

## **A 1200**

### **The Indicator with 3 Limit Contacts**



Format: 96x48 mm (1/8-DIN)  
Installation depth: 122 mm

### **Description and Operating Manual**

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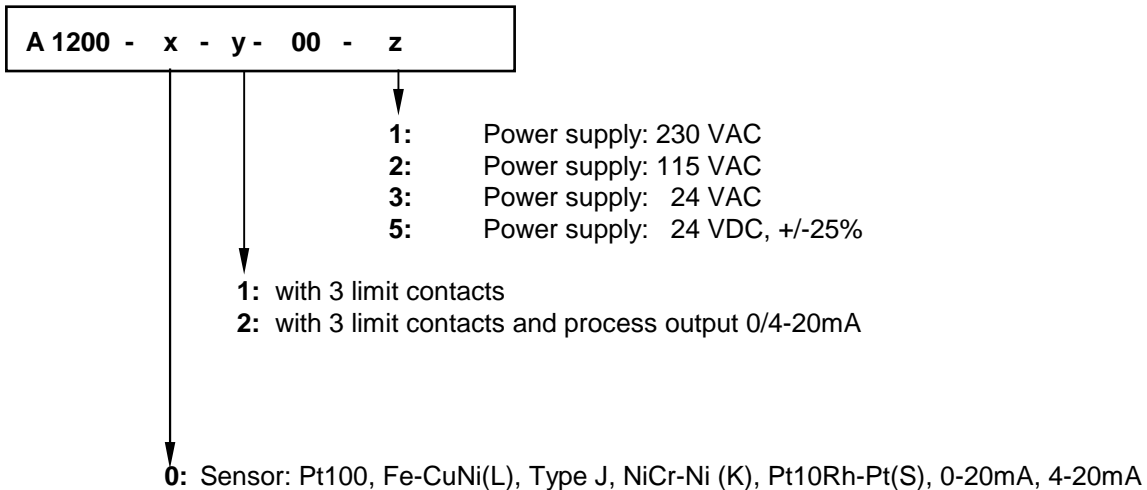
**Please read this operating manual carefully before starting up.**

