Operating Instructions

for

Digital Indicating Unit

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

Model: DAG-A4V…, 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.

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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:

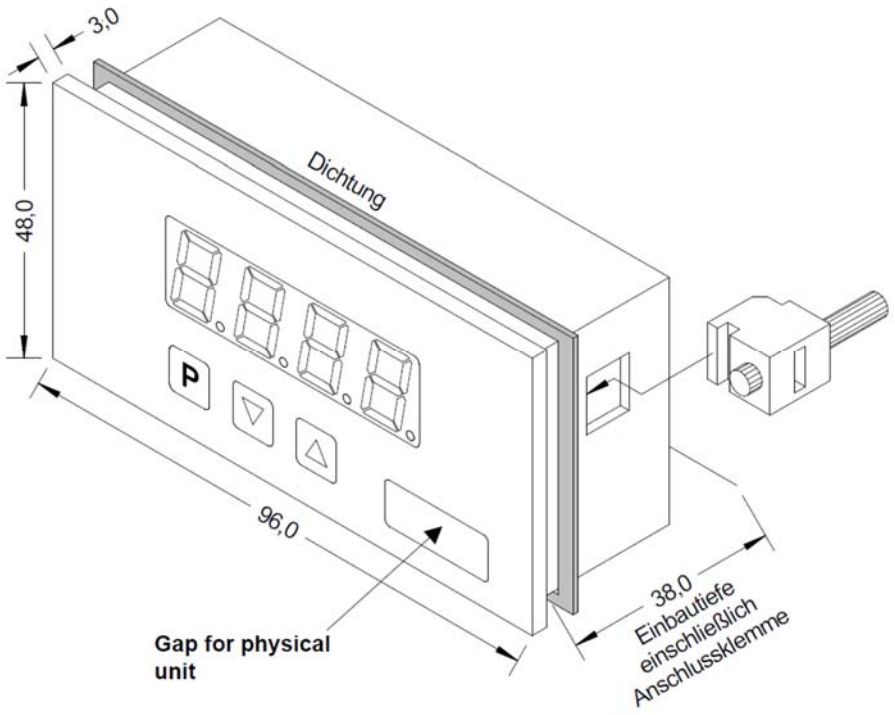
- Digital Indicating Unit model: DAG-A4V

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 16 before installation and keep this 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.

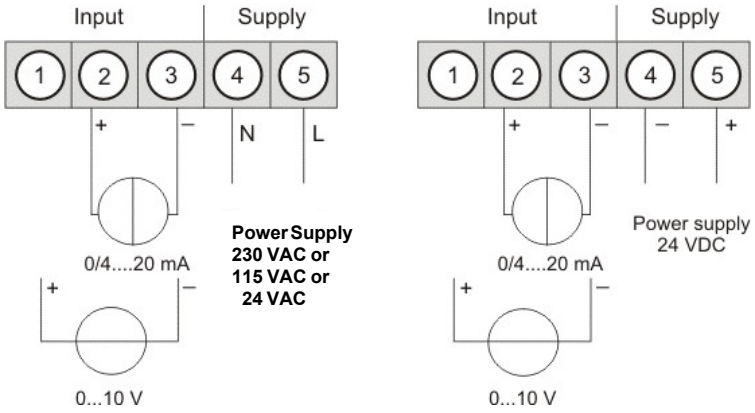
CAUTION! The torque should not exceed 0.1 Nm!

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

6. Electrical connection

DAG-A4V0… with power supply 230 VAC
DAG-A4V4… with power supply 115 VAC
DAG-A4V2… with power supply 24 VAC

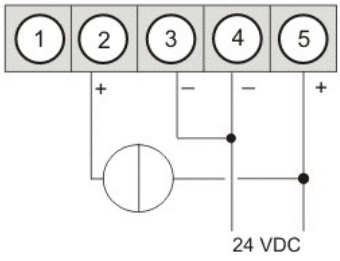
DAG-A4V3 … with power supply 24 VDC



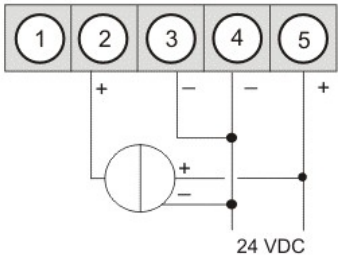
Connection examples:

Below you find some connection examples, which demonstrate some practical applications.

