PMT-555

**Process Monitor
with Totalizer**
For Analog Inputs

Installation and Operating Manual

KEP

KESSLER-ELLIS PRODUCTS
10 Industrial Way East
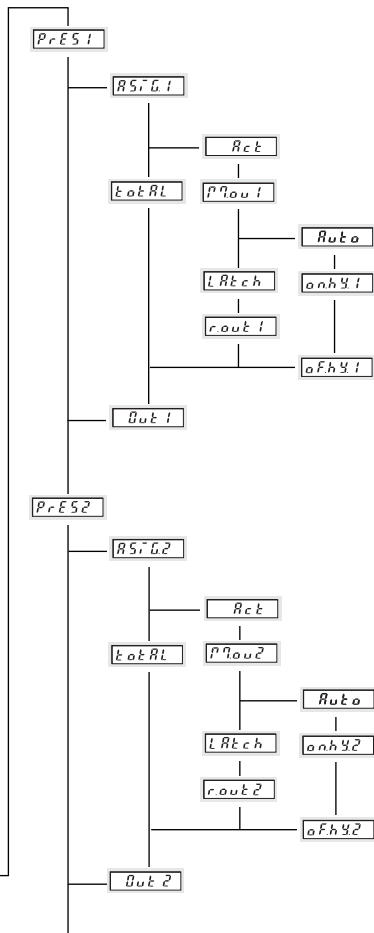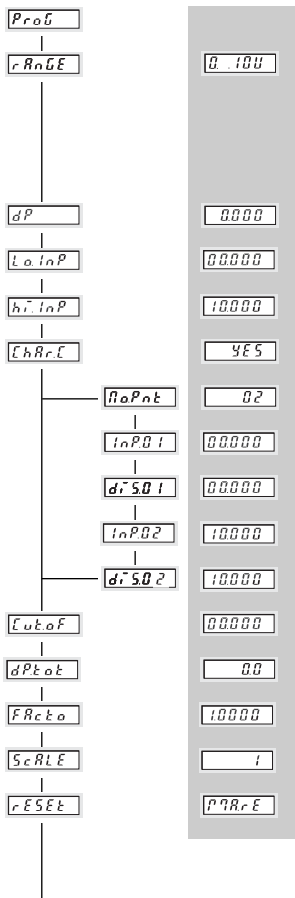Eatontown, NJ 07724
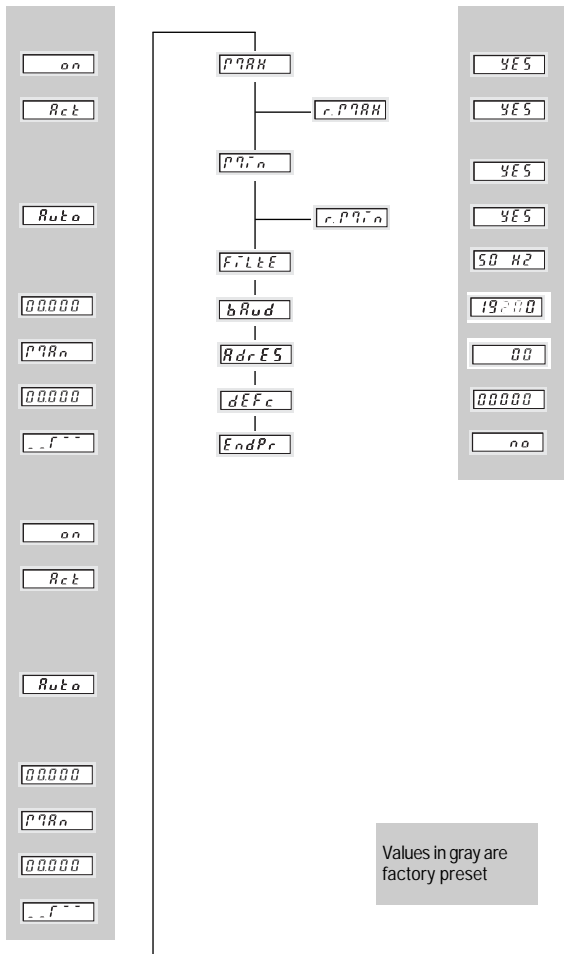800-631-2165 • 732-935-1320
Fax: 732-935-9344

CERTIFIED
ISO 9001

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99909 12/02/04

```
┌──────┐
│ ProG │
└──────┘
   │
┌──────┐                                    ┌──────┐
│ rAnGE│              ┌─────────┐           │ PrES1│
└──────┘              │ 0. .10U │           └──────┘
   │                  └─────────┘              │
   │                                    ┌──────────┐
   │                                    │  ASiG1   │
   │                                    └──────────┘
┌──────┐              ┌─────────┐              │          ┌──────┐
│  dP  │              │ 0.000   │           ┌──────┐      │ Act  │
└──────┘              └─────────┘           │totAL │      └──────┘
┌──────┐              ┌─────────┐           └──────┘   ┌──────┐
│ Lo.inP│             │ 00.000  │              │       │Priou1│
└──────┘              └─────────┘                      └──────┘              ┌──────┐
┌──────┐              ┌─────────┐                         │                  │ Auto │
│ hi.inP│             │ 10.000  │                      ┌──────┐              └──────┘
└──────┘              └─────────┘                      │LAtch │           ┌──────┐
┌──────┐              ┌─────────┐                      └──────┘           │ onhY1│
│ CHArC│              │  YES    │                      ┌──────┐           └──────┘
└──────┘              └─────────┘                      │rout1 │
   │                                                   └──────┘           ┌──────┐
┌──────┐              ┌─────────┐                                         │ oF.hY1│
│ NoPnt│              │  02     │                                         └──────┘
└──────┘              └─────────┘
┌──────┐              ┌─────────┐           ┌──────┐
│ inP.01│             │ 00.000  │           │ Out1 │
└──────┘              └─────────┘           └──────┘
┌──────┐              ┌─────────┐
│ diS.01│             │ 00.000  │
└──────┘              └─────────┘
┌──────┐              ┌─────────┐
│ inP.02│             │ 10.000  │
└──────┘              └─────────┘
┌──────┐              ┌─────────┐           ┌──────┐
│ diS.02│             │ 10.000  │           │ PrES2│
└──────┘              └─────────┘           └──────┘
                                               │
┌──────┐              ┌─────────┐           ┌──────────┐
│ CutoF│              │ 00.000  │           │  ASiG2   │
└──────┘              └─────────┘           └──────────┘
┌──────┐              ┌─────────┐              │          ┌──────┐
│ dPtot│              │  0.0    │           ┌──────┐      │ Act  │
└──────┘              └─────────┘           │totAL │      └──────┘
┌──────┐              ┌─────────┐           └──────┘   ┌──────┐
│ FActo│              │ 10.000  │              │       │Priou2│
└──────┘              └─────────┘                      └──────┘              ┌──────┐
┌──────┐              ┌─────────┐                         │                  │ Auto │
│ ScALE│              │   1     │                      ┌──────┐              └──────┘
└──────┘              └─────────┘                      │LAtch │           ┌──────┐
┌──────┐              ┌─────────┐                      └──────┘           │ onhY2│
│ rESEt│              │ PrArE   │                      ┌──────┐           └──────┘
└──────┘              └─────────┘                      │rout2 │
                                                       └──────┘           ┌──────┐
                                                                          │ oF.hY2│
                                                                          └──────┘
                                            ┌──────┐
                                            │ Out2 │
                                            └──────┘
```

