OPERATING MANUAL

TG50

Temperature-Guard

Pt100/Pt1000
Thermocouple J, K, N, S

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senseca

Table of content

1 Product description

1.1 Features

- Input Pt100, Pt1000 and Thermocouples J, K, N, S
- Measuring range programmable
- Basic accuracy 0.1 % +/- 1 Digit
- Simulator function
- Fault monitoring for break of wire and short-circuit in the measuring circuit
- Programmable fault function

  Analog output min. or max. overflow
  Alarm outputs min. or max. function
- 4 alarm outputs, relay SPDT
- Isolated analog output 0/4 ... 20 mA; 0/2 ... 10 V DC
- Full 3-port isolation

1.2 General

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 optional available fully isolated free program- mable analog output 0/4 ... 20 mA; 0/2 ... 10 V DC offers a lot of solutions for temperature monitoring. Peak va- lue indication for minimum and maximum measured temperature are stored in the background and can be read out from the display at any time.

1.3 Short information

Programming	The device is programmed by frontal buttons, in connection with the LCD display.
Inputs	RTD (Pt100/Pt1000), 3-wire connection or thermocouple type J, K, N or S.
Alarm outputs	The alarm outputs can be programmed as max. or min. function. Switch-on delay and switch-off delay time is programmable from 1 s up to 9 h. The switching status is displayed through LED´s.
Fault function	A fault in the measuring circuit could be monitored (break of wire/short-circuit). The switching function of the analog and alarm output(s) is programmable in case of an fault.

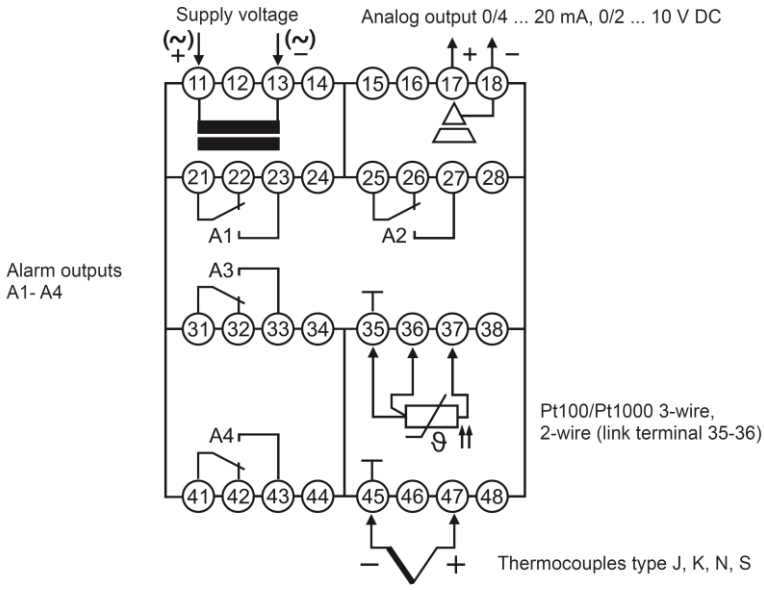
2 Technical data

Power supply	
Supply voltage	230 V AC ±10 %, 115 V AC ±10 %, oder 24 V DC ±15 %
Power consumption	< 5 VA
Operating temperature	-10 ... 55 °C (14 ... 131 °F)
Rated voltage	250 VAC between input/relay output/analog output/supply voltage degree of pollution 2, overvoltage category III
Test voltage	4 kV DC between input/relay output/analog output/supply voltage
Conformity	CE
Inputs	
Fault detection	Break of wire (RTD,Thermocouple) and short-circuit (only RTD)
Input	Pt100 (3-wire) -100.0 ... 600.0 °C / -100 ... 600 °C Pt1000 (3-wire) -100.0 ... 300.0 °C / -100 ... 300°C Thermo couple (TC) Type J -100.0 ... 800.0 °C / -100 ... 800 °C Type K -150 ... 1200 °C Type N -150 ... 1200 °C Type S -50 ... 1600 °C cold junction compensation integrated.
Basic accuracy	<0.1 %, ±1 Digit
Temperature coefficient	0.01 %/K
Display	Graphic LCD-Display 128x64 pixel, white background illuminated
Outputs	
Alarm outputs A1-A4	Relay SPDT < 250 V AC < 250 VA < 2 A coscp H 0.3, < 300 V DC < 40 W <2 A
Analog output	0/4 ... 20 mA burden G500 K; 0/2 ... 10 V burden >500 K, galv. isolated, output changes automatically (burden impedance dependent)
Accuracy	0.2 %;TK 0.01 %/K