**Observe the installation and connecting instructions.**

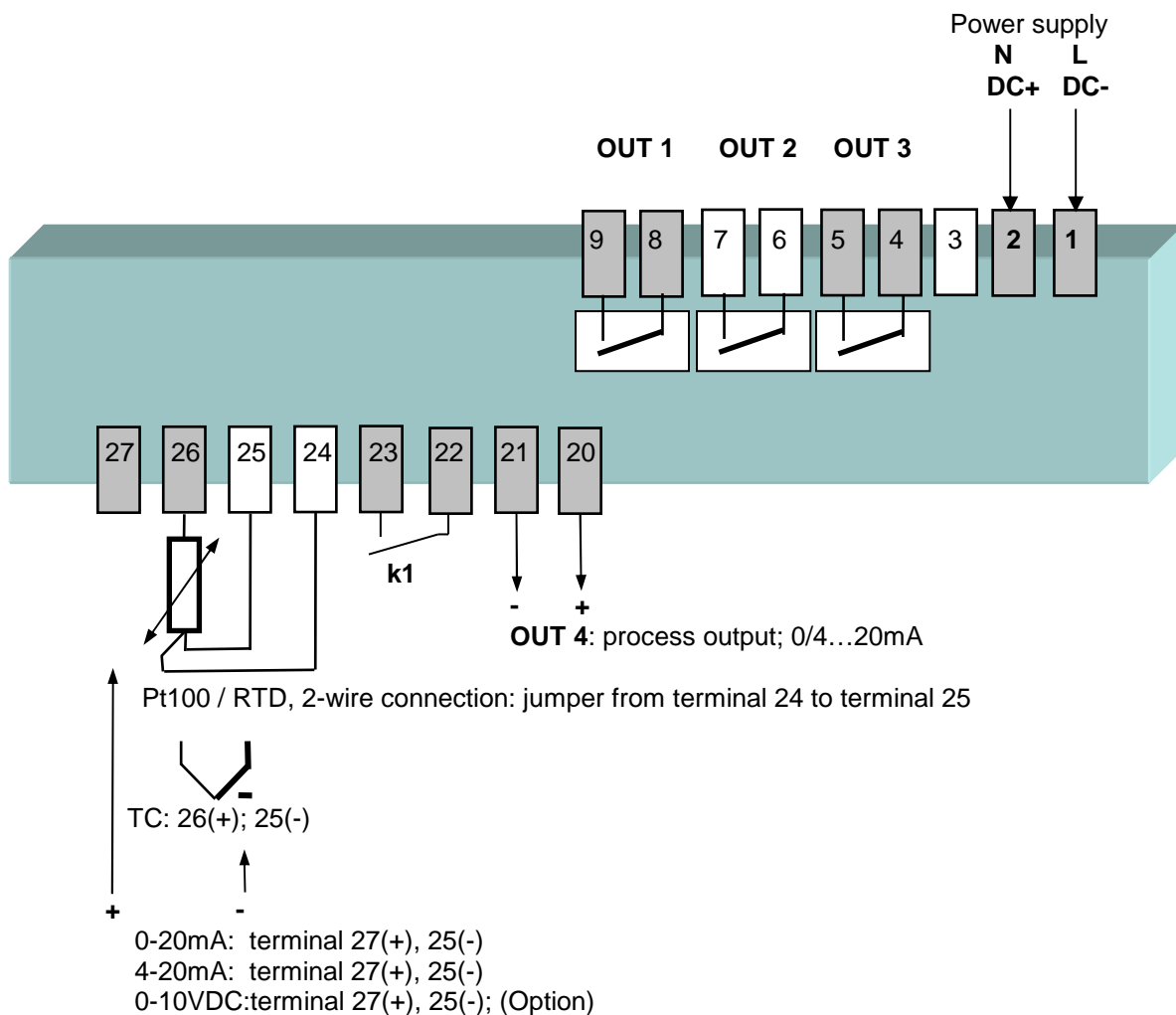
### **Disclaimer of liability:**

We have checked the contents of the document for conformity with the hardware and software described. Nevertheless, we are unable to preclude the possibility of deviations so that we are unable to assume warranty for full compliance.

## Type Code



**Connection diagram**



It is not permitted to connect the grounds of the sensor- and process-output with each other.

- OUT1 = Relay**                      Switches on setpoint SP1
- OUT2 = Relay**                      Switches on setpoint SP2
- OUT3 = Relay**                      Switches on setpoint SP3
- OUT4 =**                                Analogue process value output 0/4...20mA.

**Function of contact k1:**

- k1: open      = Adjustment lock only via "Software Code"
- k1: closed    = Adjustment locked (according to the chosen software code)

## Technical Data

<b>Input Thermocouple:</b>	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: $\leq 0,25\%$
<b>Input Pt100 / RTD:</b>	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: $\leq 0,5$ mA Calibration accuracy: $\leq 0,2\%$
<b>Input 0/4...20mA:</b>	Load max. 10 Ohm.
Linear error:	$\leq 0,2\%$
Influence of the ambient temperature:	$\leq 0,01\% / K$
<b>Setpoint selection (k1):</b>	Ext. potential-free contact, switching voltage appr. 24 V DC, max. 1 mA. Selection between SP1 (main setpoint) and SP2.
<b>Control outputs:</b>	- Relay (UR appr.), max. 250 VAC, max. 3 A (cos-phi = 1)
<b>Process output: -OUT 4:</b>	Equivalent to the choosen range. 0/4...20 mA Load max. 500 Ohms Linearity: $\leq 1,5\%$ Delay time: app. 2 secs.
<b>7-Segment-Display:</b>	Process: 10 mm red, Set: 10 mm red
<b>Data protection:</b>	EAROM
<b>CE-Mark</b>	Tested according to 2004/108/EC Electr. safety EN 61010-1 EMC for industrial areas EN 61326-1
<b>Power supply:</b>	Standard: 230 V AC. $\pm 10\%$ , 48...62 Hz. Others possible. See Type Code. Appr. 5VA.
<b>Connections:</b>	Screw terminals (UR appr.). Protection mode IP 20 (DIN 40050), Insulation class C.
<b>Permissible operating conditions:</b>	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.
<b>Casing:</b>	Format: 96 x 48 mm (DIN 43700). Installation depth 122 mm Panel cutout: 92 +0,8 mm x 45 +0,6 mm Material: Noryl, self-extinguishing, non-drip, UL 94-V1 Protection mode: IP 20 (DIN 40050), IP 50 front side
<b>Weight:</b>	app. 380g

