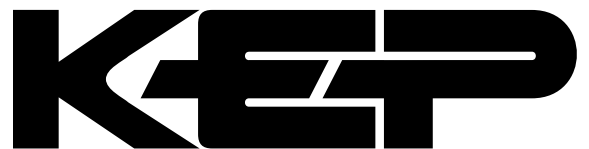


TP-554 SERIES

INSTALLATION & OPERATING INSTRUCTIONS



KESSLER-ELLIS PRODUCTS

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Proprietary Notice

The information contained in this publication is derived in part from proprietary and patent data. This information has been prepared for the expressed purpose of assisting operating and maintenance personnel in the efficient use of the instrument described herein. Publication of this information does not convey any rights to use or reproduce it or to use for any purpose other than in connection with the installation, operation and maintenance of the equipment described herein.

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This instrument contains electronic components that are susceptible to damage by static electricity. Proper handling* procedures must be observed during the removal, installation, or handling of internal circuit boards or devices.

*Handling Procedure

1. Power to unit must be removed.
2. Personnel must be grounded, via wrist strap or other safe, suitable means, before any printed circuit board or other internal device is installed, removed or adjusted.
3. Printed circuit boards must be transported in a conductive bag or other conductive container. Boards must not be removed from protective enclosure until the immediate time of installation. Removed boards must be placed immediately in protective container for transport, storage, or return to factory.

Comments

This instrument is not unique in its content of ESD (electrostatic discharge) sensitive components. Most modern electronic designs contain components that utilize metal oxide technology (NMOS, CMOS, etc.). Experience has proven that even small amounts of static electricity can damage or destroy these devices. Damaged components, even though they appear to function properly, may exhibit early failure.

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SAFETY INSTRUCTIONS

The following instructions must be observed.

- This instrument was designed and is checked in accordance with regulations in force EN 60950 (“Safety of information technology equipment, including electrical business equipment”).
A hazardous situation may occur if this instrument is not used for its intended purpose or is used incorrectly. Please note operating instructions provided in this manual.
- The instrument must be installed, operated and maintained by personnel who have been properly trained. Personnel must read and understand this manual prior to installation and operation of the instrument.
- The use of an external line fuse is recommended. Add or replace the external fuse with the following specified type and rating only:

<u>Input Power</u>	<u>Recommended Fuse</u>
115 VAC	100 mA slow blow fuse
230 VAC	50 mA slow blow fuse
12-24 VDC	250 mA slow blow fuse

Disconnect power supply before adding or replacing fuse!

- The manufacturer assumes no liability for damage caused by incorrect use of the instrument or for modifications or changes made to the instrument.

Symbols Used On Unit

<u>Number</u>	<u>Symbol</u>	<u>Publication</u>	<u>Description</u>
1	===	IEC 417, No. 5031	Direct current
2		IEC 417, No. 5172	Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION (equivalent to Class II of IEC 536–see annex H)
3		ISO 3864, No. B.3.1	Caution (refer to accompanying documents)

Technical Improvements

- The manufacturer reserves the right to modify technical data without prior notice.

1 Specifications

1.1 Power Supply

Supply voltage ¹	DC 10 .. 30 V or AC 90 .. 260 V
Power consumption	max. 2 W or max. 6 VA
Mains hum suppression	digital filter 50 Hz or 60 Hz

1.2 Inputs

Measurement ranges

Thermocouples	Ranges	Error limits
Type B	0 °C .. 1820 °C	±1.5 °C
E	-200 °C .. 1000 °C	±0.5 °C
J	-210 °C .. 1200 °C	±0.5 °C
K	-200 °C .. 1372 °C	±0.5 °C
N	-200 °C .. 1300 °C	±0.5 °C
R	-50 °C .. 1760 °C	±1 °C
S	-50 °C .. 1767 °C	±1 °C
T	-210 °C .. 400 °C	±0.5 °C

Resistance thermometer in 2, 3, or 4 wire measurement mode	Ranges	Error limits
	0 .. 400 Ω	±0.2 Ω
	0 .. 4000 Ω	±2 Ω

Millivolt input	Ranges
	0 .. +100 mV
	-100 .. +100 mV

Resolution	14 bit
Measuring speed	approx. 1 .. 4 measurements/s
Non-linearity	< 0.1 % ±1 digit
Input resistance	> 2 MΩ
Voltage limit	DC 10 V