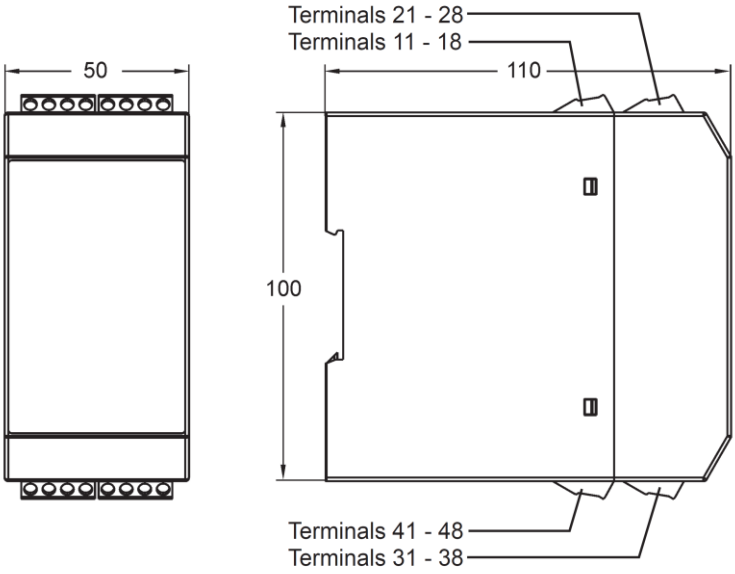
Fault function	For break of wire or short-circuit detection -belongs to the model-J Analog output 0 mA, < 3.6 mA or > 21.5 mA programmable J Alarm output(s) min. or max. function programmable
Case	Polyamide (PA) 6.6, UL94V-0, DIN rail mounting TH 35
Weight	approx. 450 g
Connection	Screw terminals 0.14 2.5 mm² (AWG 26 .. 14)
Protection	Case IP30, terminals IP20, German BGV A3

3 Connection diagram and dimensions

Connection diagram

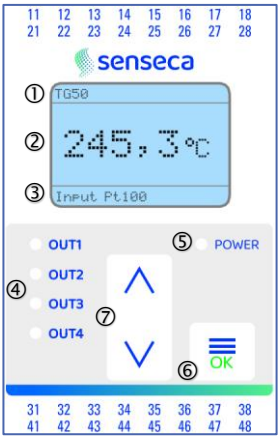


Dimensions



4 Controls and indicators

①Device name
②Measured value
③Input signal
④Alarm output A1...A4
⑤Power-ON LED
⑥Parameter button
⑦Up/down buttons



Description

The operation of the device is implemented in 2 levels. The required parameter is called up with the button . The selection within a parameter and the setting-adjustment of a value is implemented with the butto and .

Button combinations (press buttons simultaneously):

+ 1 parameter back
+ Parameter is set to "0" or minimum value.

After the switching on the supply voltage, the device initializes itself. In the display the message indicating de- vice type and software version is shown. After the initialization, the device is running in the working level. The peak value storage is called up and the setpoints of the alarm outputs can be programmed.

