

# SCL



SCL 3/S  
SCL 3/N  
SCL 8  
SBR  
SCT



SCL2



SCL 9  
SCL 10



SCL 11

EN

OPERATING MANUAL

CLOSED AMPEROMETRIC CELLS

R5-03-24

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This operating instructions contains safety information that if ignored can endanger life or result in serious injury.

The original instruction is in English.

Read these instructions **carefully** before use and keep them for future reference.

Information and specifications on this manual could be uncorrect or could have printing errors. Specifications are subject to change without notice.

Version: R3-05-21

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## GENERAL SAFETY GUIDELINES

Operating, installing, or maintaining the unit in any way that is not covered in this manual could cause death, serious personal injury, or damage to the equipment.

### ICON

This manual use the following safety message icon:



#### **Danger!**

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



#### **Warning!**

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



**Important** - A practice not related to personal injury or additional information.



**Cross reference** - An instance which refers to related information elsewhere in the same document

**PURPOSE OF USE  
AND SAFETY**

**EQUIPMENT INTENDED FOR THE MEASUREMENT OF CHLORINE (OR ITS ABSENCE) IN  
WATER.**

Do not use in explosive area (EX).  
Do not use with flammable chemical .  
Do not use with radioactive chemicals.

Use the probe in accordance with the data and specifications printed on the label

Do not modify or use in a manner inconsistent with the provisions of the operating manual.



**When using this product with aggressive chemicals observe the regulations concerning the transport and storage of aggressive fluids.**



**When installing always observe national regulations.**



**Manufacturer is not liable for any unauthorized use or misuse of this product that may cause injury, damage to persons or materials.**



**Probes must be serviced and repaired by qualified and authorized personnel only.**



**Before any operation:**

- always read chemical Material Safety Data Sheet (MSDS);
- always wear protective clothing;
- empty and rinse the liquid end before work on a the product which has been used with hazardous or unknown chemicals.



**Avoid grinding / shock / falls / friction.**

**Environmental safety**

**Work area**  
Always keep the area clean to avoid and/or discover emissions.

**Recycling guidelines**

**EWC code: 16 02 16**

Always recycle according to these guidelines:

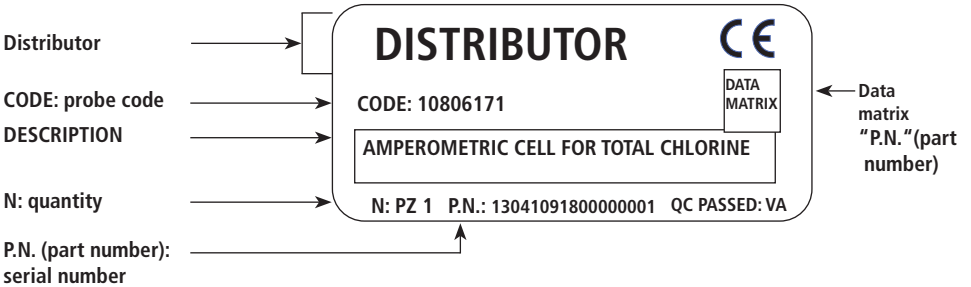
1. If the unit or parts are accepted by an authorized recycling company, then follow local recycling laws and regulations.
2. If the unit or parts are not accepted by an authorized recycling company, then return them to the nearest representative.

**Waste and emissions regulations**  
Observe these safety regulations regarding waste and emissions:

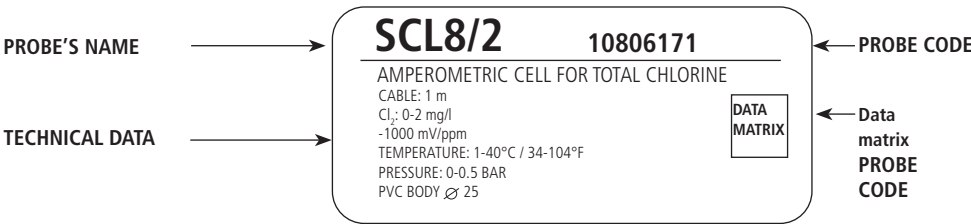
- Dispose appropriately of all waste.
- Handle and dispose of the dosed chemical in compliance with applicable environmental regulations.
- Clean up all spills in accordance with safety and environmental procedures.
- Report all environmental emissions to the appropriate authorities.

**LABELS**

On the box (example)



On the probe (example)



**Spare parts**  
For spare parts orders or any other communication, refer to the pump's label.  
Code (CODE) and serial number (P / N) uniquely identify the probe.

**i** An unsuitable transportation or storage can cause damages.

Use original box to pack the probe.

Observe storage conditions also for transportation.

Although packed, always protect the unit against humidity and the action of chemicals.

**!** Before returning the probe to the manufacturer repair service, clean and rinse it. Disassemble the membrane cap and discard electrolyte.

**i** DO NOT DISCARD PACKAGING. USE IT TO RETURN THE PROBE.

Storage

To store the probe:

- 1. Decommission the probe
- 2. Store the probe in the original box, protected against sun, chemicals and humidity.

Transportation and storage temperature ..... +10°C - +50°C (+32°F - +122°F)  
Humidity ..... 95% relative humidity (not condensed)

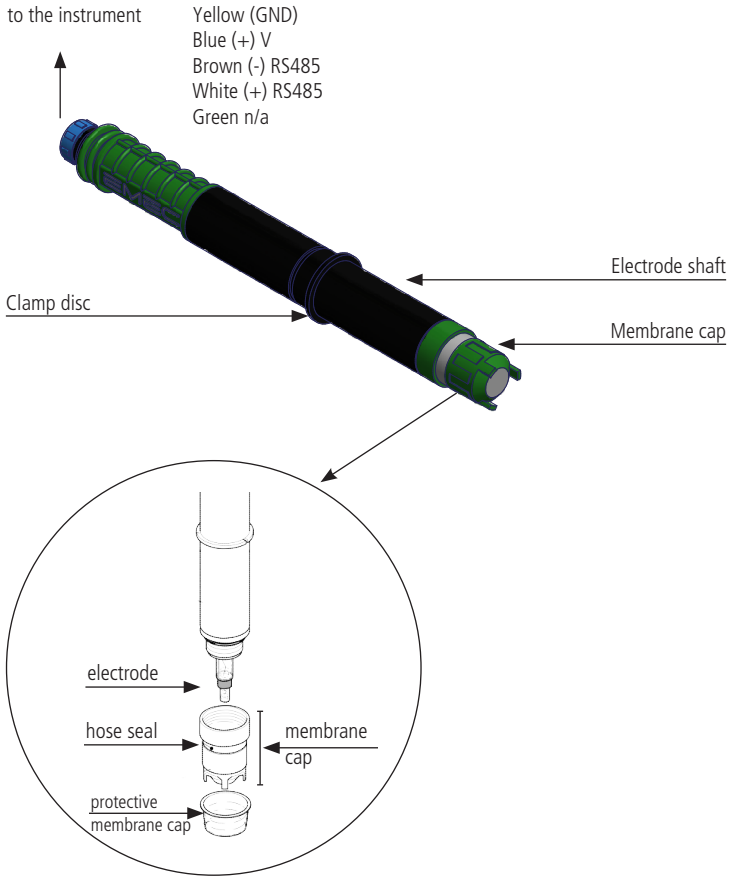
# INTRODUCTION

## Closed amperometric cells

They are equipped with a special membrane system.  
SCL 3 and 8 work in chlorine water system.

