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# User manual M3

Pt100 3-/4-wire -200,0°C...850,0°C / -328,0°F...1562,0°F



## Technical features:

- 5-digit red display °C/°F (optional: green, orange or blue display)
- small installation depth: 120 mm without plug-in terminal
- adjustment via factory default or directly on the sensor signal
- min-/max-memory
- 30 additional adjustable setpoints (parameter driven)
- display flashing at threshold exceedance/ undercut
- zero-key for actuation of HOLD & TARA
- permanent min/max value recording
- volume metering (totaliser)
- mathematical functions like reciprocal value, square root, square and rounding
- programming interlock via access code
- protection class IP65 at the front side
- plug-in terminal
- optional 2 or 4 relay outputs
- optional sensor supply
- optional 1 or 2 analog outputs
- optional galv. insulated digital input
- optional RS232 or RS485 interface
- accessories: PC-based configuration-kit with CD & USB-adapter for devices without keypad and for a simple adjustment of standard devices

## Identification

STANDARD TYPES	ORDER NUMBER
Pt100 3-/4-wire	<b>M3-1TR5B.010C.470AD</b>
Housing size: 96x48 mm	<b>M3-1TR5B.010C.570AD</b>
	<b>M3-1TR5B.010C.670AD</b>

Options – breakdown of order code:

	M	3	-	1	T	R	5	B.	0	1	0	C.	6	7	2	A	D	
<b>Standard type M-line</b>																		
<b>Installation depth mm</b> 139 mm, incl. plug-in terminal																		<b>Dimension</b> D physical unit
<b>Housing size</b> 96x48x120 mm (BxHxD)																		<b>Version</b> A
<b>Type of display</b> Temperature																		<b>Setpoints</b> 0 no setpoints 2 2 relay outputs 4 4 relay outputs 8 8 PhotoMos-outputs
<b>Display colour</b> Blue Green Red Orange																		<b>Protection class</b> 1 without keypad, operation on the back side 7 IP65 / plug-in terminal
<b>Number of digits</b> 5-digit																		<b>Supply voltage</b> 4 115 VAC 5 230 VAC 6 10-30 VDC galv. insulated
<b>Digit height</b> 14 mm																		<b>Measuring input</b> C PT100
<b>Digital input</b> without 1 digital input Interface RS232 Interface RS485																		<b>Analog output</b> 0 without X 1x 0-10 VDC, 0/4-20 mA Y 2x 0-10 VDC, 0/4-20 mA
<b>Temperature devices</b> PT100 3-/4-wire																		

Please state physical unit by order, e.g. m/min.

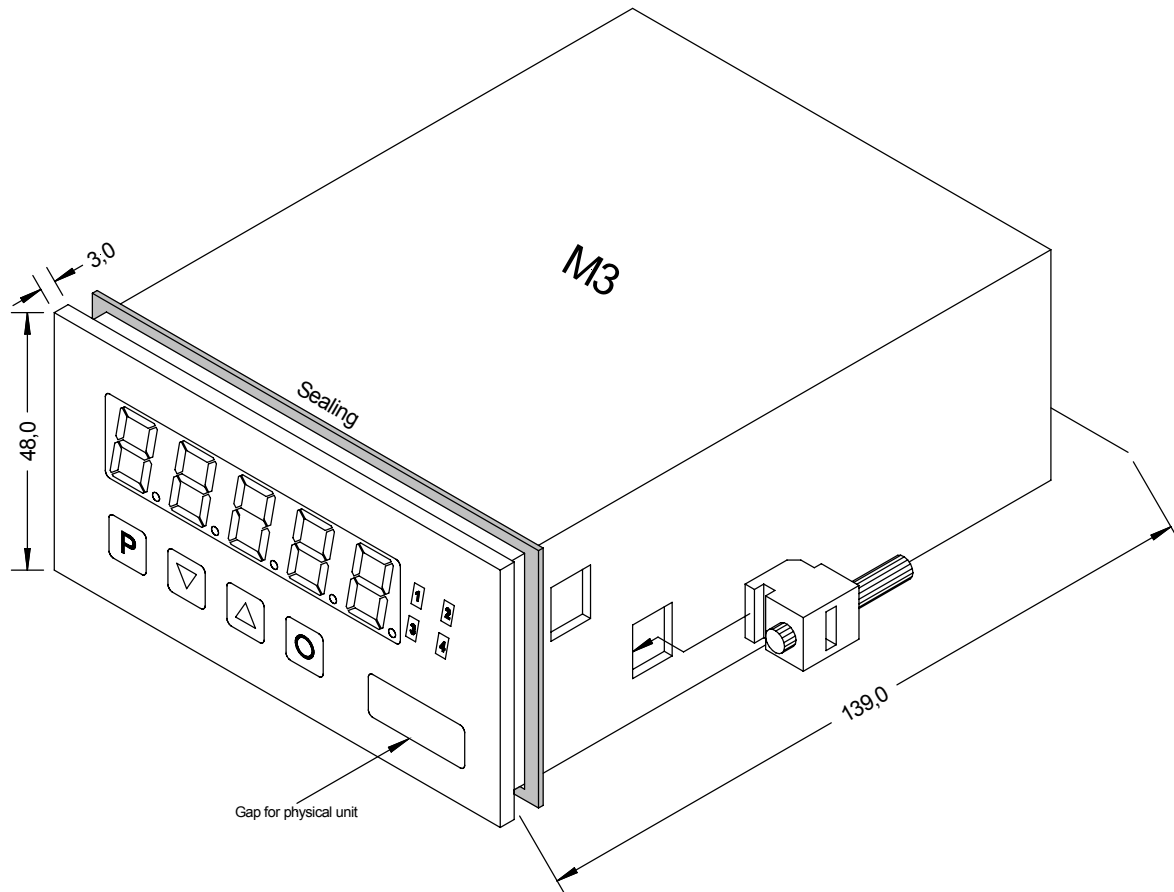
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## 1. Assembly

Please read the *Safety advice* on page 29 before installation and keep this user manual for future reference.



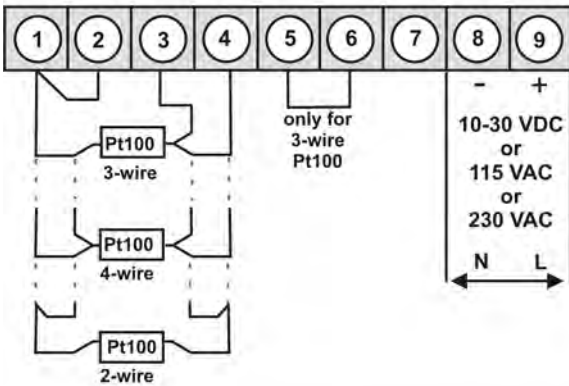
1. After removing the fixing elements, insert the device.
2. Check the seal to make sure it fits securely.
3. Click the fixing elements back into place and tighten the clamping screws by hand. Then use a screwdriver to tighten them another half a turn.

**CAUTION!** The torque should not exceed 0.1 Nm!

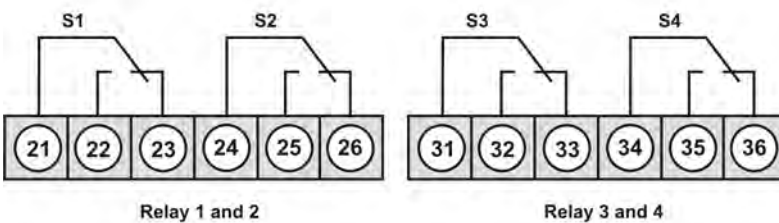
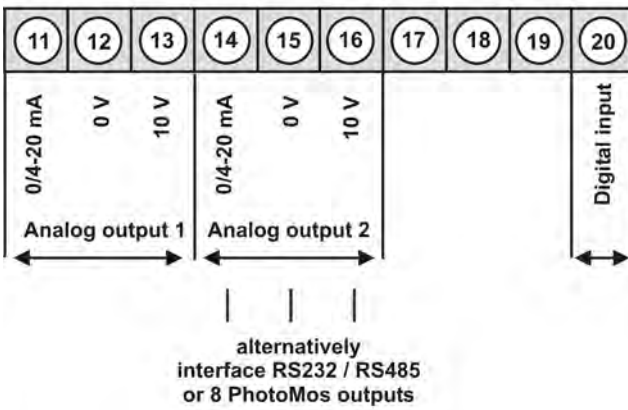
**The dimension symbols can be exchanged before installation via a channel on the side!**

## 2. Electrical connection

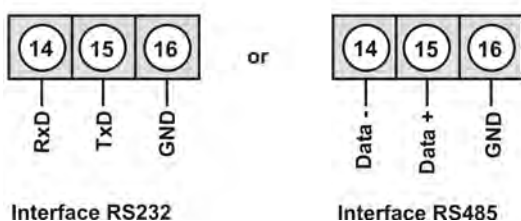
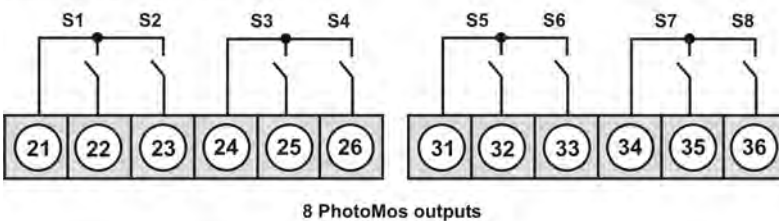
Type M3-1TT5B.010C.470AD with a supply of 115 VAC  
 Type M3-1TT5B.010C.570AD with a supply of 230 VAC  
 Type M3-1TT5B.010C.670AD with a supply of 10-30 VDC



Options:



Alternative to analog output 2



### 3. Function and operation description

#### Operation

The operation is divided into three different levels.

