

Operating Instructions for

Digital Indicating Units

Standard signals 0/4-20 mA, 0-10 VDC

Model: DAG-M1V..., 48 x 24 mm



We don't accept warranty and liability claims neither upon this publication nor in case of improper treatment of the described products.

The document may contain technical inaccuracies and typographical errors. The content will be revised on a regular basis. These changes will be implemented in later versions. The described products can be improved and changed at any time without prior notice.

© **Copyright**

All rights reserved.

1. Contents

1. Contents.....	2
2. Note	4
3. Instrument Inspection	4
4. Regulation Use	4
5. Brief description	5
6. Assembly	6
7. Electrical Connection	7
8. Function and operation description	9
9. Setting up the device.....	10
9.1 Switching on	10
9.2 Standard parameterization.....	10
9.3 Programming interlock RUN	14
9.4 Extended parameterization	15
10. Reset to factory settings.....	30
11. Alarms / Relays	31
12. Sensor calibration Offset / Final value.....	33
13. Technical Information	34
14. Order Codes	34
15. Dimensions	34
16. Safety advices.....	34
17. Error elimination	36
18. Disposal	37
19. EU Declaration of Conformance	38
20. UK Declaration of Conformity.....	39

Manufactured and sold by:

Kobold Messring GmbH
Nordring 22-24
D-65719 Hofheim
Tel.: +49(0)6192-2990
Fax: +49(0)6192-23398
E-Mail: info.de@kobold.com
Internet: www.kobold.com

2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The instruction manuals on our website www.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC machinery directive.

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Digital Indicating Unit model: DAG-M1V

4. Regulation Use

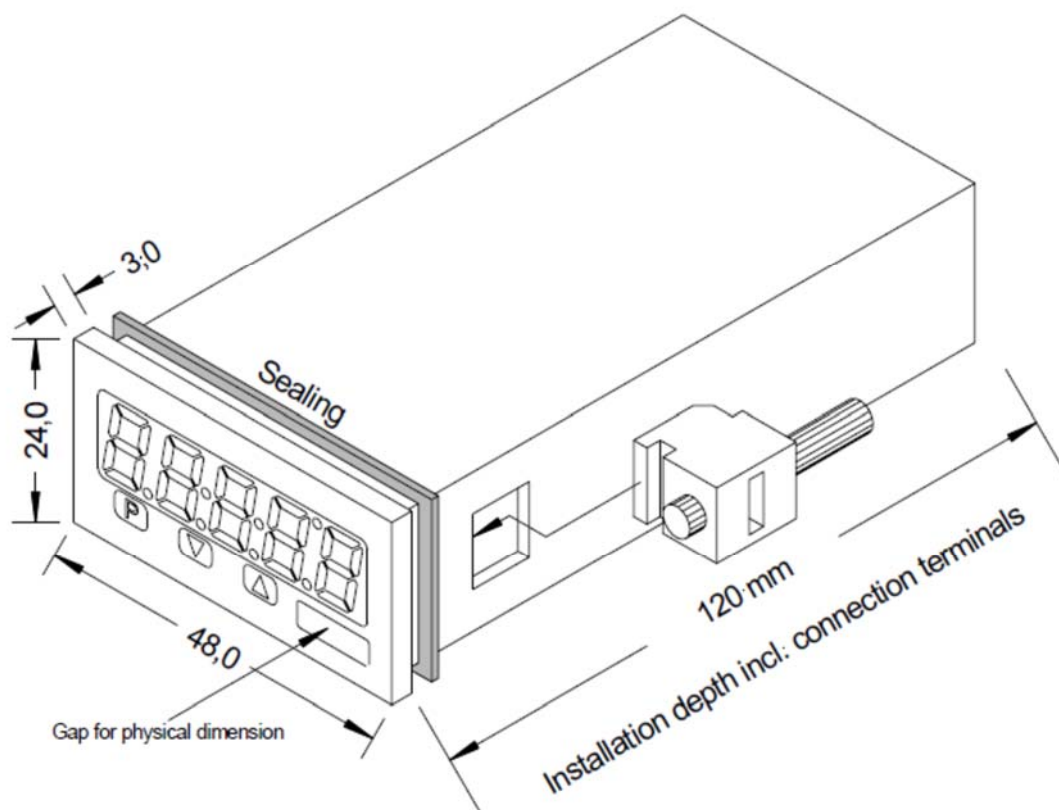
Any use of the device, which exceeds the manufacturer's specification, may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5. Brief description

The panel meter **DAG-M1V** is a 5-digit device for direct current/direct voltage signals and a visual threshold value monitoring via the display. The configuration happens via four front keys. An integrated programming interlock prevents unrequested changes of the parameters and can be unlocked again by an individual code. Optional the following functions are available: a supply for the sensor, a digital input for triggering of Hold (Tara) or an analog output for further processing in the equipment. By use of the two optional galvanic insulated setpoints, free adjustable threshold values can be controlled and reported to a superior master display. The electrical connection is carried out on the back side via plug- in terminals. Selectable functions like e.g. the request of the min/max-value, an average determination of the measuring signals, a nominal preset respectively setpoint preset, a direct change of threshold value in operation mode and additional measuring supporting points for linearization complete the modern device concept.

6. Assembly

Please read the Safety advices on page 34 before installation and keep this user manual for future reference.



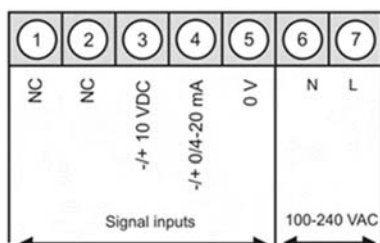
1. After removing the fixing elements, insert the device.
2. Check the seal to make sure it fits securely.
3. Click the fixing elements back into place and tighten the clamping screws by hand. Then use a screwdriver to tighten them another half a turn.

CAUTION! The torque should not exceed 0.1 Nm!

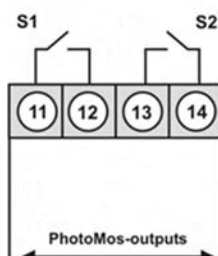
Change signs of the physical unit before assembly via a channel at the side of the front! The change can only be done from the outside before assembly!

7. Electrical Connection

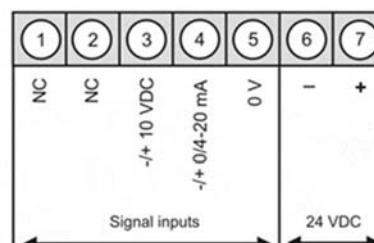
Type DAG-M1V0
With a supply of 100-240 VAC



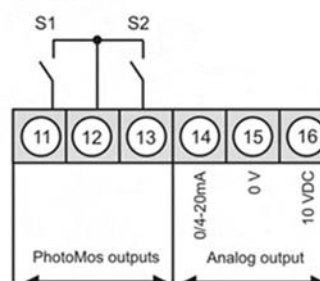
Options:



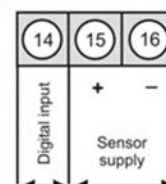
Type DAG-M1V3
With a supply of 24 VDC



Options:



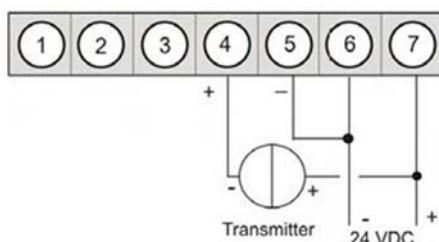
Alternatively to analog output



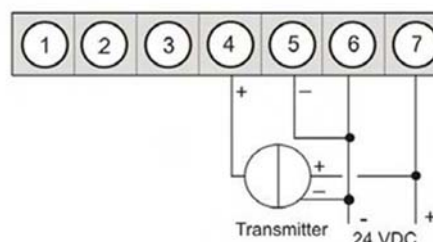
Connection examples

Below you find three connection examples, which demonstrate some practical applications for devices with voltage or current input, without sensor supply:

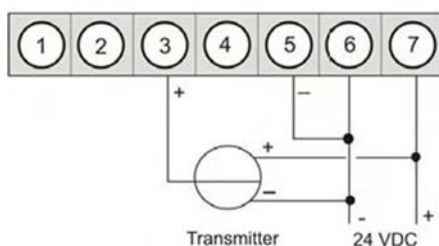
DAG-M1V in combination with a 2-wire-sensor 4-20 mA