on	PMAX	YES
Act	r.PMAX	YES
Auto	PMin	YES
0.0.0.0.0	r.PMin	YES
PMon	FiLtE	50 HZ
0.0.0.0.0	bAud	19200
__f--	AdrES	00
on	dEFc	0.0.0.0.0
Act	EndPr	no
Auto		
0.0.0.0.0		
PMon		
0.0.0.0.0		
__f--		

Values in gray are factory preset

1 Safety instructions and warnings

⚠ Only use this display
**– in a way according to its intended
  purpose
– if its technical condition is perfect
– adhering to the operating
  instructions and the general
  safety instructions.**

1. Before carrying out any installation or maintenance work, make sure that the power supply of the digital display is switched off.
2. Only use this digital display in a way according to its intended purpose.
3. If its technical condition is perfect.
4. Adhering to the operating instructions and the general safety instructions.
5. Adhere to country or user specific regulations.

6. The digital display is not intended for use in areas with risks of explosion and in the branches excluded by the standard EN 61010 Part 1.
7. The digital display shall only operated if it has been correctly mounted in a panel, in accordance with the chapter "Main technical features".

1.1 Use according to the intended purpose

The digital display may be used only as a panel-mounted device. Applications of this product may be found in industrial processes and controls, in manufacturing lines for the metal, wood, plastics, paper, glass, textile and other processing industries.
Over-voltages at the terminals of the digital display must be kept within the limits in Category II

If the digital display is used to monitor machines or processes in which, in case of a failure of the device or an error made by the operator, there might be risks of damaging the machine or causing accidents to the operators, it is your responsibility to take appropriate safety measures.

2. Technical Data

2.1 Miscellaneous Data

Display	5 digit red LED
	14.2 mm high
Display range	–19999 ... 99999, with leading zeros suppression
Out of Range Indication	Under-range uuuuu / Over-range ooooo
Data storage	EEPROM, 1 Million storage cycles or 10 Years
Test voltages	EN 61010 Part 1 ; overvoltage category 2, level 2
EMC	Interference emissions EN 50081-2 / EN 55011 Class B
	Interference resistance EN 61000-6-2

2.2 Electrical Data
2.2.1 Power supply

AC power supply	90 ... 260 V AC/max. 6 VA
	external fuse 100 mA/T
DC power supply	10 ... 30 V DC, max. 2 W,
	galvanically isolated with inverse polarity protection
	external fuse 250 mA/T
Mains Hum Filter	digital filter 50 Hz or 60 Hz, programmable

2.2.2 Inputs
Measurement ranges

Current input (DC)	
Ranges	0 ... 20 mA, 4 ... 20 mA
Resolution	2 µA
Voltage drop	max. 2 V bei 20 mA
Max. current	50 mA
Voltage input(DC)	
Ranges	0 ... 10 V, 2 ... 10 V, ±10 V
Resolution	1 mV
Input resitance	> 2 MΩ
Max. voltage	± 30 V

A/D converter	Dual-Slope
Measuring speed	approx. 2 measurements/s
Linearity	< 0,1% ±1 Digit for the whole measuring range at an
	ambient temperature of 20°C
Zero calibration	automatic
Temperature drift	100 ppm/K

Digital inputs

Input MPI*	Function of the inputs depending on set up
1. Function Display-Hold	to stop the instantaneous value
2. Function Reset	Reset the alarm value
Alarm Latch	
3. Function Reset-Totalizer	Resetting the Totalizer

*MPI: Multi Purpose Input

Input KEY	Keypad lock-out of alarm settings	
Switching level	logical 0	0 ... 2 V DC
	logical 1	4 ... 30 V DC
	Min. pulse duration	> 5 ms

Input MPI and Input KEY are galvanically isolated

2.2.3 Outputs
Alarm 1/Alarm output 2

Relay output with volt-free changeover contacts
can be setup as normally closed or normally open

Switching voltage	250 V AC/300 V DC
Switching current	max. 3 A AC/DC, min. 30 mA DC
Switching power	2000 VA / 50 Ω

or NPN-**optocoupler** with open collector and open emitter

Switching power	30 V DC/15 mA
U_{CEsat} at I_C = 15 mA	max. 2.0 V DC
U_{CEsat} at I_C = 5 mA	max. 0.4 V DC

Auxiliary power supply output for measuring transducer/sensor

AC models	voltage output 10 V DC ±2%, 30 mA
	and
	voltage output 24 V DC ±15%, 50 mA
DC models	only voltage output 10 V DC ±2%, 30 mA

The auxiliary power supply is galvanically isolated from the inputs, outputs and the interface.

2.2.4 Interface

Available options	RS232, RS485, RS422
Baud rate	600, 1200, 2400, 4800, 9600, 19 200 programmable
Address	00 ... 99 programmable
Data format	8 Data bit, no parity, 1 stop bit
Character format	advanced ASCII character format of
	IBM-PC without graphic characters

The interface is galvanically isolated from the inputs, outputs and auxiliary voltage.

2.3 Mechanical Data

Housing	Housing for control panel 96 x 48 mm according to DIN 43 700, RAL 7021
Dimensions (W x H x D)	96 x 48 x 90 mm
Panel cut-out (B x H)	92$^{+0,8}$ x 45$^{+0,6}$ mm
Mounting depth	**approx.** 83 mm
Weight	**approx.** 220 g
Protection	IP 65 (on the front side)

Connections

Power supply and output:	1 x screw terminal, 8-pole, RM 5.08
Measurement and control input:	1 x screw terminal, 11-pole, RM 3.81
Interfaces:	(*) 1 x screw terminal, 5-pole, RM 3.81

Cleaning:	The front of the unit is only to be cleaned with a soft wet (water !) cloth.