#### Menu level (delivery status)













This level is for the standard settings of the device. Only menu items which are sufficient to set the device into operation are displayed. To get into the professional level, run through the menu level and parameterise “*PROF*” under menu item *RUN*.

#### Menu group level (complete function volume)

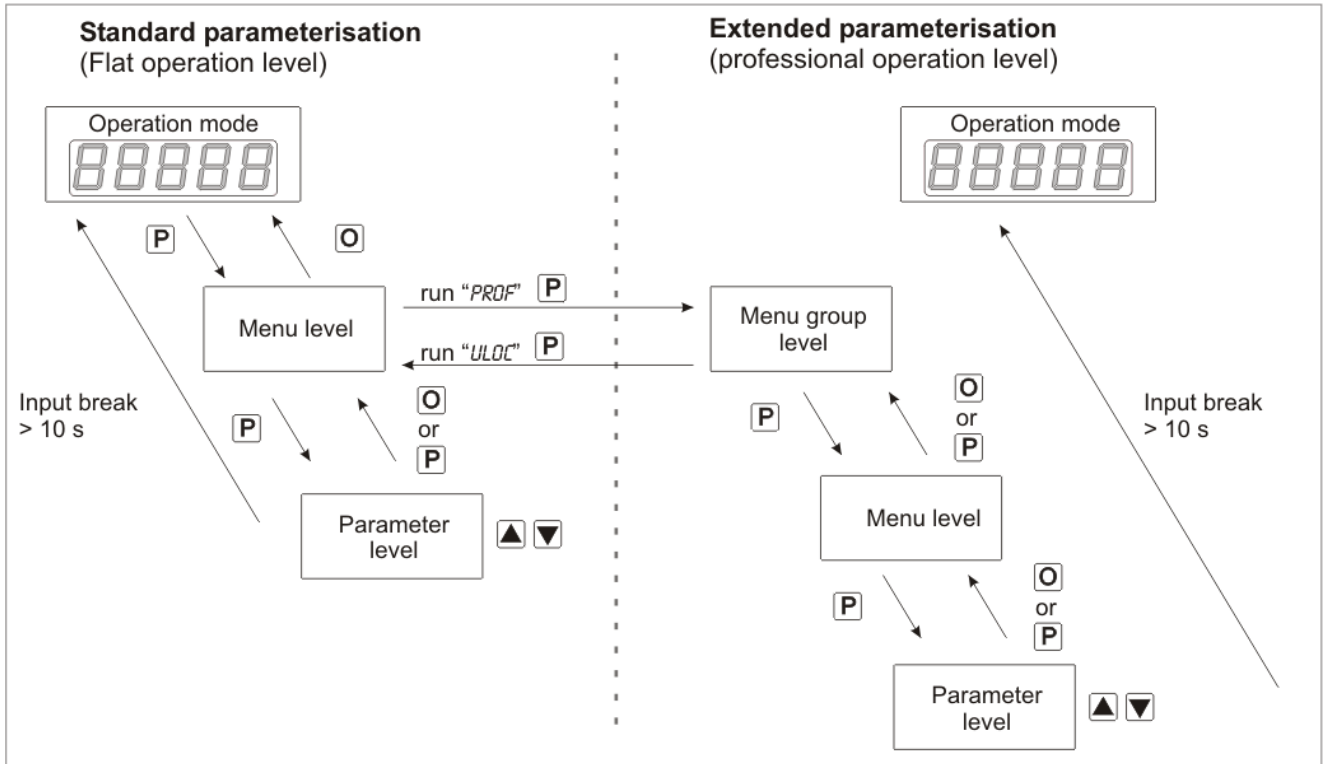
Suited for complex applications as e.g. linkage of alarms, setpoint treatment, totaliser function etc. In this level function groups which allow an extended parameterisation of the standard settings are available. To leave the menu group level, run through this level and parameterise “*ULOC*” under menu item *RUN*.

#### Parameterisation level:

Parameter deposited in the menu item can here be parameterised. Functions, that can be changed or adjusted, are always signalled by a flashing of the display. Settings that are made in the parameterisation level are confirmed with [P] and thus saved. By pressing the [O]-key (zero-key) it leads to a break-off of the value input and to a change into the menu level. All adjustments are saved automatically by the device and it changes into operating mode, if no further key operation is done within the next 10 seconds.

Level	Key	Description
Menu-level		Change to parameterisation level and deposited values.
	 	Keys for up and down navigation in the menu level.
		Change into operation mode.
Parameterisation-level		To confirm the changes made at the parameterization level.
	 	Adjustment of the value / the setting.
		Change into menu level or break-off in value input.
Menu-group-level		Change to menu level.
	 	Keys for up and down navigation in the menu group level.
		Change into operation mode or back into menu level.

**Function chart:**



**Underline:**

- P** Takeover
- O** Stop
- ▲** Value selection (+)
- ▼** Value selection (-)

## 4. Setting up the device

### 4.1. Switching on

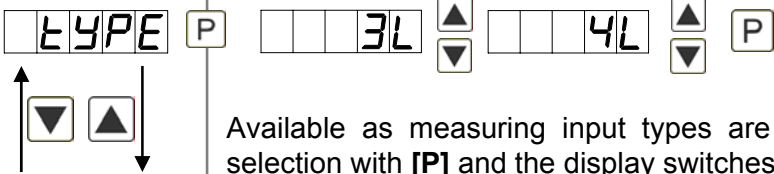
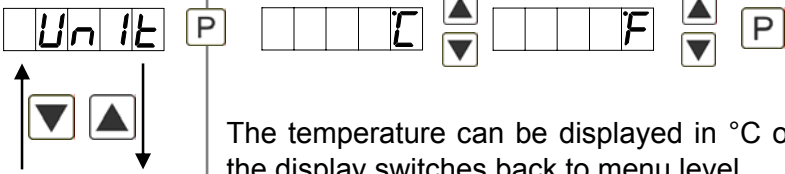
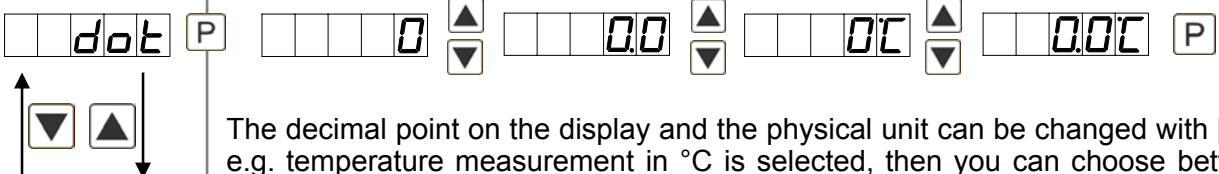
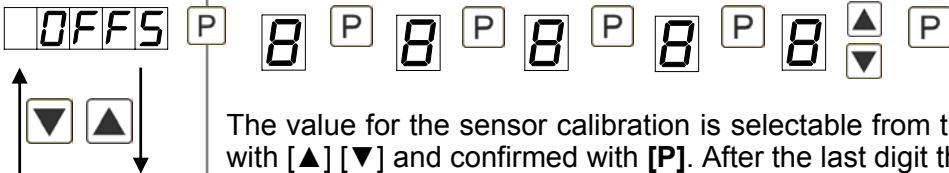
Once the installation is complete, you can start the device by applying the voltage supply. Before, check once again that all electrical connections are correct.

#### Starting sequence



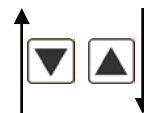

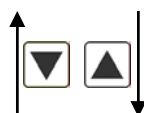

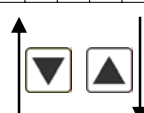



For 1 second during the switching-on process, the segment test (8 8 8 8 8) is displayed followed by an indication of the software type and, after that, also for 1 second the software version. After the starting sequence, the device switches to operation/display mode.




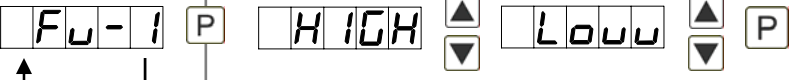






### 4.2. Standard parameterisation: (Flat operation level)

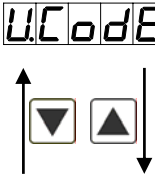

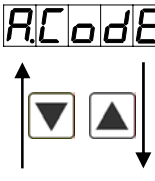

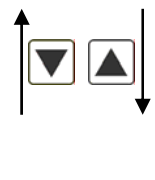

To parameterise the display, press the **[P]** key in operating mode for 1 second. The display then changes to the menu level with the first menu item *TYPE*.

