. Reset possible after omission of the fault with the external or internal button.
ASTB ➔ as before, but monitoring the exhaust gas temperature
STW ➔ Maximum- or minimum-monitoring without hold. Automatic reset after leaving the dangerous range
Switching hysteresis always acts in the direction of safe range.
The last fault is stored as plain text and can be called up in the working level and deleted.

Temperature sensor

The device may be operate only with temperature probes which are certified according to DIN EN 14597!

Technical data

Power supply		
Supply voltage	:	230 V AC ±10 % 115 V AC ±10 % 24 V DC ±15 %
Power consumption	:	< 4 VA
CE-conformity	:	EN 61326-1: 2013 EN 61326-2-2: 2013
Ambient conditions		
Operating temperature	:	-10..+55 °C
Storage temperature	:	-30..+60 °C
Relative humidity	:	< 95 %
Condensation	:	not permitted operation only in vibration less ambient
Approvals		**Title**
EN 14597:2011	:	Temperature control devices and temperature limiters for heat-generating systems
EN 61508:2011 SIL2	:	Functional security safety-related electrical/electronic/programmable electronic systems
Input		
Pt100	:	in the range -100.0..+600.0 °C 3-wire, max. line resistance 4 Ω each line sensor current<1 mA (non self heating)
Thermocouple		
Type J	:	Fe-CuNi, -100.0..+800.0 °C
Type K	:	NiCr-Ni, -150..+1200 °C
Type N	:	NiCrSi-NiSi , -150..+1200 °C
Type S	:	Pt10Rh-Pt, 0..+1600 °C cold junction compensation integrated
Accuracy	:	<0.5 %, ±2 Digit
Temperature coefficient	:	0.01 %/K
Display	:	graphic-LCD-display 28 x 64 Pixel, with white LCD-backlight
Output		
Relay	:	SPDT <250 V AC <200 VA <2 A cos Phi ≥0.7 <250 VDC <80 W <2 A, internal fused 2 A (slow-blow)
Case	:	Polyamide (PA) 6.6 , UL94V-0, TS35 acc. to DIN EN 60715
Weight	:	approx. 450 g
Connection	:	screw terminals 0.14..2.5 mm² (AWG 26 .. 14)
Protection class	:	IP20, DIN EN 60529, BGV A3

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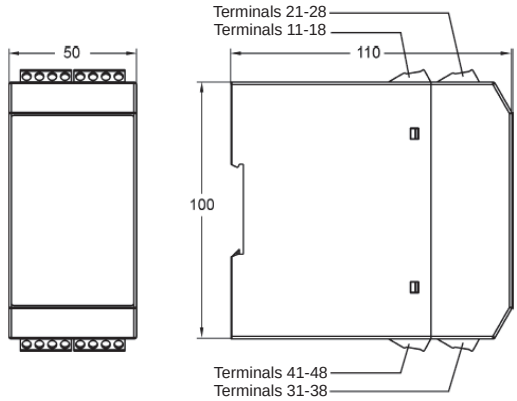
Dimensions



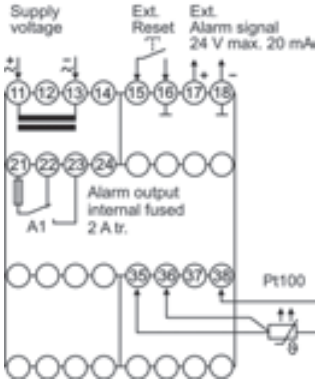
Ordering code

	1.	2.	3.	4.
STL50	-	-	-	-

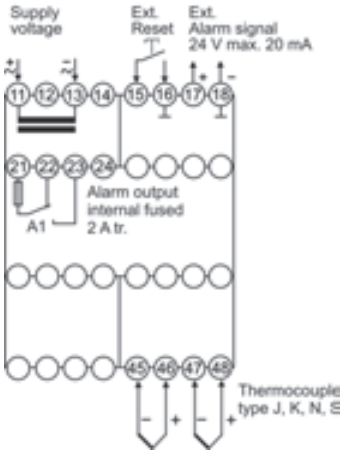
1.	**Device type/input**	
	1	Pt100, 3-wire, -100.0..+600.0 °C
	5	Thermocouple J (Fe-CuNi), -100.0..+800.0 °C K (NiCr-Ni), -150..+1200 °C N (NiCrSi-NiSi), -150..+1200 °C S (Pt10Rh-Pt), 0..1600 °C
2.	**Output**	
	1R	1 alarm output, relay SPDT
3.	**Supply voltage**	
	0	230 V AC, ± 10 % 50-60 Hz
	1	115 V AC, ± 10 % 50-60 Hz
	5	24 V DC, ± 15 %
4.	**Options**	
	00	without option

Connection diagrams

STL50-1



STL50-5



Safety Temperature Limiter STL50Ex

(acc. to DIN EN 14597, SIL 2)

- **Useful as Temperature Limiter/-Guard and Exhaust gas Temperature Limiter**
- **Certified according to DIN EN 14597 SIL 2**
- **Inputs RTD Pt100 or double-thermocouple**
- **Alarm output 1 relay SPDT**
- **Programming via backlit LCD-graphic-Display**

Characteristics

The STL50Ex safety temperature limiter is used where ever thermal processes must be monitored and the system must be transferred into a safe operational state in case of fault. If the permissible temperature limit value is reached, or if a fault occurs within the permissible temperature range on the monitoring equipment (sensor open, sensor short-circuit, failure of a component part in the device, fault in the software, failure or inadmissible value of the supply voltage etc.), the STL50Ex switches off without delay.
The alarm contact is activated, the LED ALARM on the front panel and the back-lighting of the display light up, and the error cause is indicated as plain text on the display. In addition, there is a 24 V DC signal present on the terminals 17-18 for an external alarm signal.