DAG-M1V in combination with a 3-wire-sensor 0/4-20 mA



DAG-M1V in combination with a 3-wire-sensor 0-10 V

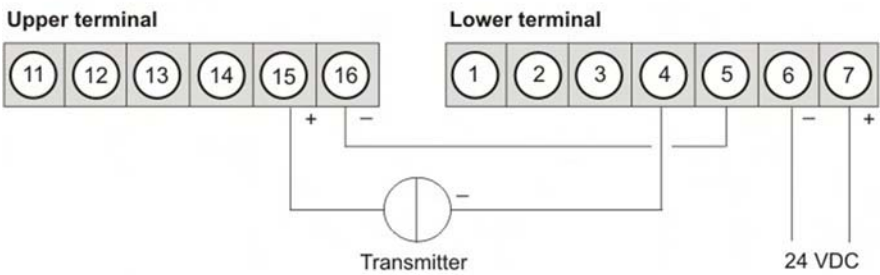


DAG-M1V

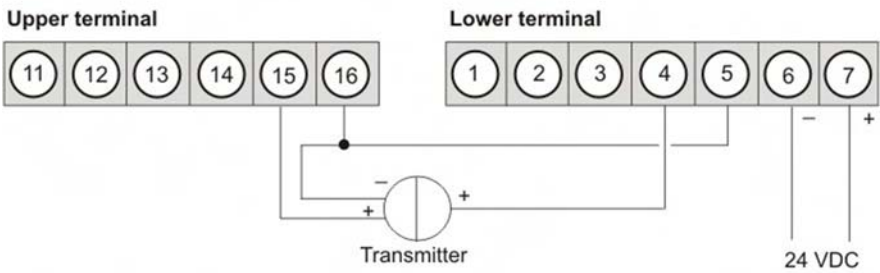
DAG-M1V devices

With current respectively voltage input in combination with a 24 VDC sensor supply.

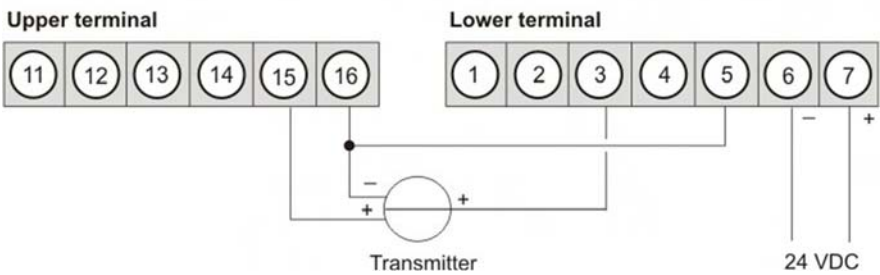
2-wire-sensor 4-20 mA



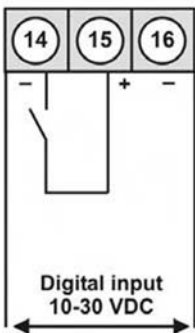
3-wire-sensor 0-20 mA



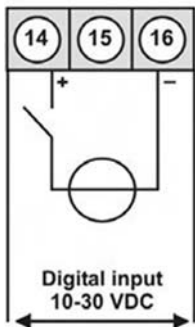
3-wire-sensor 0-10 VDC



DAG-M1V with digital input in combination with 24 VDC sensor supply



DAG-M1V with digital input and external voltage source



8. 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 parameterize “**prof**” under menu item **RUN**.

Menu group level (complete function volume)

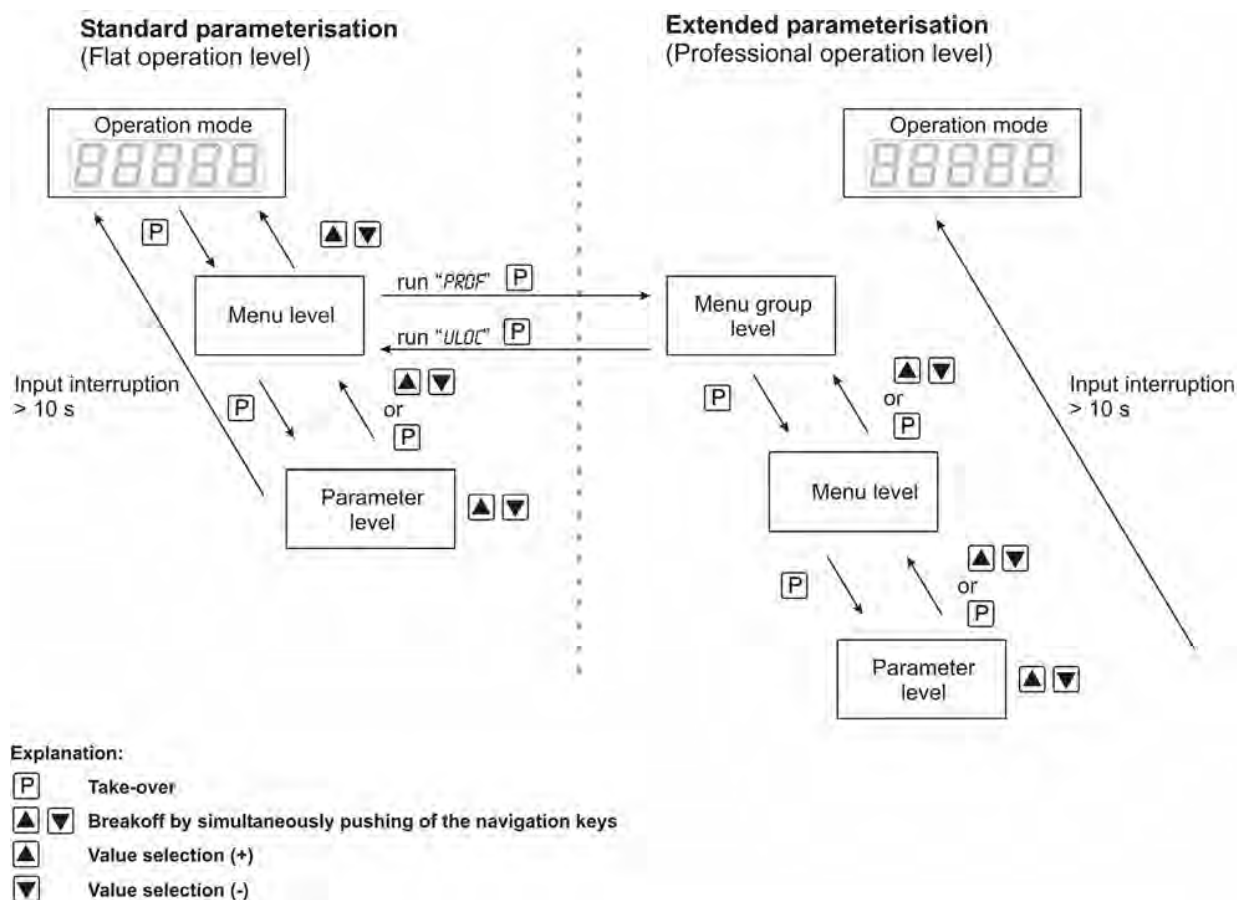
Suited for complex applications e.g. linkage of alarms, setpoint treatment, totalizer function etc. In this level function groups which allow an extended parameterization of the standard settings are available. To leave the menu group level, run through this level and parameterize “**uloc**” under menu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

Parameterization level

Parameter deposited in the menu item can here be parameterized. Functions, that can be changed or adjusted, are always signaled by a flashing of the display. Settings that are made in the parameterization level are confirmed with **[P]** and thus saved. By pressing the **[0]-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 by pushing both navigation keys at the same time.
Parameterisation level		To confirm the changes made at the parameterization level.
	 	Adjustment of the value / the setting.
	 	Change into menu level or stop of the value input, by pushing both navigation keys at the same time.
Menu group level		Change to menu level
	 	Keys for up and down navigation in the menu group level.
	 	Change into operation mode or return into menu level, by pushing both navigation keys at the same time.

Function chart:



9. Setting up the device

9.1 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.