**Absence of chlorine for more than 100 hours damage the probe.**

The probe has to be installed into a probe holder and connected to a measuring and control instrument.



## Packaging

The packaging will include the following:

- Sensor complete with sensor cap, protective cap and clamp ring
- Connector cable
- electrolyte
- operating manual

## MODELS

- SCLS3 for free chlorine (organic and inorganic) for fresh water
- SCL3N for free chlorine (inorganic) for fresh water
- SCL8 for total chlorine
- SCL2 for chlorine dioxide
- SCL9 for hydrogen peroxide
- SCL10 for ozone
- SCL 11 for peracetic acid
- SBR for bromine
- SCT for chlorite

## WARNING:

**Before to change membrane assure to install the correct one:**

**SCL / SVCL 3S must use labeled "A" membrane**

**SCL / SVCL 3N must use labeled "B" membrane**

|                                       |                                                                                                                                                                                                                         |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       | SCL35                                                                                                                                                                                                                   |
| <b>Parameter</b>                      | FREE CHLORINE (ORGANIC) FOR FRESH WATER                                                                                                                                                                                 |
| <b>Measuring range</b>                | SCL35/20: 0,1-20 mg/l (0,1-20 ppm)                                                                                                                                                                                      |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) - 10 mA                                                                                                                                                                                          |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                  |
| <b>Measuring system</b>               | membrane covered, amperometric potentiostatic 2-electrode system                                                                                                                                                        |
| <b>Ph working range</b>               | 5,5-9,5 pH                                                                                                                                                                                                              |
| <b>Sample water conductivity</b>      | 30-10.000 $\mu\text{S}/\text{cm}$                                                                                                                                                                                       |
| <b>Run-in-time</b>                    | First commissioning: 6 h approx.<br>Recommissioning: 3 h approx.                                                                                                                                                        |
| <b>Response time</b>                  | $T_{90}$ : 2 min. approx.                                                                                                                                                                                               |
| <b>Zero point adjustment</b>          | see chapter "Probe alignment"                                                                                                                                                                                           |
| <b>Slope calibration</b>              | see chapter "Probe alignment" DPD1 method                                                                                                                                                                               |
| <b>Alcalinity</b>                     | 100 ppm                                                                                                                                                                                                                 |
| <b>Working temperature</b>            | 1-40° C (34-104°F) with temperature compensation                                                                                                                                                                        |
| <b>Max pressure</b>                   | 1 bar - 10 mwc [mH <sub>2</sub> O]<br>no pressure impulses and/or vibration, no depressure                                                                                                                              |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                 |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                           |
| <b>Electrolyte mod.</b>               | ELESCL3                                                                                                                                                                                                                 |
| <b>Membrane mod.</b>                  | MESCL3                                                                                                                                                                                                                  |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                  |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                               |
| <b>Material</b>                       | Membrane cap: PC/ABS<br>Shaft: PE                                                                                                                                                                                       |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte ( (5-40°C)<br>membrane cap: 1 year, depending on water quality<br>electrolyte: in original bottle, protect from sunlight (5-25°C).<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY DEPENDING ON WATER QUALITY.                                                              |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                          |

|                                       |                                                                                                                                                                                                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       | SCL3N                                                                                                                                                                                                                  |
| <b>Parameter</b>                      | FREE CHLORINE (INORGANIC) FOR FRESH WATER                                                                                                                                                                              |
| <b>Measuring range</b>                | SCL3N/2: 0-2 mg/l (0-2 ppm) resolution: $\pm 0.001$<br>SCL3N/20: 0-20 mg/l (0-20 ppm) resolution: $\pm 0.01$<br>SCL3N/200: 0-200 mg/l (0-200 ppm) resolution: $\pm 0.1$                                                |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) - (10 mA)                                                                                                                                                                                       |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                 |
| <b>Measuring system</b>               | membrane covered, amperometric 2-electrode system                                                                                                                                                                      |
| <b>Ph working range</b>               | 5-9.5 pH, reduced dependance on pH value. When the pH value increases, the measured signal decreases at about 10% per pH unit.                                                                                         |
| <b>Water sample conductivity</b>      | 30 $\mu\text{S/cm}$ - 10000 $\mu\text{S/cm}$                                                                                                                                                                           |
| <b>Run-in-time</b>                    | first start up 1-24 h (6 hours usually) depending on water quality                                                                                                                                                     |
| <b>Response time</b>                  | T <sub>90</sub> : 2 min. approx.                                                                                                                                                                                       |
| <b>Zero point adjustment</b>          | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Slope calibration</b>              | See Operating manual: "Probe alignment" DPD1 method                                                                                                                                                                    |
| <b>Alcalinity</b>                     | 80 ppm                                                                                                                                                                                                                 |
| <b>Working temperature</b>            | 1-40° C (34-104°F)                                                                                                                                                                                                     |
| <b>Temperature compensation</b>       | automatically, by an integrated temperature sensor                                                                                                                                                                     |
| <b>Max pressure</b>                   | 1 bar - 10 mwc [mH <sub>2</sub> O]<br>no pressure impulses and/or vibration, no depressure                                                                                                                             |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                          |
| <b>Electrolyte mod.</b>               | ELESCL3N                                                                                                                                                                                                               |
| <b>Membrane mod.</b>                  | MESCL3                                                                                                                                                                                                                 |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                 |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                              |
| <b>Material</b>                       | Shaft: PE; Membrane cap: PC/ABS                                                                                                                                                                                        |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte (5-40° C)<br>membrane cap: used membrane cap can not be stored<br>electrolyte: in original bottle, protect from sunlight (5-25°C)<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY DEPENDING ON WATER QUALITY.                                                             |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                         |

