

FWT

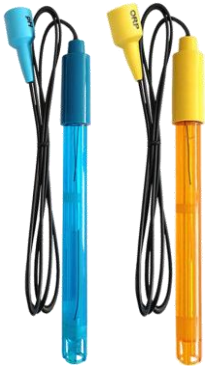
fluid and water technology



CZUJNIKI I ELEKTRODY

www.fwtsystems.it

PH and RX (ORP) ELECTRODES with cables



PH blue
RX yellow

EPH / ERX (ORP) COMMON CHARACTERISTICS

| | |
|------------------------------|--|
| Applications: | laboratory, swimming pools, water treatment, process industry |
| Characteristics: | maintenance free sensors for measuring pH and RX (ORP) value |
| Measuring Method: | combination electrode, potential against reference electrolyte gel |
| Construction: | plastic shaft, 1 diaphragm, maintenance free gel electrolyte |
| Reference system: | double junction reference |
| Storage: | recommended storage solution KCL3 (inquire for it) |
| Electrical connector: | head with fixed coaxial cable D/3 mm (length 1m or 5 m) + BNC |
| Remarks: | suitable for most pH and RX (ORP) controllers |
| Shaft length: | 120 mm |

Each electrode is provided with a Storage Solution bottle
Recommended to place electrode when it's not in use



| | EPH | ERX (ORP) |
|----------------------------------|---|----------------------------------|
| Range: | pH 0...14 | Range: -1000... +1000mV |
| Membrane / Diaphragm: | Glass / membrane Resistance low / Ceramic | Measuring element: platinum wire |
| Zero-Point / Sensitivity: | 0 ± 20mV/Sensitivity 57..59 mV pH at 25°C | ----- |
| Temperature/Isothermic: | 0...60 °C / Isothermic Point 0 +/- 50 mV | Temperature: 0...60 °C |
| Pressure: | 4 bar | Pressure: 4 bar |

EDINPHG

EDINRXG

EDINPHG10

Applications: electroplating, swimming pools, water treatment, waste water

chemical, oxides, waste water



COMMON CHARACTERISTICS

| | | | |
|------------------------------|---|--|--|
| Characteristics: | maintenance free, NO diaphragm problems | | |
| Measuring Method: | combination electrode, potential against Ag/AgCl reference electrode | | |
| Construction PH: | glass shaft, single pore, maintenance free gel | | |
| Construction RX: | glass shaft, single pore, maintenance free gel | | |
| Reference system: | double junction reference (<i>EDINPHG10 Ceramic porous setting</i>) | | |
| Storage: | storage solution KCL3 (on request) / <i>EDINPHG10 3M KCl (on request)</i> | | |
| Electrical connector: | type S8– standard connector head with integrated PG13,5 thread | | |
| Shaft length: | 120 mm | | |

| | EDINPHG | EDINRXG (ORP) | EDINPHG10 |
|--------------------------------|--|--------------------------------------|---|
| Range: | pH 2...14 (0..14 short period) | -1000 ... + 1000 mV | <i>pH 0...14</i> |
| Membrane: | type V glass | ----- | <i>diaphragm HP glass</i> |
| Membrane Resistance: | low | ----- | <i>low</i> |
| Measuring element: | ----- | platinum wire | ----- |
| Reference system: | polymer bridge | polymer bridge | <i>system encapsulated type PHI</i> |
| Zero-Point: | 0 +/- 20 mV | ----- | <i>0 +/- 20 mV</i> |
| Sensitivity: | 57 ... 59 mV / pH at 25°C | ----- | <i>57 ... 59 mV / pH at 25°C</i> |
| Isothermic Point: | 0 +/- 50 mV | ----- | <i>0 +/- 50 mV</i> |
| Temperature / Pressure: | 0...60 °C / 0...6 bar | 0...60 °C / 0...6 bar | <i>0..80 °C (briefly 100°C)/ 0..10 bar</i> |
| Electrolyte: | basic reference polymer | basic reference polymer | <i>Gel electrolyte</i> |
| Min Conductivity: | ----- | ----- | <i>100 µS/cm sample</i> |
| Notes: | <i>EDINPHG6 suitable for double junction inquiries</i> | platinum wire partly melted in glass | <i>the reference system is not influenced by heavy metals in solution</i> |



