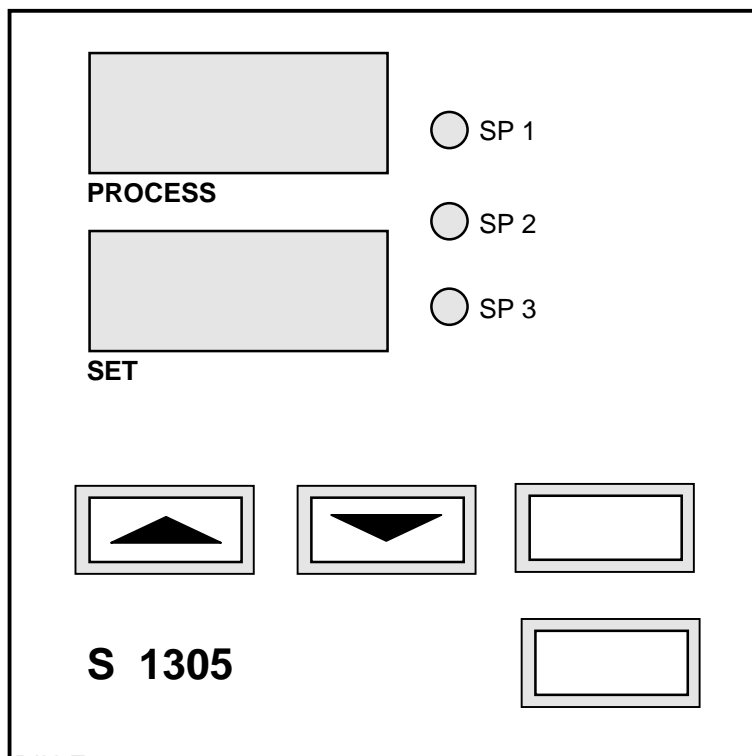




ELOTECH
INDUSTRIELELEKTRONIK GMBH

S 1305-3



DIN-Format: 96 x 96 mm
Installation depth: 122 mm

Microprocessor-based Limit Signal Monitoring Unit

Description And Operating Manual

Nr.: S1305-3-EN

03/2001

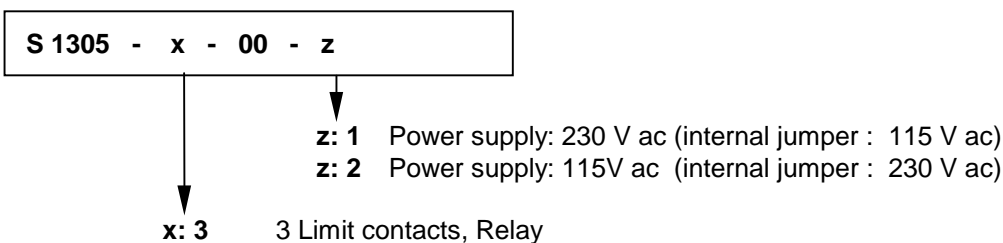
Contents

Typ code, Installation instructions	Page	2
Connection diagram		3
Technical data		4
Display and keyboard		5
Operating levels		6
Configuration level		7
Operating level, Error displays		10

Please read this operating manual carefully before starting up.

Observe the installation and connecting instructions.

Type Code



Installation Instructions

Make certain that the devices described here are used only for the intended purpose.

They are intended for installation in control panels.

The unit must be installed so that it is protected against impermissible humidity and severe contamination.

In addition, make sure that the permitted ambient temperature is not exceeded.

The electrical connections must be made according to the relevant locally applicable regulations.

If using a thermocouple sensor, the compensation cables must be laid directly to the controller terminals.

Transducers must be connected only in compliance with the programmed range.

Transducer cables and signal lines (e.g. logic or linear voltage outputs) must be laid physically separated from control lines and mains voltage supply cables (power cables).

Spatial separation between unit and inductive loads is recommended.

