Operating Instructions

for

Digital indicating Unit

PT100 3-/4-wire -200°C…850°C / -328°F…1562°F

Model: DAG-S45…, 96 x 48 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.

1. Contents

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.

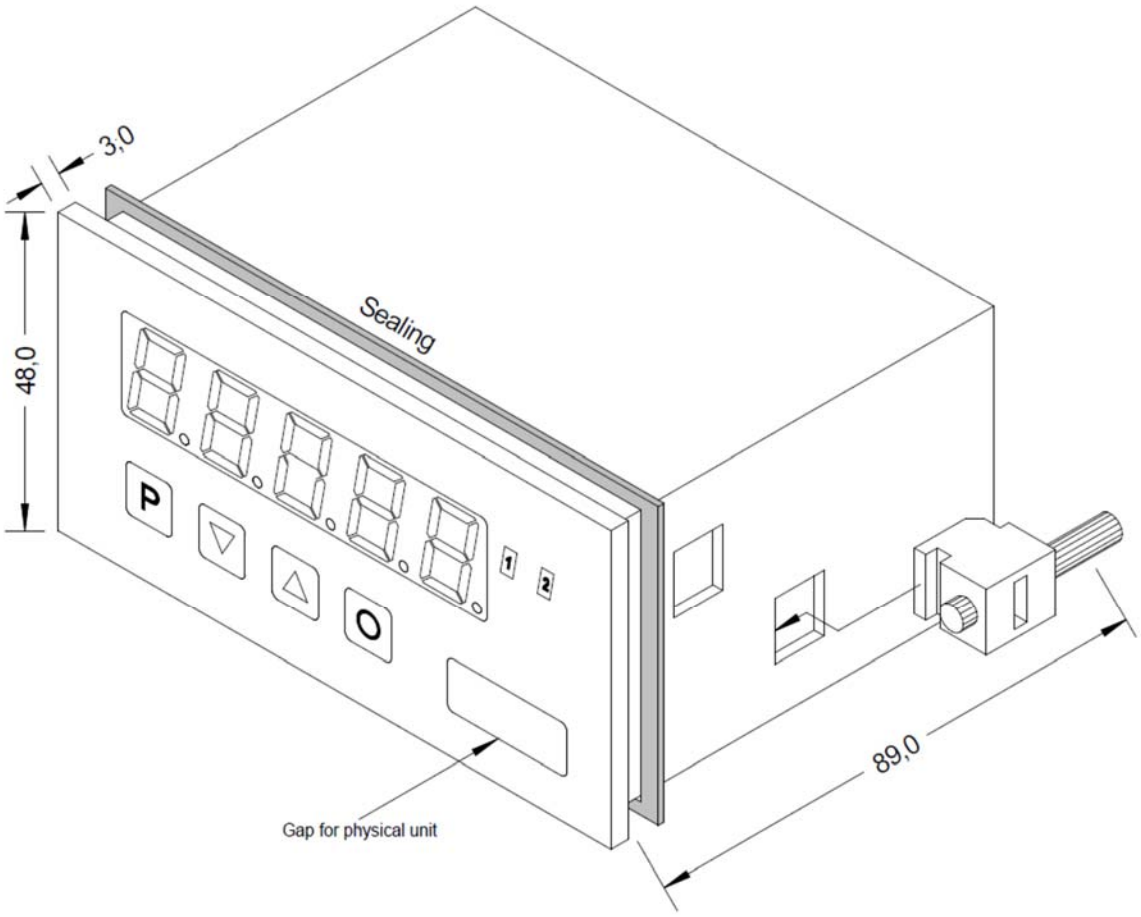
Scope of delivery:
The standard delivery includes:
- Digital indicating Unit model: DAG-S45

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. Montage

Please read the Safety advice on page 33 before installation and keep this user manual for future reference.



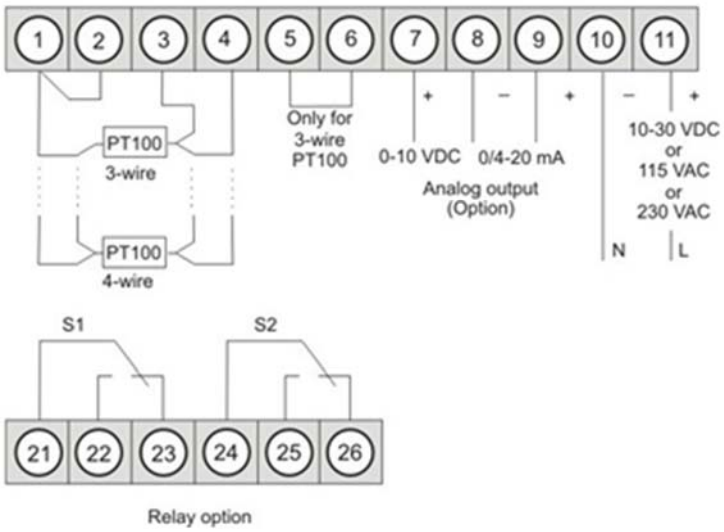
1. After removing the fixing elements, insert the device.
2. Check the seal to make sure it fits securely.
3. Click the fixing elements back into place and tighten the clamping screws by hand. Then use a screwdriver to tighten them another half a turn.

CAUTION! The torque should not exceed 0.1 Nm!

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

6. Electrical connection

DAG-S450 ... with power supply 230 VAC
DAG-S454 ... with power supply 115 VAC
DAG-S453 ... with power supply 10-30 VDC



Relay option

7. Function and operation description

Operation
The operation is divided into three different levels.