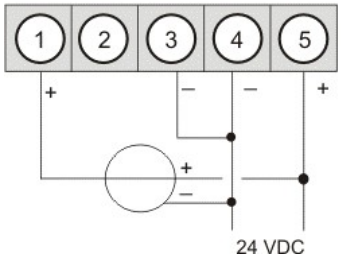
DAG-A4V … in combination with a 2-wire-sensor 4-20 mA



DAG-A4V … in combination with a 3-wire-sensor 0(4)-20 mA



DAG-A4V … in combination with a 3-wire-sensor 0 –10 V



7. Function and operation description

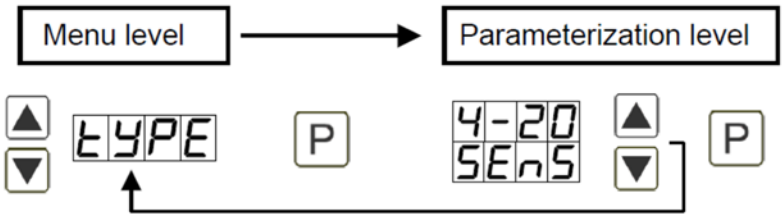
Operation
The operation is divided into two different levels.

Menu Level
Here it is possible to navigate between the individual menu items.

Parameterization level
The parameters stored in the menu item can be parameterized here.
Functions that can be adjusted or changed are always indicated with a flashing of the display. Adjustments made at the parameterization level should be always confirmed by pressing the **[P]** key to save them.
However, the display automatically saves all adjustments and then switches to operation mode if no further keys are pressed within 10 seconds.

Level	Button	Description
Menu level	P	Change to parameterization level with the relevant parameters
	▲ ▼	For navigation at the menu level
Parameterization level	P	To confirm the changes made at the parameterization level
	▲ ▼	To change the value or setting

Example:



8. Setting up the device

8.1 Switching on

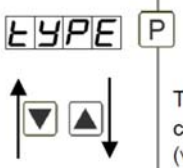
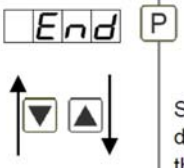
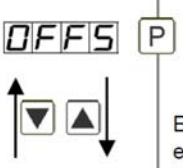
Once the installation is complete, you can start the device by applying the voltage supply. Before, check once again that all electrical connections are correct.

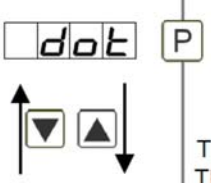
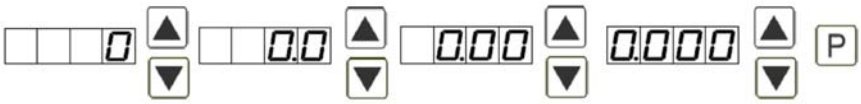
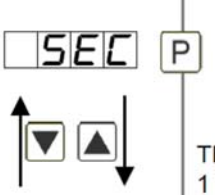
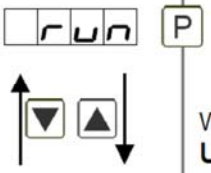
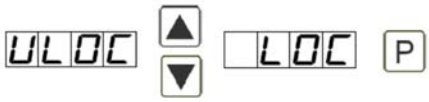
Starting sequence

For 1 second during the switching-on process, the segment test (**8 8 8 8**) 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**.