Description

Programming
The device is programmable via front side buttons in connection with the graphic display.

Operating modes
The device can be used as:
STB ➔ Maximum- or minimum-monitoring with hold. Reset possible after omission of the fault with the external or internal button.
ASTB ➔ as before, but monitoring the exhaust gas temperature
STW ➔ Maximum- or minimum-monitoring without hold. Automatic reset after leaving the dangerous range.

Switching hysteresis always acts in the direction of safe range.
The last fault is stored as plain text and can be called up in the working level and deleted.

Temperature sensor ⚠

The device may be operate only with temperature probes which are certified according to DIN EN 14597!

Technical data

Power supply

Supply voltage	: 230 V AC ±10 % 115 V AC ±10 % 24 V DC ±15 %
Power consumption	: < 4 VA
CE-conformity	: EN 61326-1: 2013 EN 61326-2-2: 2013

Ambient conditions

Operating temperature	: -10..+55 °C
Storage temperature	: -30..+60 °C
Relative humidity	: < 95 %
Condensation	: not permitted, operation only in vibration less ambient

Approvals	**Title**
EN 14597:2005	: temperature control devices and temperature limiters for heat-generating systems
EN 61508:2001 SIL2	: Functional security safety-related electrical/electronic/programmable electronic systems

Input

Explosion protection	: II (1) G [Ex ia] IIC/IIB or II (1) D [Ex iaD]
Approval	: TÜV 07 ATEX 554295
Pt100	: -100.0..+600.0 °C, 3-wire, 3-wire, max. line resistance 4 Ω each line, sensor current<1 mA (non self heating)

Data in case of an error

Max. voltage no load U_0	: 1.4 V	
Max. short circuit current I_0	: 6 mA	
Max. power loss P_0	: 7 mW	
Min. internal resistor R	: 1.6 kΩ (curve trapezoidal)	
Explosion protection	**Ex ia/IIC**	**ia/IIB**
Max. external inductivity	: 100mH	20mH
Max. external capacity	: 110µF	28 µF
Internal capacity	: negligible	
Internal inductivity	: negligible	

Thermocouple

Type J	: Fe-CuNi, -100.0..+800.0°C
Type K	: NiCr-Ni, -150..+1200 °C
Type N	: NiCrSi-NiSi, -150..+1200°C
Type S	: Pt10Rh-Pt, 0..1600 °C
	cold junction compensation integrated

Data in case of an error

Max. voltage no load U_0	: 0.7 V	
Max. short circuit current I_0	: 2 mA	
Max. power loss P_0	: 1.5 mW	
Min. internal resistor R	: 5 kΩ (curve trapezoidal)	
Explosion protection	**Ex ia/IIC**	**ia/IIB**
Max. external inductivity	: 100mH	50mH
Max. external capacity	: 240µF	54 µF
Internal capacity	: negligible	
Internal inductivity	: negligible	
Accuracy	: <0.5 %, ±2 Digit	
Temperature coefficient	: 0.01 %/K	
Display	: graphic LCD-display 28 x 64 Pixel, with white LCD-backlight	

Output

Relay	: SPDT <250 V AC <200 VA <2 A cos Phi ≥0.7 <250 VDC <80 W <2 A, internal fused 2 A (slow-blow)

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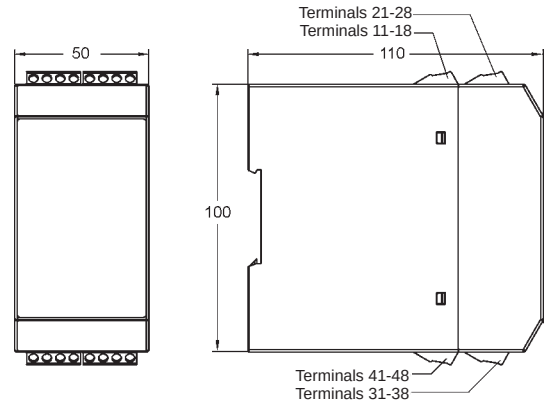
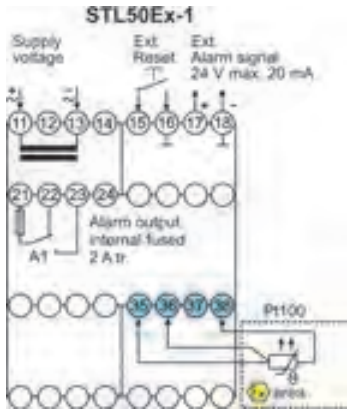
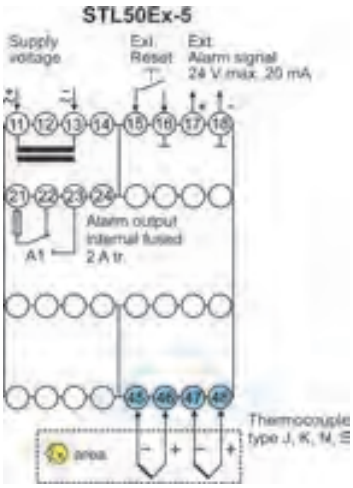
Case	:	Polyamide (PA) 6.6 , UL94V-0, TS35 acc. to DIN EN 60715
Weight	:	approx. 450 g
Connection	:	screw terminals 0.14..2.5 mm² (AWG 26 .. 14)
Protection class	:	IP20, DIN EN 60529, BGV A3

