Operating Instruction

for

Conductive Level Switch

Model: LNK-K

1. Contents

Manufactured and sold by:

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2. Note

Please read and take note of these operating instructions before unpacking and setting the unit for operation, and 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.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and with the prevailing regulation applying to procedural safety and the prevention of accidents.

By usage in machines, the measuring unit should be used only then when the machines fulfil the EC-machine guide lines.

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:
- Conductive Level Switch model: LNK-K

4. Regulation Use

Any use of the Conductive Level Switch, model: LNK-K, 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. Operating Principle

The conductive KOBOLD level probes LNK-K are used for level measurement. The electrical resistance between metallic vessel and level electrode is measured and evaluated. In combination with the KOBOLD LZE or LZE-R weld-in sleeves, the probe provides a measuring point that has no dead space and meets hygiene standards and (EHEDG approval certificate). This level switch is therefore very well suited for CIP/SIP cleaning and because of its compact design the device is suitable for almost every measurement.
The KOBOLD probes LNK-K are also available with integrated evaluating electronics. The output signal (24 V_{DC}) can thus be connected to a PLC for evaluation. This means lower installation costs, minimum wiring requirements and a high degree of noise immunity.
The level probes are connected electronically through an M12x1 plug connection. Different stem lengths are available. The stem may also be E-CTFE coated, so that foaming media can be detected.

5.1. External electrode relay (e.g. NE-104, 304)

When the LNK-K is used as a 1-stem probe, the evaluation can take place with an external electrode relay.

For connection and adjustment please see instruction manual of the external electrode relay.

6. Mechanical Connection

- The electrodes must be mounted in a vertical position in the lid or the ground of the vessel which must be detected.
- The mounting must be done in a way that the electrode stem does not contact the wall of the vessel.
- Note during mounting that the electrodes do not bend and the medium can drain off easily when they are not longer touched by the fluid.

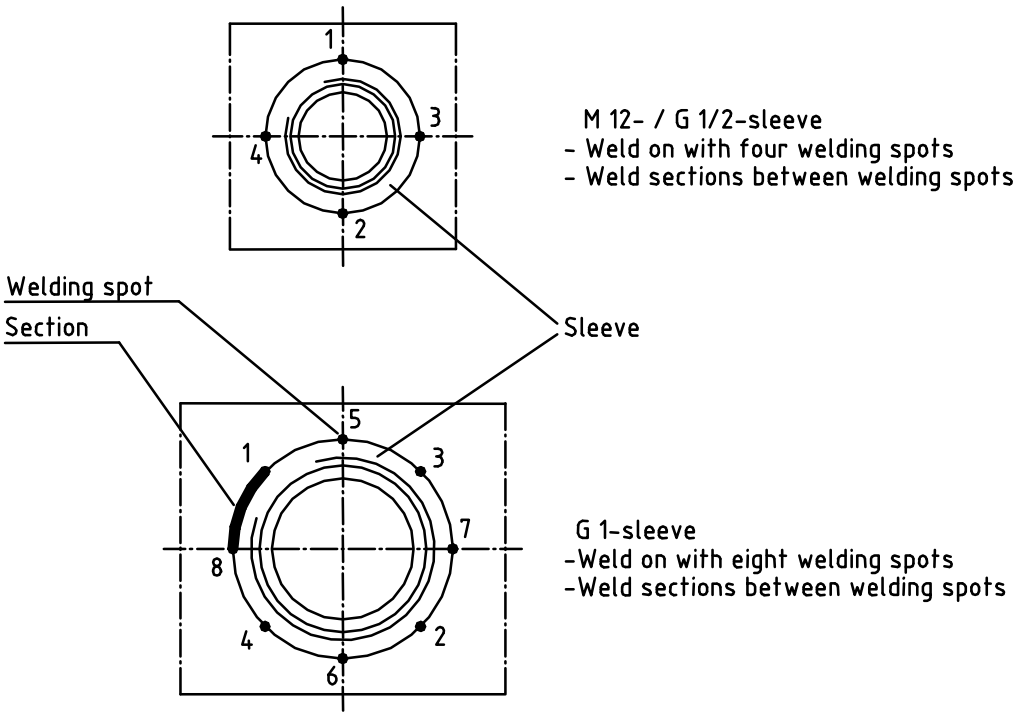
Shortening the electrodes:

- The electrode tip corresponds to the switching point and can be shortened if desired.
- Note, that the bracing of the electrode in the thread-piece is not too heavily loaded during shortening.
- Do not harm the isolation of the electrode.
- After shortening, make sure that the E-CTFE isolation is removed of about a length of 5 mm from the tip of the electrode.

6.1. Welding details for sleeves LZE

Welding in tanks and pipes:

1. Drill a hole with a diameter equivalent to outer diameter of the sleeve; max. tolerance +0,2 mm
2. Weld the sleeve at 4 points
3. Screw in the blind socket
4. Weld the sleeve segments crosswise between already welded 4 points. 4 sleeve segments for M12 and G 1/2”; 8 sleeve parts for G1”



Attention! In order to avoid deforming or red-hot turning of the sleeve, pauses between individual sleeve segments should be sufficient enough to allow cooling down of the sleeve.

