# Sensor technology

Lutz-Jesco GmbH

safety is our concern

# The subtle difference

Lutz-Jesco sensors are characterised by their high quality, a robust build and good price-performance ratio. Intensive research and many years of practical experience mean we have the skills to successfully deal with the measurement tasks you set us. We provide all measuring procedures for chlorine measurement, enabling you to select the procedure which matches your needs.

Sensors for disinfectants 4

Sensors for pH measurement 8

Sensors for redox measurement 9

Further measuring cells 10

Fitting for accepting the sensors 12

Sensor technology accessories 14

Service 15

# Measuring cell for the measurement of disinfection in water

| Sensor type | CS120 - Pt/Cu | CS120 - Pt/Ag | DMZ3* | DMZ3.1 |
|---|---|---|---|---|
| Measuring unit | all oxidising ions | all oxidising ions | all oxidising ions | all oxidising ions |
| Part number | 23722968 | 23732271 | 44302002 | 44302006 |
| Applications | swimming pool water, drinking water, process water | swimming pool water, drinking water, process water, salt water | | |
| Measuring range | 0 – 20 mg/l $Cl_2$ | 0 – 20 mg/l $Cl_2$ | 0 – 10 mg/l $Cl_2$ | 0 – 15 mg/l $Cl_2$ |
| Transfer/slope | 20 – 30 µA / mg/l | | | |
| Electrolyte | Sample water | | | |
| Electrical connection | Free wire end | | | N attachment head |
| Hydraulic connections | G5/8 mm | | hose 6/8mm | |
| Pressure range | 0–6 bar | | | |
| Flow rate | 40–50 l/h | | 30 l/h | |
| Measuring principle | Amperometric open 2-electrode measuring cell | | amperometric 3-electrode measuring cell with potentiostatic control | |
| **Can be used for water sampling station:** | | | | |
| EASYPRO 1 | • | • | - | • |
| EASYPRO 2 | - | - | - | • |
| EASYPRO 3 | - | - | - | • |
| EASYPRO 4 | - | - | - | • |
| EASYPRO MB-C | - | - | - | • |
| EASYPRO ME-C | - | - | - | - |
| EASYPRO MC-C | - | - | - | • |
| EASYPRO MD-C | - | - | - | - |
| EASYPRO MP-C | - | - | - | • |
| EASYPRO MK-C | - | - | - | • |
| EASYPRO MG-C | - | - | - | - |
| EASYPRO SMART CPL | - | • | - | - |
| EASYPRO SMART CP | • | • | - | - |
| EASYPRO SMART RP | - | - | - | - |
| EASYPRO COMPACT | - | - | - | • |
| EASYPRO 1 CS | • | • | - | - |
| EASYPRO 1 PH | - | - | - | - |
| EASYPRO 1 RD | - | - | - | - |
| EASYPRO 1 CD | - | - | - | - |
| EASYPRO 1 CH | - | - | - | - |
| EASYPRO 1 LF | - | - | - | - |
| EASYPRO 1 GC | - | - | - | - |
| EASYPRO 1 DO | - | - | - | - |
| EASYPRO 1 TR | - | - | - | - |

*Available as a spare part for: EASYPRO LB-C, LC-C, LP-C and LK-C, as well as EASYPRO CD and EASYPRO CP