Dimensions



Connection diagrams





Ordering code

STL50Ex - [1.] - [2.] - [3.] [4.]

1.	**Device type/input**	
	1	Pt100, 3-wire, -100.0..+600.0 °C
	5	Thermocouple J (Fe-CuNi), -100.0..+800.0 °C K (NiCr-Ni), -150..+1200 °C N (NiCrSi-NiSi), -150..+1200 °C S (Pt10Rh-Pt), 0..1600 °C
2.	**Output**	
	1R	1 alarm output relay
3.	**Supply voltage**	
	0	230 V AC, ± 10 % 50-60 Hz
	1	115 V AC, ± 10 % 50-60 Hz
	5	24 V DC, ± 15 %
4.	**Options**	
	00	without option

Temperature Limit Value Relay GS1000

Characteristics

The monitoring device GS1000 can be used for monitoring of temperatures in process and automation systems.

Technical data

Power supply

Supply voltage	:	Uc ± 10 %
Frequency	:	47..63 Hz
Power consumption	:	4 VA
Operating temperature	:	-10..+60 °C
CE - conformity	:	EN 61326-1:2013; EN 60664-1:2007

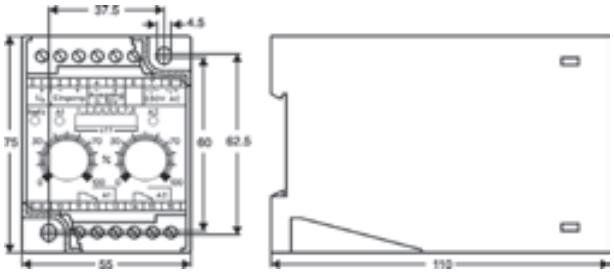
Input

RTD Pt100	:	sensor current 1 mA
Thermocouple	:	Ri > 1 MΩ
Switching hysteresis	:	approx. 1 %
Scale accuracy	:	2 %
Repeatability	:	0.2 %
Accuracy	:	RTD Pt100 0.7 % Thermocouple 0.3 % non linearized
Temperature coefficient - Pt100 / Thermocouple	:	0.035 %/K

Outputs

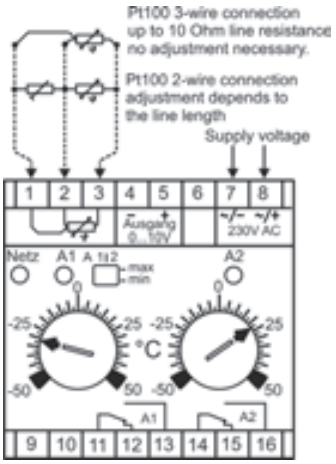
Limit relay	:	250 V AC < 250 VA < 2 A 100 V DC < 50 W < 1 A
True value - Voltage	:	0..10 V DC, max, 10 mA
- Current (optional)	:	0..20 mA or 4..20 mA, burden max. 500 Ω
Case	:	Polycarbonate UL94V-0 acc. to DIN EN 60715:2001-09
Weight	:	approx. 400 g
Electrical connection	:	Screw terminals with pressure plate, max. 4 mm²
Protection class	:	case IP40, terminals IP20 BGV A3

Dimensions

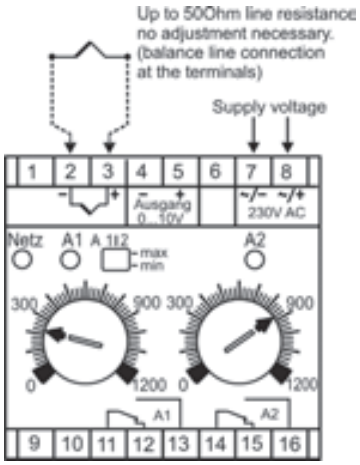


Connection diagrams

Pt100 scale °C



Thermocouple scale °C



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GHMGROUP

Specialists by C mpetence.

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Астана (7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
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Ижевск (3412)26-03-58
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Киров (8332)68-02-04
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Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
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