|                                       |                                                                                                                                                                                                                        |
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|                                       | SCL8                                                                                                                                                                                                                   |
| <b>Parameter</b>                      | TOTAL CHLORINE                                                                                                                                                                                                         |
| <b>Measuring range</b>                | SCL8/2: 0-2 mg/l (0-2 ppm) resolution: $\pm 0.001$<br>SCL8/20: 0-20 mg/l (0-20 ppm) resolution: $\pm 0.01$                                                                                                             |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) - (10 mA)                                                                                                                                                                                       |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                 |
| <b>Measuring system</b>               | membrane covered, amperometric 2-electrode system                                                                                                                                                                      |
| <b>Ph working range</b>               | 6.5-9.5 pH, reduced dependance on pH value. When the pH value increases, the measured signal decreases at about 10% per pH unit.                                                                                       |
| <b>Water sample conductivity</b>      | 0.03 - 40 mS/cm                                                                                                                                                                                                        |
| <b>Run-in-time</b>                    | first start up 24 h approx.                                                                                                                                                                                            |
| <b>Response time</b>                  | T <sub>90</sub> : 60 s approx.                                                                                                                                                                                         |
| <b>Zero point adjustment</b>          | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Slope calibration</b>              | See Operating manual: "Probe alignment" DPD4 method                                                                                                                                                                    |
| <b>Alcalinity</b>                     | 80 ppm                                                                                                                                                                                                                 |
| <b>Working temperature</b>            | 1-40° C (34-104°F)                                                                                                                                                                                                     |
| <b>Temperature compensation</b>       | automatically, by an integrated temperature sensor                                                                                                                                                                     |
| <b>Max pressure</b>                   | 1 bar (14.5 PSI) - 10 mwc [mH <sub>2</sub> O]<br>no pressure impulses and/or vibration, no depressure                                                                                                                  |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                          |
| <b>Electrolyte mod.</b>               | ELESCL8                                                                                                                                                                                                                |
| <b>Membrane mod.</b>                  | MESCL8/2 or MESCL8/20                                                                                                                                                                                                  |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                 |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                              |
| <b>Material</b>                       | Shaft: PE; Membrane cap: PC/ABS                                                                                                                                                                                        |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte (5-40° C)<br>membrane cap: used membrane cap can not be stored<br>electrolyte: in original bottle, protect from sunlight (5-25°C)<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY DEPENDING ON WATER QUALITY.                                                             |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                         |

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|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameter</b>                      | CHLORINE DIOXIDE                                                                                                                                                                                                       |
| <b>Measuring range</b>                | SCL2/2: 0-2 mg/l (0-2 ppm) resolution: $\pm 0.001$<br>SCL2/20: 0-20 mg/l (0-20 ppm) resolution: $\pm 0.01$                                                                                                             |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) - (10 mA)                                                                                                                                                                                       |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                 |
| <b>Measuring system</b>               | membrane covered, 2-electrode system                                                                                                                                                                                   |
| <b>Ph working range</b>               | 4-11 pH                                                                                                                                                                                                                |
| <b>Run-in-time</b>                    | first start up 1-24 h approx. (usually 6 h)                                                                                                                                                                            |
| <b>Response time</b>                  | T <sub>90</sub> : 15 sec.. approx.                                                                                                                                                                                     |
| <b>Zero point adjustment</b>          | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Slope calibration</b>              | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Alcalinity</b>                     | 80 ppm                                                                                                                                                                                                                 |
| <b>Working temperature</b>            | 1-40° C (34-104°F)                                                                                                                                                                                                     |
| <b>Temperature compensation</b>       | automatically, by an integrated temperature sensor                                                                                                                                                                     |
| <b>Max pressure</b>                   | 1 bar (14.5 PSI) - 10 mwc [mH <sub>2</sub> O]<br>no pressure impulses and/or vibration, no depressure                                                                                                                  |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                          |
| <b>Electrolyte mod.</b>               | ELESCL2                                                                                                                                                                                                                |
| <b>Membrane mod.</b>                  | MESCL1-2                                                                                                                                                                                                               |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                 |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                              |
| <b>Material</b>                       | Shaft: PVC; membrane cap: PPE.                                                                                                                                                                                         |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte (5-40° C)<br>membrane cap: used membrane cap can not be stored<br>electrolyte: in original bottle, protect from sunlight (5-25°C)<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY<br>DEPENDING ON WATER QUALITY.                                                          |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                         |

|                                       |                                                                                                                                                                                                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameter</b>                      | HYDROGEN PEROXIDE                                                                                                                                                                                                      |
| <b>Measuring range</b>                | SCL9/200: 0-200 mg/l (0-200 ppm) ; SCL9/50: 0-50 mg/l (0-50 ppm) res. $\pm 0.1$                                                                                                                                        |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) - 25 mA                                                                                                                                                                                         |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                 |
| <b>Measuring system</b>               | membrane covered, amperometric electrode system                                                                                                                                                                        |
| <b>Ph working range</b>               | 1-11 pH                                                                                                                                                                                                                |
| <b>Water sample conductivity</b>      | 0.05 - 5.00 mS/cm                                                                                                                                                                                                      |
| <b>Run-in-time</b>                    | first start up 2-6 h approx.                                                                                                                                                                                           |
| <b>Response time</b>                  | T <sub>90</sub> : 10 min. approx.                                                                                                                                                                                      |
| <b>Zero point adjustment</b>          | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Slope calibration</b>              | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Alcalinity</b>                     | 80 ppm                                                                                                                                                                                                                 |
| <b>Working temperature</b>            | 1-40° C (34-104°F)                                                                                                                                                                                                     |
| <b>Temperature compensation</b>       | automatically, by an integrated temperature sensor                                                                                                                                                                     |
| <b>Max pressure</b>                   | 1 bar (14.5 PSI) - 10 mwc [mH <sub>2</sub> O]<br>no pressure impulses and/or vibration, no depressure                                                                                                                  |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                          |
| <b>Electrolyte mod.</b>               | ELESCL9                                                                                                                                                                                                                |
| <b>Membrane mod.</b>                  | MESCL9                                                                                                                                                                                                                 |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                 |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                              |
| <b>Material</b>                       | Shaft: PVC-C; membrane cap: PVDF, PVC                                                                                                                                                                                  |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte (5-40° C)<br>membrane cap: used membrane cap can not be stored<br>electrolyte: in original bottle, protect from sunlight (5-25°C)<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY<br>DEPENDENT ON WATER QUALITY.                                                          |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                         |