# Measuring cell for the measurement of disinfection in water

| Sensor type | Cl 4.2 | Cl 4.2 | Cl 4.2 | Cl 4.2 |
|---|---|---|---|---|
| Measuring unit | free chlorine | free chlorine | free chlorine | free chlorine |
| Part number | 23700613 | 23700608 | 23700614 | 23700616 |
| Applications | swimming pool water, drinking water, process water | swimming pool water, drinking water, process water, salt water | swimming pool water, drinking water | |
| Measuring range | 0 – 0.5 mg/l $Cl_2$ | 0 – 2 mg/l $Cl_2$ | 0 – 5 mg/l $Cl_2$ | 0 – 10 mg/l $Cl_2$ |
| Transfer/slope | 4 – 20 mA | | | |
| Electrolyte | Diaphragm cap with electrolyte | | | |
| Connection | Free wire end | | | |
| Pressure range | 0–0.5 bar | | | |
| Flow rate | 30 l/h | | | |
| Measuring principle | amperometric membrane-covered measuring cell | | | |
| **Can be used for water sampling station:** | | | | |
| EASYPRO 1 | • | • | • | • |
| EASYPRO 2 | • | • | • | • |
| EASYPRO 3 | • | • | • | • |
| EASYPRO 4 | • | • | • | • |
| EASYPRO MB-C | - | - | - | - |
| EASYPRO ME-C | - | - | - | - |
| EASYPRO MC-C | - | - | - | - |
| EASYPRO MD-C | • | • | • | • |
| EASYPRO MP-C | - | - | - | - |
| EASYPRO MK-C | - | - | - | - |
| EASYPRO MG-C | • | • | • | • |
| EASYPRO SMART CPL | - | - | - | - |
| EASYPRO SMART CP | - | - | - | - |
| EASYPRO SMART RP | - | - | - | - |
| EASYPRO COMPACT | - | - | - | - |
| EASYPRO 1 CS | - | - | - | - |
| EASYPRO 1 PH | - | - | - | - |
| EASYPRO 1 RD | - | - | - | - |
| EASYPRO 1 CD | - | - | - | - |
| EASYPRO 1 CH | • | • | • | • |
| EASYPRO 1 LF | - | - | - | - |
| EASYPRO 1 GC | - | - | - | - |
| EASYPRO 1 DO | - | - | - | - |
| EASYPRO 1 TR | - | - | - | - |

# Measuring cell for the measurement of disinfection in water

| Sensor type | CD 4.2 | CD 4.2 | GCM | GCM | GCM |
|---|---|---|---|---|---|
| Measuring unit | Chlorine dioxide | | Total chlorine | | |
| Part number | 23700604 | 23700605 | 23700751 | 23700752 | 23700753 |
| Applications | drinking water, process water | drinking water, rinsing water, process water | swimming pool water, drinking water, process water | | |
| Measuring range | 0 – 0,5 mg/l $ClO_2$ | 0 – 2 mg/l $ClO_2$ | 0 – 2 mg/l $Cl_{total}$ | 0 – 5 mg/l $Cl_{total}$ | 0 – 10 mg/l $Cl_{total}$ |
| Transfer/slope | 4 – 20 mA | | | | |
| Electrolyte | Diaphragm cap with electrolyte | | | | |
| Connection | Free wire end | | | | |
| Pressure range | 0–0.5 bar | | 0–1 bar | | |
| Flow rate | 30 l/h | | | | |
| Measuring principle | amperometric membrane-covered measuring cell | | | | |
| **Can be used for water sampling station:** | | | | | |
| EASYPRO 1 | • | • | • | • | • |
| EASYPRO 2 | • | • | • | • | • |
| EASYPRO 3 | • | • | • | • | • |
| EASYPRO 4 | • | • | • | • | • |
| EASYPRO MB-C | - | - | - | - | - |
| EASYPRO ME-C | - | - | - | - | - |
| EASYPRO MC-C | - | - | - | - | - |
| EASYPRO MD-C | - | - | - | - | - |
| EASYPRO MP-C | - | - | • | • | • |
| EASYPRO MK-C | - | - | - | - | - |
| EASYPRO MG-C | - | - | • | • | • |
| EASYPRO SMART CPL | - | - | - | - | - |
| EASYPRO SMART CP | - | - | - | - | - |
| EASYPRO SMART RP | - | - | - | - | - |
| EASYPRO COMPACT | - | - | - | - | - |
| EASYPRO 1 CS | - | - | - | - | - |
| EASYPRO 1 PH | - | - | - | - | - |
| EASYPRO 1 RD | - | - | - | - | - |
| EASYPRO 1 CD | • | • | - | - | - |
| EASYPRO 1 CH | - | - | - | - | - |
| EASYPRO 1 LF | - | - | - | - | - |
| EASYPRO 1 GC | - | - | • | • | • |
| EASYPRO 1 DO | - | - | - | - | - |
| EASYPRO 1 TR | - | - | - | - | - |