2.4 Environmental Conditions

Ambient temperature	–10°C ... +50°C
Storage temperature	–20°C ... +70°C
Climatic stability	relative humidity < 75%, without condensation

2.5 Delivery includs:

Process display
Screw terminal, 8-pole, RM 5.08
Screw terminal, 11-pole, RM 3.81
Screw terminal, 5-pole, RM 3.81(*)
Clamping bracket
Gasket
Multilingual operating instructions
1 set of self-adhesive symbols
* only with the interface option

2.6 Order Code

PMT555.01_ 0 00

- Interface
  - 00 = without interface
  - 05 = RS232
  - 06 = RS422
  - 07 = RS485
- Power supply
  - 0 = 90 .. 260 V AC
  - 3 = 10 .. 30 V DC
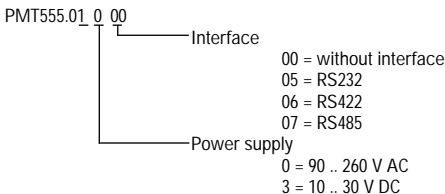
3. Mounting
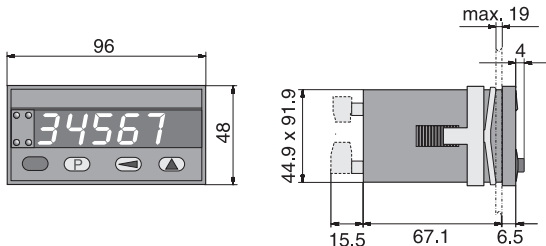
Panel cut out
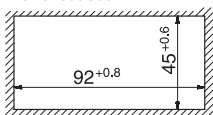
4. Electrical connections

View of rear of unit

Measuring- and control inputs as well as auxiliary signals

Power supply and limit outputs

Interface
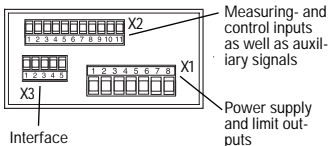
⚠ **Warning:** for 90 ... 260 V AC version. Please apply the power supply after the complete installation. Danger of Death! Please check unit label before applying the power supply.

4.1 Measuring Inputs

Current input

1	Current input (I)
	0 ... 20 mA / 4 ... 20 mA
2	GND1 (Analogue)

Voltage input
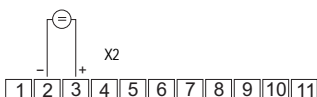
2	GND1 (Analogue)
3	Voltage input (U)
	0 ... 10 V, 2 ... 10 V, -10 ... +10 V

4.2 Control inputs and auxiliary power supply (U_{out})

9	GND3 (for Uout)
10	Uout +10 V/30 mA
11	Uout +24 V/50 mA only for power supply 90 ... 260 V AC
8	MP-Input "Reset-Alarm-Latch/ Display-Hold/Reset Totalizer"
7	GND2 (KEY/MPI)
6	Keypad lock-out "Key"

X2 `1 2 3 4 5 6 7 8 9 10 11`
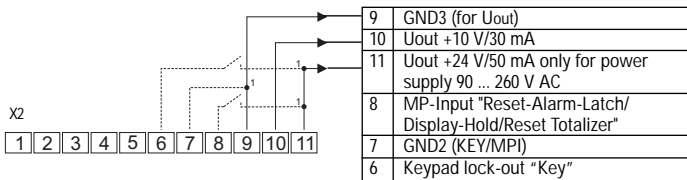
1 Alternatively connect directly to DC supply
(galvanic separation of control and measurement inputs)

4.3 Power supply and alarm outputs

Relay output

X1 OUT 2 OUT 1
`1 2 3 4 5 6 7 8`

	DC voltage	AC voltage
7	10 ... 30 V DC	90 ... 260 V AC (N~)
8	GND4 (0 V DC)	90 ... 260 V AC (L~)
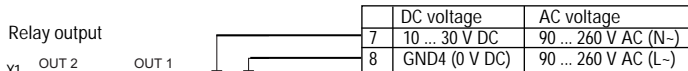
Warning: at 90 ... 260 V AC version. Please apply the power supply after the complete installation. Danger of Death! Please check unit label before applying the power supply.

Optocoupler output

X1 OUT 2 OUT 1
`1 2 3 4 5 6 7 8`

4.4 Interfaces

X3 `1 2 3 4 5`
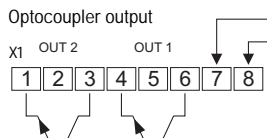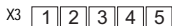
	RS232	RS485	RS422
1	GND	–	–
2	RxD	DO+/RI+	RI+
3	TxD	DO–/RI–	RI–
4	–	–	DO+
5	–	–	DO–

5 Parameter setup

The parameters have to be set up before putting the unit into operation.

– Input parameter

The parameters of the scaling slope must be set up depending on the sensor used.

– Scaling scope

The correspondence between the input signal and the displayed value is given by the scaling slope. The scaling slope is set up by entering pairs of values.

– Totalizer

The decimal point, the factor of the measuring unit, and the scaling of displaying the total value calculated by the unit must be set up.

– Alarms/outputs

Either none, one or two alarm values can be active. Hysteresis and output parameters are also set up. If the set-point is exceeded, a signal will be sent out at the corresponding output and the corresponding LED will be switched on.

The alarms themselves are set up in the operating mode!

– Mains Hum Filter

To reduce operational interference caused by the 50/60 Hz mains supply you can choose the local mains frequency.

5.1 Parameter Mode

To put the unit into set-up mode

1. keep the ⓟ key pressed
2. connect the unit with the power supply
3. When the display shows $\boxed{Pro5}$ release the key.

Getting acquainted with the displays and keys

The selection or the settings can be run through as often as required thanks to the step-through programming method

Menu item:

The display alternates every 2 seconds between

Menu	<–>	Selection
$\boxed{r\,An\,GE}$		$\boxed{0\,.10U}$

Entering into the menu:

Either a selection has to be made or a value has to be set up.

Press the ⬤ key . The display stops alternating.

– Making a selection:

Pressing the ⬤ key displays all the possible settings one after the other.

– Enter the selection:

Press the ⓟ key. The selected parameter will be stored. The next menu item appears

– Entering a value:

$\boxed{0.000\,1}$

The flashing digit indicates that it is enabled for entry.

Press the ⬤ key, the number will be incremented.

Where negative values are permitted, the highest digit will switch from "9" to "−" and only then to "0".
Press the ⊜ key to switch to the next digit.

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

5.2 Input Parameters for Instantaneous value

All set-ups related to the input signal and the corresponding displayed value are carried out here. The displayed value is displayed from the input signal via the scaling slope.

