

Operating Instructions
for
Conductivity-/high-purity water cells
with 2-electrode system
Model: ACS-Z



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.

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-machine guidelines.

If any difficulties should still arise during start-up, please do not carry out any manipulations on the unit. You could endanger your rights under the instrument warranty! Please contact the nearest subsidiary or the head office in such a case.

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:

- Conductivity-/high-purity water cells with 2-electrode system model: ACS-Z

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. General

These operating instructions are valid for electrolytic conductivity cells as per data sheets ACS-Z.

Electrolytic conductivity cells are used in conjunction with suitable transmitters for industrial chemical analysis, to determine the electrolytic conductivity of liquids, or the resistance in high-purity water.

6. Measurement principle

Two conductive electrodes of a defined surface are immersed in the medium at a certain distance to each other. They are supplied with an a.c. voltage of a specific frequency (depending on the measurement range) from a separate transmitter. Because of the conductive components in the medium (ions, salts), an alternating current is produced between the electrodes, which the transmitter uses to determine the conductivity, display it and convert it to a standardized signal.

7. Laboratory or industrial cells

Conductivity cells consist of a flow-through, immersion or screw-in body made from plastic or stainless steel and the electrodes embedded in it. Depending on the type, application and measurement range, the two electrodes are made from stainless steel, titanium or special graphite. The conductivity cells are supplied ex-factory with a fixed cell constant K [1/cm]. Typical cell constants are, for example. $K = 0.01$; 0.1 ; 1.0 ; 3.0 or 10.0 . Intermediate values are possible for customer-specific versions.

The subsequent transmitter must be set to the cell constant of the cell. In addition, temperature probes can be incorporated in the cell for specific applications.

8. Ranges

The range of electrolytic 2-electrode conductivity cells is physically restricted to a maximum of 200 mS/cm.

The table below shows the rough division of the ranges, related to the cell constant.

Cell constant K [1/cm]	Maximum range
0.01	bis 5 μ S/cm bzw. 20 M Ω cm
0.01	bis 10 μ S/cm
0.1	bis 3000 μ S/cm
1.0	bis 15 mS/cm
3.0	bis 30 m mS/cm
10.0	bis 200 mS/cm





The actual range limits vary according to the electrode material, style and subsequent transmitter!

ACS-Z

9. Electrical connection

Depending on the version, the cells are supplied with an attached cable or detachable connector.

Connection for	Connector	Attached cable	M12 conn.
Outer electrode		white	1
Inner electrode	2	brown	2
Temperature compensation	1	yellow	3
	3	green	4
3-wire circuit	-	-	5
Shield	-		



The connection cable must be run directly to the transmitter, and not via series terminals. Only use screened cables, preferably those recommended or supplied by the manufacturer.

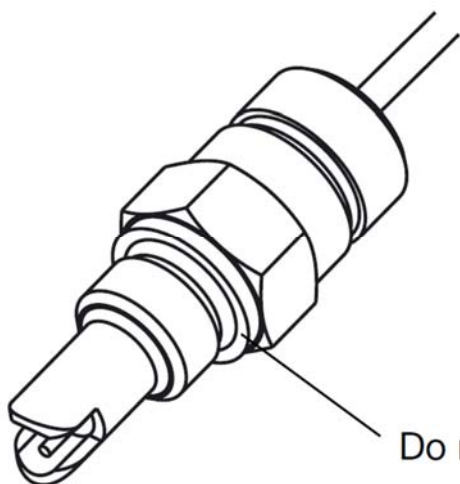
Please observe the instructions for the electrical connections in the operating instructions for the transmitter used.

10. Mechanical installation



Please take note of the technical data for your cell (see the manufacturer's technical data sheet). The cell must be suitable for the temperature, pressure and media conditions (including the chemical resistance) prevailing at the site!

Do not make any mechanical modifications to the cell (shortening, drilling into, bending or scratching the electrodes), as this may seriously impair the proper functioning of the cell and endanger your rights under the instrument warranty!



Do not use a metallic gasket!



The operating position is generally unrestricted. It must, however, be ensured that the liquid can flow adequately through or around the cell (i.e. the conductive electrodes of the cell must always be completely enveloped by the liquid), and constructional measures must be taken to eliminate interruptions in the flow or gas bubbles.

11. Maintenance/cleaning

The electrodes of the electrolytic conductivity cell are in direct contact with the liquid. It is therefore essential to clean the cell at regular intervals, depending on how prone the liquid is to contamination.

All suitable domestic cleaning agents may be used for cleaning. Abrasive cleaning agents are generally not suitable. The electrodes must not be damaged mechanically! Deposits can be removed using diluted hydrochloric acid, or by ultrasonic cleaning, for example.



The use of electrolytic conductivity cells in strongly glutinous, oily or sticky media is not permissible. In such cases, inductive conductivity measurement should be used.

12. Fault-finding

When investigating faults, all components of the conductivity electrode system must be taken into account.

Also check the transmitter and the connection cable used, in addition to the cell.

Type of fault	Possible cause	Removal
Measurement too high or too low.	Cell is dirty.	Chapter 11 "Maintenance/cleaning"
No conductivity measurement. (e.g. "0" display)	Cable break, wrong pin assignment. Cell in air (not enveloped).	Check electrical connection again carefully. Check installation site of cell: is liquid present?
No temperature measurement (for cells with integral temperature probe).	Cable break, wrong electrical connection.	Check electrical connection again carefully.
Displayed value is not stable, unsteady.	Errors due to -wrong/inadequately screened connecting cable -gas bubbles	Check cable connection and layout. Check installation site and position of cell, alter it, if necessary.

The cell can also be checked for short-circuits or internal contact problems. This can be done using a continuity tester (e.g. the diode tester of a multimeter).

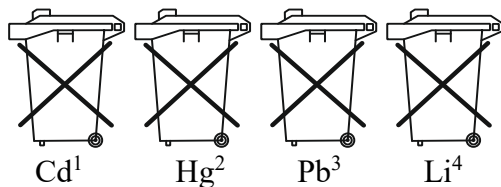
13. Disposal

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.

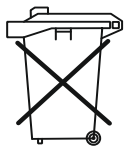
Batteries

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



14. EU Declaration of Conformance

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

**Conductivity-/high-purity water cells with 2-electrode system
model: ACS-Z**

to which this declaration relates is in conformity with the following EC guidelines:

2011/65/EU

RoHS (category 9)



H. Peters
General Manager



M. Wenzel
Proxy Holder

Hofheim, 18 Oct. 2018