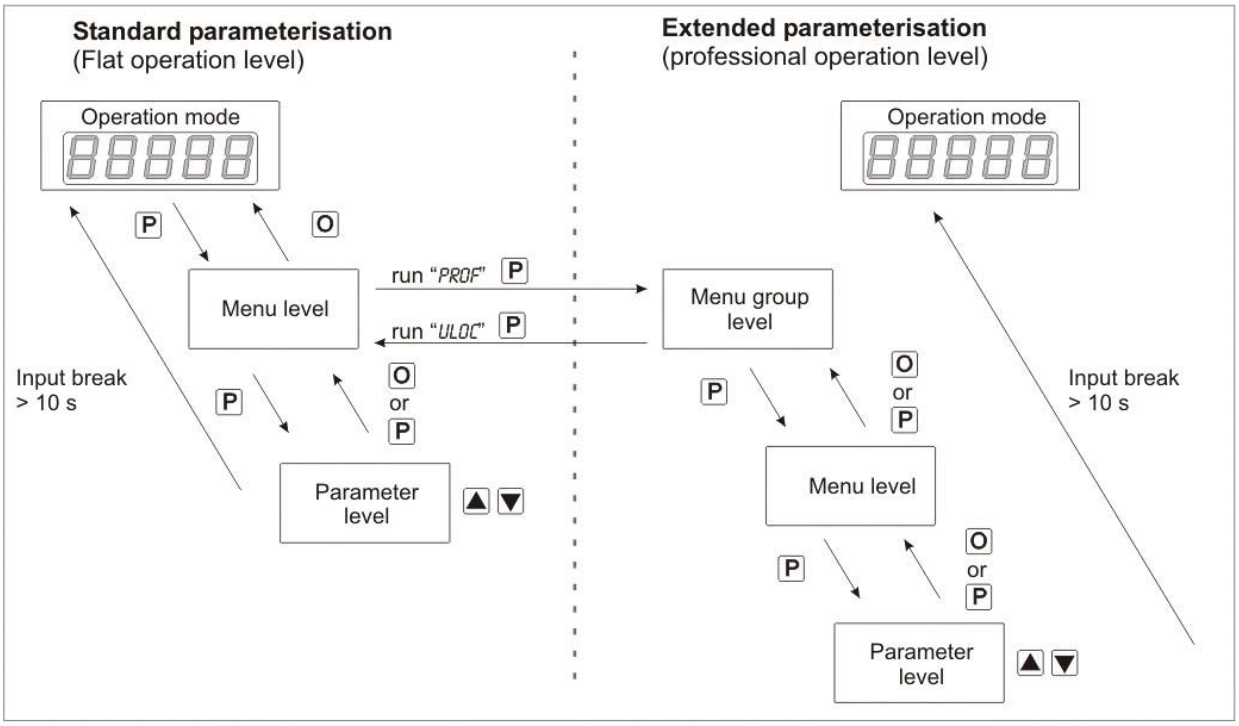
Menu level (delivery status)
This level is for the standard settings of the device. Only menu items which are sufficent to set the device into operation are displayed. To get into the professional level, run through the menu level and parameterise **prof** under menu item RUN.

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 availabe. To leave the menu group level, run through this level and parameterise **uloc** under menu item RUN.

Parameterization level
Parameter deposited in the menu item can here be parameterised. Functions, that can be changed or adjusted, are always signalised by a flashing of the display. Settings that are made in the parameterisation level are confirmed with **[P]** and thus safed. 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 safed automatically by the device and changes into operating mode, if no further key operation is done within the next 10 seconds.

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

Function chart



Underline:

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

8. Setting up the device

8.1 Switching-on

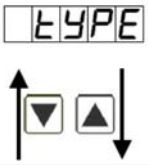
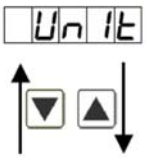
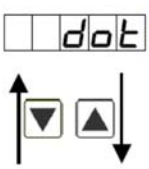
Once the installation is complete, you can start the device by applying the voltage supply. Before, check once again that all electrical connections are correct.

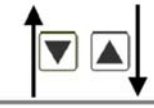
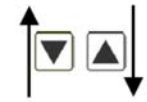
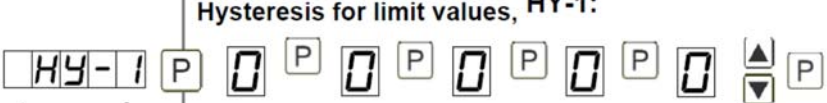
Starting sequence

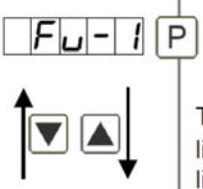
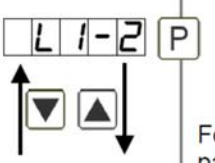
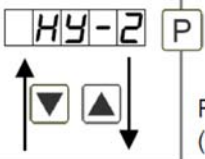
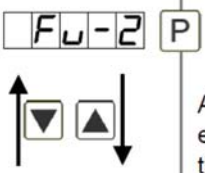
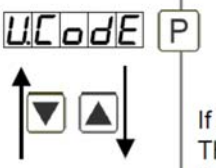
For 1 second during the switching-on process, the segment test (**8 8 8 8 8**) is displayed, followed by an indication of the software type and, after that, also for 1 second, the software version. After the starting sequence, the device switches to operation/display mode.

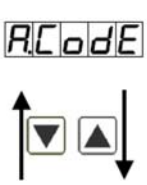
8.2 Standard parameterization

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	Parameterisation level
	**Selection of the input signal, tYPE:**  Selectable as measuring input types are 3- and 4-wire-PT100 signals. Confirm the selection with **[P]** and the display switches back to menu level.
	**Type of temperature measurement UNIT:**  Select between °C and °F to display the temperature. Confirm the selection with **[P]** and the display switches back to menu level.
	**Setting the decimal point / physical unit DOT:**  The decimal point and the physical unit of the device can be adjustedt with [▼] [▲]. If e.g. temperature measurement is selected in °C, one can select 0°C respectively 0.0°C in the parameterisation level. Confirm the selection with **[P]** and the display switches back to menu level.
	**Impedance matching, OFFS:**  The value for the sensor calibration is aligned from the smallest to the highest digit [▼] [▲] and confirmed digit per digit with **[P]**. After the last digit, the device changes back into menu level. During a temperature measurement in °C the value calibration can be adjusted between -20.0 and +20.0 and can be set during a measurement in °F between -36.0 and +36.0. If the measurement is switched later on, the value is rounded.