- Pay attention to the maximum allowable torque of 10 – 15 Nm (instrument connection G1/2) when you screw in the sensor.
- Please avoid screwing in and unscrewing the sensor from the sleeve, because on high stress the sealing edge can distort and the process connection can get leaky.
  The sealing system is designed for CIP- and SIP-cleaning.

6.2. Installation in G1/2 thread

If the sleeve LZE is not used for the installation of the level switch LNK-K, it is possible to seal the screw thread with an adequate sealing material. Thus an installation is possible in a pipe as well as in a vessel.

For this type of installation please take care that there is a conducting connection to the wall of the vessel.
An additional grounding to the pipework (wall of the vessel) is necessary when using an isolating sealing.

7. Electrical Connection

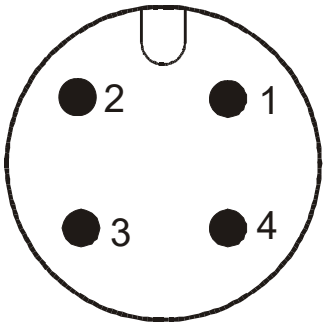
Attention! Make sure that the voltage values of your system correspond with the voltage values of the measuring unit.

- Make sure that the supply wires are de-energised.
- Connect the supply wires and the output signal **to the shown pins.**
- We recommend the use of wires with cross sectional area of min. 0,25 mm²

Attention! A wrong connection of the plug pins can damage the unit's electronic!

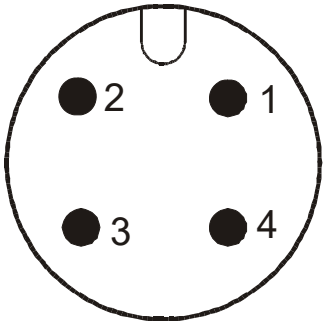
7.1. Plug assignment of M12-plug without switching electronics

1 Electrode 1
2 not connected
3 earthing of housing
4 not connected



7.2. Plug assignment of M12-plug with switching electronics

1 Power Supply + Vs / GND
2 Sensitivity + Vs / GND / open
3 Power Supply GND / +Vs
4 Output: Transistor PNP



7.2.1. Setting the output function with the option switching electronics:

The output function (full / empty signal) is switchable by changing the polarity of the supply voltage.

Power supply		**Probe**	**Output**
Plug PIN 1	**Plug PIN 3**		**Plug PIN 4**
GND	+ V_s	immersed	U_{out}
		dry	0 V
+ V_s	GND	immersed	0 V
		dry	U_{out}

7.2.2. Setting the sensitivity with the option switching electronics:

1. Configurate the instrument according to sensitivity step 1.
2. Cover probe with the medium to be measured.
3. If the output does not switch, try steps 2 and3 in succession.

Step	**Sensitivity**	**Plug PIN 2**
1	2 kΩ	+ V_s
2	20 kΩ	open (not connected)
3	200 kΩ	GND

8. Technical Information

Measuring principle:	conductive
Process temperature:	-20...+100 °C (temporary 150 °C for CIP-process)
Ambient temperature:	0...70 °C
Operating pressure:	max. 10 bar

Material

• Head, thread supports:	stainless steel 1.4404
• Insulating section:	PEEK
• Electrode stem:	stainless steel 1.4404
• Stem coating:	E-CTFE, coating 0.3 mm
Electrode length:	100, 250, 500, 750, 1000, 1500 mm
Process connection:	G 1/2, hygienic weld-in sleeves LZE or LZE-R
Electrical connection:	M12x1 plug connector
Protection:	IP 67
Weight:	approx. 150 g (+ special stem)

Switching electronics:

Power supply:	15...36 V_{DC} , 15 mA
Electrode voltage:	2 V_{AC} , 500 Hz sensitivity
(adjustable):	3 steps 2.0 / 20 / 200 kΩ
Function:	Full /empty report (switchable via the polarity of the supply voltage)
Output:	PNP, open collector, $U_{out} = V_{vers.} - 1.0$ V max. 50 mA, short-circuit-proof
Switch delay:	1 s

9. Order Codes

Example order: LNK-K 2 0 A 00S

Model	Design	Electrode material	Electrode coating	Electrode length	Electrical connection Evaluation
LNK-	**K** = compact version	**2** = st. steel 1.4404	**0** = without coating **E** = E-CTFE-coating	**A** = 4 mm stump **B** = 100 mm **C** = 250 mm **D** = 500 mm **E** = 750 mm **F** = 1000 mm **G** = 1500 mm	**00S** = without electronics, M12x1-Stecker, 4 pole **NPS** = switch electronics, PNP-switch output M12x1 plug, 4 pole