# Measuring cell for the measurement of disinfection in water

| Sensor type | WP7 | BR 1 | BR 1 | MST 1 | P10 |
|---|---|---|---|---|---|
| Measuring unit | Hydrogen peroxide | free bromine | free bromine | Chlorite | Peracetic acid |
| Part number | 23700615 | 23700618 | 23700619 | 23700625 | 23700631 |
| Applications | Process water | | | swimming pool water, drinking water, process water | process water, salt water |
| Measuring range | 0.5 – 200 mg/l | 0 – 2 mg/l | 0 – 5 mg/l | 0.5 – 2 mg/l | 0.1 – 20 mg/l |
| Transfer/slope | 4 – 20 mA | | | | |
| Electrolyte | Diaphragm cap with electrolyte | | | | |
| Connection | Free wire end | | | | |
| Pressure range | 0–0.5 bar | | | | |
| Flow rate | 30 l/h | | | | |
| Measuring principle | Membrane-covered measuring cell | | | | |
| **Can be used for water sampling station:** | | | | | |
| EASYPRO 1 | • | • | • | • | • |
| EASYPRO 2 | • | • | • | • | • |
| EASYPRO 3 | • | • | • | • | • |
| EASYPRO 4 | • | • | • | • | • |
| EASYPRO MB-C | - | - | - | - | - |
| EASYPRO ME-C | - | - | - | - | - |
| EASYPRO MC-C | - | - | - | - | - |
| EASYPRO MD-C | - | - | - | - | - |
| EASYPRO MP-C | - | - | - | - | - |
| EASYPRO MK-C | - | - | - | - | - |
| EASYPRO MG-C | - | - | - | - | - |
| EASYPRO SMART CPL | - | - | - | - | - |
| EASYPRO SMART CP | - | - | - | - | - |
| EASYPRO SMART RP | - | - | - | - | - |
| EASYPRO COMPACT | - | - | - | - | - |

# Measuring cell for measuring pH value

| Sensor type | PE110 | PE110 | PE110 | PE110 |
|---|---|---|---|---|
| Part number | 44101001 | 44101002 | 44101003 | 44101004 |
| Applications | Drinking water<br>Process water, light soiling<br>warm water | Drinking water<br>Process water heavy soiling<br>warm water | Boiler water<br>Drinking water | Swimming pool water<br>Drinking water |
| Measuring range | 0 – 14 pH | | | 2 – 12 pH |
| Transfer/slope | 52 – 59 mV / pH value | | | |
| Electrolyte | KCl (Gel) | | KCl (liquid) | KCl (Gel) |
| Connection | N attachment head with screw-in thread PG 13.5 | | | |
| Pressure range | 0–6 bar | | max. 6 bar with pressure cap | 0–6 bar |
| Temperature range | 0 – 80 °C | 0 – 130 °C | 0 – 60 °C | 0 – 50 °C |
| Installation length | 120 mm | | 180 mm | 120 mm |
| Shaft diameter | approx. 12mm | | | |
| Measuring principle | pH single-rod measuring cell | | | |
| **Can be used for water sampling station:** | | | | |
| EASYPRO 1 | • | • | • | • |
| EASYPRO 2 | • | • | • | • |
| EASYPRO 3 | • | • | • | • |
| EASYPRO 4 | • | • | • | • |
| EASYPRO MB-C | • | - | - | • |
| EASYPRO ME-C | • | - | - | • |
| EASYPRO MC-C | • | - | - | • |
| EASYPRO MD-C | • | - | - | • |
| EASYPRO MP-C | • | - | - | • |
| EASYPRO MK-C | • | - | - | • |
| EASYPRO MG-C | • | - | - | • |
| EASYPRO SMART CPL | • | - | - | • |
| EASYPRO SMART CP | • | - | - | • |
| EASYPRO SMART RP | • | - | - | • |
| EASYPRO COMPACT | - | - | - | • |
| EASYPRO 1 CS | - | - | - | - |
| EASYPRO 1 PH | • | • | • | • |
| EASYPRO 1 RD | - | - | - | - |
| EASYPRO 1 CD | - | - | - | - |
| EASYPRO 1 CH | - | - | - | - |
| EASYPRO 1 LF | - | - | - | - |
| EASYPRO 1 GC | - | - | - | - |
| EASYPRO 1 DO | - | - | - | - |
| EASYPRO 1 TR | - | - | - | - |