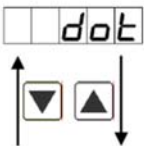

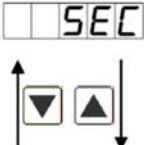

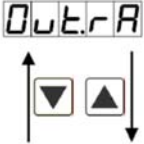

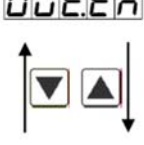

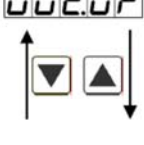

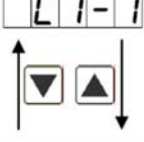

Starting sequence

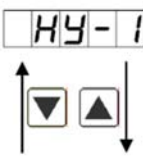
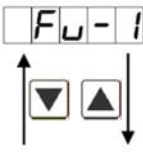
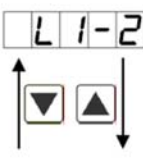
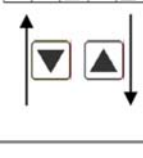
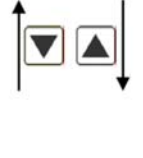
For 1 second during the switching-on process, the segment test (8 8 8 8 8) is displayed followed by an indication of the software type and, after that, also for 1 second the software version. After the starting sequence, the device switches to operation / display mode.

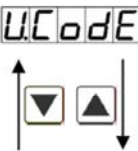

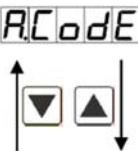

9.2 Standard parameterization

To parameterize 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**.

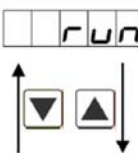

Menu level	Parameterization level
<div>TYPE P</div> <div>0-10 0-20 4-20 SENSU</div> <div>SENSA P</div> <div>   </div>	<p>Selection of the input signal, TYPE: Default: <i>SENS.U</i></p> <p>Available are several measuring input options: 0-20 mA, 4-20 mA or 0-10 VDC signals as the works calibration (without application of the sensor signal) and <i>SENSU</i> (Voltage) or <i>SENSA</i> (Current) as sensor calibration (with applied measuring signal). Confirm the selection with [P] and the display switches back to menu level.</p>
<div>End P</div> <div>8 P 8 P 8 P 8 P 8</div> <div>NOCA CAL</div> <div>   </div>	<p>Setting the end value of the measuring range, END: Default: <i>10000</i></p> <p>Set the end value from the smallest to the highest digit with [▲] [▼] and confirm each digit with [P]. A minus sign can only be parameterized on the highest value digit. After the last digit, the display switches back to the menu level. If <i>SENS</i> was selected as the input option, you can only select between <i>NOCA</i> and <i>CAL</i>. With <i>NOCA</i>, only the previously set display value is taken over, and with <i>CAL</i>, the device takes over both the display value and the analogue input value.</p>
<div>OFFS P</div> <div>8 P 8 P 8 P 8 P 8</div> <div>NOCA CAL</div> <div>   </div>	<p>Setting the start/offset value of the measuring range, OFFS: Default: <i>0</i></p> <p>Enter the start/offset value from the smallest to the highest digit [▲] [▼] and confirm each digit with [P]. After the last digit the display switches back to the menu level. If <i>SENS</i> was selected as the input option, you can only select between <i>NOCA</i> and <i>CAL</i>. With <i>NOCA</i>, only the previously set display value is taken over, and with <i>CAL</i>, the device takes over both the display value and the analogue input value.</p>

Menu level	Parameterization level
	Setting the decimal point, DOT: Default: 0  <p>The decimal point on the display can be moved with [▲] [▼] and confirmed with [P]. The display then switches back to the menu level again.</p>
	Setting the display time, SEC: Default: 1.0  <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>
	Selection of analog output, OUT.RA: Default: 4-20  <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>
	Setting up the final value of the analog output, OUT.EN: Default: 10000  <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>
	Setting up the initial value of the analog output, OUT.OF: Default: 00000  <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>
	Threshold values / Limits, LI-LI: Default: 2000  <p>This value defines the threshold, that activates/deactivates an alarm.</p>

Menu level	Parameterization level
	<p>Hysteresis for limit values, HY-1: Default: 00000</p> <p>0 P 0 P 0 P 0 P 0 P 0 P</p> <p>The delayed reaction of the alarm is the difference to the threshold value, which is defined by the hysteresis.</p>
	<p>Function for threshold value undercut /exceedance, FU-1: Default: HIGH</p> <p>HIGH LOW P</p> <p>A limit value undercut is selected with LOW (for LOW = lower limit value), a limit value exceedance with HIGH (for HIGH = higher limit value). If e.g. limit value 1 is on a threshold level of 100 and allocated with function HIGH, an alarm is activated by reaching of the threshold level. If the threshold value was allocated to LOW, an alarm will be activated by undercutting the threshold value, as long as the hysteresis is zero.</p>
	<p>Threshold values / Limits, LI-2: Default: 3000</p> <p>0 P 0 P 0 P 0 P 0 P 0 P</p> <p>This value defines the threshold, that activates/deactivates an alarm.</p>
	<p>Hysteresis for limit values, HY-2: Default: 00000</p> <p>0 P 0 P 0 P 0 P 0 P 0 P</p> <p>The delayed reaction of the alarm is the difference to the threshold value, which is defined by the hysteresis.</p>
	<p>Function for threshold value undercut /exceedance, FU-2: Default: HIGH</p> <p>HIGH LOW P</p> <p>A limit value undercut is selected with LOW (for LOW = lower limit value), a limit value exceedance with HIGH (for HIGH = higher limit value). If e.g. limit value 1 is on a threshold level of 100 and allocated with function HIGH, an alarm is activated by reaching of the threshold level. If the threshold value was allocated to LOW, an alarm will be activated by undercutting the threshold value, as long as the hysteresis is zero.</p>

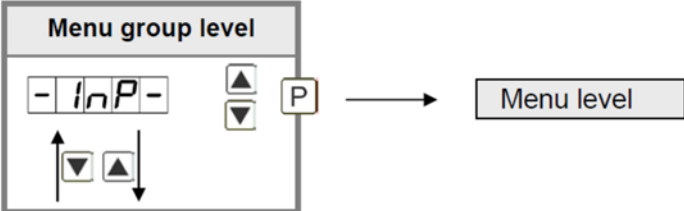
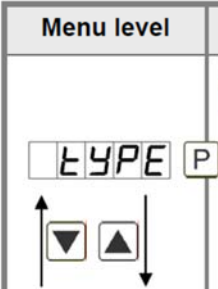
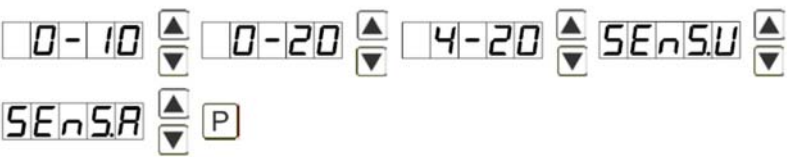
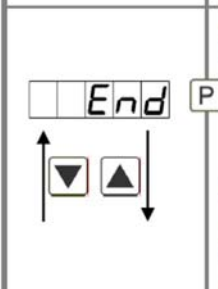

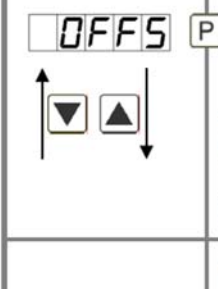

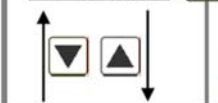

Menu level	Parameterization level
	<p>User code (4-digit number-combination, free available), <i>U.CODE</i>: Default: 0000</p>  <p>If this code was set (>0000), all parameters are locked for the user, if <i>LOC</i> has been selected before under menu item <i>RUN</i>. By pressing [P] for 3 seconds in 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>A.CODE</i> (Master code) unlocks all parameters again.</p>
	<p>Master code (4-digit number-combination, free available), <i>A.CODE</i>: 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 [P] for 3 seconds in operation mode, the display shows <i>CODE</i> and enables the user to reach all parameters by entering the <i>A.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 [P] in operation mode, the code needs not to be entered again.</p>

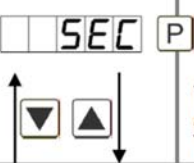
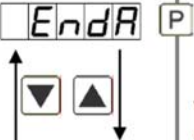
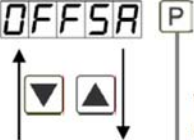
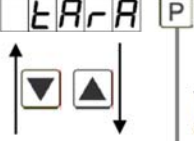
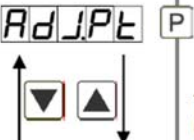
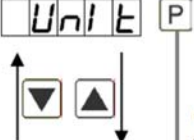
9.3 Programming interlock RUN