The configuration level is called up by activation of the button for 2 seconds. In this case, all parameters which determine the properties of the device are programmed. After the last menu item, or if no button is pressed for longer than 2 minutes, a skip-back into the working level is implemented automatically and the cur- rent measured value is indicated in the display. The configuration level can be exited at any time by holding down button for 2 seconds.

Error reports

In case of occurring faults, the messages are shown on the display in plain text. This simplifies location of the error. See explanation page 15.

Operational startup reference!

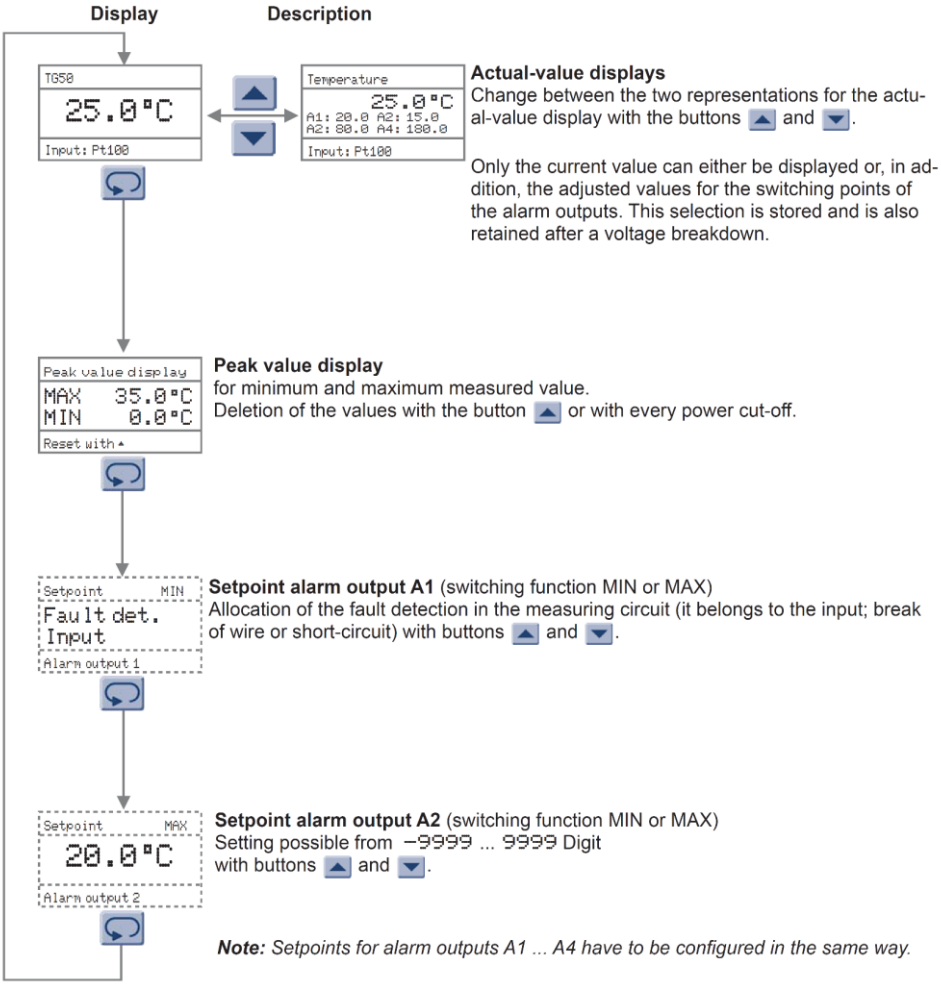
The device is preset with an ex-works default setting. Therefore, it must be adapted to each special application. See Page 12.

Note on the representation

Parameter appears only with corresponding configuration

Parameter appears only with corresponding equipment version

5 Working level



Actual-value displays
Change between the two representations for the actual-value display with the buttons ▲ and ▼.

Only the current value can either be displayed or, in addition, the adjusted values for the switching points of the alarm outputs. This selection is stored and is also retained after a voltage breakdown.