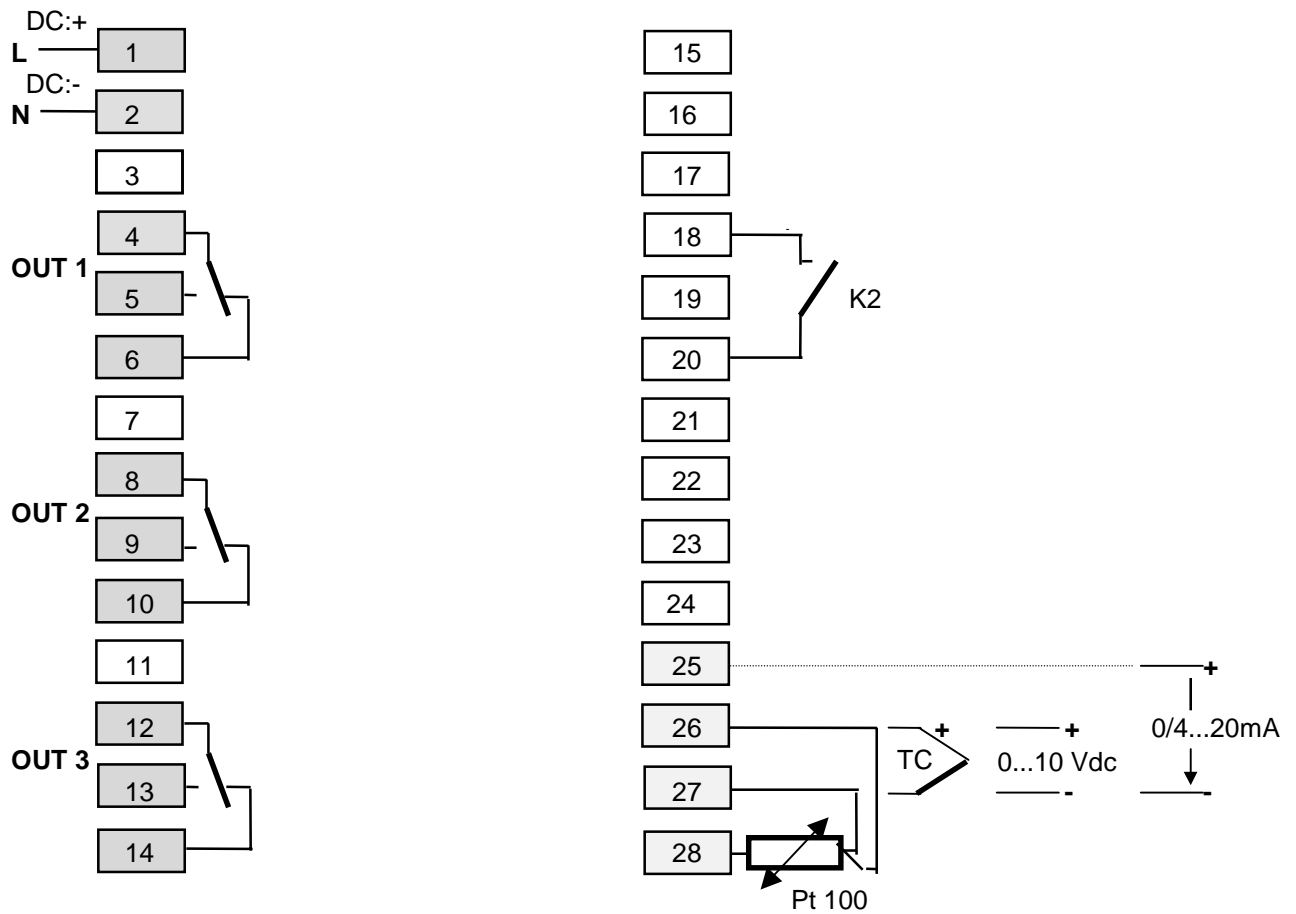
Interference from contactor coils must be suppressed by connecting adapted RC-combinations parallel to the coils.

Control circuits (e.g. for contactors) should not be connected to the mains power supply terminals of the unit.

IMPORTANT:

Before operation, the unit must be configured for its intended purpose (e.g. controller type, sensor type and range, switchpoint adjustment etc.) Please see „Configuration Level“.