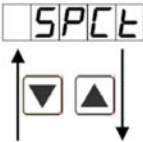

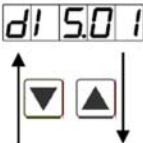

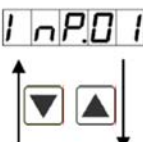

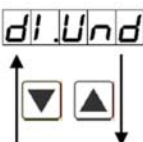

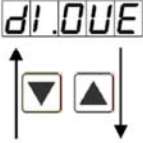

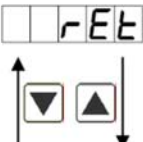
	<p>Activation / deactivation of the programming lock or completion of the standard parameterization with change into menu group level (complete function range), <i>RUN</i>: Default: <i>ULOC</i></p>  <p>With the navigation keys [▲] [▼], you can choose between the deactivated key lock <i>ULOC</i> (works setting) and the activated key lock <i>LOC</i>, or the change into the menu group level <i>PROF</i>. Confirm the selection with [P]. 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 [P] for 3 seconds in operating mode. Now enter the <i>CODE</i> (works setting 1 2 3 4) that appears using [▲] [▼] plus [P] 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 [P] 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>
---	---

9.4 Extended parameterization

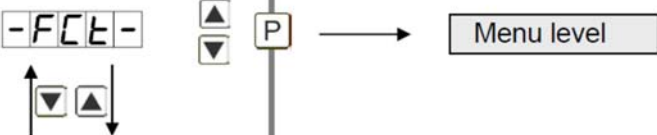
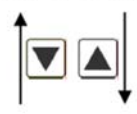
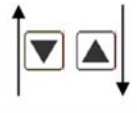
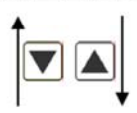
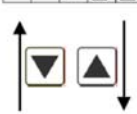
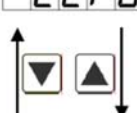
9.4.1 Signal input parameters



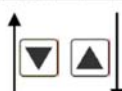







Menu group level	
	Menu level
Menu level	Parameterization level
	<p>Selection of the input signal <i>TYPE</i>: Default: <i>SENS.U</i></p> <p>  </p> <p>Available are several measuring input options: 0-20 mA, 4-20 mA or 0-10 VDC signals as the works calibration (without application of the sensor signal) and <i>SENS.U</i> (Voltage) or <i>SENS.A</i> (Current) as sensor calibration (with applied measuring signal). Confirm the selection with [P] and the display switches back to menu level.</p>
	<p>Setting the end value of the measuring range, <i>END</i>: Default: <i>10000</i></p> <p>  </p> <p>Set the end value from the smallest to the highest digit with [▲] [▼] and confirm each digit with [P]. A minus sign can only be parameterized on the highest value digit. After the last digit, the display switches back to the menu level. If <i>SENS</i> was selected as the input option, you can only select between <i>NOCA</i> and <i>CAL</i>. With <i>NOCA</i>, only the previously set display value is taken over, and with <i>CAL</i>, the device takes over both the display value and the analogue input value.</p>
	<p>Setting the start/offset value of the measuring range, <i>OFFS</i>: Default: <i>0</i></p> <p>  </p> <p>Enter the start/offset value from the smallest to the highest digit [▲] [▼] and confirm each digit with [P]. After the last digit the display switches back to the menu level. If <i>SENS</i> was selected as the input option, you can only select between <i>NOCA</i> and <i>CAL</i>. With <i>NOCA</i>, only the previously set display value is taken over, and with <i>CAL</i>, the device takes over both the display value and the analogue input value.</p>
	<p>Setting the decimal point, <i>DOT</i>: Default: <i>0</i></p> <p>  </p> <p>The decimal point on the display can be moved with [▲] [▼] and confirmed with [P]. The display then switches back to the menu level again.</p>

Menu level	Parameterization level
	Setting up the display time, SEC: Default: 1.0  <p>The display time is set with [▲] [▼]. The display moves up in increments of 0.1 sec up to 1 sec and in increments of 1.0 sec up to 10.0 sec. Confirm the selection by pressing the [P] button. The display then switches back to the menu level again.</p>
	Rescaling the measuring input values, ENDR: Default: 10000  <p>With this function, you can rescale the input value of e.g. 19.5 mA (works setting) without applying a measuring signal. If sensor calibration has been selected, these parameters are not available.</p>
	Rescaling the measuring input values, OFFR: Default: 0  <p>With this function, you can rescale the input value of e.g. 3.5 mA (works setting) without applying a measuring signal. If sensor calibration has been selected, these parameters are not available.</p>
	Setting up the tare/offset value, TARR: Default: 0  <p>The given value is added to the linearized value. In this way, the characteristic line can be shifted by the selected amount.</p>
	Setting up the balance point, ADJ.PT: Default: 08000  <p>The balance point for the final value can be chosen from the measuring range by SENS.U with 0...10 V or SENS.R with 0...20 mA in %. The preset 80.000% result from the widespread detuning of the melt pressure sensors.</p>
	Setting up the physical unit, UNIT: Default: NO  <p>One can choose between the above shown physical units. It will be displayed on the 5th digit of the display.</p>

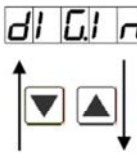
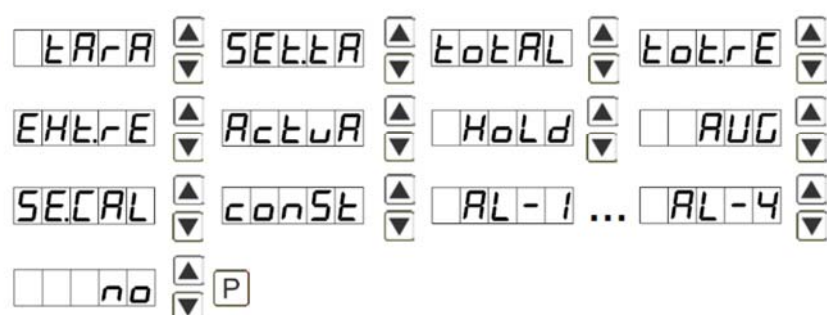
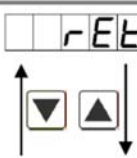
Menu level	Parameterization level
	Number of additional setpoints, SPCT: Default: 00  <p>30 additional setpoints can be defined to the initial- and final value, so linear sensor values are not linearised. Only activated setpoint parameters are displayed.</p>
	Display values for setpoints, DIS.01 ... DIS.30:  <p>Under this parameter setpoints are defined according to their value. At the sensor calibration, like at final value/offset, one is asked at the end if a calibration shall be activated.</p>
	Analog values for setpoints, IMP.01 ... IMP.30:  <p>The setpoints are always set according to the selected input signal. The desired analog values can be freely parameterised in ascending order.</p>
	Device undercut, DI.UND: Default: -19999  <p>With this function the device undercut (_____) can be defined on a definite value. Exception is input type 4-20 mA, it already shows undercut at a signal <1 mA, so a sensor failure is marked.</p>
	Display overflow, DI.QUE: Default: 99999  <p>With this function the display overflow (-----) can be defined on a definite value.</p>
	Back to menu group level, RET: <p>With [P] the selection is confirmed and the device changes into menu group level _-IMP-.</p>

9.4.2 General device parameters

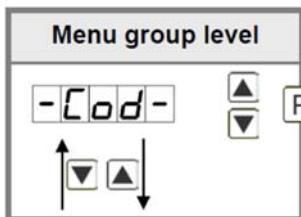
Menu group level	
	Menu level
Menu level	Parameterization level
	<p>Display time, <i>DISC</i>: Default: 01.0</p> <p>diSEC P 00.1 00.9 then 01.0 10.0 P</p> <p>The display is set up with [▲] [▼]. Thereby it switches until 1 second in increments of 0.1 seconds and until 10.0 seconds in increments of 1.0. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p>Rounding of display values, <i>ROUND</i>: 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>Arithmetic, <i>ARITH</i>: Default: NO</p> <p>ArITH P no RE21P rAd1C SQUAr P</p> <p>Reciprocal value Square root Square</p> <p>With this function the calculated value, not the measuring value, is shown in the display. With NO, no calculation is deposited. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p>Sliding average determination, <i>AVG</i>: Default: 10</p> <p>AUG P 01 50 P</p> <p>Under this menu item, the number of measurements that need to be averaged are preset. The averaging time results from the product of measuring time SEC and the averaged measurements AVG. With selection of AVG in menu level DISPL the result is shown in the display and evaluated when entered in the alarm AL1-AL4 or the analog output OUTPT.</p>
	<p>Zero point slowdown, <i>ZERO</i>: Default: 00</p> <p>ZEro P 0 P 0 P</p> <p>At the zero point slowdown, a value range around the zero point can be preset, so the display shows a zero. If e.g. 10 is set, the display would show a zero in the value range from -10 to +10; below continue with -11 and beyond with +11. The maximum adjustable range of value is 99.</p>