ECABLE: Coaxial cables with BNC suitable for Edin electrodes

Type RG174 with Head screw type S7, Diameter 3 mm

Note: we do not recommend lengths over 9 meters, signal efficiency is extremely reduced

Models available and cable length:

| | | | |
|----------------|-----------------|----------------|-----------------|
| ECABLE1 | cable length 1m | ECABLE3 | cable length 3m |
| ECABLE5 | cable length 5m | ECABLE9 | cable length 9m |

PH ELECTRODES without cables

EPHG130



Applications: chemical industry, oxides, water and waste water

The maintenance free **EDINPHG130** electrode is designed for high pH values applications, high temperature and pressure. The "HP" glass membrane provides low alkaline error and stable measure. 3 high-performance ceramic diaphragms reduce the effect of flow potential during mounting.

| | |
|------------------------------|--|
| Electrical connector: | type S8 – standard head with integrated PG13,5 thread |
| Shaft length: | 120 mm |
| Storage: | custom storage solution for or 3m KCl (inquire for it) |
| ATEX approval: | CE 0035 EX II 1/2 G EEx ia IIB T4/T5/T6 |

CHARACTERISTICS

Applications: water and waste water, Swimming pools, fish farming

The maintenance free **EPH6POL** sensor is designed for all water applications. The glass membrane is protected by plastic pins. The single Pore diaphragm barely needs cleaning and Polymer electrolyte remains stable over long period of time. It is a robust sensor that does not need steady maintenance.

EPH6POL



| | EDINPHG130 | EDINPH6POL |
|----------------------------------|---|---|
| Range: | pH 0...14 | pH 0...14 |
| Membrane: | Type H glass | Type V glass |
| Diaphragm: | HP – Ceramic / 3 diaphragms | 1 Single Pore.high accuracy,fast. |
| Reference system: | Everef system prolonging life electrode | Ag/AgCl |
| Construction: | Shaft material Glass | Shaft material Plastic |
| Electrolyte: | Gel electrolyte | polymer electrolyte |
| Zero-Point / Sensitivity: | 0 +/- 20 mV / 57 ... 59 mV / pH at 25°C | 0 +/- 20 mV / 57 ... 59 mV / pH at 25°C |
| Temperature: | 0...130 °C | -10...40 °C (briefly 60°C) |
| Pressure: | 0...16 bar at 25°C / 0...6 bar at 130°C | 0...6 bar |
| Min Conductivity: | 50 µS/cm sample | 50 µS/cm sample |

EPHFL



Applications: presence of high hydrofluoric acid value

The **EPHFL** electrode is designed for measuring pH in applications containing hydrofluoric acid. Two Single Pore diaphragms guarantee best results because of direct contact between the sample and the electrolyte. EPHFL may also mounted upside down at the tank bottom side.

| | |
|------------------------------|---|
| Electrical connector: | type S7 – standard head with integrated PG13,5 thread |
| Shaft length: | 120 mm |
| Storage: | custom storage solution or 3m KCl (inquire for it) |
| ATEX approval: | CE 0035 EX II 1/2 G EEx ia IIB T4/T5/T6 |

CHARACTERISTICS

Applications: presence of high alkaline value substances

EPHALK has the highest accuracy and fast response time and wide applicability for with emulsions, ion-weak media, general laboratory applications. Minimal alkali error making it very suitable in presence of alkaline substances. It's provide with head protection cap to prevent electrolyte spill

EPHALK



| | EDINPHG130 | EDINPH6POL |
|----------------------------------|---|--|
| Range: | pH 0...14 | pH 0...14 |
| Membrane: | Type HF glass | Type H glass |
| Diaphragm: | Single pore / 2 diaphragms | 1 Single Pore, high accuracy,fast response |
| Reference system: | Everef system prolonging life electrode | Everef system |
| Construction: | Shaft material Glass | Shaft material glass |
| Electrolyte: | Polysolve | Silver free |
| Zero-Point / Sensitivity: | 0 +/- 20 mV / 57 ... 59 mV / pH at 25°C | 0 +/- 20 mV / 57 ... 59 mV / pH at 25°C |
| Temperature / Pressure: | -5...100 °C / 0...6 bar | 0...100 °C |
| Min Conductivity: | 5 µS/cm | ----- |



