

Safety Temperature Limiter STL50Ex

(acc. to DIN EN 14597, SIL 2)



- Useable as Temperature Limiter/-Guard and Exhaust gas Temperature Limiter
- Certified according to DIN EN 14597 SIL2
- Intrinsically safe input for use with temperature sensors in 0/20; 1/21; 2/22
- Inputs RTD Pt100 or double-thermocouple
- Limit value and switching hysteresis programmable
- Basic accuracy < 0.5%, ± 2 digit
- Reaction time ≤ 0.5 s
- 1 Relay for safety-relevant temperature limit, forcibly guided
- 1 Relay for pre-alarm
- Analogue output 0,4..20mA; 0/2..10 VDC
- Memory function for error message
- Operator lock (password protection)
- Contact input for external reset
- 24 V DC signal for external alarm message

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 16-17 for an external alarm signal. Alternatively, the device can be reset using an external contact. In addition, the STL50Ex optionally has an programmable analog output with up or downscaling function, as well as a precontact.

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 ⚠

When using the device according to DIN EN 14597, temperature sensors which are approved according to DIN EN 14597 must be used!

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	
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 ia Da] IIIC
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

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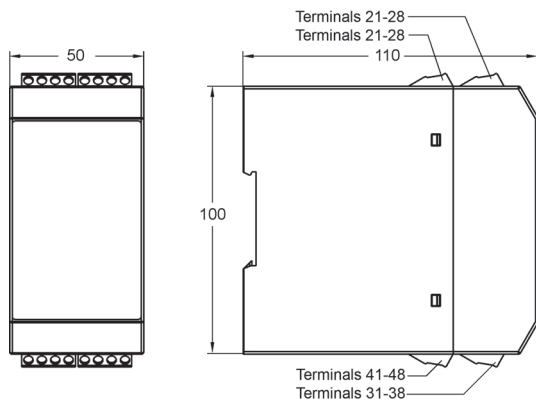
Output Relay	: SPDT <250 V AC <200 VA <2 A cos Phi ≥0.7 <250 VDC <80 W <2 A, internal fused 2 A (slow-blow)
Pre-alarm relays	: SPDT <250 V AC <500 VA <2 A ohmic load; <30 VDC <60 W <2 A,
Analogue output	: 0/4 ... 20mA burden ≤500Ω; 0/2...10V burden > 500Ω, galvanically isolated Output automatically changing (burdendependent)
Accuracy (analogue output)	: 0,04 %; TK: 0,01% /K
Case	: Polyamide (PA) 6.6 , UL94V-0, TS35 acc. to DIN EN 60715
Weight	: approx. 450 g
Connection	: screw terminals 0.14..2.5 mm ² (AWG 26 .. 14)
Protection class	: IP20, DIN EN 60529, BGV A3

Ordering code

STL50Ex - - - -

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
2RAO	2 relay outputs + analog output
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

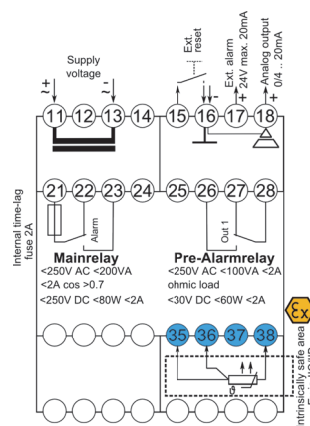
Dimensions



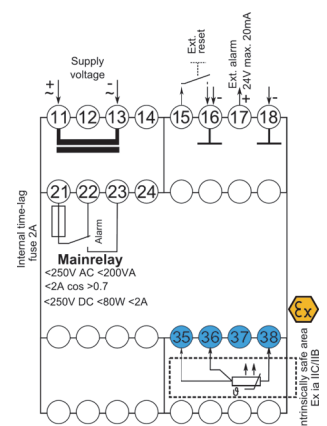
Connection diagrams

Pt100

with pre-alarm / analog

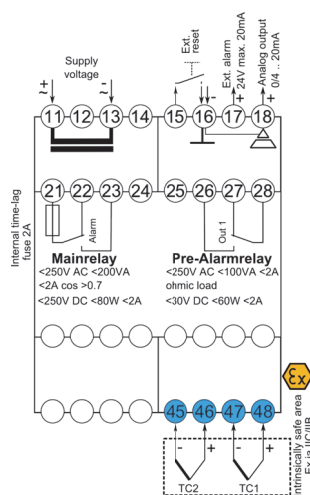


without pre-alarm / analog

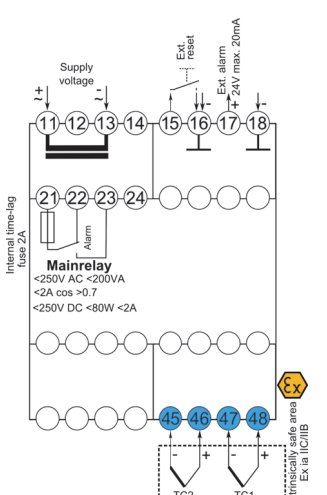


Thermo

with pre-alarm / analog



without pre-alarm / analog



Accessories

Temperature sensor

- When using STL50Ex as safety limiter -or guard according to EN14597, safety temperature sensors acc. To 14597 have to be used: See our products TR296/293, TC296/293

- Temperature sensor for SIL applications: Temperature sensors without transducers are passive elements and not SIL-classified. All sensors of our portfolio can be used. PFD characteristics for resistance elements or thermocouples are to be found in the standard tables. Alternatively manufacturer declarations of evaluation electronics and sensors to the SIL level can be created on request.