Menu level	Parameterisation level
	<p><b>Selection of the input signal, <i>TYPE</i>:</b> Default: 4L</p> <p>Available as measuring input types are 3- and 4-wire-Pt100 signals. Confirm the selection with <b>[P]</b> and the display switches back to menu level.</p>
	<p><b>Type of temperature metering <i>UNIT</i>:</b> Default: °C</p> <p>The temperature can be displayed in °C or in °F. Confirm the selection with <b>[P]</b> and the display switches back to menu level.</p>
	<p><b>Setting the decimal point, <i>DOT</i>:</b> Default: 0.0</p> <p>The decimal point on the display and the physical unit can be changed with <b>[▲]</b> <b>[▼]</b>. If e.g. temperature measurement in °C is selected, then you can choose between 0°C and 0.0°C in the parameterisation level. Confirm with <b>[P]</b>, the display then switches back to the menu level again.</p>
	<p><b>Impedance matching, <i>DOT</i>:</b> Default: 0.0</p> <p>The value for the sensor calibration is selectable from the smallest to the highest digit with <b>[▲]</b> <b>[▼]</b> and confirmed with <b>[P]</b>. After the last digit the display switches back to the menu level again. The value calibration for a temperature measurement in °C can be adjusted between -20.0 and +20.0 and in °F between -36.0 and +36.0. If the type of the measurement is changed later, then the value is rounded.</p>



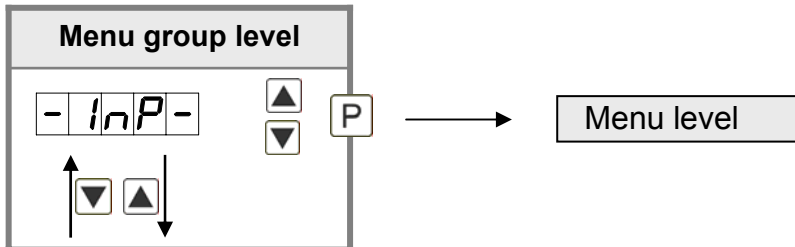
Menu level	Parameterisation level
	<p><b>Setting the display time, SEC:</b> Default: 1.0</p> <p>  </p> <p>The display time is set with [▲] [▼]. The display moves up in increments of 0.1 up to 1 second and in increments of 1.0 to 10.0 seconds. Confirm the selection by pressing the [P] button. The display then switches back to the menu level again.</p>
	<p><b>Selection of analog output, OUT.RA:</b> Default: 4-20</p> <p>  </p> <p>Three output signals are available: 0-10 VDC, 0-20 mA and 4-20 mA, with this function, the demanded signal is selected.</p>
	<p><b>Setting up the final value of the analog output, OUT.EN:</b> Default: 850.0</p> <p>  </p> <p>The final value is adjusted from the smallest digit to the highest digit with [▲] [▼] and digit by digit confirmed with [P]. A minus sign can only be parameterised on the highest digit. After the last digit, the device changes back into menu level.</p>
	<p><b>Setting up the initial value of the analog output, OUT.OF:</b> Default: -200.0</p> <p>  </p> <p>The initial value is adjusted from the smallest digit to the highest digit with [▲] [▼] and digit by digit confirmed with [P]. A minus sign can only be parameterised on the highest digit. After the last digit, the device changes back into menu level.</p>
	<p><b>Threshold values / Limits, LI-1:</b> Default: 200.0</p> <p>  </p> <p>This value defines the threshold, that activates/deactivates an alarm.</p>

Menu level	Parameterisation level
	<p><b>Hysteresis for limit values, HY-1:</b> Default: 0.0</p> <p>  </p> <p>The delayed reaction of the alarm is the difference to the threshold value, which is defined by the hysteresis.</p>
	<p><b>Function for threshold value undercut /exceedance, FU-1:</b> Default: HIGH</p> <p>  </p> <p>A limit value undercut is selected with <i>LOW</i> (for LOW = lower limit value), a limit value exceedance with <i>HIGH</i> (for HIGH = higher limit value). If e.g. limit value 1 is on a threshold level of 100 and allocated with function <i>HIGH</i>, an alarm is activated by reaching of the threshold level. If the threshold value was allocated to <i>LOW</i>, an alarm will be activated by undercutting the threshold value, as long as the hysteresis is zero.</p>
	<p><b>Limit value /Limits, LI-2:</b> Default: 300.0</p> <p>  </p> <p>For both limit values, two different values can be parameterized. With this, the parameters for each limit value are called up one after another.</p>
	<p><b>Hysteresis for limit values, HY-2:</b> Default: 0.0</p> <p>  </p> <p>For all limit values, a hysteresis function exists that reacts according to the settings (threshold exceedance / threshold undercut).</p>
	<p><b>Function if display falls below / exceeds limit value, FU-2:</b> Default: HIGH</p> <p>  </p> <p>To indicate if the value falls below the lower limit value, <i>LOW</i> can be selected (LOW = lower limit value) and if it goes above the upper limit value, <i>HIGH</i> can be selected (HIGH = upper limit value). LOW corresponds to the quiescent current principle and HIGH to the operating current principle.</p>

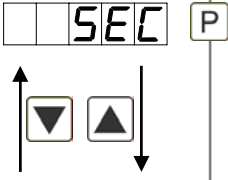

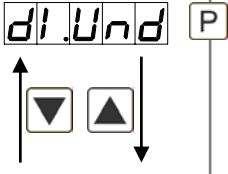

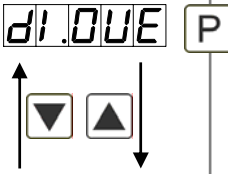

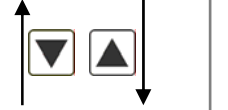
Menu level	Parameterisation level
	<p><b>User code (4-digit number-combination, free available), <i>U.CODE</i>:</b> Default: 0000</p>  <p>If this code was set (&gt;0000), all parameters are locked for the user, if <i>LOC</i> has been selected before under menu item <i>RUN</i>. By pressing [<b>P</b>] for 3 seconds in operation mode, the display shows <i>CODE</i>. The <i>U.CODE</i> needs to be entered to get to the reduced number of parameter sets. The code has to be entered before each parameterisation, until the <i>R.CODE</i> (Master code) unlocks all parameters again.</p>
	<p><b>Master code (4-digit number-combination, free available), <i>R.CODE</i>:</b> Default: 1234</p>  <p>All parameters can be unlocked with this code, after <i>LOC</i> has been activated under menu item <i>RUN</i>. By pressing [<b>P</b>] for 3 seconds in operation mode, the display shows <i>CODE</i> and enables the user to reach all parameters by entering the <i>R.CODE</i>. Under <i>RUN</i> the parameterisation can be activated permanently by selecting <i>ULOC</i> or <i>PROF</i>, thus at an anew pushing of [<b>P</b>] in operation mode, the code needs not to be entered again.</p>
	<p><b>Activation / deactivation of the programming lock or completion of the standard parameterization with change into menu group level (complete function range), <i>RUN</i>:</b> Default: <i>ULOC</i></p>  <p>With the navigation keys [<b>▲</b>] [<b>▼</b>], you can choose between the deactivated key lock <i>ULOC</i> (works setting) and the activated key lock <i>LOC</i>, or the change into the menu group level <i>PROF</i>. Confirm the selection with [<b>P</b>]. After this, the display confirms the settings with "- - - -", and automatically switches to operating mode. If <i>LOC</i> was selected, the keyboard is locked. To get back into the menu level, press [<b>P</b>] for 3 seconds in operating mode. Now enter the <i>CODE</i> (works setting 1 2 3 4) that appears using [<b>▲</b>] [<b>▼</b>] plus [<b>P</b>] to unlock the keyboard. <i>FAIL</i> appears if the input is wrong. To parameterize further functions <i>PROF</i> needs to be set. The device confirms this setting with „- - - -“, and changes automatically in operation mode. By pressing [<b>P</b>] for approx. 3 seconds in operation mode, the first menu group <i>IMP</i> is shown in the display and thus confirms the change into the extended parameterisation. It stays activated as long as <i>ULOC</i> or <i>LOC</i> is entered in menu group <i>RUN</i>.</p>