Subject to technical improvments!



**Display PROCESS** : **Process Value**

**Display 2** : While standard operation: **Selected physical unit or no display**

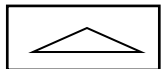
**LED 1:** Output OUT1

**LED 2:** Output OUT2

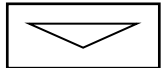
**LED 3:** Output OUT3



Parameter key



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



Short operation: single-step adjustment

Longer operation: quick-scanning

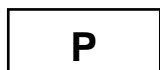
When the parameter adjustments have been altered but not entered with the E-key, the display will flash bright/dark.



Confirmation and storage of the pre-selected values

The display will shortly show a light chain as a control of this function.

To return to the process-display: press „E“ appr. 2 sec..



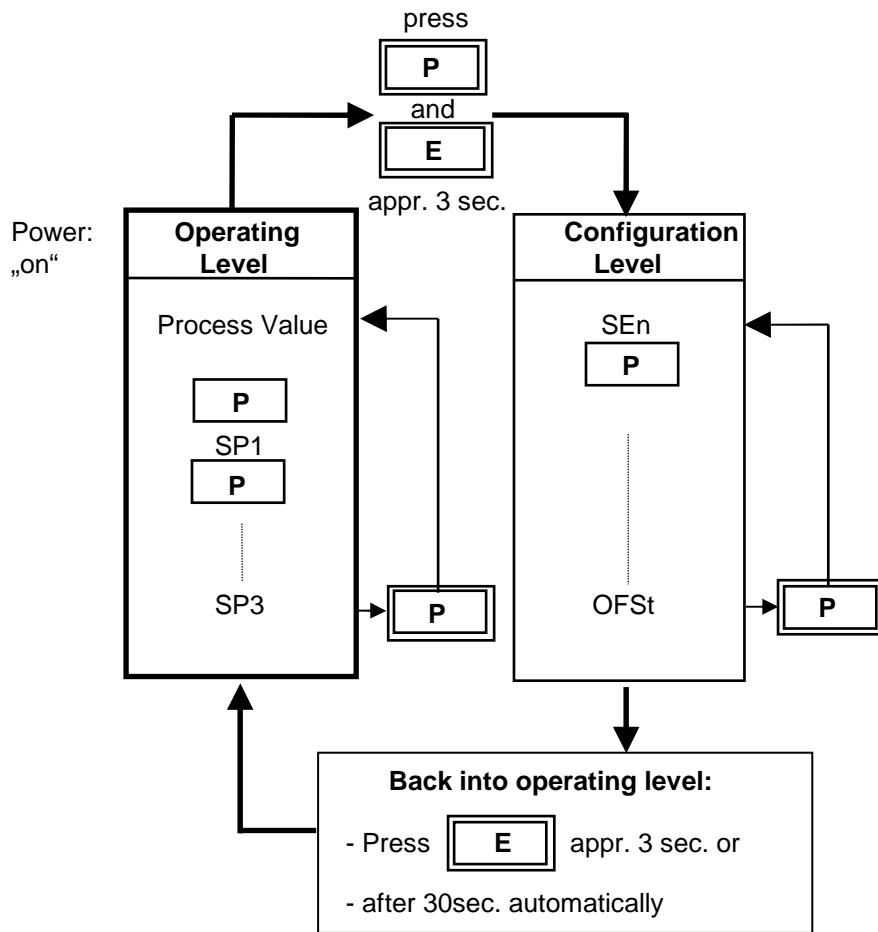
Sets the parameter back to the originally stored value.