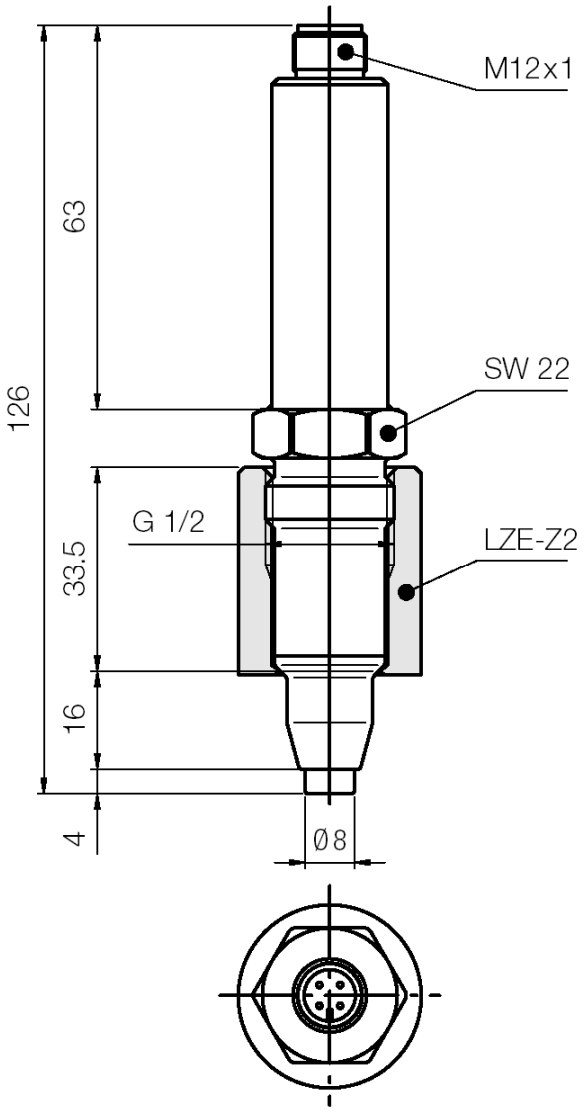
EHEDG certification of the connection system in combination with built-in sleeve LZE

10. Maintenance

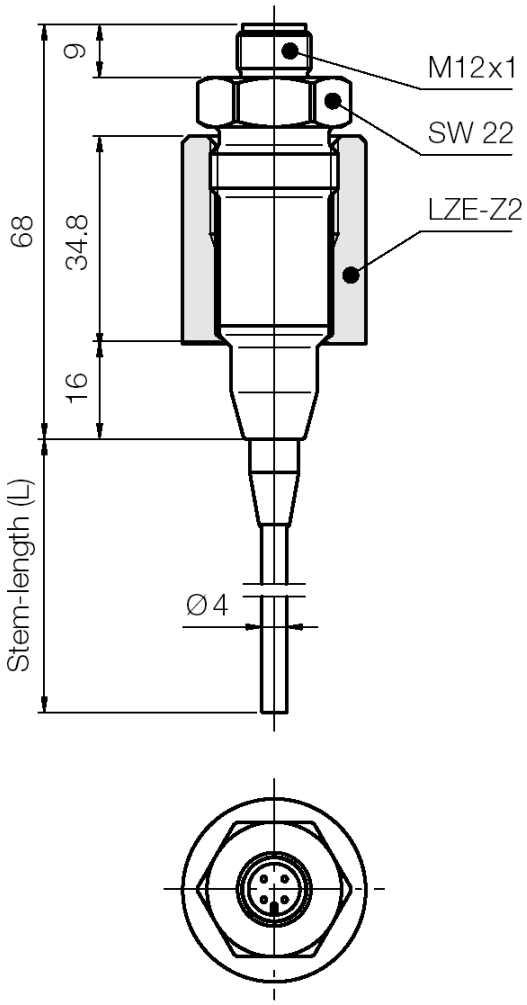
The Conductive Level Electrodes work completely maintenance free. Occasionally, the electrode tips should be checked for deposits or corrosion and cleaned accordingly. Insulated layers can result in false alarms.

11. Dimensions

with switching electronics



without switching electronics



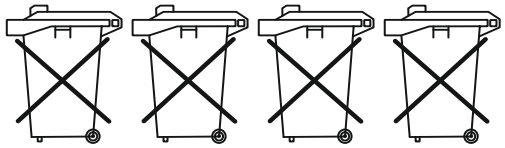
12. Disposal

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

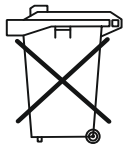
Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



Cd[1] Hg[2] Pb[3] Li[4]

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

Electrical and electronic equipment



13. EU Declaration of Conformance

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

Conductive Level Switch Model: LNK-K

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

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**
2011/65/EU	**RoHS** (category 9)
2015/863/EU	Delegated Directive (RoHS III)

We confirm that the materials used are fully suitable for direct contact with food and comply with **EC Regulation**
1935/2004
10/2011,
and **(FDA) CFR21**.

Hofheim, 13 April 2022

H. Volz
General Manager

M. Wenzel
Proxy Holder

14. UK Declaration of Conformity

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

Conductive Level Switch Model: LNK-K…

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

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. 2012/3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

We confirm that the materials used comply with FDA, CFR21.

Hofheim, 04 Oct. 2022

H. Volz
General Manager

M. Wenzel
Proxy Holder