### 4.3. Extended parameterisation (Professional operation level)

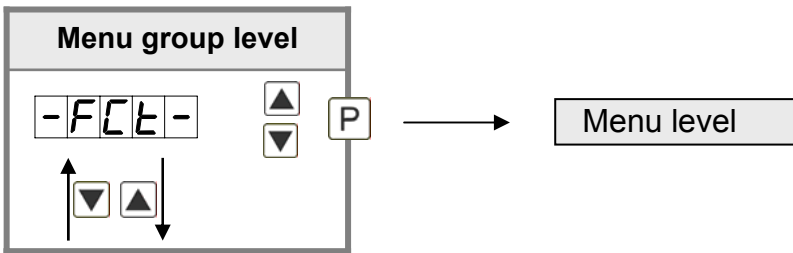
#### 4.3.1. Signal input parameters



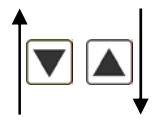
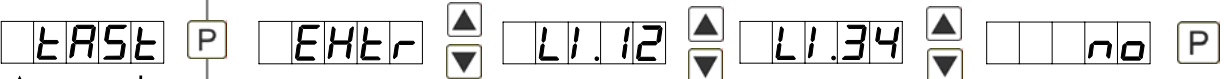
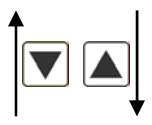
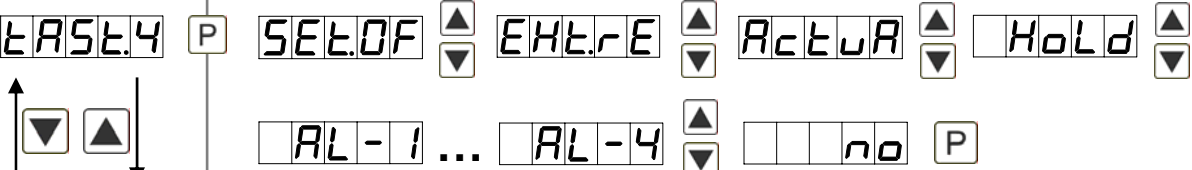
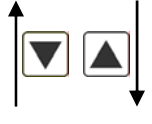
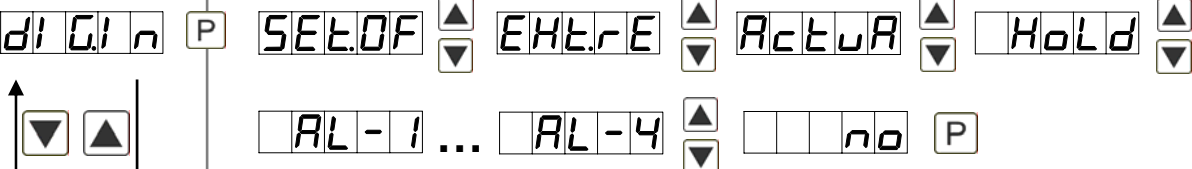
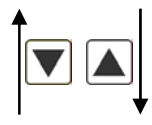
Menu level	Parameterisation level
	<p><b>Selection of the input signal, <i>TYPE</i>:</b> Default: 4L</p> <p>Available as measuring input types are 3- and 4-wire-Pt100 signals. Confirm the selection with <b>[P]</b> and the display switches back to menu level.</p>
	<p><b>Type of temperature metering <i>UNIT</i>:</b> Default: °C</p> <p>The temperature can be displayed in °C or in °F. Confirm the selection with <b>[P]</b> and the display switches back to menu level.</p>
	<p><b>Setting the decimal point, <i>DOT</i>:</b> Default: 0.0</p> <p>The decimal point on the display and the physical unit can be changed with <b>[▲]</b> <b>[▼]</b>. If e.g. temperature measurement in °C is selected, then you can choose between 0°C and 0.0°C in the parameterisation level. Confirm with <b>[P]</b>, the display then switches back to the menu level again.</p>
	<p><b>Impedance matching, <i>DOT</i>:</b> Default: 0.0</p> <p>The value for the sensor calibration is selectable from the smallest to the highest digit with <b>[▲]</b> <b>[▼]</b> and confirmed with <b>[P]</b>. After the last digit the display switches back to the menu level again. The value calibration for a temperature measurement in °C can be adjusted between -20.0 and +20.0 and in °F between -36.0 and +36.0. If the type of the measurement is changed later, then the value is rounded.</p>

Menu level	Parameterisation level
	<p><b>Setting the display time, SEC:</b> Default: 1.0</p>  <p>The display time is set with [▲] [▼]. The display moves up in increments of 0.1 up to 1 second and in increments of 1.0 to 10.0 seconds. Confirm the selection by pressing the [P] button. The display then switches back to the menu level again.</p>
	<p><b>Display underflow, DI.UND:</b> Default: -19999</p>  <p>With this function the device undercut (_____) can be defined on a definite value.</p>
	<p><b>Display overflow, DI.OUE:</b> Default: 99999</p>  <p>With this function the display overflow (~~~~) can be defined on a definite value.</p>
	<p><b>Back to menu group level, RET:</b></p> <p>With [P] the selection is confirmed and the device changes into menu group level „-INP-“.</p>

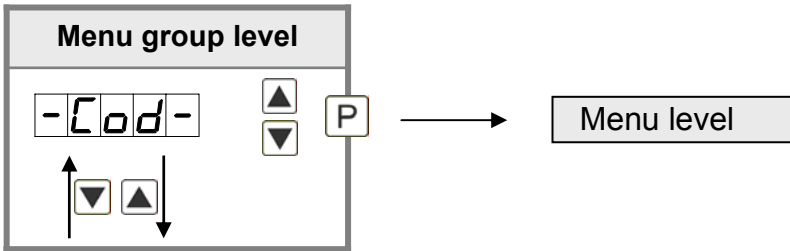
### 4.3.2. General device parameters



Menu level	Parameterisation level
	<p><b>Display time, <i>DISC</i>:</b> Default: 01.0</p> <p>di.SEC P    00.1    00.9    then    0.10    10.0 P</p> <p>The display is set up with [▲] [▼]. Thereby it switches until 1 second in increments of 0.1 seconds and until 10.0 seconds in increments of 1.0. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p><b>Rounding of display values, <i>ROUND</i>:</b> Default: 00001</p> <p>round P    00001    00005    00010    00050 P</p> <p>This function is for instable display values, where the display value is changed in increments of 1-, 5-, 10- or 50. This does not affect the resolution of the optional outputs. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p><b>Display, <i>DISPL</i>:</b> Default: ACTUA</p> <p>di SPL P    ActUA    MinUA    MaxUA    Hold P</p> <p>With this function the current measurand, Min-/Max value or the process-controlled Hold-value can be allocated to the display. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p><b>Display flashing, <i>FLASH</i>:</b> Default: NO</p> <p>FLASH P    no    AL-1    AL-2    AL.12    AL-3    AL-4    AL.34    ALAL P</p> <p>A display flashing can be added as additional alarm function either to single or to a combination of off-limit condition. With <i>NO</i>, no flashing is allocated.</p>

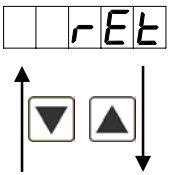
Menu level	Parameterisation level
	<p><b>Assignment (deposit) of key functions, TAST:</b> Default: <i>NO</i></p> <p>  </p> <p>For the operation mode, special functions can be deposited on the navigation keys [▲] [▼], in particular this function is made for devices in housing size 48x24 which do not have a 4th key ([O]-key). If the MIN-/MAX-memory is activated with <i>EHTR</i>, all measured MIN/MAX-values are saved during operation and can be recalled via the navigation keys. The values get lost by re-start of the device. If the threshold value correction <i>LI.12</i> or <i>LI.34</i> is chosen, the values of the threshold can be changed during operation without disturbing the operating procedure. If <i>NO</i> is selected, the navigation keys are without function in the operation mode.</p>
	<p><b>Special function [O]-key, TAST.4:</b> Default: <i>NO</i></p> <p>  </p> <p>For the operation mode, special functions can be deposited on the [O]-key. This function is activated by pressing the key. <i>SET.OF</i> adds a defined value on to the currently displayed value. <i>EHT.RE</i> deletes the MIN/MAX-memory. If <i>HOLD</i> has been selected, the moment can be hold constant by pressing the [O]-key, and is updated by releasing the key. <b>Advice:</b> <i>HOLD</i> is activated only, if <i>HOLD</i> is selected under parameter <i>DISPL. ACTUR</i> shows the measurand for approx. 7 seconds, after this the device switches back on the parametrised display value. At <i>AL-1...AL-4</i> an output can be set and therewith e.g. a setpoint adjustment can be done. If <i>NO</i> is selected, the [O]-key is without any function in the operation mode.</p>
	<p><b>Special function digital input, DIG.IN:</b> Default: <i>NO</i></p> <p>  </p> <p>In operation mode, the above shown parameters can be laid on the optional digital input, too. Function description see <i>TAST.4</i>.</p>
	<p><b>Back to menu group level, RET:</b></p> <p>With [P] the selection is confirmed and the device changes into menu group level „- FCT -“.</p>

### 4.3.3. Safety parameters

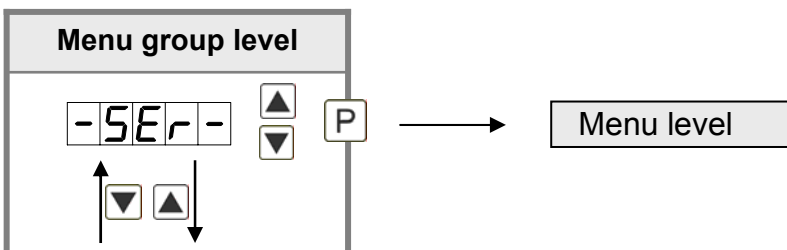


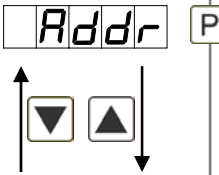
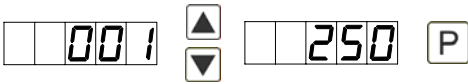
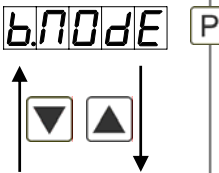