Menu level	Parameterisation level
	Solid constant value, CONST: Default: 0  <p>The constant value can be evaluated like the current measurand via the alarms or the analog output. The decimal place cannot be changed for this value and is taken over from the current measurand. So, with this value a setpoint generator can be realised via the analog output. Furthermore it can be used as calculated difference. At this the constant value needs to be subtracted from the current measurand and the difference is evaluated in the alerting or via the analog output. Thus regulation can be displayed quite easy with this parameterisation.</p>
	Minimum constant value, CON.MI: Default: -9999  <p>The minimum constant value is selected and adjusted from the smallest to the highest digit with [▲] [▼] and confirmed digit per digit with [P]. A minus sign can only be adjusted on the highest digit. After the last digit the display changes back into menu level.</p>
	Maximum constant value, CON.MA: Default: 9999  <p>The maximum constant value is selected and adjusted from the smallest to the highest digit with [▲] [▼] and confirmed digit per digit with [P]. A minus sign can only be adjusted on the highest digit. After the last digit the display changes back into menu level.</p>
	Display, DISPL: Default: ACTUA  <p>With this function the current measuring value, the min-value/max-value, the totaliser, the process-controlled hold-value, the sliding average value, the constant value or the difference between constant value and current value can be allocated to the display. With [P] the selection is confirmed and the device changes into menu level.</p>
	Brightness control, LIGHT: Default: 15  <p>The brightness of the display can be adjusted in 16 levels from 00 = very dark to 15 = very bright via this parameter or alternatively via the navigation keys from the outside. During the start of the device the level that is deposited under this parameter will always be used, even though the brightness has been changed via the navigation keys in the meantime.</p>

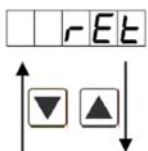
Menu level	Parameterization level
<div>FLASH</div> <div> <div>▲</div> <div>▼</div> </div> <div>P</div>	<p>Display flashing, <i>FLASH</i>: Default: <i>NO</i></p> <div> <div>no</div> <div>AL-1</div> <div>AL-2</div> <div>AL.12</div> <div>AL-3</div> <div>AL-4</div> <div>AL34</div> <div>ALAL</div> </div> <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>
<div>EAST</div> <div> <div>▲</div> <div>▼</div> </div> <div>P</div>	<p>Assignment (deposit) of key functions, <i>TAST</i>: Default: <i>NO</i></p> <div> <div>EHTr</div> <div>LI.12</div> <div>LI.34</div> <div>TARA</div> <div>SEETr</div> <div>TOTAL</div> <div>TOTRE</div> <div>EHTRE</div> <div>ACTUR</div> <div>LIGHT</div> <div>L11</div> <div>L11-2</div> <div>L11-3</div> <div>L11-4</div> <div>no</div> <div>P</div> </div> <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 fourth 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. With <i>TARA</i> the device is set temporarily on a parameterised value. The device acknowledges the correct taring with <i>00000</i> in the display. <i>SET.TA</i> switches into the offset value and can be adjusted via the navigation keys. Via <i>TOTAL</i> the current value of the totaliser can be displayed for approx. 7 seconds, after this the device switches back on the parameterised display value. If <i>TOT.RE</i> is deposited, the totaliser can be set back by pressing of the navigation keys [▲] [▼], the device acknowledges this with <i>00000</i> in the display. By allocation on <i>EHT.RE</i> the min/max-memory is deleted. At <i>ACTUR</i> the measuring value is shown for approx. 7 seconds, after this the device switches back on the parameterised display value With <i>LIGHT</i> the brightness of the display is adjusted. This setting is not saved and gets lost at a re-start fo the device. Via selection <i>L1.1</i>, <i>L1.1-2</i>, <i>L1.1-3</i>, <i>L1.1-4</i> threshold values can be addressed via the navigation keys; they can be changed digit per digit or taken over by pushing the [P]-key. The adjustment is taken over directly, an existing limit value monitoring and the current measurement will not be influenced by this. If <i>NO</i> is selected, the navigation keys are without any function in the operation mode.</p>

Menu level	Parameterization level
	<p>Special function digital input, <i>DIG.IN</i>: Default: <i>NO</i></p> <p>  </p> <p>For operating mode, special functions can be realised via the digital input. This function is actuated by pressing the key. With <i>TARA</i> the device is tared to zero and safed permanently as offset. The display acknowledges this with <i>00000</i> in the display. <i>SEt.TA</i> switches into the offset value and can be changed via the navigation keys. Via <i>TOTAL</i> the current value of the totaliser can be displayed for approx. 7 seconds, after this the device switches back on the parameterised display value. If <i>TOT.RE</i> is deposited, the totaliser can be set back by pressing the navigation keys, the device acknowledges this with <i>00000</i> in the display. <i>EHt.RE</i> deletes the min/max-memory. If <i>HOLD</i> has been selected, the moment can be hold constant by triggering the digital input, and is updated by releasing the key. Advice: <i>HOLD</i> can only be activated, if <i>HOLD</i> was selected under parameter <i>DISPL</i>. <i>ACTUA</i> shows the measuring value for approx. 7 seconds, after this the device switches back on the parameterised display value. The same applies to <i>AVG</i>, here the sliding average value is displayed. A sensor calibration is done by triggering of the digital input via <i>SE.CAL</i>, the flow diagram is shown in <i>Chapter 8</i>. The constant value <i>CONST</i> can be recalled via the digital input, or changed digit per digit. At <i>AL-1...AL-4</i> there can be set an output and therewith e.g. a setpoint adjustment can be done. If <i>NO</i> is selected, the digital input is without any function in the operation mode.</p>
	<p>Back to menu group level, <i>RET</i>:</p> <p>With [P] the selection is confirmed and the device changes into menu group level „- FCT -“.</p>

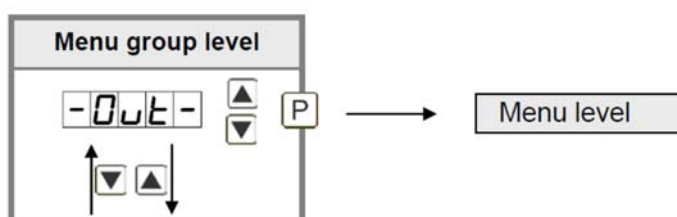
9.4.3 Safety parameters

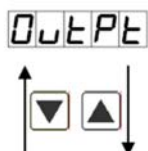

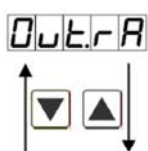

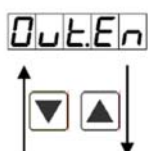



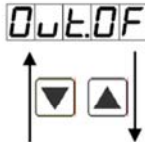

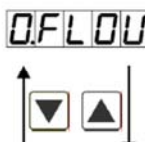
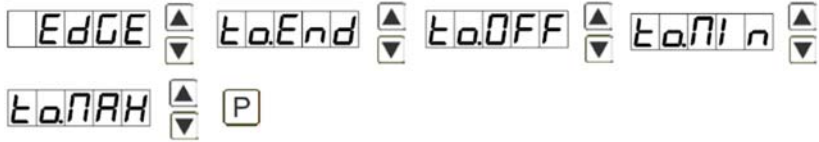
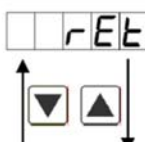
Menu level	Parameterization level
	<p>User code <i>U.CODE</i>: Default: 0000</p> <p>U.CodE P 0 P 0 P 0 P 0 P 0 P</p> <p>Via this code, reduced sets of parameters can be set free. A change of the <i>U.CODE</i> can be done via the correct input of the <i>R.CODE</i> (master code).</p>
	<p>Master code, 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

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

9.4.4 Analogue output parameters



Menu level	Parameterisation level
	<p>Selection reference analog output, <i>OUTPT</i>:</p> <p>Default: <i>ACTUA</i></p> <p>  </p> <p>The analog output signal can refer to different functions, in detail this are the current measuring value, min-value, max-value or totaliser-/sum-function, the sliding average value, the constant value or the difference between the current value and the constant value. If <i>HOLD</i> is selected the signal of the analog output will be 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>Selection analog output, <i>OUTrA</i>:</p> <p>Default: <i>4-20</i></p> <p>  </p> <p>There are 3 output signals available: 0-10 VDC, 0-20 mA and 4-20 mA. With this function the demanded signal can be selected.</p>
	<p>Setting up the final value of the analog output, <i>OUT.En</i>:</p> <p>Default: <i>10000</i></p> <p>  </p> <p>The final value can be adjusted from the smallest to the largest digit with [▲] [▼]. Confirm each digit with [P]. A minus sign can only be parameterized on the highest value digit. After the last digit, the display switches back to the menu level.</p>