# Measuring cells for measuring the Redox value

| Sensor type | ME110 | ME110 | ME110 | ME110 |
|---|---|---|---|---|
| Part number | 44102011 | 44102013 | 44102014 | 44102019 |
| Applications | Swimming pool water<br>Process water, light soiling | Heavily contaminated process water | Boiler water | Salty waters |
| Measuring range | 0 – 1000 mV | | | |
| Electrolyte | KCl (Gel) | | KCl (liquid) | KCl (Gel) |
| Connection | N attachment head with screw-in thread PG 13.5 | | | |
| Pressure range | 0–6 bar | | | |
| Temperature range | 0 – 80 °C | | | 0 – 50 °C |
| Installation length | 120 mm | | | |
| Shaft diameter | approx. 12mm | | | |
| Measuring principle | Redox single-rod measuring cell | | | |
| **Can be used for water sampling station:** | | | | |
| EASYPRO 1 | • | • | • | • |
| EASYPRO 2 | • | • | • | • |
| EASYPRO 3 | • | • | • | • |
| EASYPRO 4 | • | • | • | • |
| EASYPRO MB-C | - | - | - | - |
| EASYPRO ME-C | • | - | - | • |
| EASYPRO MC-C | • | - | - | • |
| EASYPRO MD-C | • | - | - | • |
| EASYPRO MP-C | • | - | - | • |
| EASYPRO MK-C | • | - | - | • |
| EASYPRO MG-C | • | - | - | • |
| EASYPRO SMART CPL | - | - | - | - |
| EASYPRO SMART CP | - | - | - | - |
| EASYPRO SMART RP | • | - | - | • |
| EASYPRO COMPACT | • | - | - | - |
| EASYPRO 1 CS | - | - | - | - |
| EASYPRO 1 PH | - | - | - | - |
| EASYPRO 1 RD | • | • | • | • |
| EASYPRO 1 CD | - | - | - | - |
| EASYPRO 1 CH | - | - | - | - |
| EASYPRO 1 LF | - | - | - | - |
| EASYPRO 1 GC | - | - | - | - |
| EASYPRO 1 DO | - | - | - | - |
| EASYPRO 1 TR | - | - | - | - |

# Further measuring cells

| | Conductivity | Dissolved oxygen | Turbidity | Turbidity |
|---|---|---|---|---|
| **Sensor type** | **LE110** | **DO20** | **TR10** | **TR100** |
| Part number | 41100044 | 44305003 | 44305000 | 44305001 |
| Applications | swimming pool water, drinking water, salt water | swimming pool water, drinking water, process water | | |
| Measuring range | 0 – 100 mS/cm | 0 – 20 mg/l | 0 – 10 NTU | 0 – 100 NTU |
| Transfer/slope | | approx. 1 mA/(mg/l) | approx. 0.6 mA/NTU | approx. 0.06 mA/NTU |
| Connection | M12 4-pin | Fixed cable 5 m | Fixed cable 10 m | |
| Pressure range | 0–6 bar | 0–5 bar | 0–4 bar | |
| Temperature range | 0 – 60 °C | 0 – 50 °C | | |
| Installation length | 120 mm | | | |
| Shaft diameter | 12 mm | 25 mm | 42 mm | |
| Measuring principle | Conductive two-electrode measuring cell | optical membrane-covered measuring cell | | |
| **Can be used for water sampling station:** | | | | |
| EASYPRO 1 | • | • | - | - |
| EASYPRO 2 | • | • | - | - |
| EASYPRO 3 | • | • | - | - |
| EASYPRO 4 | • | • | - | - |
| EASYPRO MB-C | - | - | - | - |
| EASYPRO ME-C | - | - | - | - |
| EASYPRO MC-C | - | - | - | - |
| EASYPRO MD-C | - | - | - | - |
| EASYPRO MP-C | - | - | - | - |
| EASYPRO MK-C | • | - | - | - |
| EASYPRO MG-C | - | - | - | - |
| EASYPRO SMART CPL | • | - | - | - |
| EASYPRO SMART CP | - | - | - | - |
| EASYPRO SMART RP | - | - | - | - |
| EASYPRO COMPACT | - | - | - | - |
| EASYPRO 1 CS | - | - | - | - |
| EASYPRO 1 PH | - | - | - | - |
| EASYPRO 1 RD | - | - | - | - |
| EASYPRO 1 CD | - | - | - | - |
| EASYPRO 1 CH | - | - | - | - |
| EASYPRO 1 LF | • | - | - | - |
| EASYPRO 1 GC | - | - | - | - |
| EASYPRO 1 DO | - | • | - | - |
| EASYPRO 1 TR | - | - | • | • |

# Sensors for measuring the temperature

| Sensors for measuring the temperature | TE110 | TE110 | |
|---|---|---|---|
| Part number | 41100021 | 411000022 | 41000301 |
| Applications | swimming pool water, process water | | swimming pool water, process water, electrolytic cells |
| Measurement resistance | 100 ohms | | |
| Connection | N attachment head with screw-in thread PG 13.5 | Cable 2.5 m long | M12 4-pin + 5 m cable |
| Pressure range | 0–6 bar | 0–5 bar | 0–10 bar |
| Temperature range | 0 – 150 °C | 0 – 80 °C | -10 to +180 |
| Sensor type | Pt100 | | |
| Installation length | 120 mm | 50 mm | 14 mm |
| Shaft diameter | approx. 12mm | approx. 6mm | approx. 19 mm / process connection G1/4 |
| Shaft material | Glass shaft | Metal protective pipe (stainless steel) | Titanium + FPM |