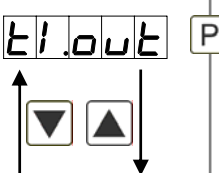

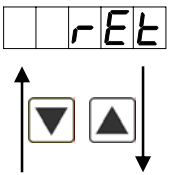
Menu level	Parameterisation level
	<p><b>User code <i>U.CODE</i>:</b> Default: 0000</p> <p>U.CodE P 0 P 0 P 0 P 0 P</p> <p>Via this code reduced sets of parameters can be set free. A change of the <i>U.CODE</i> can be done via the correct input of the <i>R.CODE</i> (master code).</p>
	<p><b>Master code, <i>R.CODE</i>:</b> Default: 1234</p> <p>R.CodE P 1 P 2 P 3 P 4 P</p> <p>By entering <i>R.CODE</i> the device will be unlocked and all parameters are released.</p>
	<p><b>Release/lock analog output parameter, <i>OUT.LE</i>:</b> Default: ALL</p> <p>Out.LE P no EN-OF OUT.EO ALL P</p> <p>Analog output parameter can be locked or released for the user:</p> <ul style="list-style-type: none"> <li>- At <i>EN-OF</i> the initial or final value can be changed in operation mode.</li> <li>- At <i>OUT.EO</i> the output signal can be changed from e.g. 0-20mA to 4-20mA or 0-10VDC.</li> <li>- At <i>ALL</i> analog output parameters are released.</li> <li>- At <i>NO</i> all analog output parameters are locked.</li> </ul>
	<p><b>Release/lock alarm parameters, <i>AL.LEU</i>:</b> Default: ALL</p> <p>AL.LEU P no LIMIT ALRM.L ALL P</p> <p>This parameter describes the user release/user lock of the alarm.</p> <ul style="list-style-type: none"> <li>- <i>LIMIT</i>, here only the range of value of the threshold values 1-4 can be changed.</li> <li>- <i>ALRM.L</i>, here the range of value and the alarm trigger can be changed.</li> <li>- <i>ALL</i>, all alarm parameters are released.</li> <li>- <i>NO</i>, all alarm parameters are locked.</li> </ul>



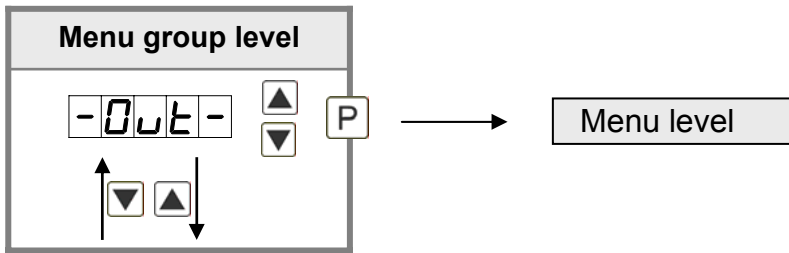
Menu level	Parameterisation level
	<p><b>Back to menu group level, <i>RET</i>:</b></p> <p>With [<b>P</b>] the selection is confirmed and the device changes into menu group level „- <i>COD</i> -“.</p>

#### 4.3.4. Serial parameters

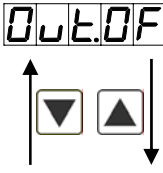

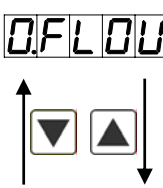

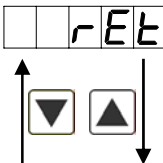


Menu level	Parameterisation level
	<p><b>Device address, <i>ADDR</i>:</b> Default: <i>001</i></p> <p></p> <p>The device address is adjusted from the smallest to the largest digit with the navigation keys [<b>▲</b>] [<b>▼</b>] and confirmed digit per digit with [<b>P</b>]. A device address up to max. 250 is available. Interface data: Baudrate 9600 bit/s, 8 databyte, 1 stopbit, no parity (8n1).</p>
	<p><b>ModBus operation type, <i>B.MODE</i>:</b> Default: <i>ASCII</i></p> <p></p> <p>In preparation.</p>
	<p><b>Timeout, <i>TIOU</i>:</b> Default: <i>000</i></p> <p></p> <p>The monitoring of the data transfer is parameterized in seconds up to max. 100 seconds; there is no monitoring with an input of <i>000</i>. The timeout is adjusted from the smallest to the largest digit with the navigation keys [<b>▲</b>] [<b>▼</b>] and confirmed digit per digit with [<b>P</b>]. After the last digit the device changes back into menu level.</p>
	<p><b>Back to menu group level, <i>RET</i>:</b></p> <p>With [<b>P</b>] the selection is confirmed and the device changes into menu group level „- <i>SER</i> -“.</p>

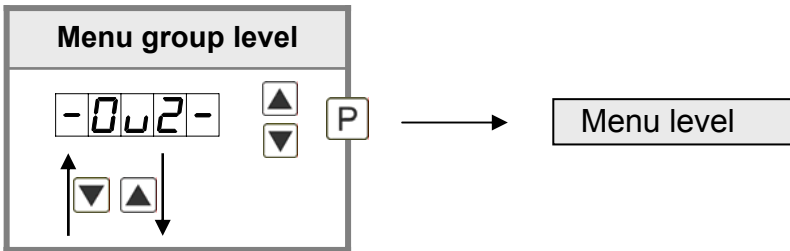
### 4.3.5. Analog output parameters for analog output 1



Menu level	Parameterisation level
	<p><b>Selection reference of analog output, <i>OUTPT</i>:</b> Default: <i>ACTUA</i></p> <p> </p> <p>The analog output signal can refer to different functions, in detail these are the current measurand, the min-value, the max-value or the totaliser-/sum function. If <i>HOLD</i> is selected, the signal of the analog output will be kept. It can be continued processing after a deactivation of <i>HOLD</i>. With [<b>P</b>] the selection is confirmed and the device changes into menu level.</p>
	<p><b>Selection analog output, <i>OUT.RA</i>:</b> Default: <i>4-20</i></p> <p> </p> <p>Three output signals are available 0-10 VDC, 0-20 mA and 4-20 mA. Select the desired signal with this function.</p>
	<p><b>Setting the final value of the analog output, <i>OUT.EM</i>:</b> Default: <i>10000</i></p> <p> </p> <p>The final value is adjusted from the smallest to the highest digit with [<b>▲</b>] [<b>▼</b>] and confirmed digit per digit with [<b>P</b>]. A minus sign can only be parameterised on the highest digit. After the last digit the device changes back into menu level.</p>

Menu level	Parameterisation level
	<p><b>Setting the initial value of the analog output, <i>OUT.OF</i>:</b> Default: <i>00000</i></p>  <p>The initial value is adjusted from the smallest to the highest digit with [▲] [▼] and confirmed digit per digit with [P]. A minus sign can only be parameterised on the highest digit. After the last digit the device changes back into menu level.</p>
	<p><b>Overflow behaviour, <i>O.FLOU</i>:</b> Default: <i>EDGE</i></p>  <p>To recognise and evaluate faulty signals, e.g. by a controller, the overflow behaviour of the analog output can be defined. As overflow can be seen either <i>EDGE</i>, that means the analog output runs on the set limits e.g. 4 and 20 mA, or <i>TO.OFF</i> (input value smaller than initial value, analog output switches on e.g. 4 mA), <i>TO.END</i> (higher than final value, analog output switches on e.g. 20 mA). If <i>TO.MIN</i> or <i>TO.MAX</i> is set, the analog output switches on the smallest or highest possible binary value. This means that values of e.g. 0 mA, 0 VDC or values higher than 20 mA or 10 VDC can be reached. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p><b>Back to menu group level, <i>RET</i>:</b></p> <p>With [P] the selection is confirmed and the device changes into menu group level „- OUT -“.</p>

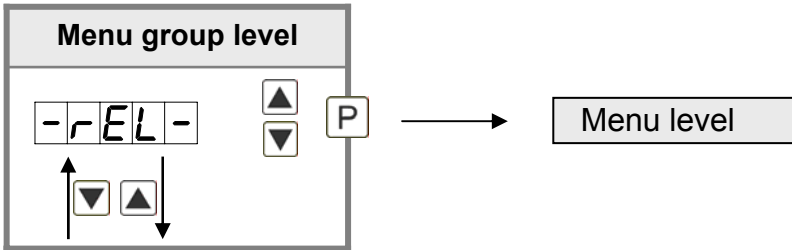
### 4.3.6. Analog output parameters for analog output 2