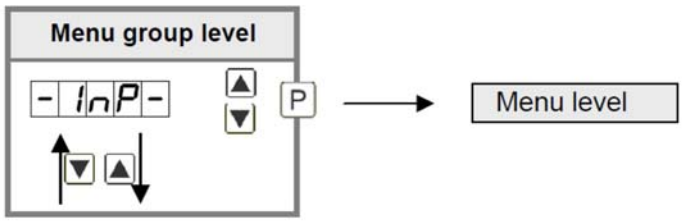
Menu level	Parameterisation level
	**Setting up the test time, SEC:**  The test time is adjusted with **[▲] [▼]**. Thereby the display moves up in increments of 0.1 sec up to 1 sec and in increments of 1.0 sec up to 10.0 sec. Confirm the selection with **[P]** and the display switches back to menu level.
	**Selection of analog output, Out.rA:**  Three output signals are available: 0-10 VDC, 0-20 mA and 4-20 mA, with this function, the demanded signal is selected.
	**Setting up the final value of the analog output, Out.En:**  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 parametrised on the highest digit. After the last digit, the device changes back into menu level.
	**Setting up the initial value of the analog output, Out.OF:**  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 parametrised on the highest digit. After the last digit, the device changes back into menu level.
	**Threshold values / limit values, LI-1:**  For both limit values, two different values can be parameterized. With this, the parameters for each limit value are called up one after another.
	**Hysteresis for limit values, HY-1:**  For all limit values exists a hysteresis function, that reacts according to the settings (threshold exceedance / threshold undercut).

Menu level	Parameterisation level
	**Function if display falls below / exceeds limit value, FU-1:**  The limit value undercut can be selected with **Louu** (LOW = lower limit value) and limit value exceedance can be selected with **high** (HIGH = upper limit value). If e.g. limit value 1 is on a switching threshold of 100 and occupied with function „high“, the alarm will be activated by reaching the threshold. If the limit value is allocated to „Low“, an alarm will be activated by undercut of the threshold.
	**Threshold values / limit values, LI-2:**  For both limit values, two different values can be parameterized. With this, the parameters for each limit value are called up one after another.
	**Hysteresis for limit values, HY-2:**  For all limit values exists a hysteresis function, that reacts according to the settings (threshold exceedance / threshold undercut).
	**Function if display falls below / exceeds limit value, FU-2:**  A limit value undercut is selected with **Louu** (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. By allocation of limit value **Louu** , an alarm is activated by falling below the threshold value.
	**User code (4-digit number-combination, free available), U.CodE:**  If this code is set, the user can only choose from a reduced number of parameter sets. The user has e.g. no access to the scale of the measuring inputs. Still, a changing of the limit values and the allocation of the analog output are allowed. This reduced parameterisation is activated by selecting **LOC** in menu item **run**. The device confirms the setting with „- - - - -„ and changes into operation mode. By pressing **[P]** for 3 seconds in operation mode, the display shows **COde** and thus confirms the change into the reduced parametrisation. It stays activated as long as the standard parametrisation is activated again by the input of **A.Code** (master code).

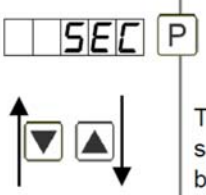
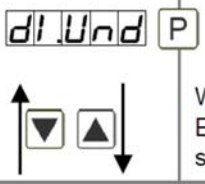
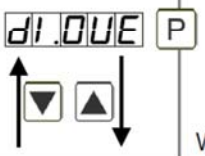
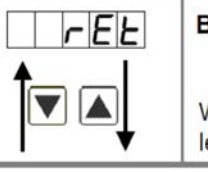
Menu level	Parameterisation level
	**Master code (4-digit number-combination free available), A.CodE:**  No parameterisation is allowed if this code is set. This function ist activated by selecting **LOC** in menu item **run**. The device confirms the setting with „- - - - -„ and changes into operation mode. By pressing **[P]** for 3 seconds in operation mode, the display shows **COde** and thus confirms the activation of the master code. The user can only come to the parameterisation by the correct input of the number-combination. It stays activated as long as **ULOC** is entered in menu group **run**, this sets the device back into standard parameterisation.
	**Activation / deactivation of the programming lock or completion of the standard parameterization with change into menu group level (complete function range), run:**  With the navigation keys [▲] [▼], you can choose between the deactivated key lock **Uloc** (works setting) and the activated key lock **Loc**, or the menu group level **ProF**. Confirm the selection with **[P]**. After this, the display confirms the settings with **"- - - - -"**, and automatically switches into operating mode. If **Loc** was selected, the keyboard is locked. To get back into the menu level, press **[P]** for 3 seconds in operating mode. Now enter the **CODE** (works setting **1 2 3 4**) that appears using [▲] [▼] plus **[P]** to unlock the keyboard. **FAIL** appears if the input is wrong. To parametrise further functions **ProF** needs to be set. The device confirms this setting with **„- - - - - „** and changes automatically into operation mode. By pressing **[P]** for approx. 3 seconds in operation mode, the first menu group **InP** is shown in the display and thus confirms the change into the extended parameterisation. It stays activated as long as **ULOC** is entered in menu group **RUN** , thus the display is set back in standard parameterisation again.