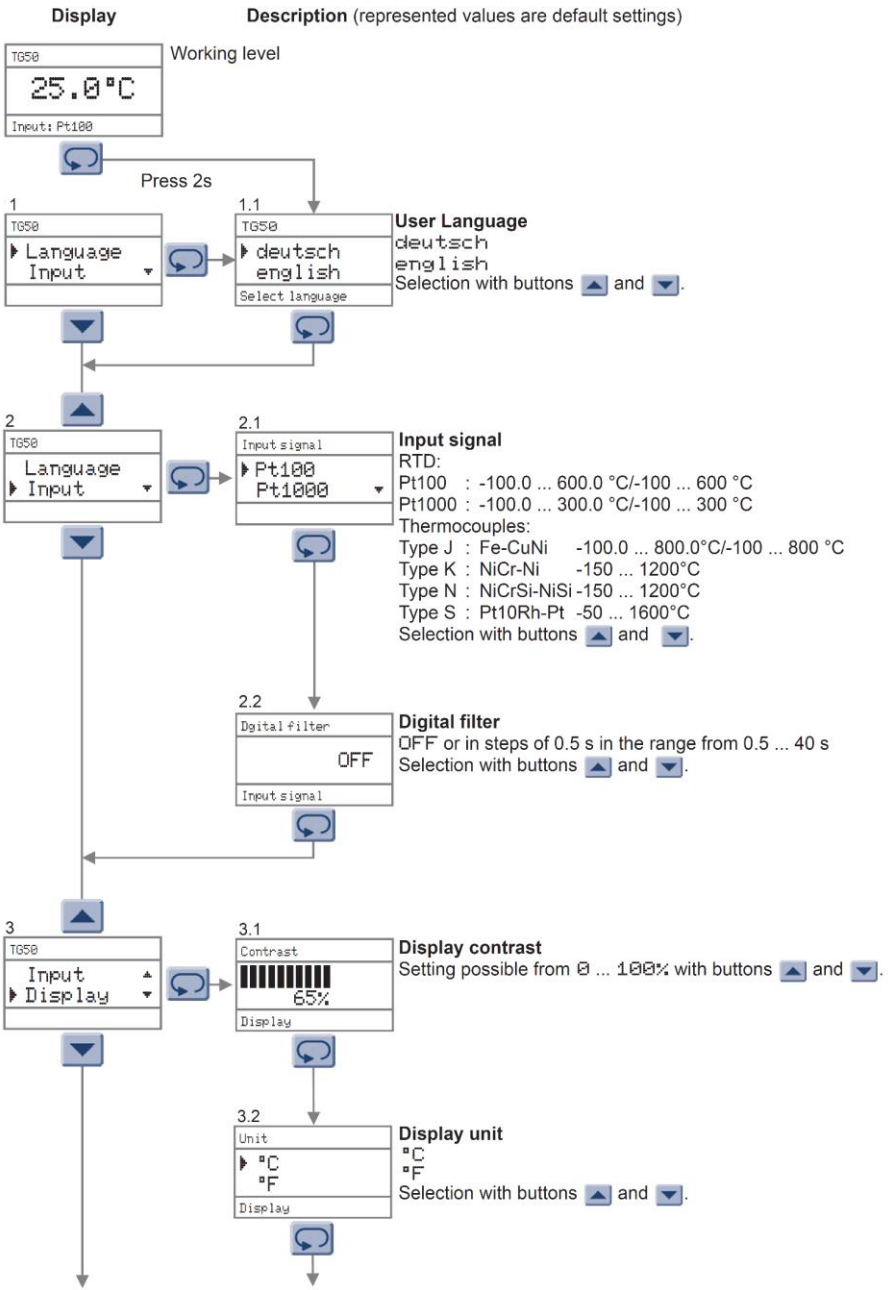
Peak value display
for minimum and maximum measured value.
Deletion of the values with the button ▲ or with every power cut-off.