Input Latch/Reset

Function of the input depending on setup parameter	
Latch signal	to hold the display
Reset pulse	> 5 ms to reset the outputs (when electrical reset is activated)
Switching level	
logical 0	DC 0 .. 2 V
logical 1	DC 4 .. 30 V

1.3 Outputs

Output 1 / Output 2

The Relays (SPDT)	can be setup as normally energized or normally non energized
Switching voltage	max. AC 250 V / DC 300 V
Switching current	max. 3 A, min. DC 30 mA
Switching power	50 W / 2000 VA
or NPN optocoupler with open collector and open emitter.	
Switching power	DC 30 V / 15 mA
Ucesat at I _c = 15 mA	max. DC 2.0 V
Ucesat at I _c = 5 mA	max. DC 0.4 V

Output power for transducer / sensor (2 Outputs)

Voltage output	DC 10 V ±2 %, 30 mA and DC 24 V ±15 %, 50 mA (with AC power supply)
----------------	---

1.4 Miscellaneous Data

Display, 7 segment	5 digit LED, 0.56" (14.2 mm) high
Display range	-19999 .. 99999
Data storage EEPROM	1 Million storage cycles or 10 years
EMC compliance	EN 61000-3-3; EN 55011 class B and EN 50082-2 with shielded control cables
Operating temperature	-10 °C .. +50 °C
Storage temperature	-25 °C .. +70 °C
Dimensions	page 6
Weight	approx. 220 g
Protection class	IP 65 (from front)

1.5 Parts List

Process Controller TP-554

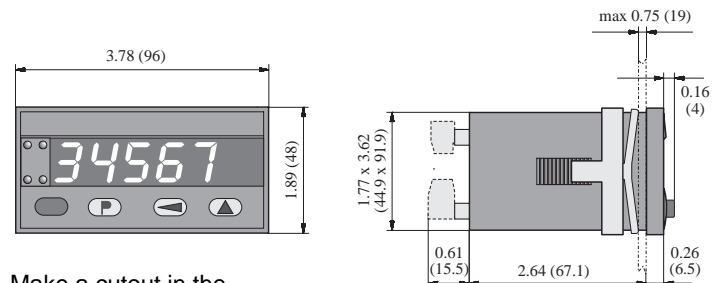
Screw terminals	
1 terminal block RM 5.08	8-pole for power supply and outputs
1 terminal block RM 3.81	11-pole for measuring and control inputs and for auxiliary power supply outputs
Clamping bracket and gasket	
1 sheet of self adhesive symbols	

1.6 Order Code

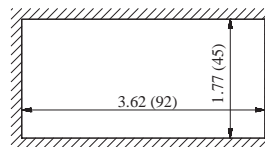
Article number	
TP554.01X.X00	
	Power supply
	0 = AC 90 .. 260 V
	3 = DC 10 .. 30 V
	Output
	0 = relay
	1 = optocoupler

2 Mounting

Before mounting the unit, you should set the operating parameters.



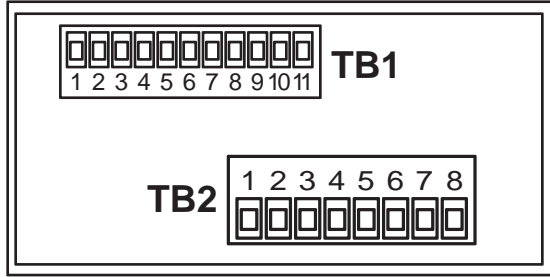
Make a cutout in the control panel:



NOTE: All dimensions in inches (mm)
Insert the unit in the cutout and fix it with the clamping bracket.

¹ depending on the selected version.

3 Electrical Connections



TB1	
1	Measuring input 1 (Sense)
2	Measuring input 2 (- Ref)
3	Sensor (+Ref)
4	Current output for 0 .. 4000 Ω (+ Sense)
5	Current output for 0 .. 400 Ω (+ Sense)
6	Keys locking
7	Reference ground Reset / Key
8	Reset
9	GND for DC Output (Pins 10 & 11)
10	+10 VDC Out (30 mA)
11	+24 VDC Out (50 mA) (AC units only)