8.3 Extended parameterization

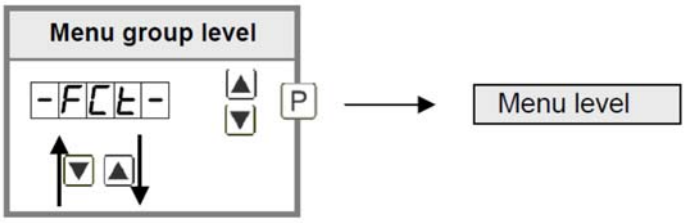
8.3.1 Signal input parameters



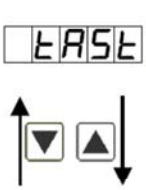
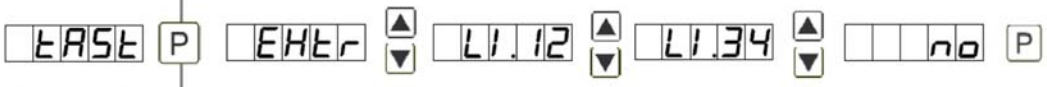
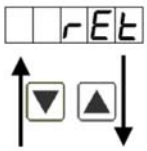
Menu level	Parameterisation level
tYPE P 3L 4L P	**Selection of the input signal, tYPE:** 3- and 4-wire-PT100 signals are available as measuring input options. Confirm the selection with **[P]** and the display switches back to menu level.
Unit P C F P	**Type of temperature measurement, UNIT:** Choose between °C and °F to display the type of temperature measurement. Confirm the selection with **[P]** and the display switches back to menu level.
dot P 0 0.0 0C 0.0C P	**Setting the decimal point / comma, DOT:** The decimal place and the physical unit of the device can be adjusted with [▼] [▲]. If e.g. the temperature measuring in °C was selected, 0°C respectively 0.0°C can be choosen in the parameter level. Confirm the selection with **[P]** and the display switches back to menu level.
OFFS P 8 P 8 P 8 P 8 P 8 P	**Impedance matching, OFFS:** The value for the sensor matching is adjusted from the smallest to the highest digit by [▼] [▲]. Confirm each digit with **[P]**. After the last digit the display switches back to the menu level. The value matching at a temperature measuring in °C can be adjusted between -20.0 and +20.0 and at a measuring in °F between -36.0 and +36.0. If the type of measurment is switched later on, the value is rounded.

Menu level	Parameterisation level
	**Setting up the display time, SEC:**  The measuring 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 seconds. Confirm the selection by pressing the **[P]** button. The display then switches back to the menu level again.
	**Device undercut, dI.Und:**  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.
	**Display overflow, dI.OUE:**  With this function the display overflow (‾‾‾‾‾) can be defined on a definite value.
	**Back to menu group level, rEt:** With **[P]** the selection is confirmed and the device changes into menu group level **„–FCT-“**.

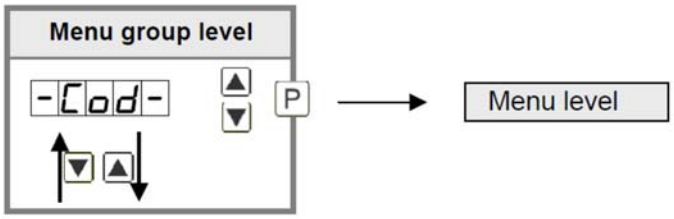
8.3.2 General device parameters



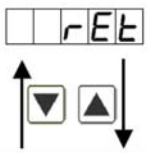
Menu level	Parameterisation level
dI.SEC P	**Display time, DISEC:** 0.01 0.09 then 0.1.0 10.0 P The display is set up with [▲] [▼]. Thereby you jump until 1 second in 0.1 steps and until 10.0 seconds in 1.0-steps. With **[P]** the selection is confirmed and the device changes into menu level.
round P	**Rounding of display values, round:** 00001 00005 00010 00050 P This function is for instable display values, where the display value is changed in 1-, 5-, 10- or 50-steps. This does not affect the resolution of the optional outputs. With **[P]** the selection is confirmed and the device changes into menu level.
dISPL P	**Display, dISPL:** ActuA MI.nUA MAXUA HoLd P With this function the current measuring value, the Min-/Max value or the process-controlled Hold-value can be assigned to the display. With **[P]** the selection is confirmed and the device changes into menu level.
FLASH P	**Display flashing, FLASH:** no AL-1 AL-2 AL.12 AL-3 AL-4 AL.34 AL.AL P A display flashing can be added as additional alarm function either to single or to a combination of off-limit condition. With **no**, no flashing is allocated.

Menu level	Parameterisation level
	**Assignment (deposit) of key functions, tASt:**  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 mm which do not have a 4th (**[O]** key). If the MIN-/MAX-memory is activated with EHtr, all measured MIN/MAX-values are safed 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 **LI.12** or **LI.34** is choosen, the values of the threshold can be changed during operation without disturbing the operating procedure. If **no** is selected, the navigation keys are without any function in the operation mode.
	**Special function [O]-key, tASt.4:** For the operation mode, special functions can be deposited on the **[O]**-Taste. This function is activated by pressing the key. Set.OF adds a defined value to the currently displayed value. EHt.rE deletes the MIN/MAX-memory. If HOLD has been selected, the moment can be hold constant by pressing the **[O]**-key, and is updated by releasing the key. **Advice:** Hold is activated only, if HOLD is selected under parameter DISPL. ActuA shows the measuring value for approx. 7 seconds, after this the device jumps back onto the parametrised display value. If no is selected, the **[O]**-key is without any function in the operation mode.
	**Back to menu group level, rEt:** With **[P]** the selection is confirmed and the device changes into menu group level **„– fct –“**.

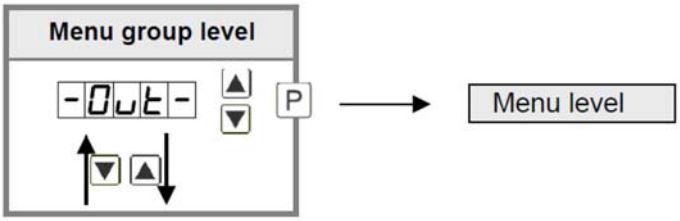
8.3.3 Safety parameter

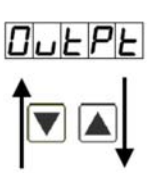
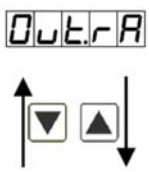