Menu level	Parameterization level
	<p>Setting the initial value of the analog output, <i>OUT.OF</i>: Default: 00000</p> <p></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 parameterized on the highest digit. After the last digit the device changes back into menu level.</p>
	<p>Overflow behaviour, <i>O.FLOU</i>: Default: <i>EDGE</i></p> <p></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>Back to menu group level, <i>RET</i>:</p> <p>With [P] the selection is confirmed and the device changes into menu group level „- OUT -“.</p>

9.4.5 Relay functions

Menu group level

-rEL-

▲

▼

P


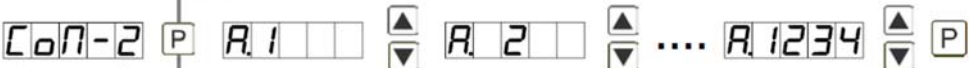

▲

▼

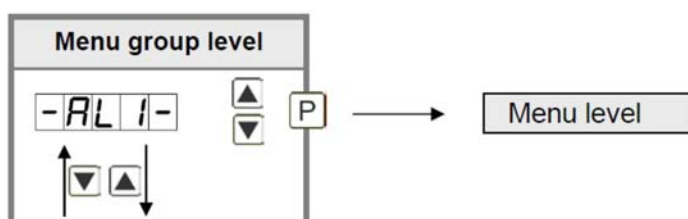
→ Menu level


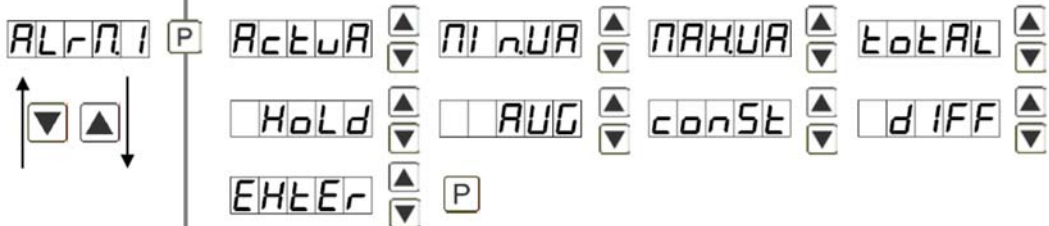
Menu level	Parameterization level												
<div style="border: 1px solid black; padding: 2px;">rEL-1</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div>	<p>Alarm relay 1, REL-1: Default: <i>AL-1</i></p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 20%;"> <div style="border: 1px solid black; padding: 2px;">rEL-1</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 80%;"> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <div style="border: 1px solid black; padding: 2px;">AL-1</div> <div style="border: 1px solid black; padding: 2px;">....</div> <div style="border: 1px solid black; padding: 2px;">AL-4</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 55%;"> <div style="border: 1px solid black; padding: 2px;">AL-n1</div> <div style="border: 1px solid black; padding: 2px;">....</div> <div style="border: 1px solid black; padding: 2px;">AL-n4</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 30%;"> <div style="border: 1px solid black; padding: 2px;">LoGIC</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 30%;"> <div style="border: 1px solid black; padding: 2px;">OFF</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 30%;"> <div style="border: 1px solid black; padding: 2px;">On</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 10%;"> <div style="border: 1px solid black; padding: 2px;">CAL</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 30%;"> <div style="border: 1px solid black; padding: 2px;">CALOF</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 30%;"> <div style="border: 1px solid black; padding: 2px;">CALEn</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 30%;"> <div style="border: 1px solid black; padding: 2px;">P</div> </div> </div> <p style="font-size: 0.8em; margin-top: 10px;">Each setpoint (optional) can be linked up via 4 alarms (by default). This can either be inserted at activated alarms <i>AL1/4</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>LoG-n</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. The parameters <i>CAL</i>, <i>CALOF</i> and <i>CALEn</i> can only be used in accordance with the semi-automatic calibration (<i>Chapter 8. Sensor alignment</i>). At <i>CAL</i> the relay switches during sensor calibration, at <i>CALOF</i> during offset calibration and at <i>CALEn</i> during the calibration of the final value. With [P] the selection is confirmed and the device changes into menu level.</p> </div></div>												
<div style="border: 1px solid black; padding: 2px;">LoG-1</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div>	<p>Logic relay 1, LoG-1 Default: <i>OR</i></p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 20%;"> <div style="border: 1px solid black; padding: 2px;">LoG-1</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 80%;"> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <div style="border: 1px solid black; padding: 2px;">or</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 55%;"> <div style="border: 1px solid black; padding: 2px;">nor</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 45%;"> <div style="border: 1px solid black; padding: 2px;">And</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> <div style="width: 55%;"> <div style="border: 1px solid black; padding: 2px;">nAnd</div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">▲</div> <div style="border: 1px solid black; padding: 2px;">▼</div> </div> </div> </div> <div style="text-align: right; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px;">P</div> </div> <p style="font-size: 0.8em; margin-top: 10px;">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>. This parameter can only be selected if <i>LoGIC</i> was selected under <i>REL-1</i>.</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: 0.7em;"> <tbody> <tr> <td style="width: 15%; text-align: center;">or</td> <td style="width: 35%;">$A1 \vee A2$</td> <td style="width: 50%;">As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.</td> </tr> <tr> <td style="text-align: center;">nor</td> <td>$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$</td> <td>The relay operates only, if no selected alarm is active. Equates to quiescent current principle.</td> </tr> <tr> <td style="text-align: center;">And</td> <td>$A1 \wedge A2$</td> <td>The relay operates only, if all selected alarms are active.</td> </tr> <tr> <td style="text-align: center;">nAnd</td> <td>$\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}$</td> <td>As soon as a selected alarm is not activated, the relay operates.</td> </tr> </tbody> </table> <p style="font-size: 0.8em; margin-top: 5px;">With [P] the selection is confirmed and the device changes into menu level.</p> </div></div>	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.											

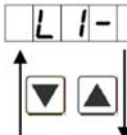

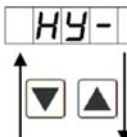

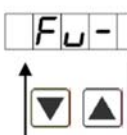

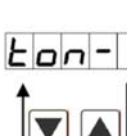

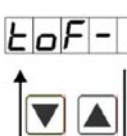

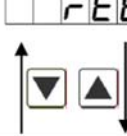
Menu level	Parameterization level												
<div>COM-1</div> <div>P</div> <div>AL1</div> <div>AL2</div> <div>....</div> <div>AL1234</div> <div>P</div> <div><div>↑</div><div>↓</div></div>	<p>Alarms for relay 1, COM-1: Default: <i>RL</i></p> <p>The allocation of the alarms to relay 1 happens via this 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>												
<div>REL-2</div> <div>P</div> <div>AL-5</div> <div>....</div> <div>AL-8</div> <div>AL-n5</div> <div>....</div> <div>AL-n8</div> <div>LOGIC</div> <div>OFF</div> <div>On</div> <div>CAL</div> <div>CAL.OF</div> <div>CAL.EN</div> <div>P</div> <div><div>↑</div><div>↓</div></div>	<p>Alarm relay 2, REL-2: Default: <i>RL-2</i></p> <p>Each setpoint (optional) can be linked up via 4 alarms (by default). This can either be inserted at activated alarms <i>AL1/4</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. The parameters <i>CAL</i>, <i>CAL.OF</i> and <i>CAL.EN</i> can only be used in accordance with the semi-automatic calibration (<i>Chapter 8. Sensor alignment</i>). At <i>CAL</i> the relay switches during sensor calibration, at <i>CAL.OF</i> during offset calibration and at <i>CAL.EN</i> during the calibration of the final value. With [P] the selection is confirmed and the device changes into menu level.</p>												
<div>LOG-2</div> <div>P</div> <div>or</div> <div>nor</div> <div>And</div> <div>nAnd</div> <div>P</div> <div><div>↑</div><div>↓</div></div>	<p>Logic relay 2, LOG-2: Default: <i>OR</i></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>. This parameter can only be selected if <i>LOGIC</i> was selected under <i>REL-1</i>.</p> <table><tr><td><div>or</div></td><td>$A1 \vee A2$</td><td>As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.</td></tr><tr><td><div>nor</div></td><td>$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$</td><td>The relay operates only, if no selected alarm is active. Equates to quiescent current principle.</td></tr><tr><td><div>And</div></td><td>$A1 \wedge A2$</td><td>The relay operates only, if all selected alarms are active.</td></tr><tr><td><div>nAnd</div></td><td>$\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}$</td><td>As soon as a selected alarm is not activated, the relay operates.</td></tr></table> <p>With [P] the selection is confirmed and the device changes into menu level.</p>	<div>or</div>	$A1 \vee A2$	As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.	<div>nor</div>	$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$	The relay operates only, if no selected alarm is active. Equates to quiescent current principle.	<div>And</div>	$A1 \wedge A2$	The relay operates only, if all selected alarms are active.	<div>nAnd</div>	$\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}$	As soon as a selected alarm is not activated, the relay operates.
<div>or</div>	$A1 \vee A2$	As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.											
<div>nor</div>	$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$	The relay operates only, if no selected alarm is active. Equates to quiescent current principle.											
<div>And</div>	$A1 \wedge A2$	The relay operates only, if all selected alarms are active.											
<div>nAnd</div>	$\overline{A1 \wedge A2} = \overline{A1} \vee \overline{A2}$	As soon as a selected alarm is not activated, the relay operates.											