Connection Diagram



RTD 2-wire connection: jumper between terminal 26 and 27

Output OUT 1: relay actuated if limit value SP1 is exceeded

Output OUT 2: relay actuated if limit value SP2 is exceeded

Output OUT 3: relay actuated if limit value SP3 is exceeded

Adjustment lock (LOC):

K2: open = Adjustment lock only via "Software Code"
 K2: closed. = Adjustment locked (according to the chosen Software Code)

Technical Data

Input Thermocouple: Built-in internal compensation point and protection against sensor breakage and incorrect polarity.
Re-calibration not required for a line resistance of up to 50 Ohms.
Calibration accuracy: $\leq 0,25\%$

Input RTD, Pt 100 (DIN): 2- or 3- wire connection possible.
Built-in protection against sensor breakage and short circuit.
Max. permissible line resistance by 3-wire connection: 80 Ohms
Sensor current: $\leq 0,5 \text{ mA}$
Calibration accuracy: $\leq 0,2 \%$

0/4 – 20mA input: $R_i < 10 \text{ Ohm}$
0 –10 Vdc input: $R_i > 100\text{kOhm}$

Linear error: $\leq 0,2 \%$
Influence of the ambient temperature: $\leq 0,01 \%$ / K

Switching outputs: Relay, max. 250 Vac, max. 3 A (cos-phi = 1)

7-Segment-Display: Process: 10 mm red, Set: 10 mm red

Data protection: EAROM

EMC: Tested according to 89 / 336 / EEC
EN 50081-2, EN 50082-2

Power supply: 230 V ac, (internal jumper 115 V ac: "b-c")
 $\pm 10 \%$, 48...62 Hz

Connections: Screw terminals, Protection mode IP 20 (DIN 40050), Insulation class C

Permissible operating conditions:

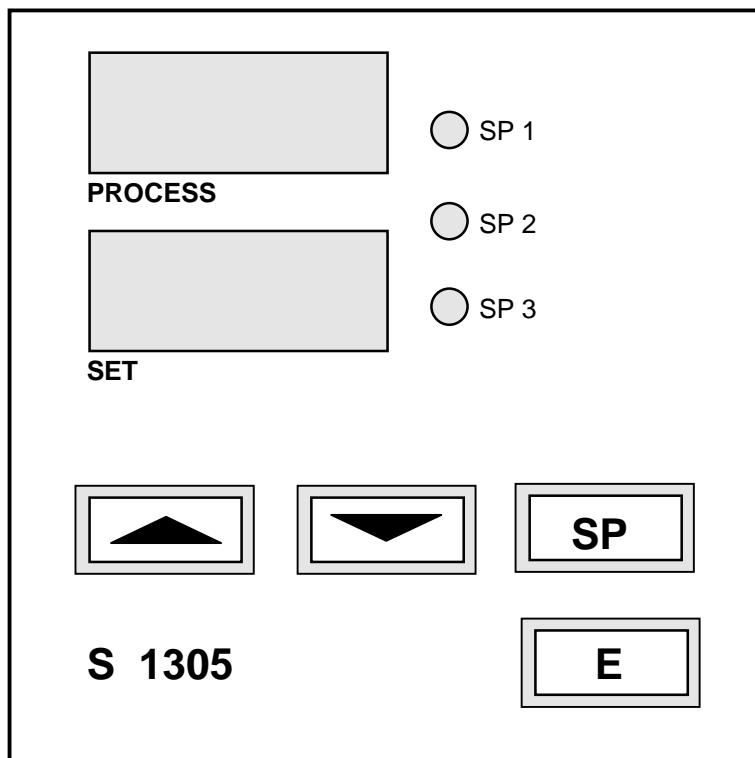
Operating temperature: 0...50 °C / 32...122 °F
Storage temperature: -30...70 °C / -22...158 °F
Climate class: KWF DIN 40040;
equivalent to annual average max. 75 % rel. humidity, no condensation

Casing: Format: 96 x 96 mm (DIN 43700), installation depth 122 mm
Panel cutout: 92 +0,5 mm x 92 +0,5 mm
Material: Noryl, self-extinguishing, non-drip, UL 94-V1
Protection mode: IP 20 (DIN 40050),
IP 50 front side

Weight: app. 500 g

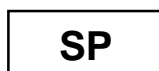
Subject to technical improvements!