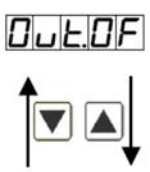
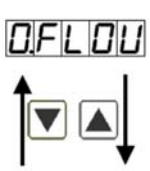
Menu level	Parameterisation level
U.CodE P	**User code U.Code:** 0 P 0 P 0 P 0 P Via this code reduced sets of parameters can be set free. A change of the **U.CodE** can be done via the correct input of the **A.CodE** (master code).
A.CodE P	**Master code, A.Code:** 1 P 2 P 3 P 4 P By entering **A.CodE** the device will be unlocked and all parameters are released.
Out.LE P	**Release/lock analog output parameters, Out.LE:** no En-oF Out.EO ALL P Analog output parameters can be locked or released for the user: - At **En-oF** the initial or final value can be changed in operation mode. - At **Out.EO** the output signal can be changed from e.g. 0-20mA to 4-20mA or 0-10VDC. - At **ALL** analog output parameters are released. At **no** all analog outpout parameters are locked.
AL.LEU P	**Release/lock alarm parameters, AL.LEU:** no LIMIt ALrM.L ALL P This parameter describes the user release/user lock of the alarm. - **LIMIt**, here only the range of value of the threshold values 1-4 can be changed. - **ALrM.L**, here the range of value and the alarm trigger can be changed. - **ALL,** all alarm parameters are released. - **no,** all alarm parameters are locked.

Menu level	Parameterisation level
	**Back to menu group level, rEt:** With **[P]** the selection is confirmed and the device changes into menu group level **„– fct –“** .

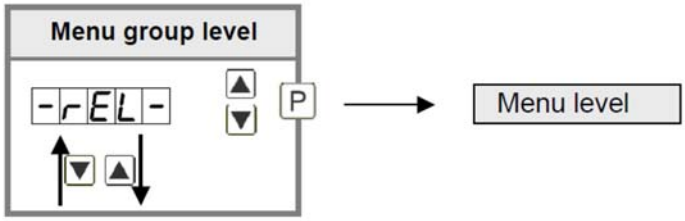
8.3.4 Analog output parameters



Menu level	Parameterisation level
	**Select reference analog output, OutPt:**  The analog output signal can refer to different functions, in detail this are the current measurand, Min-value or Max-value. If **HoLd** is selected the signal of the analog output will be hold and processed just after deactivation of **HOLD**. With **[P]** the selection is confirmed and the device changes into menu level.
	**Select analog output, Out.rA:**  There are 3 output signals availabe: 0-10 VDC, 0-20 mA and 4-20 mA. With this function the demanded signal can be selected.
	**Setting up the initial value of the analog output, Out.OF:**  The initial value can be adjusted from the smallest to the highest digit with [▲] [▼]. Confirm each digit with **[P]**. A minus sign can only be parametrized on the highest value digit. After the last digit, the display switches back to the menu level.

Menu level	Parameterisation level
	**Setting up the initial value of the analog output, Out.OF:**  The initial value can be adjusted from the smallest to the highest digit with **[▲]** **[▼]**. Confirm each digit with **[P]**. A minus sign can only be parametrized on the highest value digit. After the last digit, the display switches back to the menu level.
	**Overflow behaviour, O.FLoU:** 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 **EdGE**, that means the analog output runs on the set limits e.g. 4 and 20 mA, or **to.OFF** (input value smaller than initial value, analog output jumps on e.g. 4 mA), **to.End** (higher than final value, analog output jumps on e.g. 20 mA). If **to.MIn** or **to.MAX** is set, the analog output jumps 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.
	**Back to menu group level, rEt:** With **[P]** the selection is confirmed and the device changes into menu group level **„– out –“** .

8.3.5 Relay functions



Menu level	Parameterisation level
rEL-1 P	**Alerting relay 1, rEL-1:** AL-1 .... AL-4 AL-n1 .... AL-n4 LoGIC OFF On P Each setpoint (optional) can be linked up via 4 alarms (by default). This can either be inserted at activated alarms **AL1/4** or de-activated alarms **ALN1/4**. If **LOGIC** is selected, logical links are available in the menu level **LoG-1** and **CoM-1**. One can only get to these two menu levels via **LOGIC**, at all other selected functions, these two parameters are overleaped. Via **On/OFF** 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.
LoG-1 P	**Logic relay 1, Log-1** or nor And nAnd P Here, the switching behavior of the relay is defined via a logic link, the following schema describes these functions with inclusion of **AL-1** and **AL-2**:

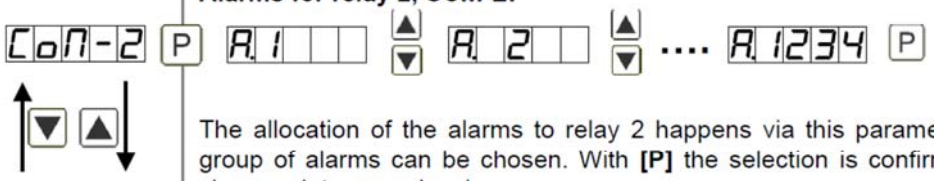
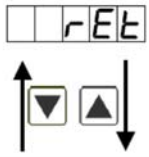
or	$A1 \vee A2$	As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.
nor	$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$	The relay operates only, if no selected alarm is active. Equates to quiescent current principle.
And	$A1 \wedge a2$	The 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.

With **[P]** the selection is confirmed and the device changes into menu level.