|                                       |                                                                                                                                                                                                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameter</b>                      | OZONE                                                                                                                                                                                                                  |
| <b>Measuring range</b>                | SCL10/2: 0-2 mg/l (0-2 ppm) resolution: $\pm 0.001$<br>SCL10/20: 0-20 mg/l (0-20 ppm) resolution: $\pm 0.01$                                                                                                           |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) -10 mA                                                                                                                                                                                          |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                 |
| <b>Measuring system</b>               | membrane covered, amperometric 2-electrode system                                                                                                                                                                      |
| <b>Ph working range</b>               | 2-11 pH                                                                                                                                                                                                                |
| <b>Run-in-time</b>                    | first start up 1 h approx.                                                                                                                                                                                             |
| <b>Response time</b>                  | T <sub>90</sub> : 50 sec. approx.                                                                                                                                                                                      |
| <b>Zero point adjustment</b>          | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Slope calibration</b>              | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Alcalinity</b>                     | 80 ppm                                                                                                                                                                                                                 |
| <b>Working temperature</b>            | 1-40° C (34-104°F)                                                                                                                                                                                                     |
| <b>Temperature compensation</b>       | automatically, by an integrated temperature sensor                                                                                                                                                                     |
| <b>Max pressure</b>                   | 1 bar (14.5 PSI) - 10 mwc [mH <sub>2</sub> O]<br>no pressure impulses and/or vibration, no depressure                                                                                                                  |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                          |
| <b>Electrolyte mod.</b>               | ELSCL10                                                                                                                                                                                                                |
| <b>Membrane mod.</b>                  | MSCL10                                                                                                                                                                                                                 |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                 |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                              |
| <b>Material</b>                       | PVC-U, stainless steel 1.4571                                                                                                                                                                                          |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte (5-40° C)<br>membrane cap: used membrane cap can not be stored<br>electrolyte: in original bottle, protect from sunlight (5-25°C)<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY<br>DEPENDING ON WATER QUALITY.                                                          |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                         |

|                                       |                                                                                                                                                                                                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameter</b>                      | PERACETIC ACID                                                                                                                                                                                                         |
| <b>Measuring range</b>                | SCL11/200: 0-200mg/l (0-200 ppm) resolution: $\pm 0.1$<br>SCL11/2000: 0-2000 mg/l (0-2000 ppm) resolution: $\pm 1$                                                                                                     |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) -10 mA                                                                                                                                                                                          |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                 |
| <b>Measuring system</b>               | membrane covered, amperometric 2-electrode system                                                                                                                                                                      |
| <b>Ph working range</b>               | 1-9 pH                                                                                                                                                                                                                 |
| <b>Run-in-time</b>                    | first start up 1 h approx.                                                                                                                                                                                             |
| <b>Response time</b>                  | T <sub>90</sub> : 3 min. approx.                                                                                                                                                                                       |
| <b>Zero point adjustment</b>          | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Slope calibration</b>              | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Alcalinity</b>                     | 80 ppm                                                                                                                                                                                                                 |
| <b>Working temperature</b>            | 1-40° C (34-104°F)                                                                                                                                                                                                     |
| <b>Temperature compensation</b>       | automatically, by an integrated temperature sensor                                                                                                                                                                     |
| <b>Max pressure</b>                   | 1 bar (14.5 PSI) - 10 mwc [mH <sub>2</sub> O]<br>no pressure impulses and/or vibration, no depressure                                                                                                                  |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                          |
| <b>Electrolyte mod.</b>               | ELESCL11                                                                                                                                                                                                               |
| <b>Membrane mod.</b>                  | MESCL11                                                                                                                                                                                                                |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                 |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                              |
| <b>Material</b>                       | PVC-U, stainless steel 1.4571                                                                                                                                                                                          |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte (5-40° C)<br>membrane cap: used membrane cap can not be stored<br>electrolyte: in original bottle, protect from sunlight (5-25°C)<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY<br>DEPENDING ON WATER QUALITY.                                                          |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                         |

|                                       |                                                                                                                                                                                                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameter</b>                      | BROMINE                                                                                                                                                                                                                |
| <b>Measuring range</b>                | SBR/20: 0-20mg/l (0-20 ppm) resolution: $\pm 0.01$                                                                                                                                                                     |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) -10 mA                                                                                                                                                                                          |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                 |
| <b>Measuring system</b>               | membrane covered, amperometric 2-electrode system                                                                                                                                                                      |
| <b>Ph working range</b>               | 6.5-9.5 pH                                                                                                                                                                                                             |
| <b>Water sample conductivity</b>      | 50 $\mu\text{S}/\text{cm}$ - 10000 $\mu\text{S}/\text{cm}$                                                                                                                                                             |
| <b>Run-in-time</b>                    | first start up 1-24 h approx. (usually 6 h)                                                                                                                                                                            |
| <b>Response time</b>                  | $T_{90}$ : 2 min. approx.                                                                                                                                                                                              |
| <b>Zero point adjustment</b>          | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Slope calibration</b>              | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Alcalinity</b>                     | 80 ppm                                                                                                                                                                                                                 |
| <b>Working temperature</b>            | 1-40° C (34-104°F)                                                                                                                                                                                                     |
| <b>Temperature compensation</b>       | automatically, by an integrated temperature sensor                                                                                                                                                                     |
| <b>Max pressure</b>                   | 0.5 bar (7 PSI) - 5 mwc [mH <sub>2</sub> O]<br>no pressure impulses and/or vibration, no depressure                                                                                                                    |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                          |
| <b>Electrolyte mod.</b>               | ELESBR                                                                                                                                                                                                                 |
| <b>Membrane mod.</b>                  | MESBR                                                                                                                                                                                                                  |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                 |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                              |
| <b>Material</b>                       | Shaft: PVC; membrane cap: PPE                                                                                                                                                                                          |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte (5-40° C)<br>membrane cap: used membrane cap can not be stored<br>electrolyte: in original bottle, protect from sunlight (5-25°C)<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY<br>DEPENDING ON WATER QUALITY.                                                          |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                         |