5.2.1 Select range for the input signal

Menu	<–>	Selection		Display range
$r R n G E$	$\boxed{B \ .1BU}$			(−0,500 ... 10,500)
	$\boxed{2 \ .1BU}$	2 ... 10 V		(01,500 ... 10,500)
▲	$\boxed{1B.1BU}$	-10 ... +10 V		(−10,500 ... 10,500)
	$\boxed{B.2B n R}$	0 ... 20 mA		(−01,000 ... 21,000)
	$\boxed{42B n R}$	4 ... 20 mA		(03,000 ... 21,000)
	$\boxed{B \ .1BU}$	0 ... 10 V		(−0,500 ... 10,500)

press key Ⓟ to accept the selection

5.2.2 Set the decimal point for the Instantaneous value

Menu	<–>	Selection	Range
$\boxed{dP}$	$\boxed{B}$		−19999 ... 99999
	$\boxed{B.B}$	0,0	−1999,9 ... 9999,9
▲		0,00	−199,99 ... 999,99
		0,000	−19,999 ... 9999,9
	$\boxed{B.BBBB}$	0,0000	−1,9999 ... 9,9999

press key Ⓟ to accept the selection

The position of the decimal point has no influence on the measuring accuracy. The maximum display value must be within the display range. After the decimal point is set up, the leading zeros in the display will be suppressed.

5.2.3 Changing the Range Limits

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

	Parameter $\boxed{LolnP}$ Possible range of values	Parameter $\boxed{hrlnP}$ Possible range of values
0 .. 10 V	–0.500 ... 10.500	–0.500 ... 10.500
2 .. 10 V	01.500 ... 10.500	01.500 ... 10.500
-10 .. +10 V	–10.500 ... 10.500	–10.500 ... 10.500
0 .. 20 mA	–1.000 ... 21.000	–1.000 ... 21.000
4 .. 20 mA	03.000 ... 21.000	03.000 ... 21.000

If the measured signal falls below or ex-
ceeds the programmed value, then the
display alternates between $\boxed{Lo}$ and
the measured value or between
$\boxed{hr}$ and the the measured value.

Setting values out of the range is not pos-
sible. It is only possible to continue with
the set-up, using the $\boxed{P}$ key, when the
settings are correct.

Lower limit

Menu <–> Selection

$\boxed{LolnP}$	$\boxed{10.000}$	Example: –5.000
$\bigcirc$	$\boxed{10.000}$	Select digit
$\boxed{\triangle}$	$\boxed{-0.000}$	Set digit
$\bigcirc$	$\boxed{-0.000}$	Select digit
$\boxed{\triangle}$	$\boxed{-5.000}$	Set digit

press the $\boxed{P}$ key to accept the selection

When the signal drops below the value
set here, then the signal alternates with
the message $\boxed{Lo}$
Under-range: if the signal is less then
–13,60 V than $\boxed{uuuuu}$ appears in the
display.
Current values < 0.0 mA will not be
measured.

Upper limit

Menu <–> Selection

$\boxed{hrlnP}$	$\boxed{10.000}$	Example: 9,000
$\bigcirc$	$\boxed{00.000}$	Select digit
$\boxed{\triangle}$	$\boxed{09.000}$	Set digit

press the $\boxed{P}$ key to accept the selection

When the signal exceeds the value set
here, then the signal alternates with the
message $\boxed{hr}$

Over-range if the signal is higher than
11.00 V or 21.5 mA, then $\boxed{ooooo}$
appears in the display..

5.2.4 Changing the Scaling Slope

Menu   <-> Selection

`ChArt`	`YES`

Example: Yes

`no`

use the scaling slope curve, ⇒ Chapter 5.4,

`YES`

Enter or alter scaling slope curve ⇒

press the Ⓟ key to accept the selection

5.3 Setting the Scaling Slope

At least two points (2 pairs of value) for the starting and the end points respectively of the characteristic curve are reqquiered. The curve can be ascending or descending.
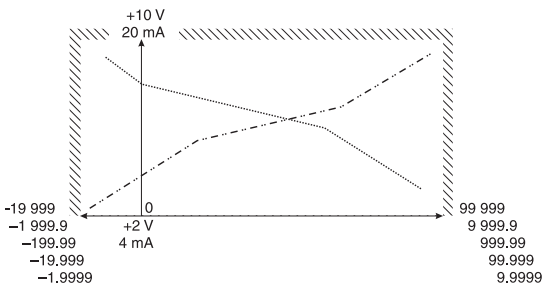At least two points (2 pairs of values) are required for the start point and end point of the scaling slope. This slope can be rising or falling. A maximum of 24 scaling points can be used.

However it should be noted that in all cases, whether the slope rises or falls, the values that are inputted (Inp.01 … InP.24) must increase sequentially.

The scaling slope must lie within the limits of the input and display ranges. The first and last points can lie on the limits.

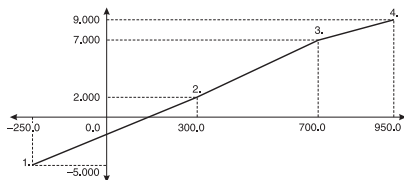**Input range 0 ... 10 V, 2 ... 10 V, 0 ... 20 mA, 4 ... 20 mA**

Display range

Input range –10 ... + 10 V


```
          +10 V
-19 999                               99 999
 -1 999.9                              9 999.9
 -199.99          0                     999.99
  -19.999                               99.999
   -1.9999                               9.9999

          -10 V
                              Display range
```
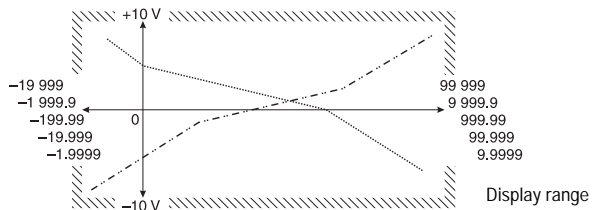
Example with 4 scaling points
For the input range –10 ... +10 V


```
9.000                                    4.
7.000                              3.

2.000                      2.
-250.0    0.0        300.0      700.0    950.0
        1.
     -5.000
```

Scaling point	Input range	Display value
1	–5,000	–250,0
2	2,000	300,0
3	7,000	700,0
4	9,000	950,0

It is advisable to make a note of the desired pairs of values for the scaling points of the slope before starting the set-up.