Menu level	Parameterization level
	Alarms for relay 2, <i>CON-2</i>: Default: <i>R. 2</i>  <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>
	Back to menu group level, <i>RET</i>: <p>With [P] the selection is confirmed and the device changes into menu group level „- REL -“.</p>

9.4.6 Alarm parameters

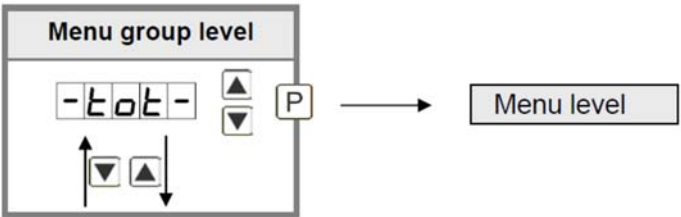


Menu level	Parameterization level
	Dependency alarm1, <i>ALRM.1</i>: Default: <i>ACTUA</i>  <p>The dependency of alarm1 can be related to special functions, in detail these are the current measurand, the MIN-value, the MAX-value, the totaliser value/sum value, the sliding average value, the constant value or the difference between the current measurand and the constant value. If <i>HOLD</i> is selected the alarm is hold and processed just after deactivation of <i>HOLD</i>. <i>ENTER</i> causes the dependency either by pressing the [O]-key on the front of the housing or by an external signal via the digital input. With [P] the selection is confirmed and the device changes into menu level.</p> <p>Example: By using the maximum value <i>ALARM.1 = MAX.VA</i> in combination with a threshold monitoring <i>FU-1 = HIGH</i>, an alarm confirmation can be realised. Use the digital input for confirmation.</p>

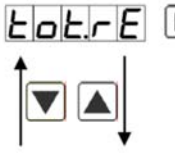

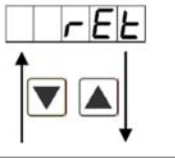
Menu level	Parameterization level
	Threshold values / Limit values, LI-1: Default: 2000  <p>The limit value defines the threshold, that activates/deactivates an alarm.</p>
	Hysteresis for threshold values, HY-1: Default: 00000  <p>The delayed reaction of the alarm is the difference to the threshold value, which is defined by the hysteresis.</p>
	Function for threshold value undercut /exceedance, FU-1: Default: HIGH  <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>
	Switching-on delay, TON-1: Default: 000  <p>For limit value 1 one can preset a delayed switching-on of 0-100 seconds.</p>
	Switching-off delay, TOF-1: Default: 000  <p>For limit value 1 one can preset a delayed switching-off of 0-100 seconds.</p>
	Back to menu group level, RET: <p>With [P] the selection is confirmed and the device changes into menu group level „-AL1-“.</p>

The same applies to -AL2- to -AL4-.

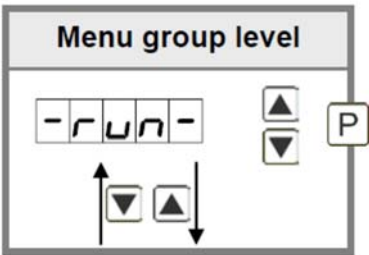
9.4.7 Totalizer (Volume metering)



Menu level	Parameterization level
	<p>Totaliser state, <i>TOTAL</i>: Default: <i>OFF</i></p> <p><i>TOTAL</i> <i>OFF</i> <i>STEAD</i> <i>TEMP</i> </p> <p>The totaliser realizes measurements on a time base of e.g. l/h, at this the scaled input signal is integrated by a time and steadily (select <i>STEAD</i>) or temporarily (select <i>TEMP</i>) saved. Select the constant storage for consumption measurements and the quick storage for frequently filling processes. During the constant storage <i>STEAD</i> the current sum value is saved at each totaliser reset. Furthermore it is saved every 30 minutes in the not-quick storage of the device. If <i>OFF</i> is selected, the function is deactivated. With [P] the selection is confirmed and the device changes into menu level.</p>
	<p>Time base, <i>TBASE</i>: Default: <i>SEC</i></p> <p><i>TBASE</i> <i>SEC</i> <i>min</i> <i>hour</i> </p> <p>Under this parameter the time base of the measurement can be preset in seconds, minutes or hours.</p>
	<p>Totaliser factor, <i>FACTD</i>: Default: <i>1E0</i></p> <p><i>FACTD</i> <i>1E0</i> ... <i>1E6</i> </p> <p>At this the factor (1E0...1E6) respectively the divisor for the internal calculation of the measuring value is assigned.</p>
	<p>Setting up the decimal point for the totaliser, <i>TOT.DT</i>: Default: <i>0</i></p> <p><i>TOT.DT</i> <i>0</i> <i>0.0</i> <i>0.00</i> <i>0.000</i> <i>0.0000</i> <i>0.00000</i> </p> <p>The decimal point of the device can be adjusted with the navigation keys [▲] [▼]. With [P] the selection is confirmed and the device changes into menu level.</p>

Menu level	Parameterization level
	<p>Totaliser reset, <i>TOT.RE</i>: Default: 00000</p>  <p>The reset value is adjusted from the smallest to the highest digit with the navigation keys [▲] [▼] and digit per digit confirmed with [P]. After the last digit, the display switches back to the menu level. The activator for the reset is parameter driven via the 4th key or via the optional digital input.</p>
	<p>Back to menu group level, <i>RET</i>:</p> <p>With [P] the selection is confirmed and the device changes into menu group level „- TOT -“.</p>

Programming interlock RUN
Description see page 14, menu level RUN



10. Reset to factory settings

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

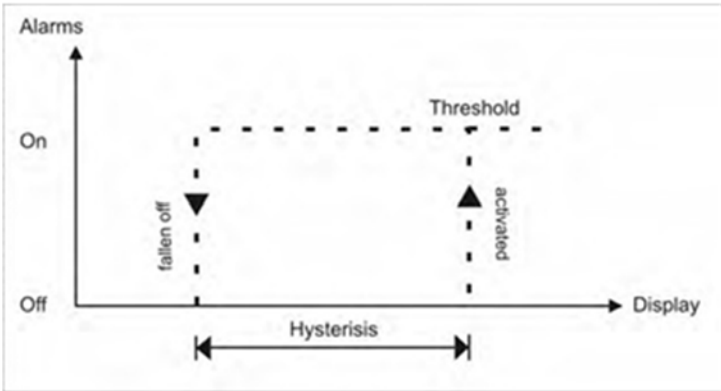
With a reset, the default values of the program table are loaded and used for subsequent operation. This sets the unit back to the state in which it was supplied.

CAUTION! All application-related data are lost.

11. Alarms / Relays

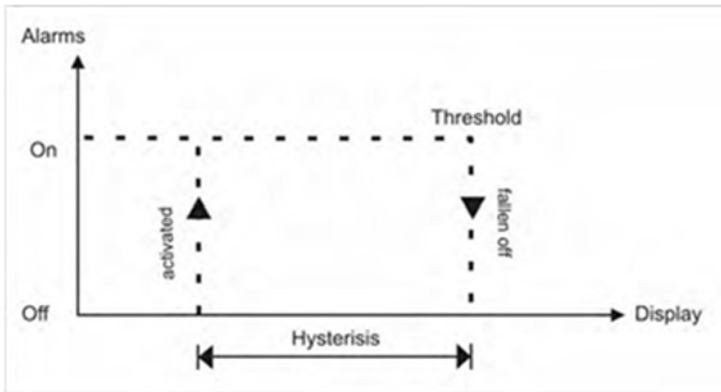
This device has 4 virtual alarms that can monitor one limit value in regard of an undercut or exceedance. Each alarm can be allocated to an optional relay output S1-S2; furthermore, alarms can be controlled by events like e.g. Hold or Min-/Max. value.