|                                       |                                                                                                                                                                                                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameter</b>                      | CHLORITE                                                                                                                                                                                                               |
| <b>Measuring range</b>                | SCT/2: 0-2mg/l (0-2 ppm) resolution: $\pm 0.001$                                                                                                                                                                       |
| <b>Voltage supply</b>                 | 0/5 VDC ( $\pm 10\%$ ) -10 mA                                                                                                                                                                                          |
| <b>Connection</b>                     | 5-pole screw connector                                                                                                                                                                                                 |
| <b>Measuring system</b>               | membrane covered, amperometric 2-electrode system                                                                                                                                                                      |
| <b>pH range</b>                       | 5.5-9.5 pH                                                                                                                                                                                                             |
| <b>Conductivity range</b>             | 0.05-5 mS/cm                                                                                                                                                                                                           |
| <b>Run-in-time</b>                    | first start up 1-24 h approx. (usually 6 h)                                                                                                                                                                            |
| <b>Response time</b>                  | $T_{90}$ : 60 s approx.                                                                                                                                                                                                |
| <b>Zero point adjustment</b>          | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Slope calibration</b>              | See Operating manual: "Probe alignment"                                                                                                                                                                                |
| <b>Alcalinity</b>                     | 100 ppm                                                                                                                                                                                                                |
| <b>Working temperature</b>            | 1-40° C (34-104°F)                                                                                                                                                                                                     |
| <b>Temperature compensation</b>       | automatically, by an integrated temperature sensor                                                                                                                                                                     |
| <b>Max pressure</b>                   | 1 bar (14.5 PSI) - 10 mwc [mH <sub>2</sub> O]<br>no sbalzi di pressione, no depressione                                                                                                                                |
| <b>Power supply</b>                   | 4 wires                                                                                                                                                                                                                |
| <b>Cable (standard)</b>               | 1 m (3.28 ft)                                                                                                                                                                                                          |
| <b>Electrolyte mod.</b>               | ELESCT                                                                                                                                                                                                                 |
| <b>Membrane mod.</b>                  | MESCT                                                                                                                                                                                                                  |
| <b>Working flow</b>                   | 30 l/h                                                                                                                                                                                                                 |
| <b>Suitable for probe holder mod.</b> | PEF1, PEF1/E, PEF5, PEF23                                                                                                                                                                                              |
| <b>Material</b>                       | Shaft: PVC; membrane cap: PPE                                                                                                                                                                                          |
| <b>Storage</b>                        | probe: frost-protected, dry and without electrolyte (5-40° C)<br>membrane cap: used membrane cap can not be stored<br>electrolyte: in original bottle, protect from sunlight (5-25°C)<br>Expiration date on the label. |
| <b>Maintenance</b>                    | regular control of measuring signal<br>change electrolyte: every 3-6 months<br>SHORTEN THE MAINTENANCE INTERVALS APPROPRIATELY<br>DEPENDING ON WATER QUALITY.                                                          |
| <b>Dimension</b>                      | Diam.: 25 mm<br>Length: 241 mm                                                                                                                                                                                         |

## Operating principle

SCL probes are membrane covered amperometric electrode systems.

The measuring electrode is membrane covered and it is in the electrolyte area together with the reference electrode. Electrolyte area contains a special electrolyte and it is separated from the measuring water.

SCL probes measuring method is an electrochemical technique that measures the changes in current resulting from chemical reaction as function of the analyte concentration.

## Precautions

**Before any operation (preparation, cleaning and replacements) and before handling the probe you MUST FOLLOW these PRECAUTIONS.**



### DANGER

#### AUTHORIZED AND QUALIFIED PERSONNEL

Installation and maintenance tasks should be carried out by AUTHORIZED AND QUALIFIED PERSONNEL only in accordance with local regulations.



### DANGER

#### WEAR UNPOWDERED NITRILE GLOVES.

Avoid contact of the electrolyte with the skin.

In case of contact with skin, rinse immediately with plenty of water.



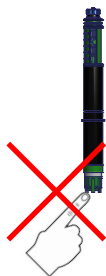
### DANGER

#### WEAR EYE PROTECTION

Avoid contact of the electrolyte with the eyes.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

## ELECTROLYTE Preparation



### **i** IMPORTANT

DO NOT TOUCH OR DAMAGE THE MEMBRANE AT THE BOTTOM OF THE MEMBRANE CAP AND THE ELECTRODES AT THE BOTTOM OF THE ELECTRODE SHAFT OR BRING THEM INTO CONTACT WITH GREASY SUBSTANCES. OTHERWISE THE SENSOR WILL NO LONGER WORK ACCURATELY. REPLACE THE MEMBRANE CAP WITH A NEW MEMBRANE CAP OR SEND THE SENSOR AWAY TO HAVE THE ELECTRODES CLEANED.

### **⚠** WARNING

Wear nitrile gloves powder free.  
Avoid electrolyte contact with skin.  
In case of contact, immediately rinse with water.

### **i** IMPORTANT

The electrolyte is sensitive to oxidation: Always keep electrolyte bottle sealed after use. Do not decant electrolytes into other containers. Do not store electrolyte beyond its "Use by" date and note the "Use by" date on the label. As far as is possible, fill the electrolyte so that it is free from bubbles. Only use the membrane cap once.

Remove protective membrane cap (transparent) before installation and keep it for decommissioning.

#### SCL3S - SCL8 .

Screw on the nozzle.

Place the electrolyte bottle on the membrane cap and allow the electrolyte to press out slowly in a stream of liquid from the bottle, while at the same time constantly pulling back the bottle. The cap is completely full if the electrolyte can be seen at the bottom thread (thread not covered by electrolyte).



#### SCL3N - SCL11

Electrolyte is already screwed. Remove the red end cap and cut off the top end of the spout on the **second line**. The cap is completely full if the electrolyte can be seen at the bottom thread (thread not covered by electrolyte). Avoid bubbles.



#### SCL9

Use the pipette included to fill the membrane cap. The cap is completely full if the electrolyte can be seen at the bottom thread (thread not covered by electrolyte). Avoid bubbles.

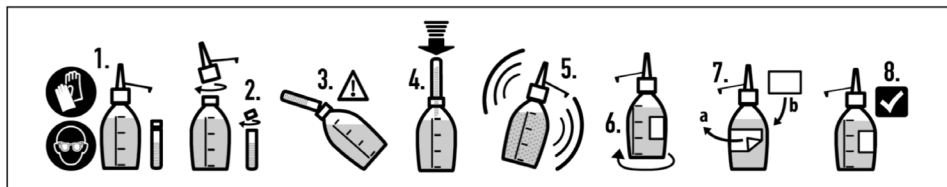


#### Electrolyte (SCL2).

Produce the ready-to-use electrolyte using the set supplied for independent production of electrolyte. Unlike ready-to-use electrolyte, these individual components are not regarded as hazardous materials. Take the following steps to produce the electrolyte:

- 1 bottle of supporting electrolyte,
- 1 tube with powder,
- 1 label for the electrolyte produced.

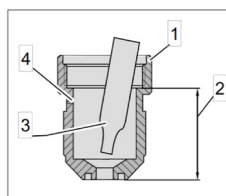
## Electrolyte production (SCL2).