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 the process value display.

# Operating Levels

The operation of the controller is divided into 2 levels.

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



## Operating level

Process- and setpoint value will be displayed simultaneously.

Within the operating level the setpoints and the alarm value 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 „P“ - key and adjusted by pressing the "▲"/"▼" - keys.

## Configuration level

Enter this level by pressing the „P“ and „E“-key appr. 3 sec. simultaneously.

In the configuration level the sensor type, the sensor range, the switching behaviour of the relay outputs OUT1 – OUT3 can be pre-selected.

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

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

After either pressing the „E“ - key for approx. 3 second, or waiting for a period of approx. 30 seconds, the unit will automatically return to the operating level (display of process value).

Display "Process"	Parameter	Display 2		
<b>Sen</b>	<b>Sensor selection</b>	P1 °C	Pt 100,	-50,0...100,0 °C
		P1 °F	Pt 100,	-58,0...212,0 °F
		P2 °C	Pt 100,	-100...200 °C
		P2 °F	Pt 100,	-148...392 °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-Input	0...20mA
		4-20	Current-Input	4...20mA

If the Sensor selection is changed, the following parameters will be reset (setting in brackets) and need to be re-adjusted:  
 All Setpoints (set to OFF); all switching hysteresis values (Sh);  
 process offset value (OFF)

The following parameters are only valid for standard signal inputs (0...20mA, 4...20mA). 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.

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

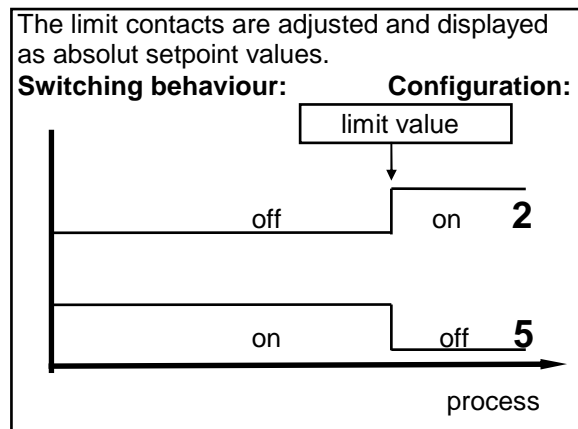
<b>Out4 Process value output</b>	OFF	no process value output selected
	Pr. 0	0...20mA process value output
	Pr. 4	4...20mA process value output

Option: process value output		
<b>Sc.Hi higher range limitation</b> (20mA value)	valid for analogue process value output, if Out4 = Pr.0 or Pr.4 Adjustment range: Sc.Lo ... top range	(ex works: 400)
<b>Sc.Lo lower range limitation</b> (0/4mA value)	valid for analogue process value output, if Out4 = Pr.0 or Pr.4 Adjustment range: bottom range ... Sc.Hi	(ex works: 0)
The difference between Sc.Lo and Sc.Hi must be a minimum of 25% of the sensor range.		