Function principle of alarms / relays	
Alarm / Relay x	Deactivated, instantaneous value, min-/max-value, Hold-value, totaliser value, sliding average value, constant value, difference between instantaneous value and constant value or an actuation via the digital input
Switching threshold	Threshold / limit value of the change-over
Hysteresis	Broadness of the window between the switching thresholds
Working principle	Operating current / Quiescent current



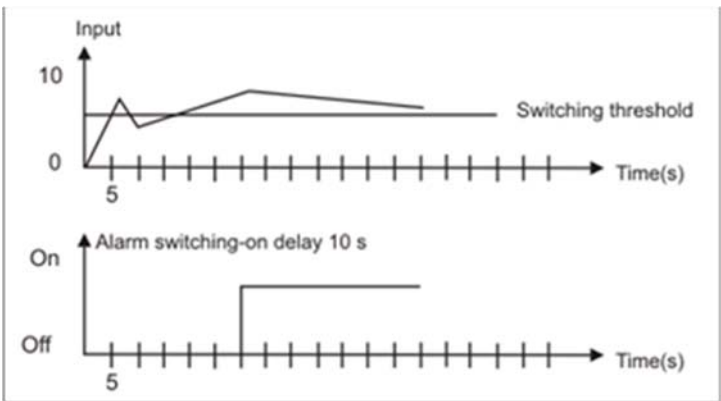
Operating current

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.

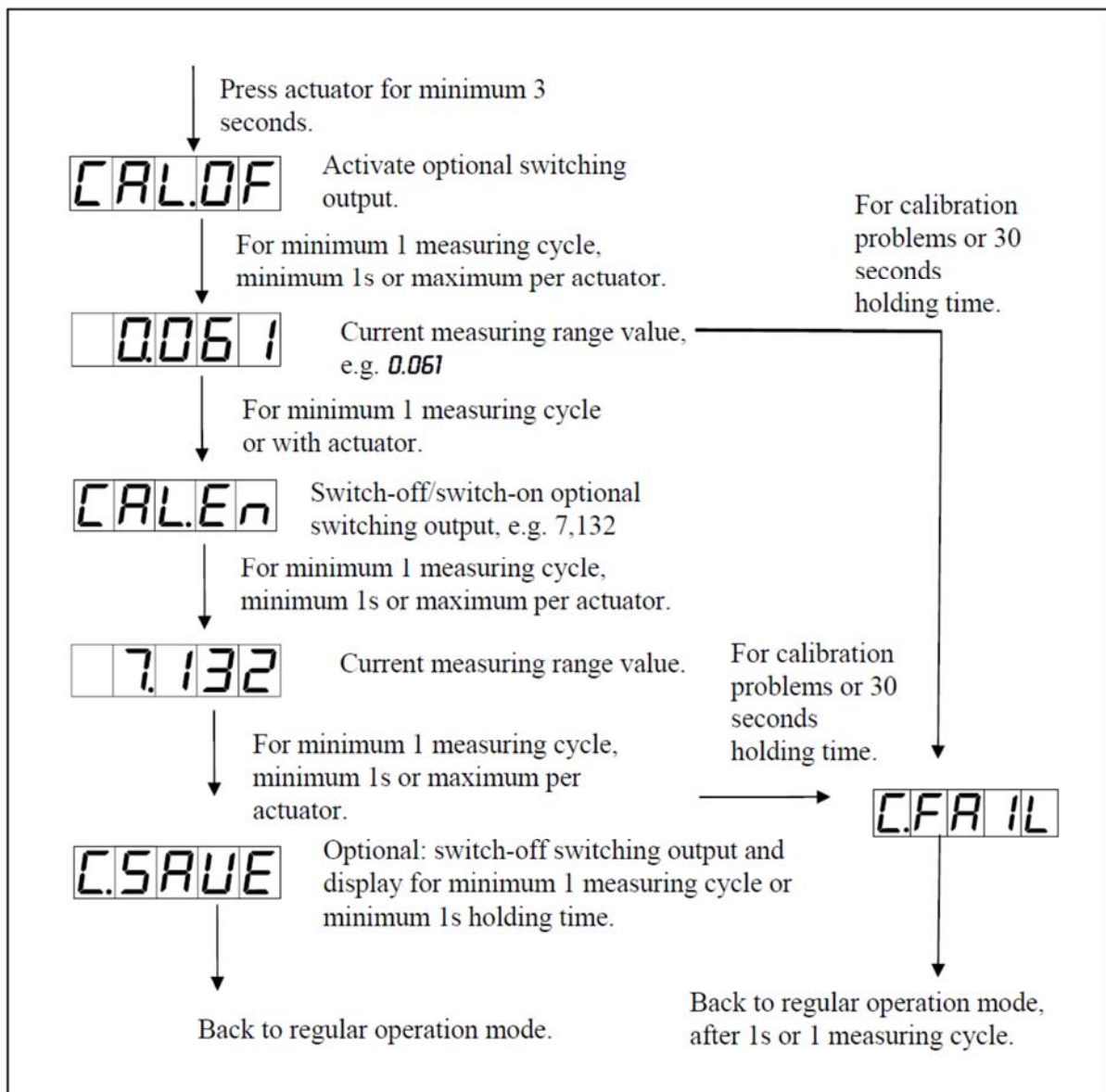


Switching-on delay

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 parameterized time.

12. Sensor calibration Offset / Final value

The device is equipped with a semi-automatic sensor calibration (**SENSu/SENSa**). A switching output operates the trimming resistor, which exists in some sensors. An adjustment of offset and final value takes place, after which the sensor can be used directly. Depending on parameterization, the calibration can be realized via the fourth key or via the digital input. It is possible to key during the calibration steps. So, reference signals can be connected manually. However, the calibration will be interrupted after 30 seconds.



13. Technical Information

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

14. Order Codes

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

15. Dimensions

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

16. Safety advices

Please read the following safety advices and the assembly *chapter 6* before installation and keep it for future reference.

Proper use

The **DAG-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 **DAG-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 **0.5 A 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 equalizer (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 device is part of the service. Here electrostatic discharge needs to be avoided. Attention! High voltage can cause dangerous body currents,
- Galvanic insulated potentials within one complex need to be placed on an 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.

17. Error elimination

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

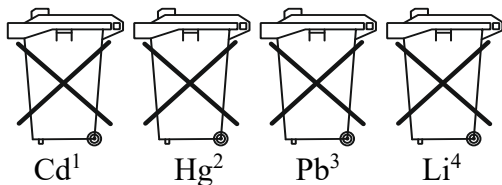
18. Disposal

Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

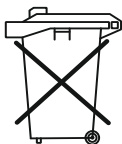
Batteries

Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

Electrical and electronic equipment



19. EU Declaration of Conformance

We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

Digital Indicating Unit

Model: DAG-M1V

to which this declaration relates is in conformity with the standards noted below:

EN 61010-1:2010+A1:2019+A1:2019/AC:2019

Safety requirements for electrical equipment for measurement, control and laboratory use

EN 61326-1:2013

Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

EN 63000:2018

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Also, the following EC guidelines are fulfilled:

2014/30/EU

EMC Directive

2014/35/EU

Low Voltage Directive

2011/65/EU

RoHS (category 9)

2015/863/EU

Delegated Directive (RoHS III)

Hofheim, 16 March 2023



H. Volz
General Manager



M. Wenzel
Proxy Holder

20. UK Declaration of Conformity

We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

Digital Indicating Unit

Model: DAG-M1V

to which this declaration relates is in conformity with the standards noted below:

BS EN 61010-1:2010+A1:2019

Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements

BS EN 61326-1:2013

Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements

BS EN IEC 63000:2018

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Also, the following UK guidelines are fulfilled:

S.I. 2016/1091

Electromagnetic Compatibility Regulations 2016

S.I. 2016/1101

Electrical Equipment (Safety) Regulations 2016

S.I. 2012/3032

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Hofheim, 06 June 2023

H. Volz
General Manager

M. Wenzel
Proxy Holder