# Fittings for accepting the sensors

The chlorine measuring cell, pH and Redox electrodes, temperature sensor and flow control have been combined into a single unit to facilitate integration into the system. Lutz-Jesco provides a wide range of different fittings, so that you always have the correct solution for connecting the sensors into your process.

| Fitting type | PRMZ | LMZ | DC111-2 | DC111-3 | DW111-3 | DC111-DN20 | DC111-DN25 |
|---|---|---|---|---|---|---|---|
| Part number | 44302004 | 44302007 | 37700 | 37701 | 37702 | 41100101 | 41100102 |
| Version | PRMZ measuring cell fitting | LMZ measuring cell fitting | Throughflow fitting | | | | |
| Number take-up electrodes | 1 | | 2 | 3 | | 1 | |
| Type of the electrodes | pH, redox single-rod measuring cells | Conductivity electrode | Single-rod measuring cells<br>Conductivity measuring cells | | | | |
| for connection | Screw-in thread PG 13.5 | | | | | | |
| Temperature | 60 °C | | 40 °C | | | | |
| Discharge | max. 6 bar | | | | | max. 10 bar at 20 °C | |
| Material | Luran | | PMMA | | | PVC | |
| Can be shut-off | Cannot be shut-off | | | | | | |

# Fittings for accepting the sensors

| Fitting type | DP111 | DT111 | EC 111-500 mm | EC 111-1000 mm | EP 111-426 mm |
|---|---|---|---|---|---|
| Part number | 41100103 | 41131288 | 41100104 | 41100110 | 41100105 |
| Version | Throughflow fitting | | Immersion fitting | | |
| Number take-up electrodes | 3 | 2 | 1 | | 3 |
| Type of the electrodes | Single-rod measuring cells, conductivity measuring cells | | | | |
| for connection | Screw-in thread PG 13.5 | | | | |
| Temperature | max. 95 °C | max. 40 °C | max. 95 °C | | |
| Discharge | 6 bar (at 25 °C) | | Pressure-free | | |
| Material | PP | Plastic housing | PP | | |
| Can be shut-off | Cannot be shut-off | | | | |
| Immersion tube length | - | - | 500 mm | 1000 mm | 426 mm |

| Fitting type | DW111-PP | DW111-PVDF | Throughflow fitting | TR10/TR100 |
|---|---|---|---|---|
| Part number | 41100115 | 41100116 | 37699 | 44305002 |
| Version | Changeover device | | Throughflow fitting | |
| Number take-up electrodes | 1 | | | |
| Type of the electrodes | pH or Redox single-rod measuring cells | | Membrane-covered measuring cells | Turbidity sensor |
| Connection | 3/4“ | | for hose 6/12 mm | hose 8/12mm |
| Temperature | max. 70 °C | max. 120 °C | max. 40 °C | max. 50 °C |
| Discharge | 5 bar (at 50 °C) | | depending on the measuring cell used | 4 bar |
| Material | PP | PVDF | PMMA | PP black |
| Can be shut-off | Cannot be shut-off | | | |

# Sensor technology accessories

Choose from a comprehensive range of accessories for sensor technology. Measuring lines and sockets for various designs. Buffer, calibration, potassium chloride and cleaning solutions complete our offer.

# Photometer

Photometers serve the adjustment of measurement systems through reference measurements. Systems with multiple measuring cells need simple and quick reference measurements.

The Lutz-Jesco photometer combines this requirement with high measurement accuracy and a robust structure.

# An overview of the three measuring principles

## Potentiometry

- Potentiometry measures the potential of the electrode in a measurement solution.

## Amperometry

- This enables the determination of the concentration of various substances by current measurement in watery solutions.