**unit selectable physical unit** shown in the lower display 2  
 ( e.g. : °C, °F, bar, volt, A, OHM, rot, rPM, MA, %, SEC, HZ ... )

**Configuration of the switching behaviour of the relays OUT1, OUT2, OUT3 corresponding to the setpoints SP1, SP2, SP3.**

The relays are switching like limit contacts.



on: Relay "activated"  
off: Relay "not active"

**Please note:**

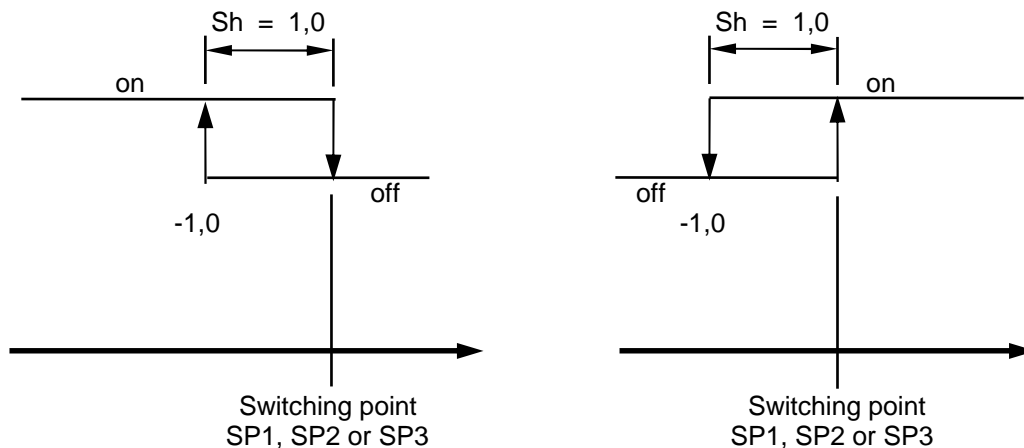
In case of sensor error the alarms will react in the same way as range override.

<b>C.SP1</b>	<b>Configuration setpoint SP1</b>	2	Switching behaviour of relay 1: off - on
		5	Switching behaviour of relay 1: on - off
<b>C.SP2</b>	<b>Configuration setpoint SP2</b>	2	Switching behaviour of relay 2: off - on
		5	Switching behaviour of relay 2: on - off
<b>C.SP3</b>	<b>Configuration setpoint SP3</b>	2	Switching behaviour of relay 3: off - on
		5	Switching behaviour of relay 3: on - off



**1 Sh switch-point hystereses  
OUT 1**

Adjustment range: 10% of the selected measuring range.  
With or without decimal point, depending to the selected range.



**2 Sh switch-point hystereses  
OUT 2**

Adjustment range: 10% of the selected measuring range.  
With or without decimal point, depending to the selected range.

**3 Sh switch-point hystereses  
OUT 3**

Adjustment range: 10% of the selected measuring range.  
With or without decimal point, depending to the selected range.

**OFSt process value offset**

-999 ... OFF ... 1000 K (ex works: OFF)  
-99,9 ... OFF ... 100,0 K  
-9,99 ... OFF ... 10,00 K

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)
P C	parameter and configuration levels locked
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.

**1200**

**EL.xx Control number**

No function. End of configuration level

## Operating Level

Display  
"Process"

Parameter

Display  
2

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**Process**  
(process)

**and**

**physical unit**  
(display 2)

**SP1 Setpoint 1**

Limit contact value OUT1  
OFF = OUT1 not active

(ex works: OFF)

**SP2 Setpoint 2**

Limit contact value OUT2  
OFF = OUT2 not active

(ex works: OFF)

**SP3 Setpoint 3**

Limit contact value OUT3  
OFF = OUT3 not active

(ex works: OFF)

The range of adjustment is dependant on the sensor range.

## Error displays

<u>Display</u>	<u>Cause</u>	<u>Possible remedy</u>
rA.Lo	Lower range has been reached	Reduce limit, if need be
rA.Hi	Upper range limit has been reached	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 instrument back for examination.

## 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 controller 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).

To keep the CE-conformity it is necessary, to use for sensor- and low voltage signal lines shielded cables. Spatial separation between controller 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 controller.

**IMPORTANT:**

Before operation, the unit must be configured for its intended purpose

(e.g. sensor type and range, switching point/setpoint adjustment etc.). Please see „Configuration Level“.