5.3.1 Enter the number of scaling points

Menu <–> Selection
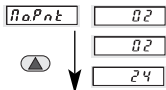
Example: 2
Pressing the ▲ key will increase the value by one. After reaching 24 the value jumps back to 2.

press the Ⓟ key to accept the selection

5.3.2 Define first Scaling point

Firstly set the input value for the start of the slope using the respective unit (mA, V)

Menu <–> Selection

| `InPO1` | `0.0.0.0.0` | Example: –5.000 |

⊜   `0.0.0.0.0`   Select digit

▲   `-5.0.0.0`   Set digit

press the Ⓟ key to accept

Than set the display value for the start of the slope

Menu <–> Selection

| `di5.01` | `0.0.0.0.0` | Example: –250.0 |

⊜   `0.0.0.0.0`   Select digit

▲   `-2.5.0.0`   Set digit

press the Ⓟ key to accept

5.3.3 Define the second scaling point
Set **input value**

Menu <–> Selection

| `InPO2` | `0.0.0.0.0` | Example: 2.000 |
| | `0.2.0.0.0` | |

press the Ⓟ key to accept

Set **display value**

Menu <–> Selection

| `di5.02` | `0.0.0.0.0` | Example: 300.0 |
| | `0.3.0.0.0` | |

press the Ⓟ key to accept

5.3.4 Define further scaling points

Additional scaling points will be requested only, when in section 5.3.1 more than 2

scaling points are defined.

5.4 Totalizer

The totalizer accumulates the input display (instantaneous) values with a sampling rate of 1 per second.

If the measurement signal is out of range `Lo.InP` or `hi.InP`, this is indicated by the display alternating between `totRL` and `Lo` or `totRL` and `hi`.

The totalier continues adding the measurement results. If the measurement signal is out of range, over-range `00000` or under range `uuuuu`, than `totRL` and `00000` or `totRL` and `uuuuu`. appears in the display and the totalizer stops.

If the totalizer value exceeds the range 99999 the display blinks once per second.

Note: In the event of a power failure the totalizer value is saved.

5.4.1 Set the input threshold for the totalizer

This value is always represented with three places after the decimal point. If set to 0.000 (no threshold) all input values are processed by the totalizer.
Note: With the ranges 4 … 20 mA and 2 … 10 V an interruption at the input signal may have the undesired effect that the value in the totalizer goes down;

this is because the input signal has fallen below the lowest input signal and this may be interpreted as a negative instantaneous value.

Menu <–> Selection

`CutoF`	`00000`	Example: 0,100
⊜	`00100`	Select digit
⬆	`00100`	Set digit
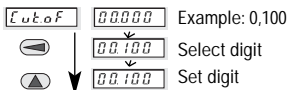
press the Ⓟ key to accept

5.4.2 Totalizer Setup

The totalizer adds up the instantaneous values with a sampling rate of 1 per second. These values, when added together, give a very large resulting number which normally exceeds the display range. Hence, it is necessary to apply a conversion to bring the result within the display range. This is carried out with the help of factors and scaling.
Explanation: If the display shows a value of 12.345 and this is totalled over an hour, then 3.600 values of 12.345 each give a result of 44.442,000. This value can be displayed only if it has been divided by 1.000. Thus the display shows 44.442.

The displayed total value will be derived from the result in the totalizer, leaving the decimal point free to be set as required.

Note: To optimize the accuracy, it is recommended to make use of the full totalizer display range. This is also valid for the instantaneous value so far as it is possible to display the total scaling with a reasonable number of decimal digits (least possible rounding effects).
The totalizer value can be reset (set to 0) either via an electrical signal or manually using the red key.
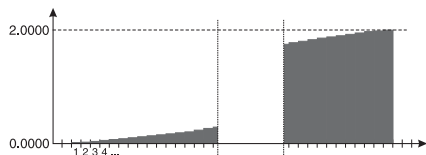
Example 1:

An empty container is filled at an average rate of 10 l/s until a volume of 2 m3 is reached. After this the container is emptied and the total value set (reset) to 0.
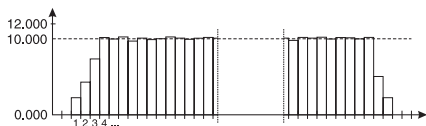
Instantaneous value

Totalizer value

Instantaneous value display	Numerical value at the totalizer input		Number of values		Unscaled result in the totalizer
10.000	10 000	X	200	→	2 000 000

Unscaled result in the totalizer		total scaling		Number at the output of totalizer	Totalizer display
2 000 000	X	1	→	2 000	2000

Possibilities for setting the overall scaling

Factor x Scaling
0,1000 x 10
1,0000 x 1
etc.

Note:

In case it is required to output the totalizer value as weight, the weight per unit volume (specific gravity) can taken into consideration by setting the factor correspondingly.

Example 2:
If a tyre is tested for 1 hour at a speed of 180 km/h, the total distance travelled is 180 km.

Instantaneous value display	Numerical value at the totaizer input		Number of values		Unscaled result in the totalizer
`1800`	180,0	X	3 600	→	648 000,0

Hint:
Since one value is transferred each second, 3600 values are totalled in an hour. In order to make full use of the display range of the totalizer, the expected result will be displayed with two decimal digits. The 180.00 km corresponds to a number of 18 000 at the output of the totalizer.
The total scaling of
648 000.0 : 18 000 = 0.027777...
Is carried out by setting the factor = 2.7778 (rounded) and the scale = 0.01.

Unscaled result in the totalizer		total scaling		Number at the output of totalizer	Totalizer display
648 000,0	X	0,027778	→	18 000	`18000`

5.4.2.1 Setting the decimal point for the totalizer

Menu <–> Selection

`dPtot`   `0`
         `0.000`   max. 3 decimal places

press the (P) key to accept

The decimal point has only a visual effect in the display. It does not influence the result.

5.4.2.2 Overall scaling for the total value

Global scaling	=	Factor	x	scaling
Max. 999.99	=	9.9999	x	100
Min. 0,00001	=	0,0001	x	0,001

Factor and scale influence only the totalizer.

Setting the factor

Menu <–> Selection

`FActo`   `00000`
(⊖)   `00001`   Select digit
(▲)   `99999`   Set digit

press the (P) key to accept

Conversion into other measuring units can be carried out with the factor.

Setting the scaling

Menu <–> Selection

$\boxed{5cRLE}$	$\boxed{100}$	100
	$\boxed{10}$	10
		1
$\triangle$		0,1
		0,01
$\downarrow$	$\boxed{0001}$	0,001

press key $\boxed{P}$ to accept

5.4.3 Resetting the total value

This setting affects the function of the MP input $\implies$ Chapter 4.2, $\boxed{\cdot}$ 9,
Chapter 5.5.1.5, $\boxed{\cdot}$ 22, Chapter 5.5.2.5, $\boxed{\cdot}$ 24 , Chapter 6.4, $\boxed{\cdot}$ 32 and Chapter 6.5, $\boxed{\cdot}$ 32

Menu <–> Selection

$\boxed{rESEt}$ $\boxed{P9REL}$

$\boxed{norES}$ Resetting the totalizer value to 0 is not possible
Note: At the MP input a Display Hold signal can be set. The alarm output can only be reset manually.