PH and RX (ORP) BUFFER SOLUTIONS

Buffer solutions placed in small bottles 75 ml

Models available and cable length:

| | | | | | |
|---------------|----------------|---------------|----------------|---------------|----------------|
| SPH4 | solution pH4 | SPH7 | solution pH7 | SPH9 | solution pH9 |
| SRX250 | solution RX250 | SRX475 | solution RX475 | SRX650 | solution RX650 |

MEMBRANE SENSORS CLS series



| | |
|--|--|
| CC1Hun Free Inorg.-Organic chlorine | CC1N Free Inorg.-Organic chlorine |
|--|--|

Application 1:

standard (CLS2-CLS20) water treatment (also drinking water), swim. Pools

Application 2:

with Gel ECC1S (upon request) sea water

| | | |
|-------------------------------|---|--|
| Measuring method: | membrane ion selective amperometric 3 electrodes system, integrated electronics | |
| Suitable chlorinating agents: | NaOCl (sodium hypochlorite); Ca (OCl) ₂ (calcium hypochlorite); chlorine gas; Electrolytically generated chlorine; organic chlorine compounds on isocyanuric acid bases (tested > 500 mg/l iso-cyanuric acid) | |
| Interference parameters: | ClO ₂ is measured at 100% / O ₃ is measured / NO galvanic isolation | |
| Compatibility: | Tensides: Isocyanuratic / Surfactants / Flocculants | |
| Range: | 0.005 2 ppm (mg/l) free chlorine | 0.05 20 ppm (mg/l) free chlorine |
| Resolution: | 0.001 ppm (mg/l) | 0.01 ppm (mg/l) |
| Signal (nominal slope): | -1000 mV/ppm pH-compensated | -100 mV/ppm pH-compensated |
| Power supply: | ±5 to ±12,5 Vdc / 10 – 25 Vdc 25mA | ±5 to ±15 Vdc / 10mA |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | |
| Operating temperature: | > 5 ... < 45°C, automatic compensation by integrated temperature sensor | |
| pH range: | pH 4 ÷ pH 12 (low pH dependency) | |
| Flow requirement: | approximately 30 l/h | |
| Pressure: | 0,5 bar, no sudden pressure surges, impulses and/or vibrations or fluctuations | |
| Run-in time / Response: | first start-up approx. 2 hours / T90 approx.2 min | |
| Slope adjustment: | reference method DPD1; Zero point calibration NOT necessary | |
| Connection: | 4 poles screwable plug (NOT provided with cable, see cable for CLS sensors) | |
| Material: | microporous hydrophilic membrane; PVC-U body, St.steel 1.4571 electropolished | |
| Dimensions: | diameter approx 25 mm / Length (analog sensor) approximately 175 mm | |
| Maintenance: | recommended measure signal control at least once a week; Replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months | |
| Storage: | probe: it can be stored frost-free, dry and without electrolyte for unlimited time; membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M48.1 membrane Cap spare ECC 1G electrolyte GEL spare bottle 100 ml ECC 1S/G electrolyte GEL spare to order separately for sea/brine water bottle 100ml | |
| Available upon request: | available on request 2 , 5, 10 ppm ranges, mA output/slope | |

| | |
|--------------------------------------|--------------------------------------|
| CN1H-A12n Absence of chlorine | CN1N-A12n Absence of chlorine |
|--------------------------------------|--------------------------------------|

Application: to verify the absence of chlorine in water for drinking quality (e. g. reverse osmosis)