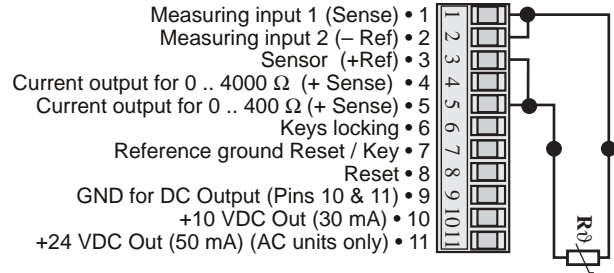
TB2		
1	Output 1	Relay C Optocoupler Emitter
2	Output 1	Relay N.O.
3	Output 1	Relay N.C. Optocoupler Collector
4	Output 2	Relay C Optocoupler Emitter
5	Output 2	Relay N.O.
6	Output 2	Relay N.C. Optocoupler Collector
Power Supply		
7	Power In	AC 90 to 260V DC 10 to 30V
8	Power In	AC 90 to 260V DC 0V (GND)

NOTE: Check unit lable before

3.2 Resistance measurements 0 .. 4000 Ω or Pt 100

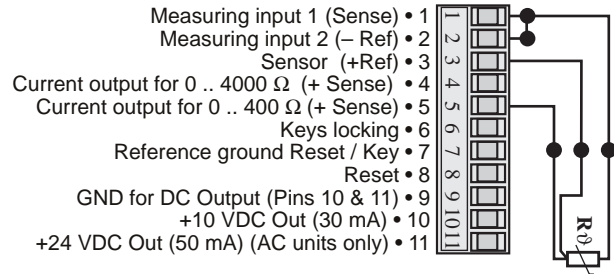
2 wire measurement (measuring resistance 0 .. 4000 Ω)

NOTE: Not recommended for long runs.



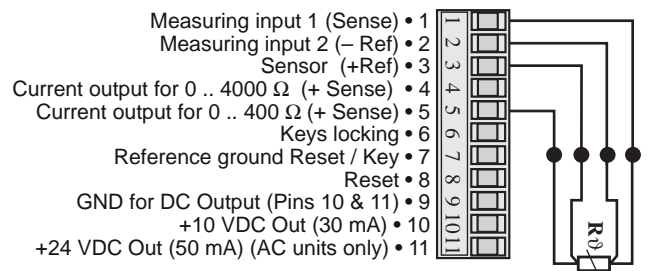
3 wire measurement (measuring resistance 0 .. 4000 Ω)

NOTE: Jumper 1 & 2 at meter, wires 3 & 4 must go to sensor

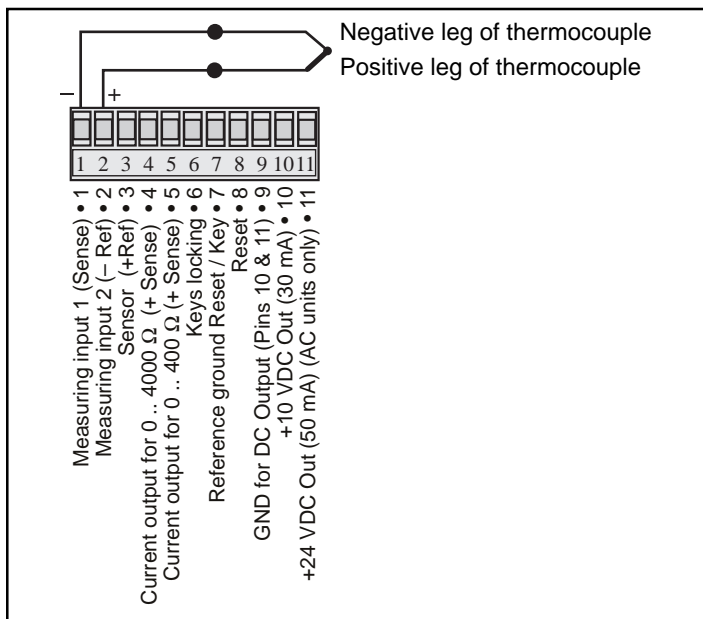


4 wire measurement (measuring resistance 0 .. 4000 Ω)