Setpoint alarm output A1 (switching function MIN or MAX)
Allocation of the fault detection in the measuring circuit (it belongs to the input; break of wire or short-circuit) with buttons ▲ and ▼.

Setpoint alarm output A2 (switching function MIN or MAX)
Setting possible from −9999 ... 9999 Digit
with buttons ▲ and ▼.

Note: *Setpoints for alarm outputs A1 ... A4 have to be configured in the same way.*

6 Configuration level



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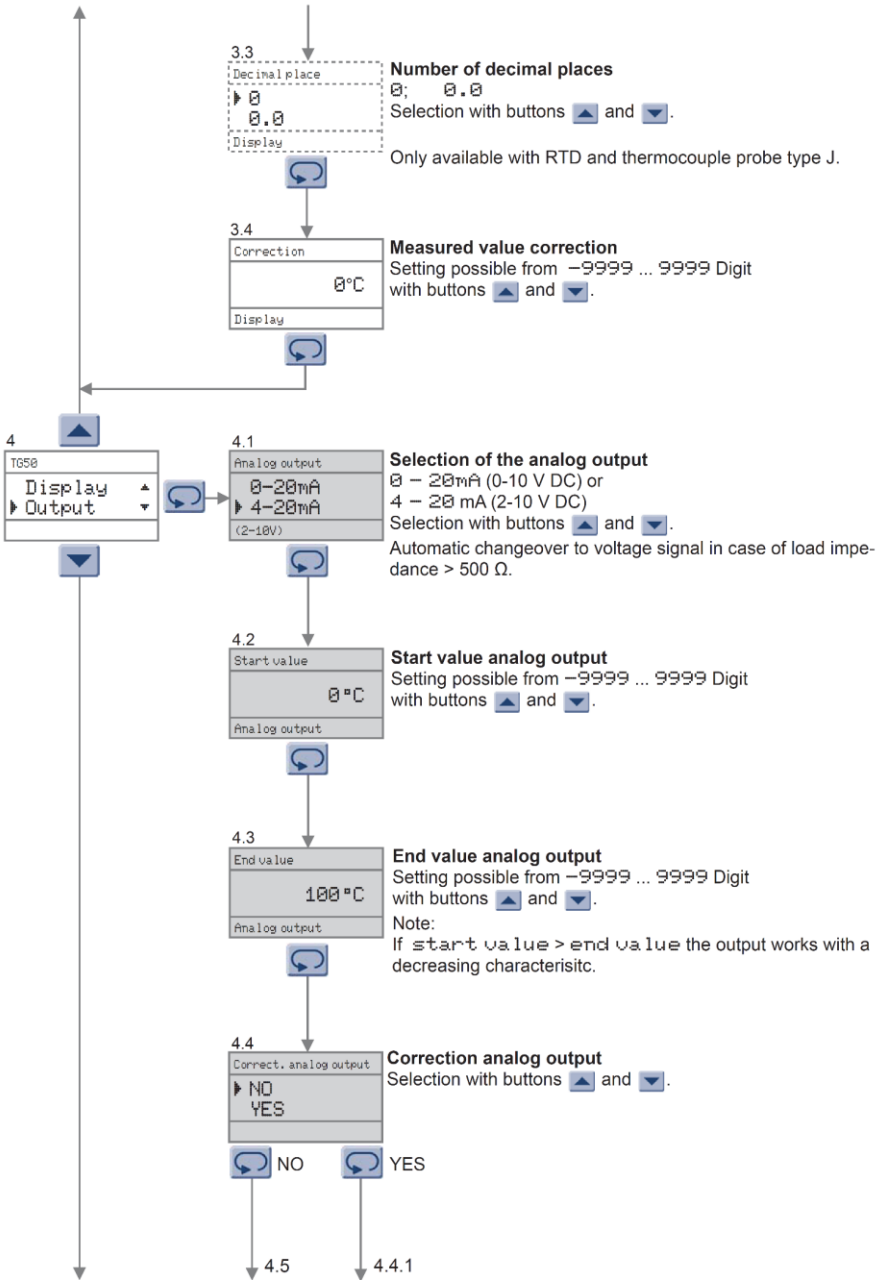