Menu level	Parameterisation level
<p data-bbox="124 757 280 801">0U2.Pt</p> <p data-bbox="140 815 280 927">↑ ↓</p>	<p data-bbox="352 651 963 685"><b>Selection reference of analog output, 0U2.PT:</b></p> <p data-bbox="352 685 536 714">Default: <i>ACTUA</i></p> <p data-bbox="384 741 1331 819">ActUA ▲ ▼ MinUA ▲ ▼ MaxUA ▲ ▼ Hold ▲ ▼</p> <p data-bbox="384 842 608 887">AbsUA P</p> <p data-bbox="352 943 1484 1099">The analog output signal can refer to different functions, in detail these are the current measurand, the min-value, the max-value or the totaliser-/sum function. If <i>HOLD</i> is selected, the signal of the analog output will be kept. It can be continued processing after a deactivation of <i>HOLD</i>. With [P] the selection is confirmed and the device changes into menu level.</p>
<p data-bbox="124 1223 280 1267">0U2.rA</p> <p data-bbox="140 1281 280 1393">↑ ↓</p>	<p data-bbox="352 1122 791 1155"><b>Selection analog output, 0U2.RA:</b></p> <p data-bbox="352 1155 517 1184">Default: <i>4-20</i></p> <p data-bbox="384 1211 1054 1290">0-10 ▲ ▼ 0-20 ▲ ▼ 4-20 P</p> <p data-bbox="352 1357 1484 1424">Three output signals are available 0-10 VDC, 0-20 mA and 4-20 mA. Select the desired signal with this function.</p>
<p data-bbox="124 1547 280 1592">0U2.En</p> <p data-bbox="140 1606 280 1718">↑ ↓</p>	<p data-bbox="352 1453 1050 1487"><b>Setting the final value of the analog output, 0U2.EN:</b></p> <p data-bbox="352 1487 533 1516">Default: <i>10000</i></p> <p data-bbox="384 1543 1075 1621">8 P 8 P 8 P 8 P 8 ▲ ▼ P</p> <p data-bbox="352 1644 1484 1733">The final value is adjusted from the smallest to the highest digit with [▲] [▼] and confirmed digit per digit with [P]. A minus sign can only be parameterised on the highest digit. After the last digit the device changes back into menu level.</p>
<p data-bbox="124 1861 280 1906">0U2.OF</p> <p data-bbox="140 1919 280 2031">↑ ↓</p>	<p data-bbox="352 1760 1066 1794"><b>Setting the initial value of the analog output, 0U2.OF:</b></p> <p data-bbox="352 1794 539 1823">Default: <i>00000</i></p> <p data-bbox="384 1850 1066 1928">8 P 8 P 8 P 8 P 8 ▲ ▼ P</p> <p data-bbox="352 1962 1484 2051">The initial value is adjusted from the smallest to the highest digit with [▲] [▼] and confirmed digit per digit with [P]. A minus sign can only be parameterised on the highest digit. After the last digit the device changes back into menu level.</p>



Menu level	Parameterisation level
<div data-bbox="124 443 284 495" style="border: 1px solid black; padding: 2px;">OU2.FL</div> <div data-bbox="316 443 347 477" style="border: 1px solid black; padding: 2px; display: inline-block;">P</div> <div style="margin-top: 10px;"> <div style="display: inline-block; vertical-align: middle;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▼</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲</div> </div> </div>	<p data-bbox="352 331 727 365"><b>Overflow behaviour, <i>OU2.FL</i>:</b></p> <p data-bbox="352 367 520 400">Default: <i>EDGE</i></p> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px;">EDGE</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">▲</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">▼</div> <div style="border: 1px solid black; padding: 2px;">to.END</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">▲</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">▼</div> <div style="border: 1px solid black; padding: 2px;">to.OFF</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">▲</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">▼</div> <div style="border: 1px solid black; padding: 2px;">to.Min</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">▲</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">▼</div> </div> <div style="margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px;">to.MAX</div> <div style="border: 1px solid black; padding: 2px; margin-left: 5px;">P</div> </div> <p data-bbox="352 629 1497 913">To recognise and evaluate faulty signals, e.g. by a controller, the overflow behaviour of the analog output can be defined. As overflow can be seen either <i>EDGE</i>, that means the analog output runs on the set limits e.g. 4 and 20 mA, or <i>TO.OFF</i> (input value smaller than initial value, analog output switches on e.g. 4 mA), <i>TO.END</i> (higher than final value, analog output switches on e.g. 20 mA). If <i>TO.MIN</i> or <i>TO.MAX</i> is set, the analog output switches on the smallest or highest possible binary value. This means that values of e.g. 0 mA, 0 VDC or values higher than 20 mA or 10 VDC can be reached. With <b>[P]</b> the selection is confirmed and the device changes into menu level.</p>
<div data-bbox="124 936 292 981" style="border: 1px solid black; padding: 2px;">rEt</div> <div style="margin-top: 10px;"> <div style="display: inline-block; vertical-align: middle;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▼</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 2px;">▲</div> </div> </div>	<p data-bbox="352 931 778 965"><b>Back to menu group level, <i>RET</i>:</b></p> <p data-bbox="352 1037 1497 1108">With <b>[P]</b> the selection is confirmed and the device changes into menu group level „- <i>OU2</i> -“.</p>

### 4.3.7. Relay functions

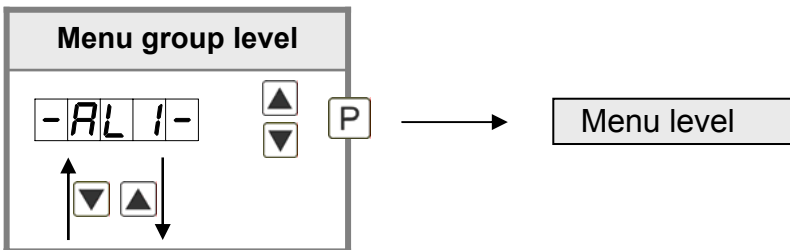




Menu level	Parameterisation level												
	<p><b>Alarm relay 1, REL-1:</b> <span style="float: right;"><b>The same applies for relays 2-4</b></span>                      Default: <i>AL-1</i></p> <p>REL-1 P AL-1 ... AL-4 ▲▼ AL-n1 ... AL-n4 ▲▼</p> <p>LOGIC ▲▼ OFF ▲▼ On P</p> <p>Each setpoint (optional) can be linked up via 4 alarms (by default). This can either be inserted at activated alarms <i>AL-1/4</i> or de-activated alarms <i>ALN1/4</i>. If <i>LOGIC</i> is selected, logical links are available in the menu level <i>LOG-1</i> and <i>COM-1</i>. One can only get to these two menu levels via <i>LOGIC</i>, at all other selected functions, these two parameters are overleaped. Via <i>ON/OFF</i> the setpoints can be activated/de-activated, in this case the output and the setpoint display are set/not set on the front of the device. With <b>[P]</b> the selection is confirmed and the device changes into menu level.</p>												
	<p><b>Logic relay 1, LOG-1</b>                      Default: <i>OR</i></p> <p>LOG-1 P or ▲▼ nor ▲▼ And ▲▼ nAnd P</p> <p>Here, the switching behaviour of the relay is defined via a logic link, the following schema describes these functions with inclusion of <i>AL-1</i> and <i>AL-2</i>.</p> <table border="1" data-bbox="336 1512 1498 1899"> <tbody> <tr> <td data-bbox="336 1512 523 1630">or</td> <td data-bbox="523 1512 826 1630"><math>A1 \vee A2</math></td> <td data-bbox="826 1512 1498 1630">As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.</td> </tr> <tr> <td data-bbox="336 1630 523 1720">nor</td> <td data-bbox="523 1630 826 1720"><math>\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}</math></td> <td data-bbox="826 1630 1498 1720">The relay operates only, if no selected alarm is active. Equates to quiescent current principle.</td> </tr> <tr> <td data-bbox="336 1720 523 1809">And</td> <td data-bbox="523 1720 826 1809"><math>A1 \wedge A2</math></td> <td data-bbox="826 1720 1498 1809">The relay operates only, if all selected alarms are active.</td> </tr> <tr> <td data-bbox="336 1809 523 1899">nAnd</td> <td data-bbox="523 1809 826 1899"><math>\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}</math></td> <td data-bbox="826 1809 1498 1899">As soon as a selected alarm is not activated, the relay operates.</td> </tr> </tbody> </table> <p>With <b>[P]</b> the selection is confirmed and the device changes into menu level.</p>	or	$A1 \vee A2$	As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.	nor	$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$	The relay operates only, if no selected alarm is active. Equates to quiescent current principle.	And	$A1 \wedge A2$	The relay operates only, if all selected alarms are active.	nAnd	$\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}$	As soon as a selected alarm is not activated, the relay operates.
or	$A1 \vee A2$	As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.											
nor	$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$	The relay operates only, if no selected alarm is active. Equates to quiescent current principle.											
And	$A1 \wedge A2$	The relay operates only, if all selected alarms are active.											
nAnd	$\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}$	As soon as a selected alarm is not activated, the relay operates.											