## Conductometry

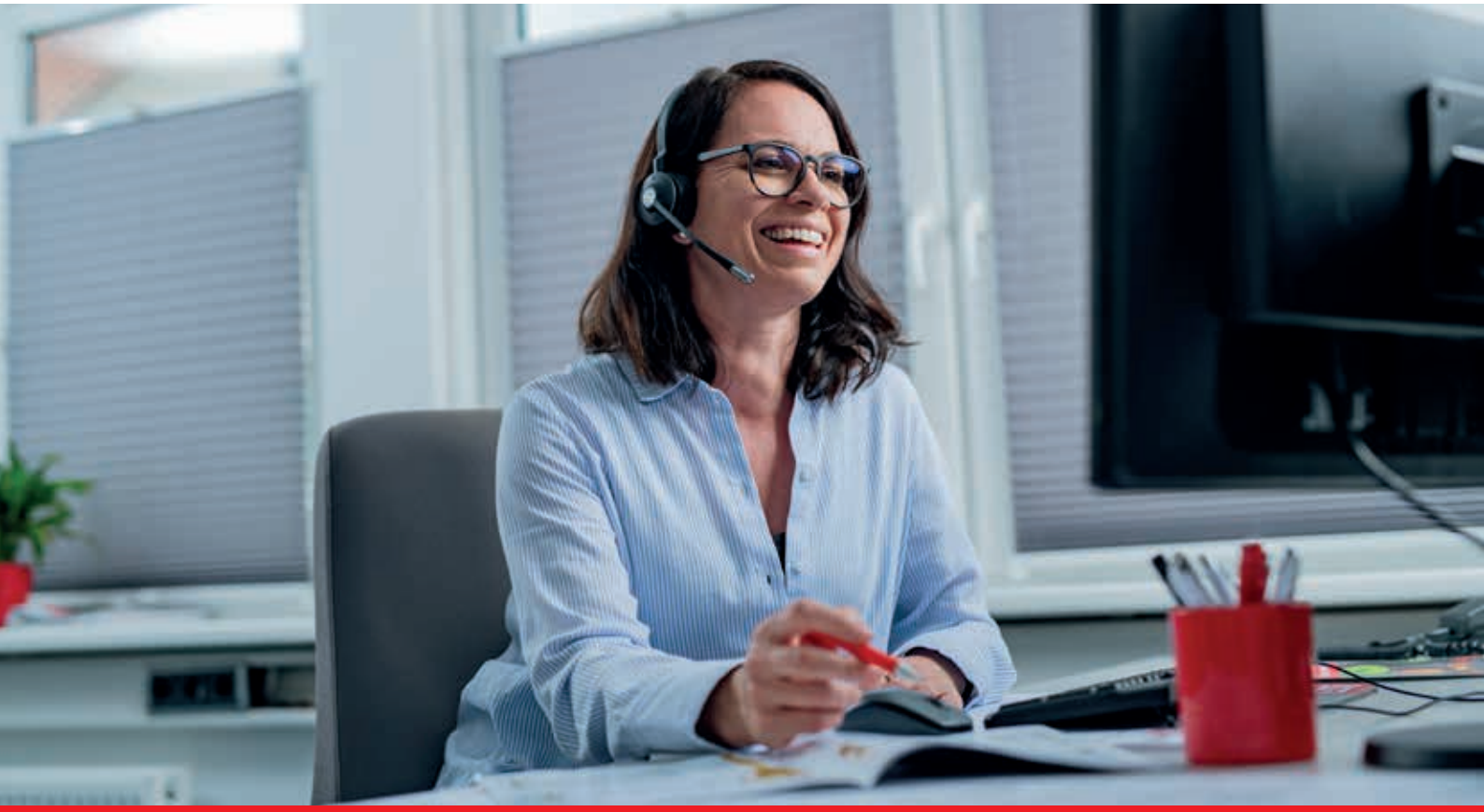
- This measurement principle measures the electrolytic conductivity.

# Service

Lutz-Jesco is available to you as a reliable partner with a worldwide network of competent representatives for all service questions relating to our products.

Customer-oriented action extends from advice to sales and after-sales service. To ensure that you are on the safe side, we offer you not only high-quality products but also comprehensive services.

**Technical Support l Commissioning l Maintenance l Servicing l Repairs in the factory l Material Service l Customer Training courses**



**Do you have questions about our services?**
**Our experts will be happy to advise you:**

**service@lutz-jesco.com | Telefon +49 5130 5802-30**

The products supplied may be different to the pictures shown.
Order no. P0005EN | State of the art 10.2024 | Subject to technical changes

Follow us:

**Lutz-Jesco GmbH**
Am Bostelberge 19 | DE-30900 Wedemark | Telephone +49 5130 5802-0 | info@lutz-jesco.com | www.lutz-jesco.com