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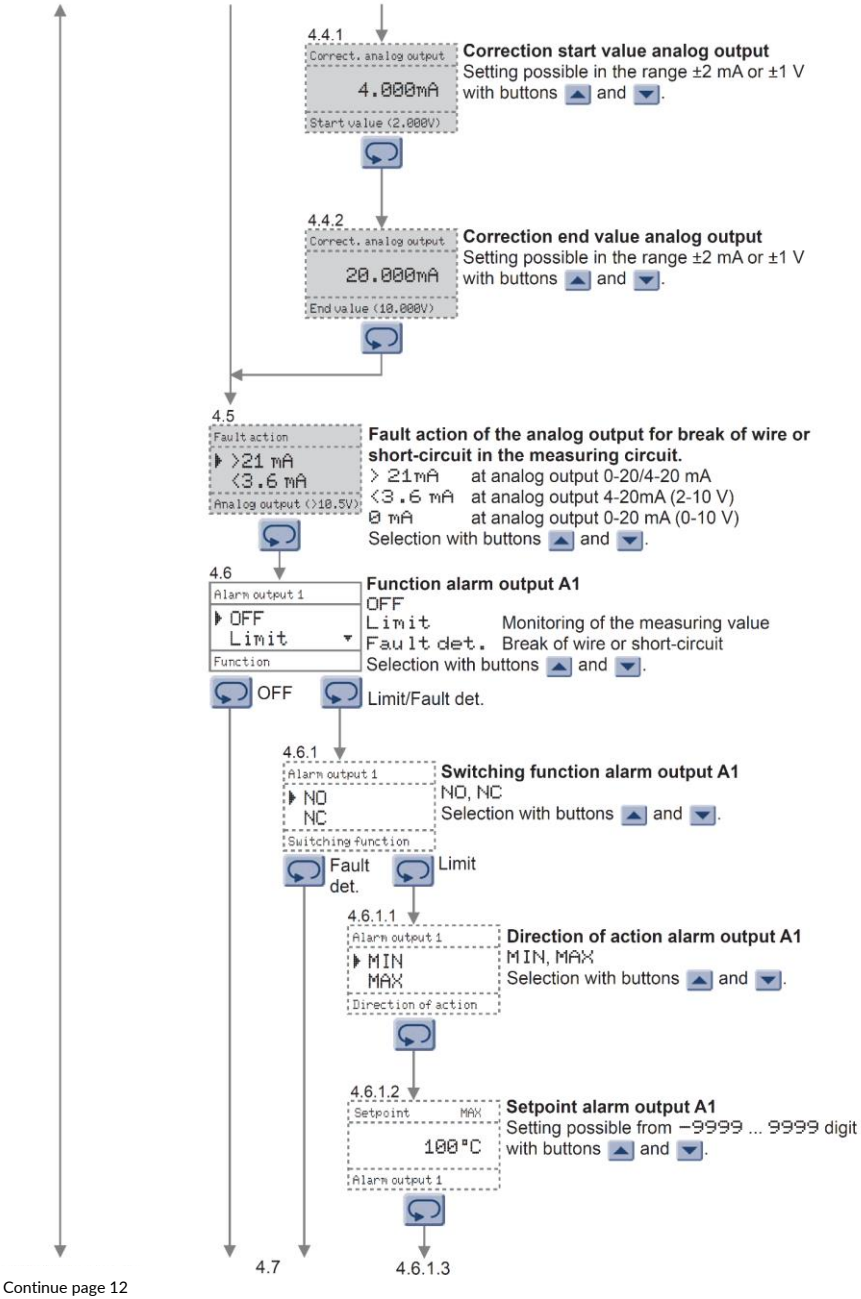