Menu level	Parameterisation level												
	<p><b>Alarms for relay 1, COM-1:</b> Default: <i>A.1</i></p> <p>COM-1 [P] A.1 [▲] [▼] A.2 [▲] [▼] .... A.1234 [P]</p> <p>The allocation of the alarms to relay 1 happens via this parameter, one alarm or a group of alarms can be chosen. With [P] the selection is confirmed and the device changes into menu level.</p>												
	<p><b>Alarm relay 5, REL-5:</b> <span style="float: right;"><b>The same applies for relays 6-8</b></span> Default: <i>AL-5</i></p> <p>REL-5 [P] AL-5 .... AL-8 [▲] [▼] AL-n5 .... AL-n8 [▲] [▼]</p> <p>LOGIC [▲] [▼] OFF [▲] [▼] ON [P]</p> <p>Each setpoint (optional) can be linked up via 4 alarms (by default). This can either be inserted at activated alarms <i>AL5/8</i> or de-activated alarms <i>ALN1/4</i>. If <i>LOGIC</i> is selected, logical links are available in the menu level <i>LOG-1</i> and <i>COM-1</i>. One can only get to these two menu levels via <i>LOGIC</i>, at all other selected functions, these two parameters are overleaped. Via <i>ON/OFF</i> the setpoints can be activated/de-activated, in this case the output and the setpoint display are set/not set on the front of the device. With [P] the selection is confirmed and the device changes into menu level.</p>												
	<p><b>Logic relay 5, LOG-5:</b> Default: <i>OR</i></p> <p>LOG-5 [P] or [▲] [▼] nor [▲] [▼] And [▲] [▼] nAnd [P]</p> <p>Here, the switching behaviour of the relay is defined via a logic link, the following schema describes these functions with inclusion of <i>AL-1</i> and <i>AL-2</i>.</p> <table border="1"> <tbody> <tr> <td>or</td> <td><math>A1 \vee A2</math></td> <td>As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.</td> </tr> <tr> <td>nor</td> <td><math>\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}</math></td> <td>The relay operates only, if no selected alarm is active. Equates to quiescent current principle.</td> </tr> <tr> <td>And</td> <td><math>A1 \wedge A2</math></td> <td>The relay operates only, if all selected alarms are active.</td> </tr> <tr> <td>nAnd</td> <td><math>\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}</math></td> <td>As soon as a selected alarm is not activated, the relay operates.</td> </tr> </tbody> </table> <p>With [P] the selection is confirmed and the device changes into menu level.</p>	or	$A1 \vee A2$	As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.	nor	$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$	The relay operates only, if no selected alarm is active. Equates to quiescent current principle.	And	$A1 \wedge A2$	The relay operates only, if all selected alarms are active.	nAnd	$\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}$	As soon as a selected alarm is not activated, the relay operates.
or	$A1 \vee A2$	As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.											
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And	$A1 \wedge A2$	The relay operates only, if all selected alarms are active.											
nAnd	$\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}$	As soon as a selected alarm is not activated, the relay operates.											

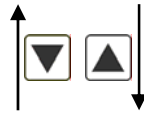
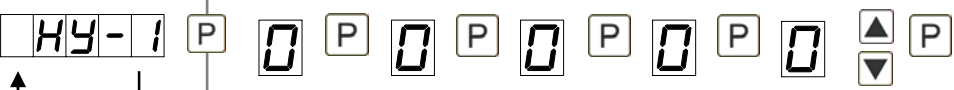
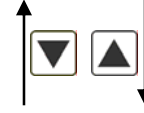
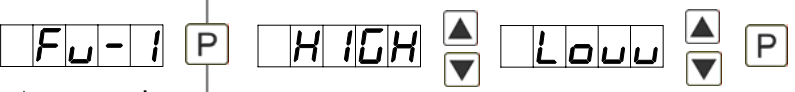
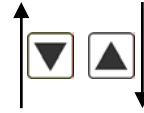

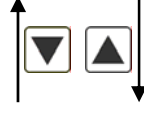

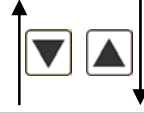
Menu level	Parameterisation level
	<p><b>Alarms for relay 5, COM-5:</b> Default: <i>R. 5</i></p> <p>COM-5 P R. 1 [▲] [▼] R. 2 [▲] [▼] ... R. 1234 P</p> <p>The allocation of the alarms to relay 5 happens via this parameter, one alarm or a group of alarms can be chosen. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p><b>Back to menu group level, RET:</b></p> <p>RET</p> <p>With [P] the selection is confirmed and the device changes into menu group level „-REL -“.</p>

### 4.3.8. Alarm parameters



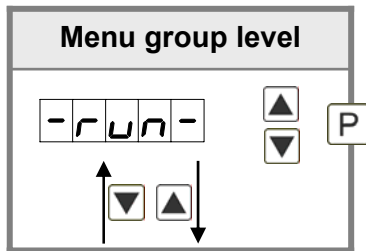
Menu level	Parameterisation level
	<p><b>Dependency alarm 1, ALRM.1:</b> Default: <i>ACTUA</i></p> <p>ALRM.1 P ACTUA [▲] [▼] MINUA [▲] [▼] MAXUA [▲] [▼] HOLD P</p> <p>The dependency of alarm 1 can be related to special functions, in detail these are the current measurand, the MIN-value or the MAX-value. Is <i>HOLD</i> selected, then the alarm is hold and processed just after deactivation of <i>HOLD</i>. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p><b>Threshold values / Limit values, LI-1:</b> Default: <i>200.0</i></p> <p>LI-1 P 0 P 0 P 0 P 0 P 0 [▲] [▼] P</p> <p>The limit value defines the threshold, that activates/deactivates an alarm.</p>



Menu level	Parameterisation level
	<p><b>Hysteresis for threshold values, <i>HY-1</i>:</b> Default: <i>0.0</i></p> <p>  </p> <p>The delayed reaction of the alarm is the difference to the threshold value, which is defined by the hysteresis.</p>
	<p><b>Function for threshold value undercut /exceedance, <i>FU-1</i>:</b> Default: <i>HIGH</i></p> <p>  </p> <p>A limit value undercut is selected with <i>LOW</i> (for LOW = lower limit value), a limit value exceedance with <i>HIGH</i> (for HIGH = higher limit value). If e.g. limit value 1 is on a threshold level of 100 and allocated with function <i>HIGH</i>, an alarm is activated by reaching of the threshold level. If the threshold value was allocated to <i>LOW</i>, an alarm will be activated by undercutting the threshold value, as long as the hysteresis is zero.</p>
	<p><b>Switching-on delay, <i>TON-1</i>:</b> Default: <i>000</i></p> <p>  </p> <p>For limit value 1 one can preset a delayed switching-on of 0-100 seconds.</p>
	<p><b>Switching-off delay, <i>TOF-1</i>:</b> Default: <i>000</i></p> <p>  </p> <p>For limit value 1 one can preset a delayed switching-off of 0-100 seconds.</p>
	<p><b>Back to menu group level, <i>RET</i>:</b></p> <p>With [P] the selection is confirmed and the device changes into menu group level „-AL1-“.</p>

The same applies for *-AL2-* to *-AL8-*.

#### 4.3.9. Programming interlock, *RUN*:



Description see page 11, menu level *RUN*

#### 4.4. Reset to default values

To return the unit to a **defined basic state**, a reset can be carried out to the default values.

The following procedure should be used:

- Switch off the power supply
- Press button [P]
- Switch on voltage supply and press [P]-button until „- - - -“ is shown in the display.

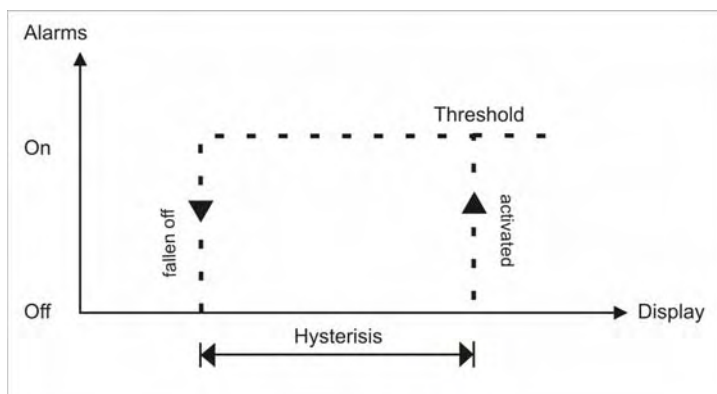
With reset, the default values of the program table are loaded and used for subsequent operation. This puts the unit back to the state in which it was supplied.

**Caution! All application-related data are lost.**

## 4.5. Alarms / Relays

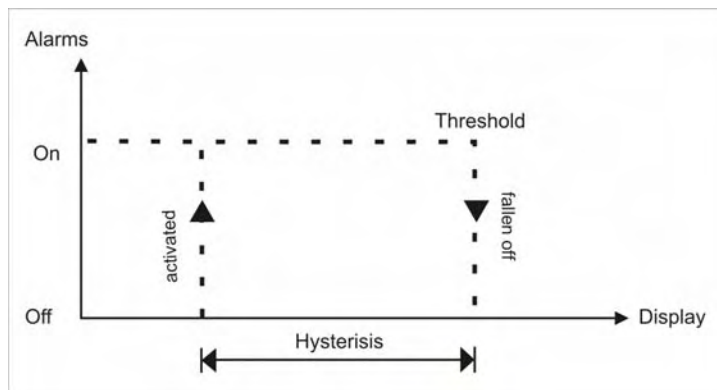
This device has 4 virtual alarms that can monitor one limit value in regard of an undercut or exceedance. Each alarm can be allocated to an optional relay output S1-S2; furthermore alarms can be controlled by events like e.g. Hold or Min-/Max-value.