$\boxed{ELrES}$ Only electrical resetting of the totalizer value (Reset pulse at MP input)
Note: The Display Hold Function is off.
In the Latch Mode the alarm outputs can only be reseted manually.

$\triangle$ $\boxed{P9RrE}$ Manual Reset to 0, only, using the red key.
Note: At the MP input a Display Hold signal can be set. Resetting the alarm outputs in Latch Mode is only possible electrically.

$\boxed{P9REL}$ Manual Reset with the red key and/or with an electrical pulse at the MP input.
Note: The Display Hold function is off. If the display function $\boxed{totRL}$ is selected, the alarm outputs can be reset electrically.

press the $\boxed{P}$ key to accept the selection

5.5 Alarms/Alarm outputs
One, two or no alarms can be active.

When exceeding	Signal on	LED display	
Alarm 1	Output 1	⌁ 1	on
Alarm 2	Outout 2	⌁ 2	on

5.5.1 Alarm 1/Alarm output 1
5.5.1.1 Alarm 1 off/on
Menu <–> Selection

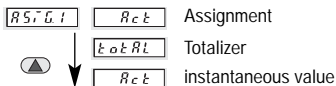| $PrE5t$	on	Example: on
▲	oFF	Alarm 1 not active ⟹ Chapter 5.5.2 ⌐ 23
	on	Alarm 1 active
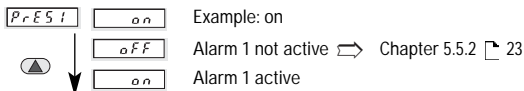
press the Ⓟ key to accept the selection

5.5.1.2 Assign Alarm 1
Menu <–> Selection

$A5rG1$	Act	Assignment
▲	$totAL$	Totalizer
	Act	instantaneous value

The limit value can be assigned either to the totalizer value or the current measured value.

press the Ⓟ key to accept the selection

5.5.1.3 Mode for Alarm output 1
Menu <–> Selection

$Mout1$	$Auto$	
▲	$LAtch$	Latch mode, Latch signal reset at output 1 ⟹ Chapter 5.5.1.5 ⌐ 22
	$Auto$	Auto mode
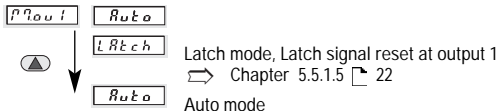
press the Ⓟ key to accept the selection
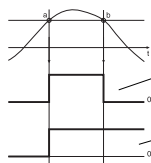
Alarm   a: threshold exceeded
         b: below threshold
Output mode "Auto": automatic resetting of output when the signal falls below threshold, signal set to 0, LED extinguished.

Output mode "Latch": Manual and/or electrical resetting of signal and LED

5.5.1.4 Alarm 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:
Alarm value and hysteresis are always based on the displayed current value and not on the input signal value.
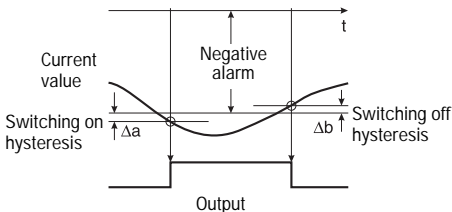
For positive alarm value:
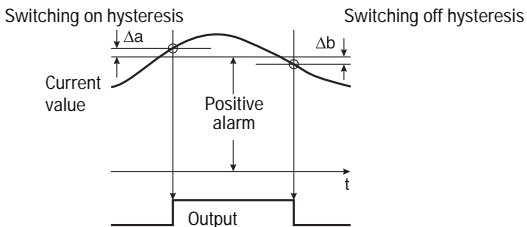
Switching on value = alarm + switching on hysteresis Δa
Switching off value = alarm – switching off hysteresis Δb
The switching on value **must be greater** than the switching off value.

For negative alarm value:

Switching on value = alarm – switching on hysteresis Δa
Switching off value = alarm + 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 alarm 1
Menu <–> Selection

`onh⁥⁥1`	`0 0 0 0 0`	Example 1.0
⬤	`0 0 0 0 0`	Select digit
▲ ▼	`0 0 0 1 0`	Set digit

press the ⓟ key to accept the selection

Set switching off hysteresis Δb for limit 1
Menu <–> Selection

`ofh⁥⁥1`	`0 0 0 0 0`	Example: 1,0
⬤	`0 0 0 0 0`	Select digit
▲ ▼	`0 0 0 1 0`	Set digit, then select signal form for output 1, ⟹
		Chapter 5.5.1.6 ⌐➤ 23

press the ⓟ keey to accept the selection

5.5.1.5 Reset Latch signal at output 1
Menu <–> Selection

`rout1` `ⁿⁿ⁡⁡8n`

    `ⁿⁿ⁡⁡8n`   Manual reset with red key ⬤
Alarm output can only be reset manually if `8ct`, `ⁿ⁡8⁡n` or `ⁿⁿ88x` is selected as the function and is displayed. If `totAL` is selected as the function and is displayed, then the alarm output can only be reset manually if the totalizer reset parameter `rESEt` has been programmed as `norES` or `ELrES`.

    ▲   `ELEct`   Electrical reset with MPI-Input
Alarm output can only be reset electrically, if `8ct`, `ⁿ⁡8⁡n` or `ⁿⁿ88x` is selected as the function and is displayed.
If `totAL` is selected as the function and is displayed, then the alarm output can only be reset electrically if the totalizer reset parameter `rESEt` a `norES` has been programmed as `ⁿⁿ8rE`.
Note: The Display Hold funktion is off.

    `EL.ⁿⁿ8`   Both manual and electrical reset
Alarm output can either be reset manually via the red key or via a reset pulse on the MP input. If `totAL` is selected as the function and is displayed, then the alarm output can only be reset manually and/or electrically if the totalizer reset parameter `rESEt` is programmed as `norES`.
Note: The Display Hold function is off.

press the ⓟ key
to accept

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5.5.1.6 Select Signal Form for Output 1

Menu <–> Selection

| `Out 1` | `_ _ r _ _` |

    `_ _ r _ _`
Positive output signal
Output is **activated**, when the instantaneous
value ≥ alarm 1

   `_ _ L _ _`
Negative output signal
Output is **deactivated**, when the instantaneous
press the Ⓟ key value ≥ limit 1.
to accept