| | | |
|-------------------------------|---|--|
| Measuring method: | membrane ion selective amperometric 3 electrodes system, integrated electronics | |
| Suitable chlorinating agents: | NaOCl (= sodium hypochlorite), Ca(OCl) ₂ , chlorine gas, electrolytically generated chlorine | |
| Interference parameters: | ClO ₂ ; O ₃ ; combined chlorine may increase the measurement value; reducing agents may lead to slope loss | |
| Range: | 0.005 2 ppm (mg/l) free chlorine | 0.05 20 ppm (mg/l) free chlorine |
| Resolution: | 0.001 ppm (mg/l) | 0.01 ppm (mg/l) |
| Signal (nominal slope): | -1000 mV/ppm pH-compensated | -100 mV/ppm pH-compensated |
| Power supply: | ±12Vdc (11,3 -13 Vdc) / ±6 Vdc approx.40mA | |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | |
| Operating temperature: | > 5 ... < 40°C / automatic compensation by an integrated temperature sensor | |
| pH range: | pH 6,5 ÷ pH 9 | |
| Flow rate / Pressure: | approximately 30 l/h / 0,5 bar, no pressure surges, impulses and/or fluctuations | |
| Run-in time / Response: | first start-up approx. 24 hours (after maintenance approx.6h) / T90 approx.2 min | |
| Slope adjustment: | 1. Ensure constant chlorine content in the sample water; make DPD-1-analysis 2. If no chlorine may be present in the sample water, use external calibration EKV-1 and DPD-1-analysis | |
| Connection: | 4 poles screwable plug (NOT provided with cable, see cable for CLS sensors) | |
| Material: | microporous hydrophilic membrane; PVC-U body, St.steel 1.4571 electropolished | |
| Dimensions: | diameter approx 25 mm / Length (analog sensor) approximately 175 mm | |
| Maintenance: | regular control of the measuring signal: at least once a week replacement of the membrane cap: once a year (depending on the water quality). replacement of electrolyte: every 3 - 6 months | |
| Storage: | probe: it can be stored frost-free, dry and without electrolyte for unlimited time at >5->40°C; Membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M48.G membrane Cap spare / EKN1/Gel electrolyte GEL spare bottle 100ml | |

MEMBRANE SENSORS CLS series



CLST2.1Hun Total chlorine

CLST20.1N Total chlorine

Application 1:

standard CLST2.1Hun water treatment (also drinking water), swimming pools (NOT compatible with surfactants/fats/oil)

Application 2:

with electrolyte ECP2S/GEL sea water (tensides are partly tolerated)

| | | |
|-------------------------------|---|--|
| Indicator: | total chlorine (= free chlorine + combined chlorine) | |
| Measuring method: | membrane ion selective amperometric 3 electrodes system, integrated electronics | |
| Suitable chlorinating agents: | NaOCl (sodium hypochlorite); Ca (OCl) ₂ (calcium hypochlorite); chlorine gas; Electrolytically generated chlorine | |
| Interference parameters: | ClO ₂ measured at 100% / O ₃ measured with slope approx. 130% (factor 1,3 to Cl slope) | |
| Range: | 0.005 2 ppm (mg/l) free chlorine | 0.05 20 ppm (mg/l) free chlorine |
| Resolution: | 0.001 ppm (mg/l) | 0.01 ppm (mg/l) |
| Signal (nominal slope): | -1000 mV/ppm | -100 mV/ppm |
| Power supply: | ±5 to ±12,5 Vdc / 10 – 25 Vdc 25mA | ±5 to ±15 Vdc / 10mA |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | |
| Operating temperature: | > 5 ... < 45°C, automatic compensation by integrated resistor | |
| pH range: | pH 4÷pH 12 (low pH dependency, linear decrease approx. 5% per unit increase pH) | |
| Flow rate / Pressure: | approximately 30 l/h / 0,5 bar, no sudden pressure, impulses and/or fluctuations | |
| Run-in time / Response: | first start-up approx. 2 hours / T90 approx. 2 min | |
| Slope adjustment: | reference method DPD4 (DPD1+DPD3); Zero point calibration NOT necessary | |
| Connection: | 4 poles screwable plug (NOT provided with cable, see cable for CLS sensors) | |
| Material: | microporous hydrophilic membrane; PVC-U body, St. steel 1.4571 electropolished | |
| Dimensions: | diameter approx 25 mm / Length (analog sensor) approximately 175 mm | |
| Maintenance: | recommended measure signal control at least once a week; Replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months | |
| Storage: | probe can be stored frost-free, dry, without electrolyte for unlimited time at >5-<40°C membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M48.1D Membrane Cap for CLST2.1Hun / M48.1 Membrane Cap for CLST20.1N ECP 1.3/G Electrolyte GEL spare bottle 100 ml ECP 2S/G Electrolyte GEL spare to order separately for sea/brine water bottle 100ml | |
| Notes: | flocculation must function perfectly (DIN 19643) | |
| Available upon request: | 20 ppm sensor +2000mV output; also mA output sensors WITH Galvanic isolation | |