Function principle of alarms / relays	
<b>Alarm / Relay x</b>	Deactivated, instantaneous value, Min-/Max-value, Hold-value, totaliser value
<b>Switching threshold</b>	Threshold / limit value of the change-over
<b>Hysteresis</b>	Broadness of the window between the switching thresholds
<b>Working principle</b>	Operating current / Quiescent current



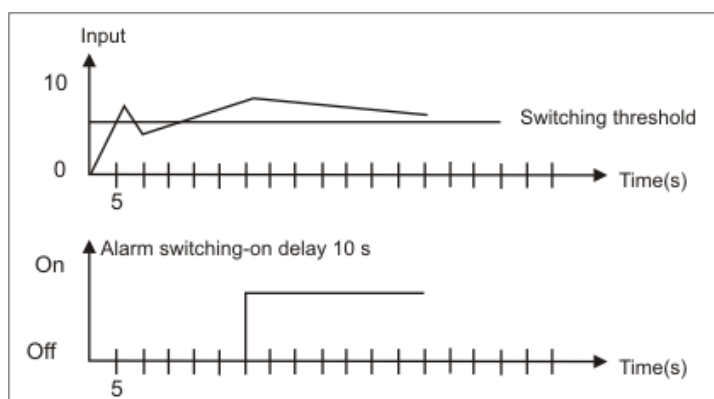
### Operating current

By operating current the alarm S1-S2 is off below the threshold and on on reaching the threshold.



### Quiescent current

By quiescent current the alarm S1-S2 is on below the threshold and switched off on reaching the threshold.



### Switching-on delay

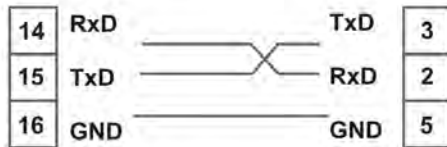
The switching-on delay is activated via an alarm and e.g. switched 10 seconds after reaching the switching threshold, a short-term exceedance of the switching value does not cause an alarm, respectively does not cause a switching operation of the relay. The switching-off delay operates in the same way, keeps the alarm / the relay switched longer for the parametrised time.

## 4.6. Interfaces RS232 and RS485

### Connection RS232

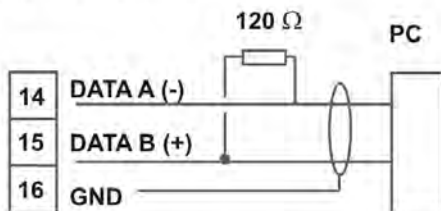
Digital device M3

PC - 9-pole Sub-D-plug



### Connection RS485

Digital device M3



The interface **RS485** is connected via a screened data line with twisted wires (Twisted-Pair). On each end of the bus segment a termination of the bus lines needs to be connected. This is necessary to ensure a secure data transfer to the bus. For this a resistance (120 Ohm) is interposed between the lines Data B (+) and Data A (-).

## 5. Technical data

<b>Housing</b>			
<b>Dimensions</b>	96x48120 mm (BxHxD)		
	96x48x139 mm (BxHxD) plug-in terminal		
Panel cut-out	92.0 <sup>+0.8</sup> x 45.0 <sup>+0.6</sup> mm		
Wall thickness	up to 15 mm		
Fixing	Screw elements		
Material	PC Polycarbonate, black, UL94V-0		
Sealing material	EPDM, 65 Shore, black		
Protection class	Standard IP65 (Front side), IP00 (Back side)		
Weight	approx. 300 g		
Connection	plug-in terminal; wire cross-section up to 2.5 mm <sup>2</sup>		
<b>Display</b>			
Digit height	14 mm		
Segment colour	Red (optional green, orange or blue)		
Range of display	-19999 to 99999		
Setpoints	one LED per setpoint		
Overflow	horizontal bars at the top		
Underflow	horizontal bars at the bottom		
Display time	0.1 to 10.0 seconds		
<b>Input</b>	<b>Measuring range</b>	<b>Measuring error</b>	<b>Digit</b>
Pt100 3-/4-wire	-200.0...850.0°C	0.1 % of measuring range	±1
Pt100 3-/4-wire	-328.0...1562.0°F	0.1 % of measuring range	±1
Digital input	< 2,4 V OFF, 10 V ON, max. 30 VDC R <sub>i</sub> ~ 5 kΩ		
<b>Accuracy</b>			
Drift of temperature	100 ppm / K		
Measuring time	0.1...10.0 seconds		
Measuring principle	U/F-conversion		
Resolution	0.1°C or 0.1°F		

<b>Output</b>	
Analog output 1 and 2	0/4-20 mA or 0-10 VDC 16 Bit switchable
<b>Switching outputs</b>	
Relay Switching cycles	with change-over contact 250 VAC / 5 AAC; 30 VDC / 5 ADC 30 x 10 <sup>3</sup> at 5 AAC, 5 ADC ohm resistive burden 10 x 10 <sup>6</sup> mechanically Diversity according to DIN EN 50178 / Characteristics according to DIN EN 60255
PhotoMos outputs	Normally open (NO) contacts : 30 VDC/AC, 0,4 A
<b>Interface</b>	
Protocol	Modbus with ASCII or RTU-protocol
RS232	9.600 Baud, no parity, 8 databit, 1 stopbit, wire length max. 3 m
RS485	9.600 Baud, no parity, 8 databit, 1 stopbit, wire length max 1000 m
<b>Power pack</b>	
	230 VAC +/- 10 % (max. 10 VA) 10-30 VDC galv. insulated (max. 4 VA)
<b>Memory</b>	
	EEPROM
Data life	≥ 100 years
<b>Ambient conditions</b>	
Working temperature	0...50°C
Storing temperature	-20...80°C
Weathering resistance	relative humidity 0-80% on years average without dew
<b>EMV</b>	
	EN 61326
<b>CE-sign</b>	
	Conformity to directive 2004/108/EG
<b>Safety standard</b>	
	According to low voltage directive 2006/95/EG EN 61010; EN 60664-1

## 6. Safety advices

Please read the following safety advice and the assembly *chapter 1* before installation and keep it for future reference.

### Proper use

The **M3-device** is designed for the evaluation and display of sensor signals.



**Danger! Careless use or improper operation can result in personal injury and/or damage to the equipment.**

### Control of the device

The panel meters are checked before dispatch and sent out in perfect condition. Should there be any visible damage, we recommend close examination of the packaging. Please inform the supplier immediately of any damage.



### Installation

The **M3-device** must be installed by a suitably **qualified specialist** (e.g. with a qualification in industrial electronics).

### Notes on installation

- There must be no magnetic or electric fields in the vicinity of the device, e.g. due to transformers, mobile phones or electrostatic discharge.
- The **fuse rating** of the supply voltage should not exceed a value of **6A N.B. fuse**.
- Do not install **inductive consumers** (relays, solenoid valves etc.) near the device and **suppress** any interference with the aid of RC spark extinguishing combinations or free-wheeling diodes.
- Keep input, output and supply lines separate from one another and do not lay them parallel with each other. Position “go” and “return lines” next to one another. Where possible use twisted pair. So, you receive best measuring results.
- Screen off and twist sensor lines. Do not lay current-carrying lines in the vicinity. Connect the **screening on one side** on a suitable potential equaliser (normally signal ground).
- The device is not suitable for installation in areas where there is a risk of explosion.
- Any electrical connection deviating from the connection diagram can endanger human life and/or can destroy the equipment.
- The terminal area of the devices is part of the service. Here electrostatic discharge needs to be avoided. Attention! High voltages can cause dangerous body currents.
- Galvanic insulated potentials within one complex need to be placed on a appropriate point (normally earth or machines ground). So, a lower disturbance sensibility against impacted energy can be reached and dangerous potentials, that can occur on long lines or due to faulty wiring, can be avoided.

## 7. Error elimination

	Error description	Measures
1.	<p>The unit permanently indicates overflow.</p> 	<ul style="list-style-type: none"> <li>• The input has a very high measurement, check the measuring circuit.</li> <li>• With a selected input with a low voltage signal, it is only connected on one side or the input is open.</li> <li>• Not all of the activated setpoints are parameterised. Check if the relevant parameters are adjusted correctly.</li> </ul>
2.	<p>The unit permanently shows underflow.</p> 	<ul style="list-style-type: none"> <li>• The input has a very low measurement, check the measuring circuit .</li> <li>• With a selected input with a low voltage signal, it is only connected on one side or the input is open.</li> <li>• Not all of the activated setpoints are parameterised. Check if the relevant parameters are adjusted correctly.</li> </ul>
3.	<p>The word "<b>HELP</b>" lights up in the 7-segment display.</p>	<ul style="list-style-type: none"> <li>• The unit has found an error in the configuration memory. Perform a reset on the default values and re-configure the unit according to your application.</li> </ul>
4.	<p>Program numbers for parameterising of the input are not accessible.</p>	<ul style="list-style-type: none"> <li>• Programming lock is activated</li> <li>• Enter correct code</li> </ul>
5.	<p>"<b>ERR1</b>" lights up in the 7-segment display</p>	<ul style="list-style-type: none"> <li>• Please contact the manufacturer if errors of this kind occur.</li> </ul>
6.	<p>The device does not react as expected.</p>	<ul style="list-style-type: none"> <li>• If you are not sure if the device has been parameterised before, then follow the steps as written in <i>chapter 5.2.</i> and set it back to its delivery status.</li> </ul>