Display and Keyboard



Display PROCESS : Process Value
 Display SET : Limit / Setpoint Value

LED OUT 1: Output OUT1 active
 LED OUT 2: Output OUT2 active
 LED OUT 3: Output OUT3 active



Parameter key; to adjust the setpoints / limit values (SP)



Adjustment of chosen parameter (e.g. setpoint) to higher or lower values.



Short operation: single-step adjustment
 Longer operation: quick-scanning

When the parameter adjustments have been altered but not entered, the display will flash bright/dark.



Confirmation and storage of the pre-selected values
 The display will shortly be switched dark as a control of this function.

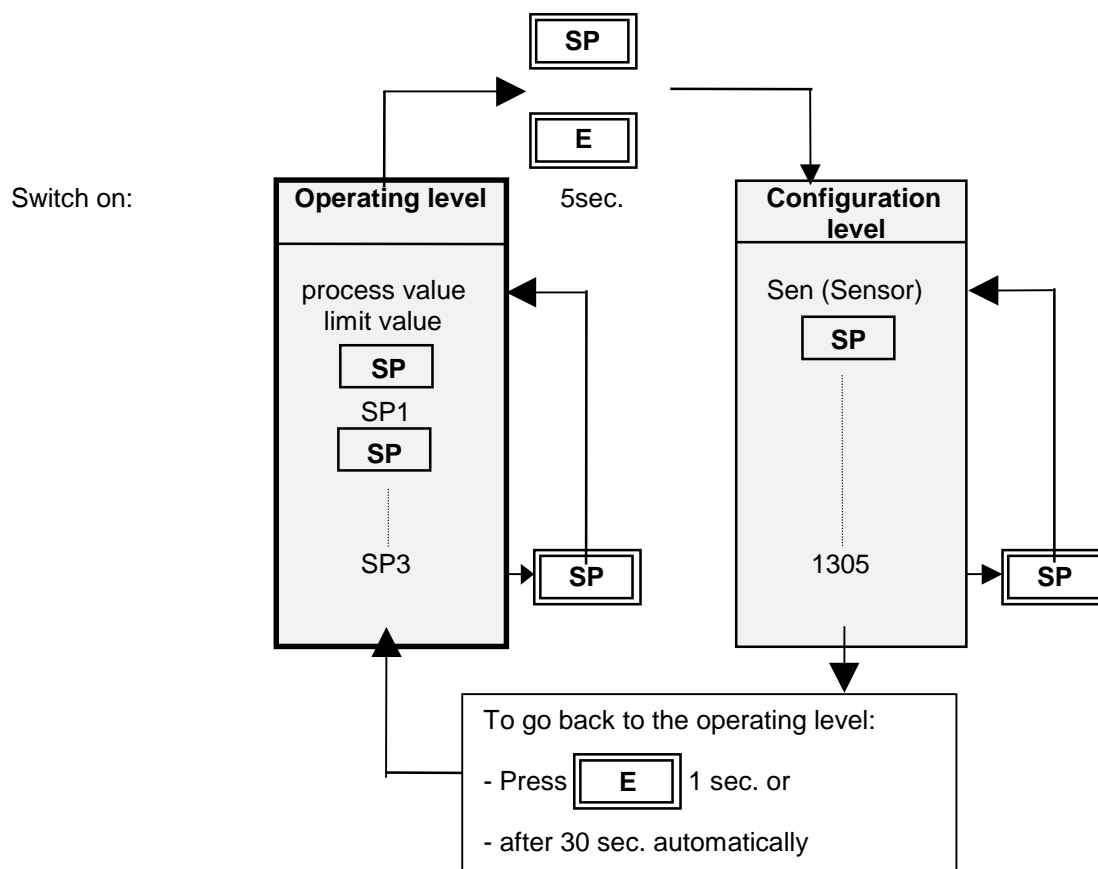


Sets the parameter back to the originally stored value.
 Any alterations made to the parameters, that are not confirmed (E-key) within 30 seconds, will not be accepted and the parameter will return to its originally stored value.