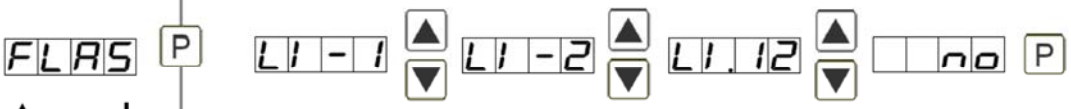
Menu level	Parameterization level
	**Selection of the input signal, TYPE:**  There are several measuring input options: 0/4-20 mA or 0-10 VDC signals as works calibration (without application of the sensor signal) and **Sens** as sensor calibration (with the sensor applied). Confirm the selection with **[P]** and the display switches back to menu level.
	**Setting the measuring range end value, END:**  Set the end value from the smallest to the highest digit with [▲] [▼] and 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. If **Sens** was selected as the input option, you can only select between **noca** and **cal**. With **noca**, only the previously set display value is taken over, and with **cal**, the device takes over both the display value and the analogue input value.
	**Setting the measuring range start/offset value, offs:**  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 **Sens** was selected as the input option, you can only select between **noca** and **cal**. With **noca**, only the previously set display value is taken over, and with **cal**, the device takes over both the display value and the analogue input value.

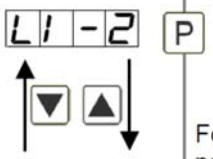
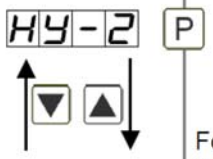
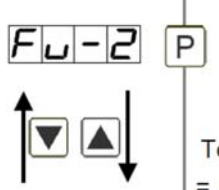
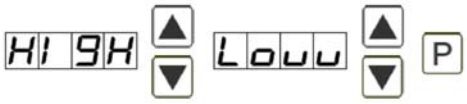
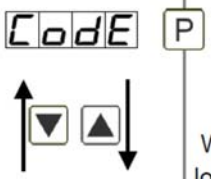
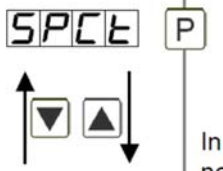
Menu level	Parameterization level
	**Setting the decimal point, dot:**  The decimal point on the display can be moved with [▲] [▼] and confirmed with **[P]**. The display then switches back to the menu level again.
	**Setting the display time, SEC:**  The display time is set with [▲] [▼]. The display moves up in increments of 0.1 up to 1 second and in increments of 1.0 o 10.0 seconds. Confirm the selection by pressing the **[P]** button. The display then switches back to the menu level again.
	**Activation / deactivation of the programming lock and completion of the standard parameterization, run:**  With the aid of the [▲] [▼] keys, you can choose between the deactivated key lock **Uloc** (works setting) and the activated key lock **Loc**. Make the selection with **[P]**. After this, the display confirms the settings with **"- - - -"**, and automatically switches to operating mode. If **Loc** was selected, the keyboard is locked. To get back into the menu level, you must press **[P]** for 3 seconds in operating mode. You must now enter the **CODE** (works setting **1 2 3 4**) that appears using the [▲] [▼] keys plus **[P]** to unlock the keyboard. **FAIL** appears if the input is wrong.

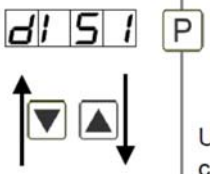
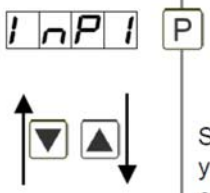
8.3 Extended parameterization

By pressing the [▲] & [▼] buttons during standard parameterization for one second, the display switches to the extended parameterization mode. Operation is the same as in standard parameterization.