5.5.2 Alarm 2/Alarm output 2
5.5.2.1 Alarm2 on / off
Menu <–> Selection

| `PrES2` | `on` | Example: on |

    `oFF`   Alarm 2 not activated, ⟹ Chapter 5.6, 🔖 25

   `on`   Alarm 2 not activated, press the Ⓟ key to accept the selection

5.5.2.2 Assign Alarm 2

Menu <–> Selection

| `AS, G2` | `Act` | Example: on |

    `totAL`   Totalizer

   `Act`   instantaneous value, press the Ⓟ key to accept the selection

5.5.2.3 Mode for Alarm output 2
Menu <–> Selection

| `Mou2` | `Auto` | Example: on |

    `LAtch`   Reset Latch mode, Latch signal at output 2
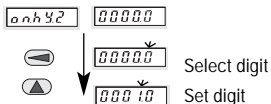   ⟹ Chapter 5.5.2.5 , 🔖 24

   `Auto`   Auto mode

press the Ⓟ key to accept the selection

5.5.2.4 Hysteresis for Alarm 2
Set switching on hysteresis Δa for Alarm 2
Menu <–> Selection

`onhY2`   `0 0 0 0.0`

⊜   `0 0 0 0.0`   Select digit

▲   `0 0 0 1.0`   Set digit

press the ⓟ key to accept the selection

Set switching off hysteresis Δb for Alarm 2
Menu <–> Selection

`oFhY2`   `0 0 0 0.0`

⊜   `0 0 0 0.0`   Select digit

▲   `0 0 0 1.0`   Set digit ⟹ Chapter 5.5.2.6 select signal for output 2

press key ⓟ to accept

5.5.2.5 Reset Latch signal at Output 2
Menu <–> Selection

`LAtch`   `MAn`

`MAn`   Manual reset with red key ⊜
Alarm output can only be reset manually if `Act`, `MIn` or `MAX` is selected.. If `totAL` is selected as the function and is displayed, then the alarm output can only be reset manually if the totalizer reset parameter "rESEt" has been programmed for "no.rES" or "EL.rE" .

▲   `ELEct`   Electrical reset with MPI-Input
Alarm output can only be reset electrically, if `Act`, `MIn` or `MAX` is selected as the function and is displayed.
If `totAL` is selected as the function and is displayed, then the alarm output can only be reset electrically if the totalizer reset parameter `rESEt` a `norES` has been programmed as `MArE` .
Note: The Display Hold funktion is off.

`EL.MA`   Both, manual and electrical reset
Alarm output can either be reset manually via the red key or via a reset pulse on the MP input. If `totAL` is selected as the function and is displayed, then the alarm output can only be reset manually and/or electrically if the totalizer reset parameter `rESEt` is programmed as `norES` .
Note: The Display Hold function is off.

press the ⓟ key
to accept

5.5.2.6 Select signal form for output 2

Menu <–> Selection

| `Out 1` | `__ r __` |

`__ r __` Positiv output signal
Output is **activated**, when the instantaneous
value ≥ limit 1

`__ L __` Negativ output signal
Output is **deactivated**, when the instantaneous
press the Ⓟ key to value ≥ limit 1.
accept

5.6 MIN/MAX value acquisition
The maximum value may be captured, saved and consulted during operation
by pressing a key.

5.6.1 Capture of MIN/MAX Values

Menu <–> Selection

| `MMAX` | `YES` | Example: Yes |

`no` Not monitored ⟹ Chapter 5.6.2 , ⌐ 25

`YES` Monitored and saved.

press the Ⓟ key to accept the selection

5.6.1.1 Reset Maximum value
Menu <–> Selection

| `MMAX` | `YES` | Example: Yes |

`no` not resettable

`YES` Resettable via the ⬤ key .

press the Ⓟ key to The MAX value can only be cleared by pressing the red key. In addition
accept "MAX" must be selected as the display source. In parameter set-up "r.MAX"
must be programmed as "YES"

5.6.2 MIN Value Monitor
Menu <–> Selection

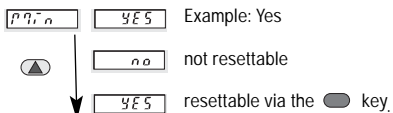| `MMin` | `YES` | Example: Yes |

`no` Not monitored ⟹ Chapter 5.7 , ⌐ 26

`YES` Monitored and saved.

press the Ⓟ key to accept the selection

5.6.2.1 Reset Minimum value

Menu <–> Selection

| $\boxed{P\,q_{\overline{\tau}}\,n}$ | $\boxed{3\,E\,5}$ | Example: Yes |

   $\boxed{\blacktriangle}$ $\boxed{n\,o}$ not resettable

           $\boxed{3\,E\,5}$ resettable via the ⬤ key

press the Ⓟ key
to accept

The MIN value can only be cleared by pressing the red key. In addition "MIN" must be selected as the display source. In parameter set-up "r.MIN" must be programmed as "YES"

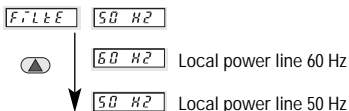### 5.6.3 Effects resulting from exceeding the measuring range limits or of Overload/Underload on MIN/MAX.

If the signal measured lies outside the measuring range limits $\boxed{L\,o\,\overline{\tau}\,n\,P}$ or $\boxed{h\,\overline{\tau}\,\overline{\tau}\,n\,P}$ then the current measured value will be recorded either as a MIN value $\boxed{u\,u\,u\,u\,u}$ or as a MAX value $\boxed{o\,o\,o\,o\,o}$. If the signal is in an overload or underload condition, then it will be saved either as as a MIN value $\boxed{u\,u\,u\,u\,u}$ or as a MAX value $\boxed{o\,o\,o\,o\,o}$ . .

5.7 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

| $\boxed{F\,\overline{\tau}\,L\,E\,E}$ | $\boxed{5\,B\quad H\,\overline{c}}$ |

   $\boxed{\blacktriangle}$ $\boxed{6\,B\quad H\,\overline{c}}$ Local power line 60 Hz

           $\boxed{5\,B\quad H\,\overline{c}}$ Local power line 50 Hz

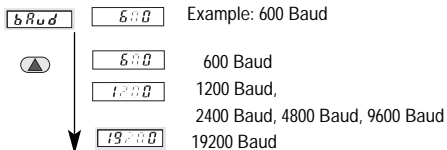press the Ⓟ key to accept the selection

5.8 Interface

As an option the instrument can be supplied with a serial interface, either RS232, RS485 or RS422. Using a PC, then all the unit's parameters can be read or programmed via this interface.