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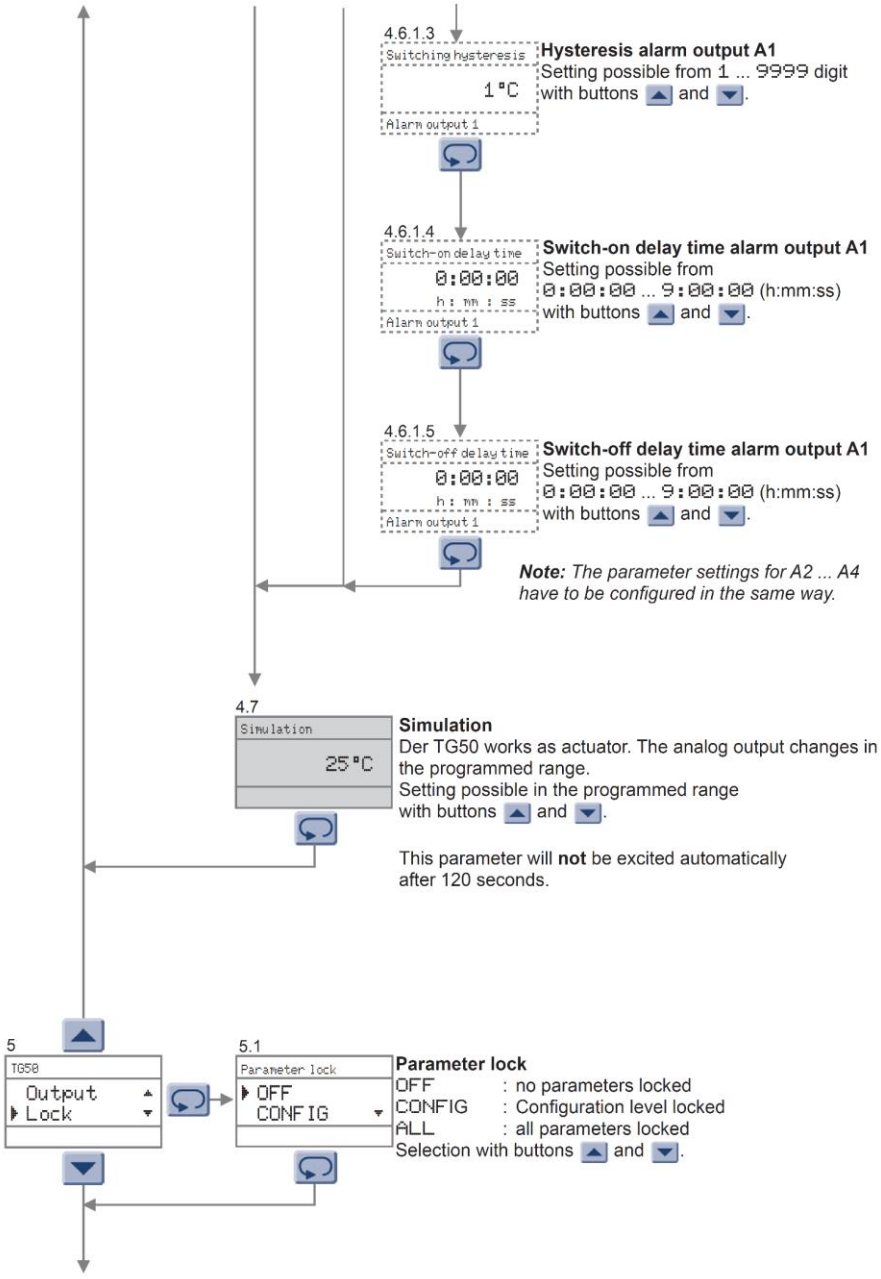