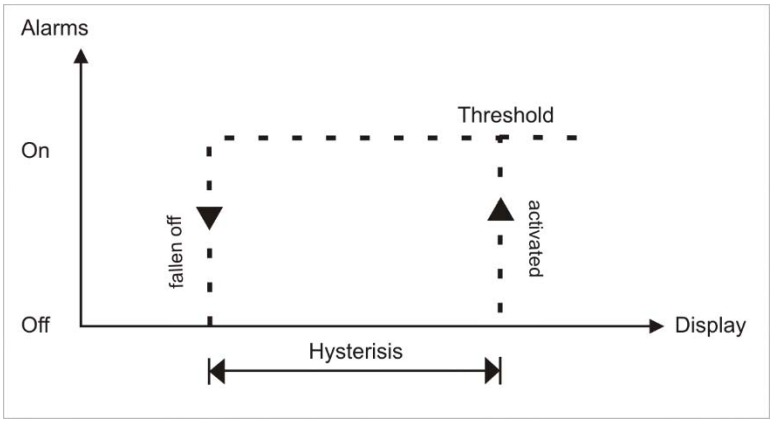
Menu level	Parameterization
EndA P 	**Rescaling the measuring input values, EndA:**  With the aid of this function, you can rescale the input value of **e.g. 19,5 mA** (works setting) without applying a measuring signal. If sensor calibration has been selected, these parameters are not available.
OFFA P 	**Rescaling the measuring input values, OFFA:**  With the aid of 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.
tArA P 	**Setting up the tare/offset value, tArA:**  The given value is added to the linerarized value. In this way, the characteristic line can be shifted by the selected amount.
ZErO P 	. **Zero point tranquilization, ZErO:**  With zero point tranquilization, a value range around zero can be preselected at which the display shows zero. If, for example, a 10 is set, the display would show a zero in the range from -10 to +10 and continue below it with -11 and above it with +11.

Menu level	Parameterization level
tASt P	**MIN/MAX value inquiry - Assignment of key functions, Tast:**  Here, you can enter for the operating mode either a MIN/MAX value inquiry, a threshold value correction or a tara-function on the arrow keys. If the MIN/MAX memory is activated with **EHER**, the measured MIN/MAX values will be saved during operation and can be called up via the arrow keys **[▲] [▼]**. The values are lost if the device is restarted. If the threshold value correction **LI.1** is selected, the limit values can be changed during operation without hindering the operating procedure. With the tara-function the device can be set on a temporarily parameterized value. This function is activated by pushing the two arrow keys **▼] [▲]** simultaneously. The device receipts the correct taring by showing "0000" in the display. If **No** is parameterized, the arrow keys **[▼] [▲]** have no function in operating mode.
FLAS P	**Flashing of display, FLAS:**  Here, the flashing of the display can be added as an extra alarm function, either to the first limit value (select: **LI-1**), the second limit value (select: **LI-2**) or to both limit values (select: **LI-12**). With **No** (works setting), no flashing is assigned at all.
LI-1 P	**Limit values / Limits, 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 the other.
HY-1 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	**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.

Menu level	Parameterization level
	**Limit value /Limits, 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 the other.
	**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:**  To indicate if the value falls below the lower limit value, **Louu** can be selected (LOW = lower limit value) and if it goes above the upper limit value, **high** can be selected (HIGH = upper limit value). LOW corresponds to the quiescent current principle and HIGH to the operating current principle.
	**Setting the code, CODE:**  With this setting, it is possible to select an individual code (works setting **1 2 3 4**) for locking the keyboard. To lock/release the key, proceed according to menu item **run**.
	**4.3.4. Set points - Number of additional set points, SPCt:**  In addition to the start and end value, 8 extra set points can be defined to linearize non-linear sensor values. Only the activated set point parameters are displayed.

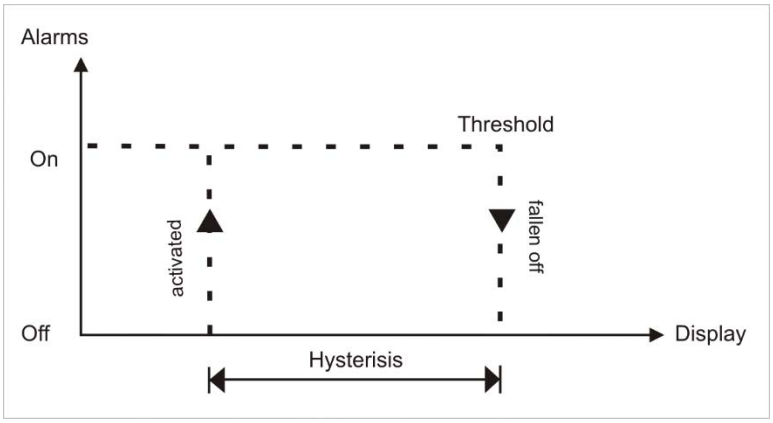
Menu level	Parameterization level
	**Display values for set points dIS1 … dIS5:**  Under this parameter the setpoints are defined on a value basis. At the sensor calibration one will be asked at the end (like at Endwert/Offset, too), if a calibration shall be triggered.
	**Analogue values for set points INP1 … INP8:**  Setpoints are only displayed under works calibration (4-20 mA). Here you can choose your analog values. The entry of constantly rising values need to be done self-contained.