AS2N Inorganic Free chlorine

AS3H / AS3N-CL Inorganic Free chlorine

Applications AS2:

drinking water, services for cold and hot water up to max 70°C, high pressure

Applications AS3:

drinking water, swim. pools, closed systems cold / hot water: legionella control

| | | |
|---------------------------|---|--|
| Measuring method: | open probe amperometric-potentiostatic 3 electrode system (NOT galvanic isolation) | |
| Suitable chlorine agents: | NaOCl (sodium hypo.); Ca(OCl) ₂ calcium hypochlorite; Cl ₂ gas; electrolytically Cl ₂ | |
| Interference parameters: | Chlorine, Chlorite are measured with less than 2% of their value | |
| Range/Resolution/Signal: | AS2H-CL 0.03...10 ppm (mg/l) / Resolution 0.01 ppm / Signal -100 mV/ppm | |
| Range/Resolution/Signal: | AS3H-CL 0.005...2 ppm (mg/l) / Resolution 0.001 ppm / Signal -1000 mV/ppm | |
| Range/Resolution/Signal: | AS3N-CL .03...10 ppm (mg/l) / Resolution 0.01 ppm / Signal -100 mV/ppm | |
| Power supply/ Output: | ±5 to ±15 Vdc 10mA/ Analog output -2000 mV/Output resist. 1KΩ / NO galvanic isolat. | |
| Operating temperature: | AS2 > 5... < 50°C; AS3 0... < 70°C; automatic compensation; max changes 30°C per hour, quick temperature changes should be avoided | |
| pH range: | pH 5 ÷ pH 9; stability material: pH1-pH12 | |
| Flow rate / Pressure: | 80 l/h / AS2 5 bar; AS3 approximately 8 bar | |
| Run-in time / Response: | first start-up approx. 1 hour to 2 days / T90 approx. 30 sec. | |
| Slope adjustment: | reference method DPD1 by analytical determination | |
| Connection: | 4 poles screwable plug (NOT provided with cable, see cable for CLS sensors) | |
| Material / Dimensions: | AS2 PVC-U body / AS3 PEEK, PVDF / Diam. 25mm, Length (analog sensor) 175mm | |
| Maintenance: | regular control of the measuring signal: at least once a week cleaning of the gold electrodes: every 4 - 12 weeks replacement of electrolyte: every 3 - 6 months maintenance at factory: after 1 year operating time | |
| Storage: | probe: filled with electrolyte and with protection cap 1 year frost-free OR frost-free, dry and without electrolyte for unlimited time; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | EAS1/G Electrolyte GEL spare bottle 50 ml | |
| Notes AS2 series: | for AS2 bear in mind dissociation chlorine equilibrium and ensure correct pH level | |
| Available upon request: | available on request 1, 2, 5 ppm ranges, mA output/slope | |



MEMBRANE SENSORS CLS series



| | CLS CD4H Chlorine-dioxide | CLS CD4N Chlorine-dioxide |
|----------------------------|---|--|
| Application Fields: | Swimming-pool, drinking water, process water; It must NOT contain tensides | |
| Measuring method: | membrane-covered amperometric 2-electrodes system with integrated electronics | |
| Interference parameters: | Cl ₂ : is measured with factor 0.03 of its measurement value / O ₃ : is measured | |
| Range: | 0.005 2 ppm (mg/l) chlorine dioxide | 0.05 20 ppm (mg/l) chlorine dioxide |
| Resolution / Signal: | 0.001 ppm / signal slope -1000 mV/ppm | 0.01 ppm / signal slope -100 mV/ppm |
| Power supply: | ±5 to ±15 Vdc / 10mA | |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | |
| Operating temperature: | > 5 ... < 45°C, automatic compensation by integrated resistor | |
| pH range: | pH 1÷pH 11 (low pH dependency) | |
| Flow rate / Pressure: | approximately 30 l/h / 1 bar, no sudden pressur, impulses and/or fluctuations | |
| Run-in time / Response: | first start-up approx. 1 hour / T90 approx. 15 sec | |
| Slope adjustment: | all the device by analytical determination; Zero point calibration NOT necessary | |
| Connection: | 4 poles screwable connector (NOT provided with cable, see cable for CLS sensors) | |
| Material / Dimensions: | semi permeable membrane, PVC-U / Diam.25mm, Length (4 poles screw) 175mm | |
| Maintenance: | recommended measure signal control at least once a week; replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months | |
| Storage: | probe can be stored frost-free, dry, without electrolyte for unlimited time at >5-<40°C membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M20 Membrane Cap spare / ECD4/W - ECD7/W spare bottle 100ml | |