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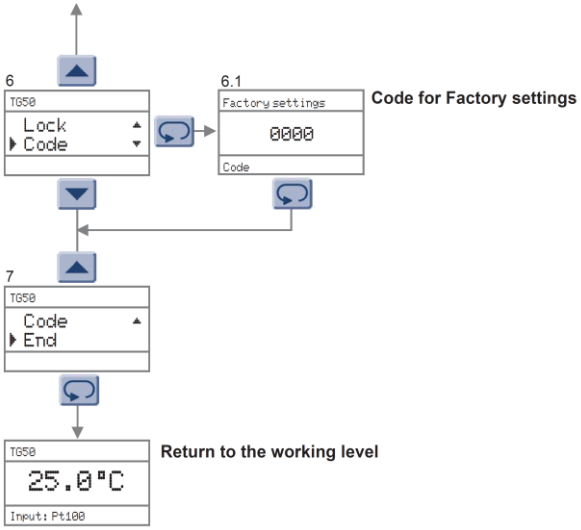
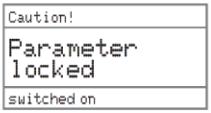
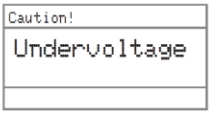
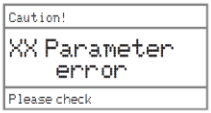
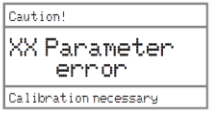
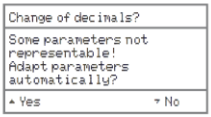
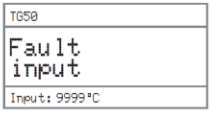
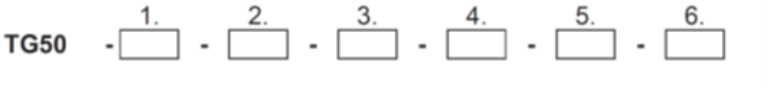

6
TG50
Lock
Code
6.1
Factory settings
0000
Code
Code for Factory settings
7
TG50
Code
End
TG50
25.0°C
Input: Pt100
Return to the working level

7 Error reports

Error reports	Description
	The parameter can not be changed, because the parameter lock for the configuration level, or work and configuration level, is switched on.
	Supply voltage to low
	At the check-up of the parameter memory, XX errors are detectet. The incorrect parameter are resetted to the factoty settings. Please check and correct parameters if necessary.
	As before, but the factory settings are incorrect. The device must be checked at works.
	Change of decimal places While changing number of decimal places, some parameters can be converted, but however, not represented! Selection "No" : Change of the decimal places is not carried out. Selection "Yes" : Decimal places are changed automatically, where the affected parameters are set to the maximum possible value. A subsequent verification of the accepted parameters is absolutely necessary.
	Break of wire or short-circuit in the measuring circuit. Text Input: 9999°C is flashing.

8 Ordering code



1. Input			
3	Pt100	3-wire	-100,0 ... 600,0 °C/-100 ... 600 °C
	Pt1000	3-wire	-100,0 ... 300,0 °C/-100 ... 300 °C
	Thermocouple	J (Fe-CuNi)	-100,0 ... 800,0 °C/-100 ... 800 °C
		K (NiCr-Ni)	-150 ... 1200 °C
		N (NiCrSi-NiSi)	-150 ... 1200 °C
		S (Pt10Rh-Pt)	-50 ... 1600 °C
2.Alarm outputs			
2R	2 Relay outputs	A1, A2 SPDT	
3. Alarm outputs			
00	not installed		
2R	2 Relay outputs	A3, A4 SPDT	
4. Analog output			
00	not installed		
AO	Analog output	0/4 ... 20 mA; 0/2 ... 10 V DC	
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. Option			
00	without option		

Works configuration according to customer specifications.

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