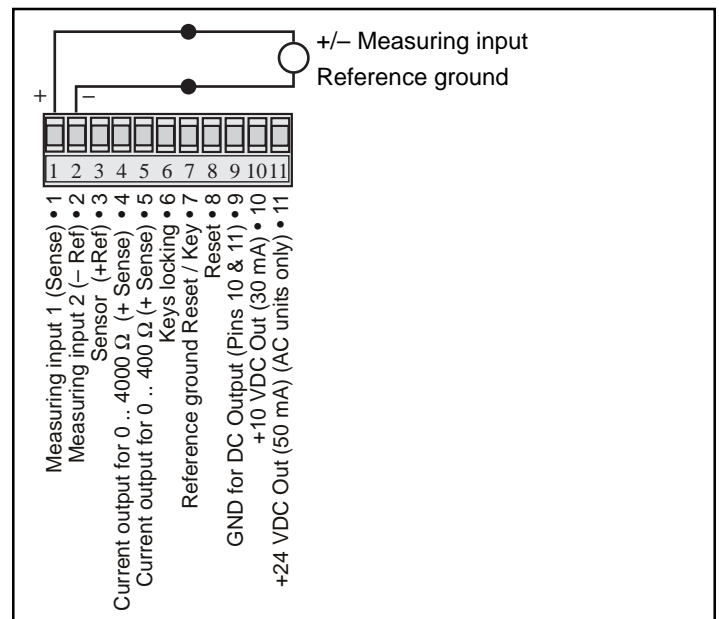
NOTE: All 4 must go to sensor



3.1 Thermocouples



3.3 Voltage measurement (0 to 100mV or -100 to +100mV)



4 Parameter Setup

The parameters have to be setup before putting the unit into operation. It is recommended to set them up before mounting.

– Input parameter

The parameters of the characteristic curve of the unit must be setup depending on the sensor used.

– Characteristic curve

The correspondence between the input signal and the displayed value is given by the characteristic curve. The characteristic curve is setup by entering pairs of values.

– Limits / outputs

Either none, one or two limit values can be active. Hysteresis and output parameters are also setup. In case the limit is exceeded, a signal will be sent out at the corresponding output and the corresponding LED will be switched on.

The limits themselves are setup in the **operating mode!**

– Mains hum filter

The local mains frequency will be selected.

4.1 Setup Mode

Start the setup mode:

- Hold key **P**.
- Connect unit to the power supply.
The display shows **Pr00**.
- Release key.

Getting acquainted with the display and keys

The selection or the setting can be repeatedly run through as often as wished because of the rotational principle.

Menu item: The display alternates every 2 seconds between the menu item and the selection.

Menu	↔	Selection
r R n G E		0 . 1 0 U

Entering into the menu item:

Either a selection has to be made or a value has to be setup.

Press key **←**. The display stops alternating.

– Making a selection:

With the key **▲** all possible settings will be displayed one after the other.

Enter the selection: Press key **P**. The selected parameter will be stored. The next menu item appears.

– Entering a value:

The flashing digit indicates that it is enabled for entry.



Press key **▲**, the number will be incremented.

Where negative values are permitted, the highest digit will switch from "9" to "-", then "-1", and only then to "0".

Press key **←** to switch to the next digit.

Enter value: Press key **P**, the value will be stored. The next menu item appears.

4.2 Input Parameter for Instantaneous Value

Here the sensor type will be selected to match the unit to the sensor used.

The displayed value is obtained from the input signal through stored characteristic curve or a user defined curve.

Menu	↔	Selection	Enter
r R n G E		t h E r E	P Go to indicated section to continue setup.
		r E S i S	⇒ 4.2.2 Resistance measurement □ 5 (Pt 100 or Pt 1000, linear or non-linear resistors 0 .. 400 Ω bzw. 0 .. 4 kΩ)
		1 0 0 P P	⇒ 4.2.3 Input range 0 .. 100 mV (positive polarity) □ 6
		1 0 0 b P	⇒ 4.2.4 Input range -100 .. 0 .. +100 mV (bipolar) □ 6
		t h E r E	⇒ 4.2.1 Thermocouples □ 4

The selection should be made depending on the sensor (signal source).

4.2.1 Thermocouples

Menu	↔	Selection	Enter
r R n G E		t h E r E	P

4.2.1.1 Select type of thermocouple

Menu	↔	Selection	Enter
t h E Y P		b	P
		b	Type B
		E	Type E
		J	Type J
		K	Type K
		N	Type N
		R	Type R
		S	Type S
		T	Type T

For the thermocouples here specified, characteristic curves with 24 pairs of value are stored in the unit. Input values intermediate between the stored pairs of values are linearly interpolated.

4.2.1.2 Display unit

The selection carried out here is also used for comparison point compensation and for correction value.

Menu	↔	Selection	Enter
U n i t		° C	P
		° C	Display in °C or °F
		° F	

4.2.1.3 Comparison point compensation

The temperature measured by the thermocouple can be compensated either by the temperature measured internally in the unit (int.) or by an external reference value. Further, a correction value can be added (see section 4.2.1.5 □ 5). The unit adds this value and displays the result.