Operating Levels

The operation of the controller is divided into two levels.

Two seconds after switching on the unit, the unit will automatically be in the operating level.



Operating level

Process- and a preselected limit value or setpoint value will be displayed simultaneously.

Within the operating level the setpoints can be adjusted by pressing the "▲" / "▼" - keys.

Every adjustment has to be quit by pressing the „ E “ - key.

All parameters within the operating level can , in succession, be displayed by pressing the „ SP “ - key and adjusted by pressing the "▲" / "▼" - keys.

Configuration level

In the configuration level the input type, sensor range and the switchpoint behaviour can be pre-selected.

This primary information has to be entered before taking the unit into operation.

The configuration level is reached by simultaneously pressing the "SP" - and " E " - keys for a period of approx. 5 seconds.

The display of each single parameter within the configuration level, and their adjustment, are made in the same fashion as within the operating level.

After either pressing the „E“ - key for approx. 1 second, or waiting for a period of approx. 30 seconds, the unit will automatically return to the operating level (display of process value and setpoint).

Configuration Level

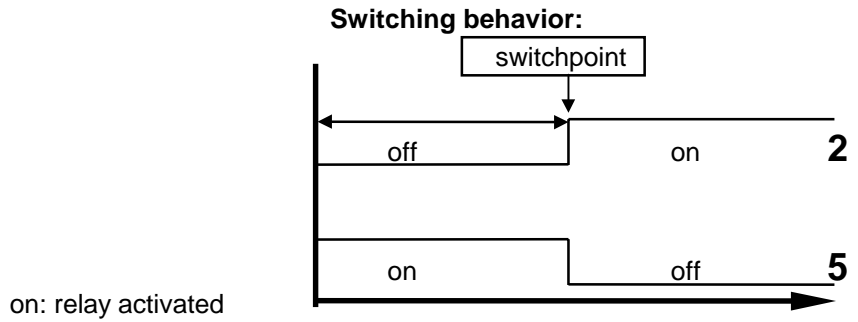
Display "Process"	Parameter	Display „Set“				
SEn	Sensor selection	P1 °C	Pt 100,	-50,0...100,0	°C	
		P1 °F	Pt 100,	-58,0...212,0	°F	
		P2 °C	Pt 100,	-90,0...205,0	°C	
		P2 °F	Pt 100,	-130...401	°F	
		P4 °C	Pt 100,	0...400	°C (ex works)	
		P4 °F	Pt 100,	32...752	°F	
		P8 °C	Pt 100,	0...800	°C	
		P8 °F	Pt 100,	32...1472	°F	
		L4 °C	T/C Fe-CuNi (L),	0...400	°C	
		L4 °F	T/C Fe-CuNi (L),	32...752	°F	
		L8 °C	T/C Fe-CuNi (L),	0...800	°C	
		L8 °F	T/C Fe-CuNi (L),	32...1472	°F	
		J8 °C	T/C Fe-CuNi (J),	0...800	°C	
		J8 °F	T/C Fe-CuNi (J),	32...1472	°F	
		n1 °C	T/C NiCr-Ni (K),	0...1200	°C	
		n1 °F	T/C NiCr-Ni (K),	32...2192	°F	
		S1 °C	T/C Pt10Rh-Pt (S),	0...1600	°C	
		S1 °F	T/C Pt10Rh-Pt (S),	32...2912	°F	
			0 - 20	Current	0...20	mA
			4 - 20	Current	4...20	mA
	10 dc	Voltage	0...10	V dc		

If the Sensor selection is changed, the following parameters will be reset (setting in brackets) and need to be re-adjusted:
all Setpoints (OFF); process offset(OFF).