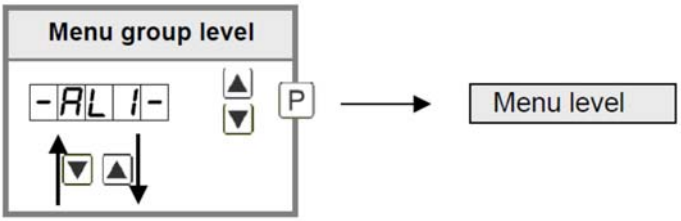
Menu level	Parameterisation level
CoM-1 P A.1 ▲▼ A.2 ▲▼ .... A.1234 P ▼▲	**Alarms for relay 1, CoM-1:** The allocation of the alarms to relay 1 happens via this parameter, one alarm or a group of alarms can be chosen. With **[P]** the selection is confirmed and the device changes into menu level.
rEL-2 P AL-1 .... AL-4 ▲▼ AL-n1 .... AL-n4 ▲▼ LoGIC ▲▼ OFF ▲▼ On P ▼▲	**Alerting relay 2, reL-2:** Each setpoint (optional) can be linked up via 4 alarms (by default). This can either be inserted at activated alarms **AL1/4** or de-activated alarms **ALN1/4**. If **LOGIC** is selected, logical links are available in the menu level **LoG-1** and **CoM-1**. One can only get to these two menu levels via **LOGIC**, at all other selected functions, these two parameters are overleaped. Via **On/OFF** 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.
LoG-2 P or ▲▼ nor ▲▼ And ▲▼ nAnd P ▼▲	**Logic relay 2, LoG-2:** Here, the switching behavior of the relay is defined via a logic link, the following schema describes these functions with inclusion of **AL-1** and **AL-2**:

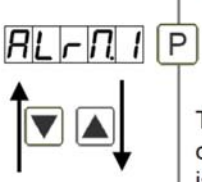
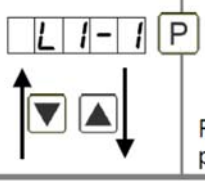
or	$A1 \vee A2$	As soon as a selected alarm is activated, the relay operates. Equates to operating current principle.
nor	$\overline{A1 \vee A2} = \overline{A1} \wedge \overline{A2}$	The relay operates only, if no selected alarm is active. Equates to quiescent current principle.
And	$A1 \wedge a2$	The 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.

With **[P]** the selection is confirmed and the device changes into menu level.

Menu level	Parameterisation level
	**Alarms for relay 2, CoM-2:** The allocation of the alarms to relay 2 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.
	**Back to menu group level, rEt:** With **[P]** the selection is confirmed and the device changes into menu group level **„– rel –“**.

8.3.6 Alarm parameters

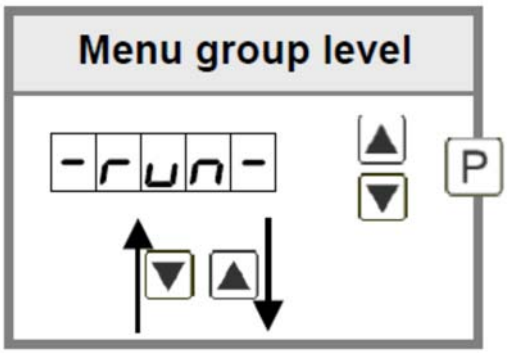


Menu level	Parameterisation level
	**Dependency alarm1, ALrM.1:** The dependency of alarm 1 can be related to special functions, in detail these are the current measurand, the MIN-value, the MAX-value or the totaliser-/sum-value. If Hold is selected, the alarm is hold and processed just after deactivation of HOLD. With **[P]** the selection is confirmed and the device changes into menu level.
	**Threshold values / limit values, LI-1:** For both limit values, two different values can be parameterized. With this, the parameters for each limit value are called up one after another.

Menu level	Parameterisation level
HY-1 P 0 P 0 P 0 P 0 P 0 ▲▼ P	**Hysteresis for limit values, HY-1:** For all limit values exists a hysteresis function, that reacts according to the settings (threshold exceedance / threshold undercut).
Fu-1 P HIGH ▲▼ Louu ▲▼ P	**Function if display falls below / exceeds limit value, FU-1:** The limit value undercut can be selected with **Louu** (LOW = lower limit value) and limit value exceedance can be selected with **high** (HIGH = upper limit value). If e.g. limit value 1 is on a switching threshold of 100 and occupied with function „high“, the alarm will be activated by reaching the threshold. If the limit value is allocated to „Low“, an alarm will be activated by undercut of the threshold.
ton-1 P 0 P 0 P 0 P 0 P 0 ▲▼ P	**Switching-on delay, ton-1:** For limit value 1 one can preset a delayed switching-on of 0-100 seconds.
toF-1 P 0 P 0 P 0 P 0 P 0 ▲▼ P	**Switching-off delay, toF-1:** For limit value 1 one can preset a delayed switching-off of 0-100 seconds.
rEt	**Back to menu group level, rEt:** With **[P]** the selection is confirmed and the device changes into menu group level **„– Ali –“** .

The same applies to –Al2– to –Al4–.

8.3.7 Programming lock, run

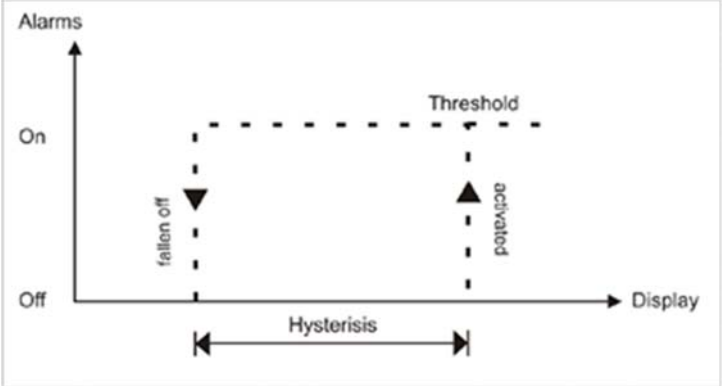


Description see page 11, menu level run

8.4 Alarm / Relays

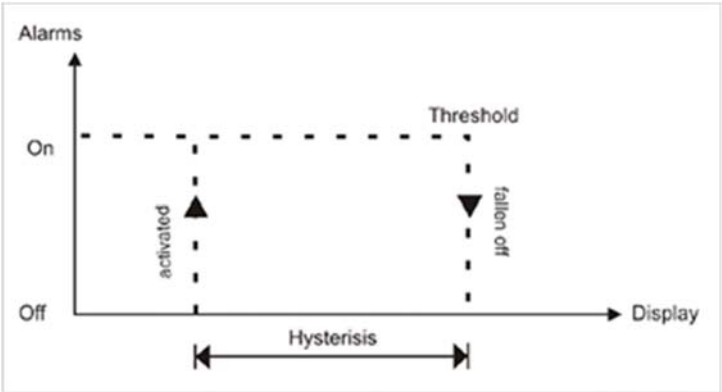
This device has 4 virtual alarms that can monitor one limit value in regard of an undercut or exceedance. Each alarm can be allocated to an optional relay output S1-S2; furthermore, alarms can be controlled by events like e.g. Hold or Min-/Max-value.