Menu	↔	Selection	Enter	
REF.UU		int	(P)	Example: External
		int		Internal comparison point compensation (temperature sensor within the unit) ⇒ 4.2.1.5 Correction value □ 5
		Ext		External comparison point temperature

4.2.1.4 External comparison point temperature

Entry of the known value of an external reference with one decimal digit.

Menu	↔	Selection	Enter	
Ext.Unc		00000	(P)	
		00000		Select digit
		00000		Preset Decimal

4.2.1.5 Correction value

Entry of a correction (adjust) value by which the measured value will be adjusted. The value will be added to the measured value. Positive as well as negative correction values are possible. The entry is always carried out with one decimal digit.

Menu	↔	Selection	Enter	
Adjust		00000	(P)	Example: -1.5
		00005		Set digit
		-0015		Select digit

Assuming the measured value is 28.45 and the correction value is -1.5, the display will indicate 26.95.

⇒ 4.4 Limits / Outputs □ 8

4.2.2 Resistance Measurement

Menu	↔	Selection	Enter	
RnGE		RESr	(P)	

Also suitable for non-linear resistors.

4.2.2.1 Select measuring mode

Menu	↔	Selection	Enter	
PnEth		2wir	(P)	
		2wir		2 wire measurement
		3wir		3 wire measurement
		4wir		4 wire measurement

(see also chapter 3, Electrical connections □ 3)

4.2.2.2 Measurement range

Menu	↔	Selection	Enter	
RESol		0.400	(P)	Go to indicated section to continue setup.
		0.400		0 .. 400 Ω ⇒ 4.2.2.5 Decimal point □ 6
		0.4000		0 .. 4 kΩ ⇒ 4.2.2.5 Decimal point □ 6
		Pt 100		Pt 100 (with stored characteristic curve) ⇒ 4.2.2.3 Display unit □ 5
		Pt 1000		Pt 1000 (with stored characteristic curve) ⇒ 4.2.2.3 Display unit □ 5

4.2.2.3 Display unit (with Pt 100 and Pt 1000)

This setting is also valid for the correction value.

Menu	↔	Selection	Enter	
Unit		°C	(P)	
		°C		Display in °C or °F
		°F		

4.2.2.4 Correction value (with Pt 100 and Pt 1000)

Entry of a correction (adjust) value by which the measured value will be adjusted. The value will be added to the measured value. Positive as well as negative correction values are possible. The entry is always carried out with one decimal digit.

Menu	↔	Selection	Enter	
Adjust		00000	(P)	Example: -1.5
		00005		Set digit
		-0015		Select digit

Assuming the measured value is 28.45 and the correction value is -1.5, the display indicates 26.95.

⇒ 4.4 Limits / Outputs □ 8

4.2.2.5 Decimal point (with 0 .. 400 Ω and 0 .. 4 kΩ)

Menu	↔ Selection	Enter
dP	0	(P)
	0.0	0.0
	0.00	0.00
	0.000	0.000
	0.0000	0.0000
	0	0

The decimal point setting is only for optical appraisal. It influences neither the measuring accuracy nor the actual resolution. I.e. for example, shifting 2 digits left results in a display in unit of hundreds.

After the decimal point is setup, the leading zeros will be suppressed.

4.2.2.6 Changing the characteristic curve (with 0 .. 400 Ω and 0 .. 4 kΩ)

Menu	↔ Selection	Enter	
ChArc	YES	(P)	Example: YES
	no		Use the current characteristic curve ⇒ 4.4 Limits / Outputs □ 8
	YES		Enter or alter characteristic curve ⇒ 4.3 Setting the characteristic curve □ 7

4.2.3 Input range 0 .. 100 mV, pos. polarity

Menu	↔ Selection	Enter
rRnGE	100PP	(P)

4.2.3.1 Decimal point for displayed value

Menu	↔ Selection	Enter
dP	0	(P)
	0.0	0.0
	0.00	0.00
	0.000	0.000
	0.0000	0.0000
	0	0

The decimal point setting is only for optical appraisal. It influences neither the measuring accuracy nor the actual resolution. I.e. for example, shifting 2 digits left results in a display in unit of hundreds.

After the decimal point is setup, the leading zeros will be suppressed.