9. Functional principle of the set points



Limit value exceedance „High“

By limit value exceedance the alarm S1-S2 is off below the threshold and on on reaching the threshold.



Limit value undercut „Low“

By limit value undercut the alarm S1-S2 is on below the threshold and switched off on reaching the threshold.

Alarms / optical setpoint display

An activated set point can be optically indicated by flashing of the 7-segment display.

Functional principle of the alarms	
Alarm	Deactivated, display value
Threshold	Threshold/limit value for switch over
Hysteresis	Width of the window between the thresholds
Function	Limit value exceedance / limit value undercut

10. Factory settings

10.1 Default values

Parameter	Menu items				Default
tYPE	0-10	SEnS	0-20	4-20	SEnS
End	-999	to	9999		1000
OFFS	-999	to	9999		0000
dot	0000	to	0.000		0
SEC	0.1	to	10.0		01.0
run	ULOC	LOC			ULOC
OFFA	-9.99	to	99.99		
EndA	-9.99	to	99.99		
tArA	-999	to	9999		0
2Er0	00	to	99		0
tASt	no	EHtr	LI.12	tArA	no
FLAS	no	LI-1	LI-2	LI 12	no
LI-1	-999	to	9999		0200
HY-1	0000	to	9999		0000
Fu-1	Louu	HI 9H			HI 9H
LI-2	-999	to	9999		0300
HY-2	0000	to	9999		0000
Fu-2	Louu	HI 9H			HI 9H
CodE	0000	to	9999		1234
SPCt	0	to	8		0
dI S1	-999	to	9999		
InP1	-999	to	9999		
dI S2	-999	to	9999		
InP2	-999	to	9999		
dI S3	-999	to	9999		
InP3	-999	to	9999		
dI S4	-999	to	9999		
InP4	-999	to	9999		
dI S5	-999	to	9999		
InP5	-999	to	9999		
dI S6	-999	to	9999		
InP6	-999	to	9999		

Parameter	Menu items				Default
di S7	-999	to	9999		
InP7	-999	to	9999		
di S8	-999	to	9999		
InP8	-999	to	9999		

10.2 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]** button until **„- - - -„** is shown in the display.

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

Caution! All application-related data are lost.

11. Technical Information

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

12. Order Codes

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

13. Dimensions

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

14. Safety advice

Please read the following safety advice and the assembly *chapter 5* 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

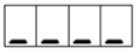
The **DAG-..-device** must be installed by a suitably **qualified specialist** (e.g. with a qualification in industrial electronics).

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 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.

15. 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.

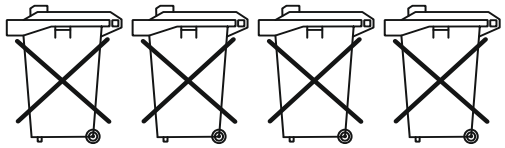
16. Disposal

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.

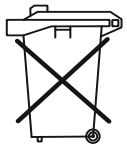
Batteries

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



17. EU Declaration of Conformance

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

Digital Indicating Unit **model: DAG-A4V**

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, 17 Jan. 2023

H. Volz
General Manager

M. Wenzel
Proxy Holder

18. 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-A4V**

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, 04 May 2023

H. Volz
General Manager

M. Wenzel
Proxy Holder