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



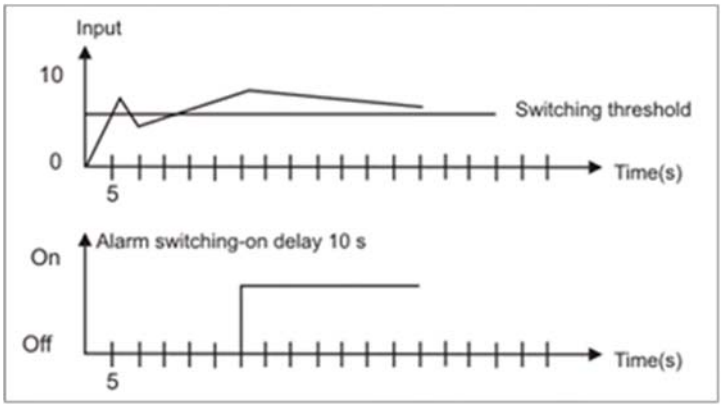
Operating current

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 oft he relay. The switching-off delay operates in the same way, keeps the alarm / the relay switched longer for the parameterized time.

9. Factory settings

9.1 Default values

Standard parameterization (flat operation level)

Parameter	Menu items					Default values
tYPE Type of input	3L 3-wire	4L 4-wire				4L 4-wire
Unit Unit	°C °C	°F °F				°C °C
dot Decimal point	0 0	0.0 0.0	0°C 0°C or 0°F	0.0°C 0.0°C or 0.0°F		0.0 0.0
OFFS Impedance matching	-19999 	to	99999 			0.0
SEC Measuring time	0.1 0.1 seconds	to	10.0 10.0 seconds			1.0 1.0 seconds
Out.rA Analog output range	0-10 0…10 V	0-20 0…20 mA	4-20 4…20 mA			4-20 4…20 mA
Out.En Analog output final value	-19999 	to	99999 			850.0
Out.0F Analog output initial value	-19999 	to	99999 			-200.0
L1-1 Limit value 1	-19999 	to	99999 			200.0
HY-1 Hysteresis 1	00000 	to	99999 			0.0
Fu-1 Operation type 1	Louu Undercut	HIGH Exceedance				HIGH Exceedance

Parameter	Menu items					Default values
L1-2 Limit value 2	-19999	to	99999			300.0
HY-2 Hysteresis 2	00000	to	99999			0.0
Fu-2 Operation type 1	Louu Undercut	HIGH Exceedance				HIGH Exceedance
U.CodE User code	0000	to	9999			0000
A.CodE Master code	0000	to	9999			1234
run Run	ULOC Standard operation	LOC Parameter lock	ProF Professional operation			ULOC Standard operation

Extended parameterization (professional operation level)

Signal input parameters

-InP-

Parameter	Menu items					Default values
tYPE Type of input	3L 3-wire	4L 4-wire				4L 4-wire
Unit Unit	C °C	F °F				C °C
dot Decimal point	0 0	0.0 0.0	0C 0°C or 0°F	0.0C 0.0°C or 0.0°F		0.0 0.0
OFFS Impedance matching	-19999	to	99999			0.0
SEC Measuring time	0.1 0.1 seconds	to	10.0 10.0 seconds			1.0 1.0 seconds

Parameter	Menu items					Default values
d i.Und Display underflow	-1999	to	9999			-199.9
d i.oUE Display overflow	-1999	to	9999			999.9
rEt						

General device parameters

-FcT-

Parameter	Menu items					Default values
di.SEC Display time	00.1 0.1 seconds	to	10.0 10 seconds			01.0 1 second
round Round a value	0001 no rounding	0005 in steps of 5	0010 in steps of 10	0050 in steps of 50		0001 no rounding
di SPL Default display	ActuA Current measurand	MI nUA Minimum	MAXUA Maximum	HoLd Hold		ActuA Current measurand
FLASH Flashing at	no no AL-4 Alarm 4	AL-1 Alarm 1 AL.34 Alarm 3 + 4	AL-2 Alarm 2 AL.AL Alarm 1...4	AL.12 Alarm 1 + 2	AL-3 Alarm 3	no no
tASt Up-/Down-function	no no	EHtr Extremum (min/max)	LI.12 Alarm limit 1+2	LI.34 Alarm limit 3+4		no no
tASt.4 Special function 4. key	no no	SEt.oF Set offset	EHt.rE Extremum reset	ActuA Display measurand	HoLd Hold	no no
rEt						

Safety parameters

-CodE-

Parameter	Menu items					Default values
UCodE User code	0000	to	9999			0000
ACodE Administrator code	0000	to	9999			1234
Out.LE Analog output level	no	En-0F	Out.E0	ALL		ALL All parameters
ALLEU Alarm level	no	LIMIt	ALrM.L	ALL		ALL All parameters
rEt						

unchangeable — Range of value — range of value & source — All parameters

unchangeable — Limit value — range of value & source — All parameters

Analog output parameters

-Out-

Parameter	Menu items						Default values
OutPt Source	ActuA Current measurand	MI nUA Minimum	MAXUA Maximum	HoLd Hold			ActuA Current measurand
Out.rA Output range	0-10 0...10 mA	0-20 0...20 mA	4-20 4...20 mA				4-20 4...20 mA
Out.En Final value	-9999	to	9999				8500
Out.0F Initial value	-9999	to	9999				-2000
0.FLOU Overflow behaviour	EdGE Run on limit value	to.End Jump on final value	to.0FF Jump on initial value	to.MIn Jump on smallest value	to.MAX Jump on highest value		EdGE Run on limit value
rEt							