A more detailed description of the commands can be found in the separate instruction manual "CODIX 55x Interfaces". This manual is supplied with units having an interface. When the unit is powered up, then the type of interface will appear in the display for approx. 2 sec.
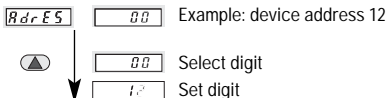
5.8.1 Select Baud Rate
Menu <–>Selection

| `bAud` | `600` | Example: 600 Baud |

▲	`600`	600 Baud
	`1200`	1200 Baud,
		2400 Baud, 4800 Baud, 9600 Baud
	`19200`	19200 Baud

press the Ⓟ key to accept the selection

5.8.2 Select address
Menu <–> Selection

| `AdrES` | `00` | Example: device address 12 |

| ▲ | `00` | Select digit |
| | `12` | Set digit |

press the Ⓟ key to accept the selection

5.9 Setting Default Values

The user has the possibility to set all parameters back to their default values by using the parameter `dEFc` . This parameter `dEFc` must be programmed with the value `07499` If you then proceed to the next parameter using the keys, then all parameters are reset to their default values. It is not necessary to finish the programming: a new programming cycle can take place immediately.

Menu <–> Selection

| `dEFc` | `00000` |

| ▲ | `00000` | Select digit |
| | `07499` | Set digit |
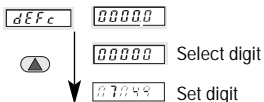
press the Ⓟ key to accept the selection

5.10 End of Setup Yes/No?
Menu <–> Selection

| `EndPr` | `YES` |

| ▲ | `YES` | Parameters will be stored -> Operation |
| | `no` | Check/alter Parameters ⟹ Chapter 5.11, ▯ 28 |
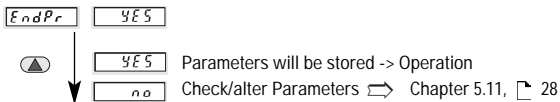
press the Ⓟ key to accept the selection

5.11 Check/Alter Parameters

Menu <–> Selection

r̄ AnGE	

Checking the individual menu items
* after every 2 seconds the menu changes to Selection
* If the setting is as desired, then switch to the next menu with ⓅP key, otherwise, start the set-up again.

6 Operation

The unit is in the operating mode, when the power supply is switched on or at the end of the set-up.

One of the following will be displayed during operation.

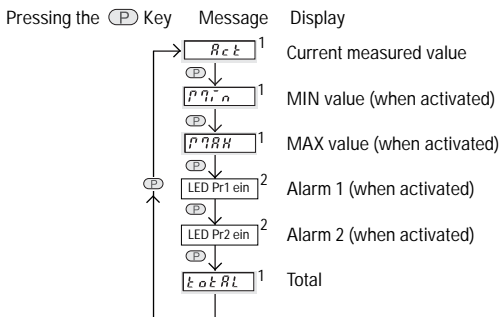| 326.81	326.81 The measuring signal has been applied and lies within the limits of the measuring range. The display will show either the current	measured value, the totalizer value, the MAX value or the MIN value.
Lo	The input value is below the lower limit of the measuring range. This message alternates with the	current measured value or with the value of the totalizer.
hi⁻	⁻ The input value is higher than the upper limit of the measuring range. This message alternates with the	current measured value or with the value of the totalizer.
uuuuu	The input value is less than -13.6 V. Current inputs below 0.0 mA are not measured.	
ooooo	The input value is higher than 11.0 V or above 21.5 mA	

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6.1 Changing the Display during Operation

Pressing the P key once for 2 sec will identify the function currently selected. If within these 2 sec the P key is pressed again, then the display will proceed to

the next display function. The new identification will be displayed for 2 sec to confirm this. After 2 sec the corresponding value of the selected function will be displayed.

Pressing the ⓟ Key   Message   Display

$\boxed{R c t}$ [1] Current measured value

ⓟ↓

$\boxed{P\,9\,\bar{\imath}\,o}$ [1] MIN value (when activated)

ⓟ↓

$\boxed{P\,9\,8\,H}$ [1] MAX value (when activated)

ⓟ↓

$\boxed{\text{LED Pr1 ein}}$ [2] Alarm 1 (when activated)

ⓟ↓

$\boxed{\text{LED Pr2 ein}}$ [2] Alarm 2 (when activated)

ⓟ↓

$\boxed{t\,o\,t\,R\,L}$ [1] Total

[1]Following actuation the corresponding value of the chosen function remains in the display. During a PowerOff the function currently selected will be saved. At the next PowerOn the corresponding value of this function will be shown again in the display.

[2]After 4 sec the display automatically switches back to the current measured value and the LED indicators Pr1 or Pr2 are turned off.

Note:
When an alarm value is shown in the display, its set value can be changed.

This can be prevented by disabling the panel keys using the "Key" lock.

6.2 Setting the Alarms during Operation

When an alarm value is shown in the display, its set value can be changed.

Note: the "key-lock" should not be enabled.

Alarm 1 is displayed. LED 'Pr1' is illuminated

Set Alarm

Display   Action

$\overline{8888}$

⊜   Select digit position and
▲   set digit.

$\overline{3888}$ Example: 300.0

press the Ⓟ key to accept and go to Alarm 2

Alarm 2 is displayed. LED 'Pr2' is illuminated

Set Alarm
Display   Action

$\overline{8888}$

⊜   Select digit position and
▲   set digit.

$\overline{8888}$ Example 800.0

press the Ⓟ key to accept the selection

6.3 Resetting MIN/MAX value

Resetting is only possible if this has been enabled in the parameter mode.

Select Min/Max value display
• press the red key.
• the stored value is cleared

6.4 Resetting the Totalizer

Resetting is possible only if the MP input has been programmed for the Reset function.

Depending on the setting, the resetting is carried out either manually with the red key, and /or electrically with a high pulse (> 4V; > 5 ms)at the reset input.

Reset:
- Ensure the totalizer value is shown in the display
- Press the red key and/or apply a high-level pulse at the MP input
- The value in the totalizer will be cleared

6.5 Display Hold

The Display Hold function is only available for use with the current measured value and for the totalizer value.
For as long as a high level signal (> 4 V DC) is present at the MP input, then the display is "frozen".

The MIN/MAX capture, alarm monitoring and totalizer functions continue in the background.

The Display Hold function is only active with the following parameter settings:

	Parameter	Settings
Reset totalizer value	$r E 5 E t$	$n o r E 5$ or $P P R r E$
And		
Alarms	$P r E S i$ / $P r E S 2$	$o f f$
Reset totalizer value	$r E 5 E t$	$n o r E 5$ or $P P R r E$
And		
Alarms	$P r E S i$ / $P r E S 2$	$o n$
Output Mode	$P P o u i$ / $P P o u 2$	$R u t o$
Reset totalaizer value	$r E 5 E t$	$n o r E 5$ or $P P R r E$
And		
Alarms	$P r E S i$ / $P r E S 2$	$o n$
Output Mode	$P P o u i$ / $P P o u 2$	$L R t c h$
Reset-Alarm-Latch	$r o u t i$ / $r o u t 2$	$P P R n$