1. Take appropriate measures, such as protective gloves and goggles (1), to protect yourself, according to the Material Safety Data Sheets for the components.
2. Open the bottle of supporting electrolyte and the tube with powder (2).
3. Guide the tube at an angle fully into the opening of the bottle of supporting electrolyte (3).
4. Completely transfer the powder into the bottle of supporting electrolyte (4).
5. Close the bottle and shake the bottle until the powder has fully dissolved, 10 seconds (5). No solids and streaks should be visible in the electrolyte.
6. Remove (6) the label from the supporting electrolyte.
7. Replace (7) the label with the label supplied.
8. You can now use the electrolyte you have produced (8).

## Filling with electrolyte

1. Open the electrolyte bottle and screw on the nozzle.
2. Pour in the electrolyte, preferably free of bubbles.  
Place the electrolyte bottle on the diaphragm cap and slowly press the electrolyte in a single stream from the electrolyte bottle, at the same time evenly pulling back the electrolyte bottle.  
The diaphragm cap is completely full if the diaphragm cap is filled to the brim with electrolyte.
3. Place the sensor vertically onto the filled diaphragm cap.
4. Do not use your finger, or similar, to close the vent hole, otherwise pressure can build up when it is screwed shut and the diaphragm can be damaged. When screwing it shut, allow excess electrolyte to escape through the vent hole under the hose seal. The vent hole must form the highest point to ensure the reliable escape of air.  
If no electrolyte escapes when screwing is shut, then the diaphragm cap has not been sufficiently filled. Repeat this process and fully fill the diaphragm cap.
5. Turn the diaphragm cap manually as far as the stop so that no gap can be seen between the diaphragm cap and the sensor.
6. Rinse off any escaped electrolyte with clean water.
7. Close the electrolyte bottle.
8. Rinse the electrolyte from the nozzle of the electrolyte bottle under running water.
9. The sensor is now ready to be installed in the bypass fitting



1. Diaphragm cap
2. Electrolyte filling height
3. Pipette
4. Vent Hole

## Probe alignment procedure

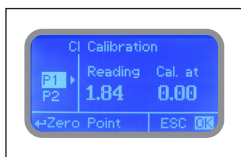
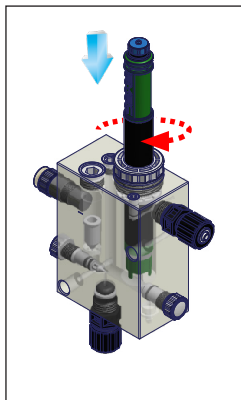
Alignment procedure must be performed monthly or more frequently if the application needs higher precision.

The sensor needs to be calibrated to the instrument it is connected to.

**Calibration must be performed to a value close to working point.**

Instrument requires "0" calibration ONLY for low measurement range probes.

Instrument does not require "0" calibration if not necessary.



Connect the probe to the measuring instrument.

Install the probe into PEF flow cell (PEF in the pictures is an example). See **"Installation on PEF"**:

- close water inlet/outlet through the PEF;
- unscrew completely the threading nut on PEF;
- insert the probe **slowly** until the **bottom**;
- screw the threading nut to fix the probe into the PE .

Use **hands only**. Make sure the the probe is **tightly fastened** in the place.

To calibrate the probe:

- Open PEF water outlet and then water inlet.
- Wait the time as in "Run-in-time" on the probe technical sheet.
- Check the water chlorine by a DPD1 / DPD4 or a colorimetric method (depending on the probe).

Proceed to calibration as described on instrument manual.

*If requested, proceed to "0" calibration point*

*To calibrate the probe to point 0, water must be chlorine free.*

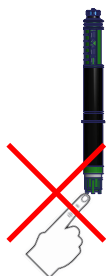
*For a chlorine free water, substitute the filter (installed before the PEF) with a carbon filter one. Check the absence of chlorine by a DPD1 / DPD4 or a colorimetric method (depending on the probe).*

*Open PEF water outlet and then water inlet.*

*Wait the time as in "Run-in-time" on the probe technical sheet.*

*Proceed to 0 calibration as described on instrument manual.*

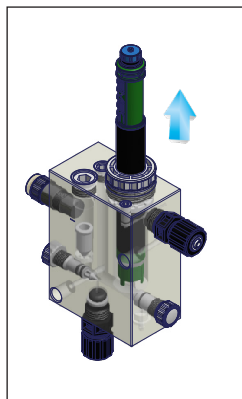
Cleaning procedure must be performed monthly or more if the application needs higher precision.



**i IMPORTANT**

**DO NOT TOUCH OR DAMAGE THE MEMBRANE AT THE BOTTOM OF THE MEMBRANE CAP AND THE ELECTRODES AT THE BOTTOM OF THE ELECTRODE SHAFT OR BRING THEM INTO CONTACT WITH GREASY SUBSTANCES.**

**OTHERWISE THE SENSOR WILL NO LONGER WORK ACCURATELY. REPLACE THE MEMBRANE CAP WITH A NEW MEMBRANE CAP OR SEND THE SENSOR AWAY TO HAVE THE ELECTRODES CLEANED.**



Uninstall the probe from PEF flow cell

- close water inlet/outlet through the PEF;
- unscrew completely the threading nut on PEF;
- extract the probe **slowly**.

Gently remove any adhesive dirt:

1. Rinse the membrane under a gentle stream of cold water

2. Remove deposits (lime scale, rust):

- Dismantle the membrane cap
- Rinse the sensor with plenty of water

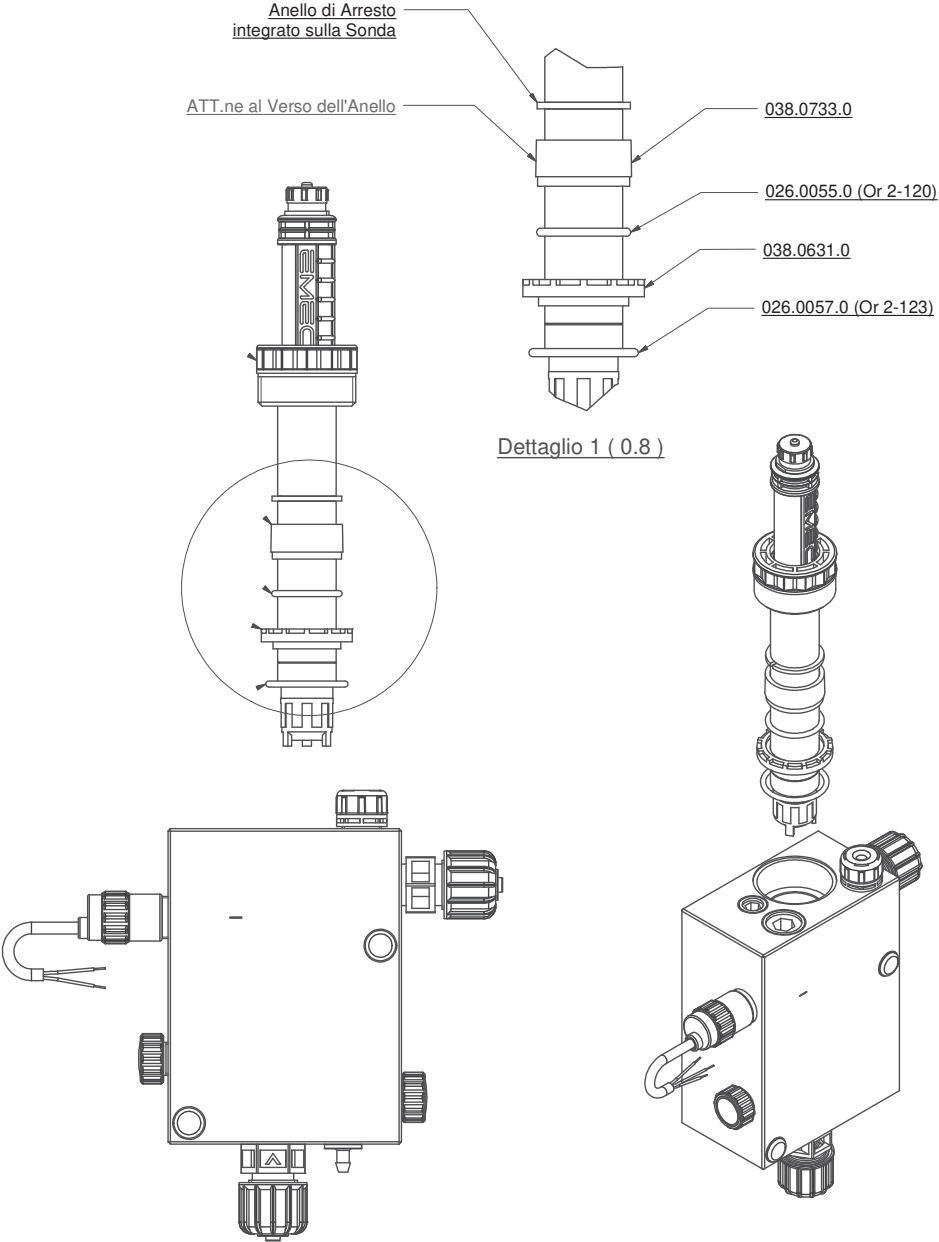
Now fill the sensor with electrolyte, allow it to run in and recalibrate.

Replacing the membrane

If calibration is no longer possible even after the membrane has been cleaned or if the membrane is damaged, then you need to replace the membrane cap.

Repairing the sensor

The sensor can only be repaired in the factory. Return it in its original packaging.



## MAINTENANCE

### Maintenance schedule

**⚠ DANGER**  
**MAINTENANCE SCHEDULE**

In order to ensure the requirements of potable drinking water treated and the maintenance of the improvements as declared by the manufacturer, this equipment must be checked at least once a week.

**⚠ DANGER**  
**OPERATOR PROTECTION**

Use safety equipment according to the company regulations.

Use this safety equipment within the work area during installation, service and when handling chemicals:

- protective mask
- unpowdered nitrile gloves
- safety goggles
- further security device, if necessary.

**⚠ DANGER**  
**POWER SUPPLY DISCONNECTION**

Always disconnect power to the equipment before you perform any installation or maintenance tasks. Failure to disconnect power will result in serious physical injury.

**⚠ DANGER**  
**AUTHORIZED AND QUALIFIED PERSONNEL**

Installation and maintenance tasks should be carried out by AUTHORIZED AND QUALIFIED PERSONNEL only in accordance with local regulations.

**i IMPORTANT**

Use original spare parts.