The following parameters are only valid for standard signal inputs (0...20mA, 4...20mA, 0...10Vdc). The difference between the bottom end of the display range and the top end must amount to a minimum of 100 units and a maximum of 2000 units. By adjustment of one of the above parameters, the other in this case will automatically follow.

rA.SP	decimal points	0; 1; 2	(ex works: 1)
rA.Hi	display range top end	rA.Lo ... 9999	(ex works: 100,0)
rA.Lo	display range bottom end	-1999 ... rA.Hi	(ex works: 0,0)

Display "Process"	Parameter	Display „Set“		
C.SP1	Switchpoint Configuration	2	limit contact:	off-on
	SP1, (OUT 1)	5	limit contact:	on-off



C.SP2	Switchpoint Configuration	2	limit contact:	off-on
	SP2, (OUT 2)	5	limit contact:	on-off
C.SP3	Switchpoint Configuration	2	limit contact:	off-on
	SP3, (OUT 3)	5	limit contact:	on-off

The **limit contact** is adjusted and displayed as an absolute value.

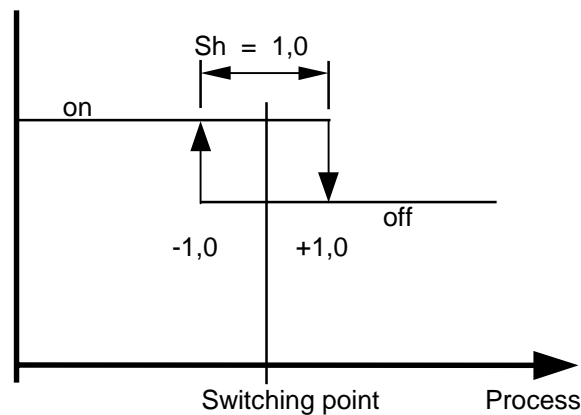
SP.di	Switchpoint display simultaneously to process value	OFF	no indication in display „SET“	
		SP1...SP3	indication of SP1...SP3 - value in display „SET“	

Display
"Process"

Parameter

Display
„Set“

1 Sh **switch-point difference OUT1**



The adjustment range is 10% of the sensor range.

2 Sh **switch-point difference OUT2**

3 Sh **switch-point difference OUT3**

OFSt	process value offset	-999 ... OFF ...1000 Units	(ex works: OFF)
		-99,9 ... OFF ... 100,0	1)
		-9,99 ... OFF ... 10,00	2)

This parameter serves to correct the input signal, e.g. for:

- the correction of a gradient between the measuring point and the sensor tip,
- the line resistance balancing of 2-line RTD (Pt100) sensors and
- correction of the control deviation when using P- or PD-action.

If for example the offset value is set to +5°C, then the real temperature measured by the sensor (when process is balanced) is 5°C less than the setpoint and the displayed process value.

LOC	Adjustment lock	OFF	no adjustment lock (ex works)
		ConF	configuration level looked
		ALL	all parameters locked
		All parameters that have been locked with „LOC“ can be selected and read, but not altered.	
		This adjustment cannot be changed if the external contact K2 is closed.	

1305	Control number	end of configuration level
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Operating Level

Display "Process"	Parameter	Display "Set"
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Process
(process)

and

a preselected or no
Switchpoint / Setpoint SPx
(set)

are displayed simultaneously (basic setting).

SP1	Setpoint / Switching point 1	OFF: not active Limit value (absolute)
SP2	Setpoint / Switching point 2	OFF: not active Limit value (absolute)
SP3	Setpoint / Switching point 3	OFF: not active Limit value (absolute)

Error displays

<u>Display</u>	<u>Cause</u>	<u>Possible remedy</u>
rA.Lo	Bottom range end has been reached (for standart signal inputs)	Reduce limit, if need be
rA.Hi	Top range end has been reached (for standart signal inputs)	Increase limit, if need be
LOC	Parameter has been locked	Unlock, if need be
Er.Hi	Top range end has been exceeded, sensor defect	Check sensor and cable
Er.Lo	Bottom range end has been exceeded, sensor defect	Check sensor and cable
Er.SY	System error	Extinguish error signal by pressing the „E“-key. Check all parameters. If the error signal continues please send the controller back for examination.
Notes:	1) valid for ranges with one decimal point 2) valid for ranges with two decimal points	

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