4.2.3.2 Changing the characteristic curve

Menu	↔ Selection	Enter	
ChArc	YES	(P)	Example: YES
	no		Use the current characteristic curve ⇒ 4.4 Limits / Outputs □ 8
	YES		Enter or alter characteristic curve ⇒ 4.3 Setting the characteristic curve □ 7

4.2.4 Input range -100 .. +100 mV, bipolar

Menu	↔ Selection	Enter
rRnGE	100bP	(P)

4.2.4.1 Decimal point for displayed value

Menu	↔ Selection	Enter
dP	0	(P)
	0.0	0.0
	0.00	0.00
	0.000	0.000
	0.0000	0.0000
	0	0

The decimal point setting is only for optical appraisal. It influences neither the measuring accuracy nor the actual resolution. I.e. for example, shifting 2 digits left results in a display in unit of hundreds.

After the decimal point is setup, the leading zeros will be suppressed.

4.2.4.2 Changing the range limits

The given limits for the input range can be entered as is, or adjusted.

When under or overloaded the display alternates between the measured value and alarm.

The settings must be within the range (e.g. no values >100.00 mV or no negative values in the range 0 .. 100 mV). A continuation of setup with the key (P) is only possible when the setup is correct.

Lower limit

Menu	↔ Selection	Enter	
Lo.inP	100.00	(P)	Example: -50.00
	100.00		Select digit
	-00.00		Set digit
	-00.00		Select digit
	-50.00		Set digit

When the input signal falls below the value set here then "Lo" will be displayed.

Upper limit

Menu	↔ Selection	Enter	
hi.inP	100.00	(P)	Example: 80.00
	000.00		Select digit
	080.00		Set digit

When the input signal exceeds the value set here then "hi" will be displayed.

4.2.4.3 Changing the characteristic curve

Menu	↔ Selection	Enter	
ChArc	YES	(P)	Example: YES
	no		Use the current characteristic curve ⇒ 4.4 Limits / Outputs □ 8
	YES		Enter or alter characteristic curve ⇒ 4.3 Setting the characteristic curve □ 7

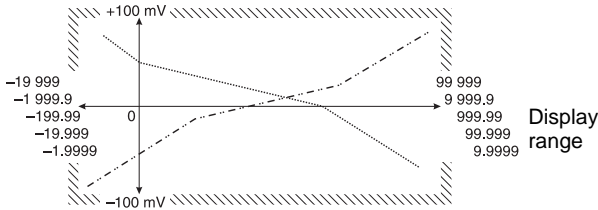
4.3 Setting the Characteristic Curve

At least two points (2 pairs of values), for the starting and end points respectively of the characteristic curve, are required. The curve can be ascending or descending.

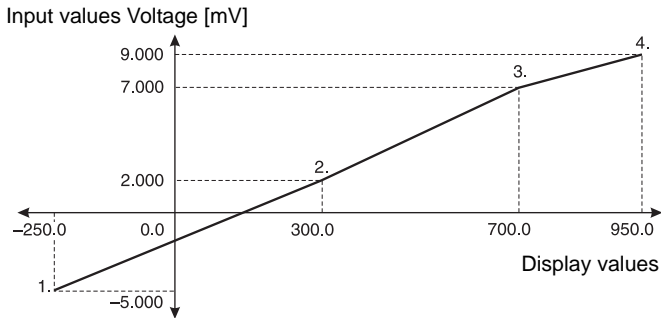
A maximum of 24 knee points can be implemented. However, it must be ensured that with a rising curve all curve segments must slope upwards and with a descending curve all segments must slope downwards.

The characteristic curve must lie within the zone shown, i.e. within the limits of the input and display ranges. The first and last points can lie on the limits.

Input range -100 .. +100 mV



Based on input range -100 .. +100 mV an example with 4 knee points will be implemented:



It is recommended to note down the required pairs of values for the knee points of the curve before starting the setup.

Knee points	Input values	Display values
1.	-50.00	-250.0
2.	20.00	300.0
3.	70.00	700.0
4.	80.00	950.0

This example will be used below.

4.3.1 Enter the number of knee points

Menu ↔ Selection Enter

n.k.p.t (P) Example: 4

Pressing the key will increment the value by one. After reaching 24 the value jumps back to 2.

4.3.2 Define first knee point

Set input value in mV for the starting point of the curve.

Menu ↔ Selection Enter

inP.01 (P) Example: -50.00

Select digit.

Set digit.

Set display value for the starting point of the curve.

Menu ↔ Selection Enter

d1.501 (P) Example: -250.0

Select digit.

Set digit.

4.3.3 Define second knee point

Set input value.