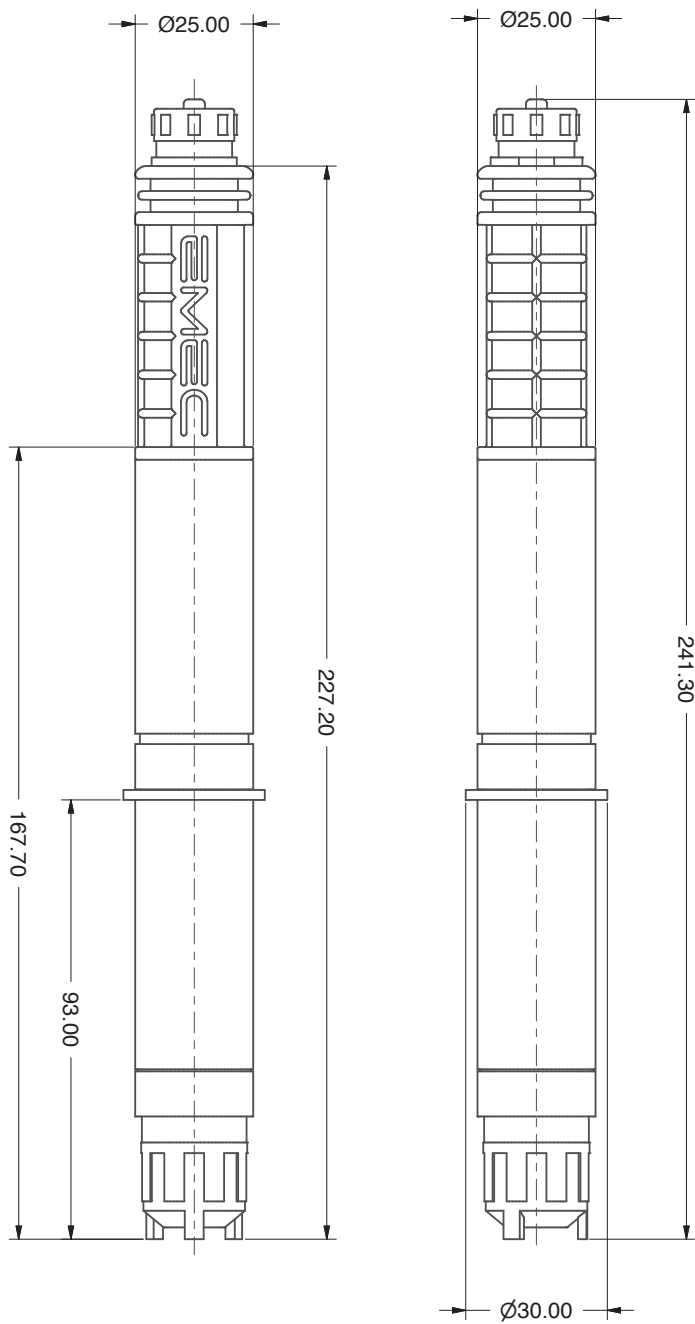
### Maintenance inspection

| INTERVAL         | MAINTENANCE INSPECTIONS                                                            | REFERENCE                   |
|------------------|------------------------------------------------------------------------------------|-----------------------------|
| Weekly           | Control probe reading using a DPD1/DPD4 or colorimetric method.                    | Probe calibration procedure |
| Monthly          | Check probe integrity                                                              | Cleaning procedure          |
| Monthly          | Check electrical wiring                                                            | -                           |
| Every 3/6 months | Replace electrolyte solution into membrane cap.<br>Control membrane cap integrity. | "Preparation" procedure     |
| Yearly           | Replace membrane cap.                                                              | -                           |

Shorten the inspection intervals appropriately if the chemical is abrasive or corrosive.

### Decommissioning

1. Disconnect the sensor from the power
2. Depressurise the in-line probe housing
3. Loosen the clamping screw
4. Remove the sensor slowly from the in-line probe housing
5. Screw open and empty the membrane cap over a sink or similar vessel
6. Flush the membrane and electrode with clean water and dry until free of dust
7. Loosely screw on the membrane cap to protect the electrodes
8. Replace the membrane protection cap to protect the membrane cap



## TROUBLESHOOTING

| PROBLEM                                                                     | CAUSES                                                        | SOLUTIONS                                                              |
|-----------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------|
| Sensor cannot be calibrated and measured value greater than DPD measurement | Run-in period too short                                       | Observe the run-in period                                              |
|                                                                             | Membrane cap damaged                                          | Replace membrane cap                                                   |
|                                                                             | Troublesome substances in the water                           | Check water for troublesome substances and remedy this                 |
|                                                                             | Distance between membrane/ electrode is too great             | Screw the membrane cap up to its stop                                  |
|                                                                             | Short circuit in the measuring line                           | Identify short circuit and eliminate the cause                         |
|                                                                             | DPD chemicals out of date                                     | User new chemicals, repeat calibration                                 |
|                                                                             | pH < pH 5,5                                                   | Increase pH value                                                      |
| Sensor cannot be calibrated and measured value lower than DPD measurement   | Run-in period too short                                       | Observe the run-in period                                              |
|                                                                             | Coating on the membrane cap                                   | Replace membrane cap, allow sensor to run in and calibrate             |
|                                                                             | Sample water flow rate too low                                | Correct flow rate                                                      |
|                                                                             | Air bubbles on the outside of the membrane                    | Increase the flow within the permitted range                           |
|                                                                             | pH < pH 5,5                                                   | Increase pH value                                                      |
|                                                                             | No electrolyte in the membrane cap                            | Fill with new electrolyte                                              |
|                                                                             | Electrolyte pushed out by gas bubbles in the sample water     | Contact supplier                                                       |
| Measured value display 0                                                    | Chlorine content below the lower limit of the measuring range | Add chlorine and then repeat calibration and/or use a suitable sensor  |
|                                                                             | Measuring line broken                                         | Replace measuring line                                                 |
|                                                                             | Sensor connected to the controller with incorrect polarity    | Connect the sensor correctly to the controller                         |
|                                                                             | Run-in period too short                                       | Observe the run-in period                                              |
|                                                                             | Sensor defective                                              | Send sensor in for regeneration                                        |
| Sensor measured value is unstable                                           | Membrane damaged                                              | Replace membrane cap; allow sensor to run in and calibrate             |
|                                                                             | Air bubbles on the outside of the membrane                    | Remove air bubbles by tapping them and increase flow rate if necessary |
|                                                                             | Reason lies with the controller                               | Eliminate cause                                                        |

When you have tried everything: Check whether the reference electrode at the end of the electrode shaft is silvery-white instead of brownish-grey. The reference electrode is then worn out and needs to be replaced.

## PRODUCT SERVICE REPAIR FORM

ENCLOSE THE PRESENT FORM TO THE DELIVERY NOTE

DATE .....

### SENDER

Company name.....  
Address .....,  
Phone no. ....  
Contact person.....

### PRODUCT TYPE (see product label)

DEVICE CODE .....  
S/N (serial number).....

### OPERATING CONDITIONS

Location/installation description .....  
.....  
Chemical .....  
Start-up (date) ..... Running time (approx. hours).....

REMOVE ALL THE LIQUID AND DRY IT BEFORE PACKAGING IN ITS ORIGINAL BOX.

### DESCRIPTION OF PROBLEM

- ☐ MECHANICAL  
Wear parts.....  
Brekage/other damages .....  
Corrosion.....  
Other .....
- ☐ ELECTRICAL  
Connections, connector, cables .....  
Other .....
- ☐ NOT OR INADEQUATE FUNCTION/OTHER  
.....  
.....  
.....

I declare that the product is free of any hazardous chemical.

\_\_\_\_\_  
Signature of the compiler

\_\_\_\_\_  
Company stamp







## PRECAUTIONS RELATING TO DIRECTIVES, REGULATIONS AND STANDARDS

### § CE/EU and UKCA marking

We guarantee that this product meets the essential requirements of the applicable Directives and Regulations based on the following specifications. Please carefully consider the following specifications for use of the product in European Union member countries and the United Kingdom.

#### • CE/EU harmonized directives and standards

##### **Directives**

DIRECTIVE 2014/30/EU

DIRECTIVE 2011/65/EU

DELEGATED DIRECTIVE (EU) 2015/863

##### **Harmonized standards**

EN ISO 12100

EN IEC 61326-1

EN IEC 63000

#### • UKCA harmonized regulations and standards

##### **Regulations**

2008 2016 No. 1091

2012 No. 3032

##### **Harmonized standards**

BS EN ISO 12100

BS EN IEC 61326-1

BS EN IEC 63000



#### **Disposal of end-of-life equipment by users**

This symbol warns you not to dispose of the product with normal waste. Respect human health and the environment by giving the discarded equipment to a designated collection center for the recycling of electronic and electrical equipment. For more information visit the online site.



When dismantling a pump please separate material types and send them according to local recycling disposal requirements. We appreciate your efforts in supporting your local Recycle Environmental Program. Working together we'll form an active union to assure the world's invaluable resources are conserved.