Relay functions

-rEL-

Parameter	Menu items					Default values
rEL-1 Relay function1	AL-1 at alarm 1 AL-n1 not alarm 1 LoGIC via logic	to to OFF declined	AL-4 at alarm 4 AL-n4 not alarm 4 on activated			AL-1 at alarm 1
LoG-1 Logic relay 1	or active if at least 1 alarm	nor active if no alarm	And active if all alarms	nAnd active if not at least 1 alarm		or active if at least 1 alarm
CoN-1 Alarm combi-nation relay 1	A.1 Alarm 1 etc. up to	A.2 Alarm 2 A.1234 Alarm 1+2+3+4	A.12 Alarm 1 + 2	A.3 Alarm 3	A.13 Alarm 1 + 3	A.1 Alarm 1
rEL-2 Relay function 2	AL-1 at alarm 1 AL-n1 not alarm 1 LoGIC via logic	to to OFF declined	AL-4 at alarm 4 AL-n4 not alarm 4 on activated			AL-2 at alarm 2
LoG-2 Logik Relais 2	or active if at least 1 alarm	nor active if no alarm	And active if all alarms	nAnd active if not at least 1 alarm		or active if at least 1 alarm
CoN-2 Alarm combi-nation relay 2	A.1 Alarm 1 etc. up to	A.2 Alarm 2 A.1234 Alarm 1+2+3+4	A.12 Alarm 1+2	A.3 Alarm 3	A.13 Alarm 1+3	A.2 Alarm 2
rEt						

Alarm parameter

-AL 1-

Parameter	Menu items					Default values
ALrM.1 Alarm source 1	ActuA Current measurand	MI nUA Minimal measurand	MAXUA Maximal measurand	HoLd Hold		ActuA Current measurand
L 1-1 Limit value 1	-19999	to	99999			200.0
HY-1 Hysteresis 1	00000	to	99999			0.0
Fu-1 Function 1	Louu Undercut	HIGH Exceedance				HIGH Exceedance
ton-1 Activation delay 1	000 no	to	100 100 seconds			000 no
toF-1 Deactivation delay 1	000 no	to	100 100 seconds			000 no
rEt						

-AL2-

Parameter	Menu items					Default values
ALrM.2 Alarm source 2	ActuA Current measurand	MI nUA Minimal measurand	MAXUA Maximal measurand	HoLd Hold		ActuA Current measurand
L 1-2 Limit value 2	-19999	to	99999			300.0
HY-2 Hysteresis 2	00000	to	99999			0.0
Fu-2 Function 2	Louu Undercut	HIGH Exceedance				HIGH Exceedance

Parameter	Menu items					Default values
ton-2 Activation delay 2	000 no	to	100 100 seconds			000 no
toF-2 Deactivation delay 2	000 no	to	100 100 seconds			000 no
rEt						

-AL3-

Parameter	Menu items					Default values
ALrN3 Alarm source 3	ActuA Current measurand	MI nUA Minimal measurand	MAXUA Maximal measurand	HoLd Hold		ActuA aktueller Messwert
LI -3 Limit value 3	-19999	to	99999			400.0
HY-3 Hysteresis 3	00000	to	99999			0.0
Fu-3 Function 3	Louu Undercut	HIGH Exceedance				HIGH Exceedance
ton-3 Activation delay 3	000 no	to	100 100 seconds			000 no
toF-3 Deactivation delay 3	000 no	to	100 100 seconds			000 no
rEt						

-AL4-

Parameter	Menu items					Default values
ALrM4 Alarm source 4	ActuA Current measurand	MI nUA Minimal measurand	MAXUA Maximal measurand	HoLd Hold		ActuA Current measurand
LI -4 Limit value 4	-9999	to	99999			500.0
HY-4 Hysteresis 4	00000	to	99999			0.0
Fu-4 Function 4	Louu Undercut	HIGH Exceedance				HIGH Exceedance
ton-4 Activation delay 4	000 no	to	100 100 seconds			000 no
toF-4 Deactivation delay 4	000 no	to	100 100 seconds			000 no
rEt						

9.2 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]** 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.

10. Technical Information

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

11. Order Codes

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

12. Dimensions

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

13. Safety advices

Please read the following safety advice and the assembly *chapter 5* before installation and keep it for future reference.

Proper use
The **DAG-S..-device** is designed for the evaluation and display of PT100 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-S4..-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 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.

14. Error elimination

	Error description	Measures
1.	The unit permanently indicates overflow. 	• 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 setpoints are parameterised. Check if the relevant parameters are adjusted correctly.
2.	The unit permanently shows underflow. 	• 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 setpoints are parameterised. Check if the relevant parameters are adjusted correctly.
3.	The word "**HELP** " lights up in the 7-segment display.	• 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.	Program numbers for parameterising of the input are not accessible.	• Programming lock is activated • Enter correct code
5.	"**Err1**" lights up in the 7-segment display	• Please contact the manufacturer if errors of this kind occur.
6.	The device does not react as expected.	• If you are not sure if the device has been parameterised before, then follow the steps as written in *chapter 5.2.* and set it back to its delivery status.

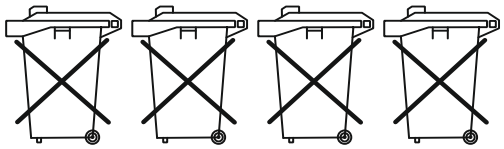
15. Disposal

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.

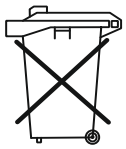
Batteries

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



16. EU Declaration of Conformance

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

Digital Indicating Unit for Panel Mounting **Model: DAG-S45**

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 - Part 1: General requirements

EN 61326-1:2013
Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

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 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, 27 April 2023

H. Volz
General Manager

M. Wenzel
Proxy Holder

17. UK Declaration of Conformity

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

Digital Indicating Unit for Panel Mounting **Model: DAG-S45**

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