Menu ↔ Selection Enter

inP.02 (P) Example: 020.00

Set display value.

Menu ↔ Selection Enter

d1.502 (P) Example: 300.0

4.3.4 Define further knee points

Additional knee points will be requested only when in section 4.3.1 7 more than 2 knee points are defined.

4.4 Limits / Outputs

There can be none, one or two limits active.

When exceeding	Signal on	LED display
Limit 1	Output 1	on ↗ 1
Limit 2	Output 2	on ↗ 2

4.4.1 Limit 1 / Output 1

4.4.1.1 Limit 1 off / on

Menu ↔ Selection Enter

`PrES1` `on` (P) Example: on

↓

`off` Limit 1 not active
4.4.2 Limit 2 / Output 2 ↗ 9

`on` Limit 1 active

4.4.1.2 Select Output 1 mode

Menu ↔ Selection Enter

`P9.out1` `Reset` (P) Example: Latch

↓

`Latch` Latch signal 4.4.1.4 Reset Latch signal at output 1 ↗ 8

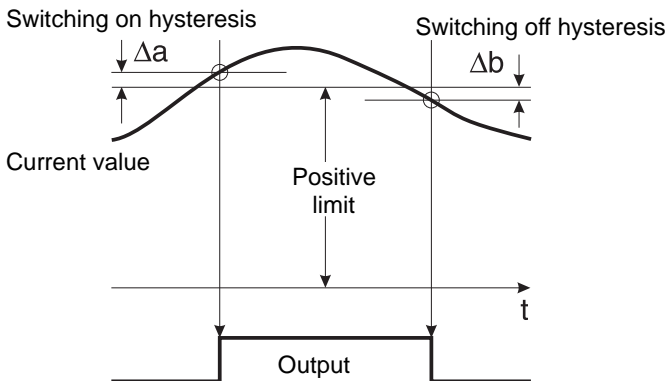
`Reset` Auto

4.4.1.3 Limit value 1 hysteresis

Here hysteresis means : The difference in thresholds between switching on and switching off. This difference should be selected large enough to avoid undesired switching actions at the output due to the variations of the current instantaneous value.

Note: Limit value and hysteresis are always referred to the displayed current value and not to the input signal value.

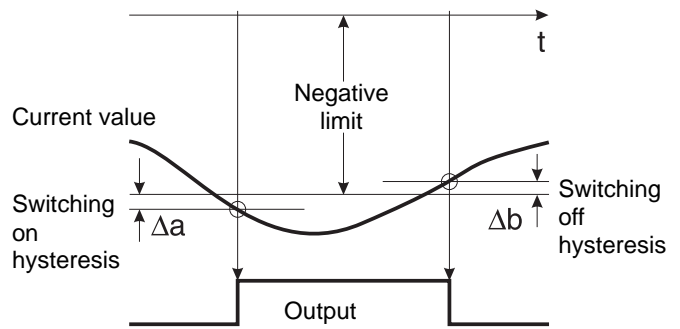
For positive limit value:



Switching on value = Limit + Switching on hysteresis Δa
Switching off value = Limit – Switching off hysteresis Δb

The switching on value must be **greater** than the switching off value.

For negative limit value:



Switching on value = Limit – Switching on hysteresis Δa
Switching off value = Limit + Switching off hysteresis Δb

The switching on absolute value (numerical value without sign) must be **greater** than the absolute value for switching off.

Set switching on hysteresis Δa for limit 1

Menu ↔ Selection Enter

`on.hyst1` `00000` (P) Example: 1.0

← `00000` Select digit

↑ `000.10` Set digit

Set switching off hysteresis Δb for limit 1

Menu ↔ Selection Enter

`off.hyst1` `00000` (P) Example: 1.0

← `00000` Select digit

↑ `00.100` Set digit

⇒ 4.4.1.5 Select Signal form for output 1

4.4.1.4 Reset Latch signal at output 1

The mode of resetting the Latch signal will be selected.

Menu ↔ Selection Enter

`r.out1` `RRRn` (P) Reset with

↓

`RRRn` manual red key

`ELEcE` electrical RESET signal

`EL.PRR` electrical as well as manual

4.4.1.5 Select signal form for output 1

Menu) Selection Enter

`Out1` `--F--` (P)

↓

`--F--` Positive output signal

↑ `--L--` Negative output signal

Output is **activated** when the instantaneous value \geq Limit 1.

Output is **deactivated** when the instantaneous value \geq Limit 1.

4.4.2 Limit 2 / Output 2

4.4.2.1 Limit 2 off / on

Menu	↔	Selection	Enter
PrE52		on	(P) Example: on
	↓	off	Limit 2 not active ⇒ 4.5 Mains Hum filter □ 9
		on	Limit 2 active

4.4.2.2 Select Output 2 mode

Menu	↔	Selection	Enter
PrOu2		Auto	(P)
	↓	Latch	Latch signal ⇒ 4.4.2.4 Reset Latch signal at output 2 □ 9
		Auto	Auto

4.4.2.3 Hysteresis for limit 2

Set switching on hysteresis Δa for limit 2

Menu	↔	Selection	Enter
onh42		00000	(P)
		00000	Select and set digit

Set switching off hysteresis Δb for limit 2

Menu	↔	Selection	Enter
offh42		00000	(P)
		00000	Select and set digit

⇒ 4.4.2.5 Select Signal form for output 2 □ 9

4.4.2.4 Reset Latch signal at output 2

The mode of resetting the Latch signal will be selected.

Menu	↔	Selection	Enter
Latch		PrAn	(P) Reset with
	↓	PrAn	manual red key <input checked="" type="checkbox"/>
		ELect	electrical RESET signal
		ELPrAn	electrical as well as manual

4.4.2.5 Select signal form for output 2

Menu	↔	Selection	Enter
Out2		--f--	(P)
	↓	--f--	Positive output signal
		--l--	Negative output signal

Output is **activated** when the instantaneous value \geq Limit 2.

Output is **deactivated** when the instantaneous value \geq Limit 2.

4.5 Mains Hum Filter

To reduce the interference from mains line and the environment (mains hum), the instrument must be set to the local mains frequency.

Menu	↔	Selection	Enter
Filter		50Hz	(P)
	↓	60Hz	Local power line with 60 Hz.
		50Hz	Local power line with 50 Hz.

4.6 End of Setup Yes / No?

Menu	↔	Selection	Enter
EndPr		YES	(P)
	↓	YES	Parameters will be stored. ⇒ 5 Operation □ 32
		no	⇒ 4.7 Check / alter parameters

4.7 Check / alter Parameters

Checking the individual menu items:

– After every 2 seconds the menu changes to selection.

rrnEE	
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– If the setting is as desired, then switch to the next menu with (P), otherwise, carryout the setting anew.

5 Operation

The unit is in the operating mode when the power supply is switched on or at the end of the setup. One of the following will be displayed:

----	There is no input measuring signal connected or the measuring range has been exceeded.
326.81	The measuring signal is present, the actual value will be displayed.
Lo	The input signal is below the lower limit of the measuring range. This display alternates with the measured value display.
hi	The input signal is higher than the upper limit of the measuring range. This display alternates with the measured value display.

5.1 Switch over the Display during Operation

In order to switch the display further, the key (P) should be pressed within about 2s.

Key (P)	Message	Display
Press once	Rec t	Actual measured value
Press once	LED Pr1 on ¹	Limit 1 (when activated)
Press once	LED Pr2 on ¹	Limit 2 (when activated)
Press once	Rec t	Actual measured value

¹ After 4s the display reverts automatically to the actual value display and the LED indicators 'Pr1' or 'Pr2' extinguishes.

Attention!

While the display shows a limit value, its set value can be changed.

The panel keys can be disabled by the "Key"-lock.

5.2 Setting the Limits during Operation

While the display shows a limit value, its set value can be changed!

Note: The key lock "Key" should not be enabled.

Limit 1 is displayed. LED 'Pr1' is lighted.

Set limit 1:

Display	Action
0000	◀ = Select digit and
3000	▲ = Set digit.
	Example: 300.0
	(P) = Enter and switch over to limit 2.

Limit 2 is displayed. LED 'Pr2' is lighted.

Set limit 2:

Display	Action
0000	◀ = Select digit and
8000	▲ = Set digit.
	Example: 800.0
	(P) = Enter

After 4s the display reverts automatically to the instantaneous value display.

We hope you will be pleased with our product. If you have any questions concerning our warranty, repair, modification or returned goods process, please contact your local distributor.

WARRANTY

This product is warranted against defects in materials and workmanship for a period of two (2) years from the date of shipment to Buyer.

The Warranty is limited to repair or replacement of the defective unit at the option of the manufacturer. This warranty is void if the product has been altered, misused, dismantled, or otherwise abused.

ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARE EXCLUDED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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