| | CLS CD7H Chlorine-dioxide | CD7N Chlorine-dioxide | CD7L Chlorine-dioxide |
|----------------------------|---|---------------------------|-------------------------|
| Application Fields: | all types of water treatment, bottle washer, CIP plant; Tensides ARE tollerated | | |
| Measuring method: | membrane-covered amperometric 2-electrodes system with integrated electronics | | |
| Interference parameters: | Cl ₂ : not disruptive / O ₃ : measured with 25 times the sensitivity as ClO ₂ | | |
| Range: | 0.005...2 ppm chlorine dioxide | 0.05 ...20 ppm Cl dioxide | 0 ...200 ppm Cl dioxide |
| Resolution: | 0.001 ppm (mg/l) | 0.01 ppm (mg/l) | 0.1 ppm (mg/l) |
| Signal (nominal slope): | -1000 mV/ppm / analog signal | -100 mV/ppm / analog | -10 mV/ppm / analog |
| Power supply: | ±5 to ±15 Vdc / 10mA | | |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | | |
| Operating temperature: | > 5...< 50°C; automatic compensation temperature changes at <5°C | | |
| pH range: | pH 1÷pH 11 (low pH dependency) | | |
| Flow rate / Pressure: | approximately 30 l/h / 1 bar, no sudden pressur, impulses and/or fluctuations | | |
| Run-in time / Response: | first start-up approx. 1 hour / T90 approx. 1.5 min | | |
| Slope adjustment: | all the device by analytical determination; Zero point calibration NOT necessary | | |
| Connection: | 4 poles screwable connector (NOT provided with cable, see cable for CLS sensors) | | |
| Material / Dimensions: | PVC-U, Stainless steel 1.4571 / Diam.25mm, Length (4 poles screw) 175mm | | |
| Maintenance: | recommended measure signal control at least once a week; replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months | | |
| Storage: | probe can be stored frost-free, dry, without electrolyte for unlimited time at >5-<40°C membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | | |
| Spare parts: | M7 Membrane Cap / M7L Membrane Cap for CD7L / ECD4/W - ECD7/W | | |



| | MST1N measurement of chlorite |
|---------------------------|--|
| Application: | measurement of chlorite for drinking water, swimming pool, process water |
| Measuring method: | membrane-covered amperometric 3-electrodes system with integrated electronics |
| Suitable chlorite agents: | acid/chlorite method; chlorine/chlorite-method (chlorite/oxidizer-method in test) |
| Interference parameters: | Mn ²⁺ , Nitrit, Fe ²⁺ , No interference to chlorine dioxide, chlorine and chlorate |
| Range / Resolution: | 0.05 ... 2 ppm (mg/l) chlorite / Resolution 0.01 ppm |
| Power supply / Signal: | ±5 to ±15 Vdc - 10mA / signal (nominal slope) -100 mV/ppm |
| Output signal: | analog output 0.. - 2000 mV (max.-2500mV) /Output 1 KΩ / WITH galvanic isolation |
| Operating temperature: | > 5 ... < 40°C / automatic compensation by an integrated temperature sensor |
| pH range/Flow /Pressure: | pH 6 ÷ pH 9 / approx. 30 l/h / 0,3 bar, no pressure surges, and/or fluctuations |
| Run-in time / Response: | first start-up approx. 24 hours / T90 approx.1 min |
| Slope adjustment: | by analytical determination of chlorite concentration; Zero point calibr. NOT required |
| Connection: | 4 poles screwable adaptor (NOT provided with cable, see cable for CLS sensors) |
| Material: | microporous hydrophilic membrane; PVC body, Stainless steel electropolished |
| Spare parts: | M48.1 membrane Cap spare / EMST1N/Gel electrolyte GEL spare bottle 100ml |

MEMBRANE SENSORS CLS series



| | CLS WP7Hun Hydrogen Peroxide | CLS WP7Un Hydrogen Peroxide |
|----------------------------|---|------------------------------------|
| Application Fields: | All types of water treatment (e. g. bottle washer, CIP plant, rinser) | |
| Measuring method: | membrane-covered, amperometric 2 electrodes system with integrated electronics | |
| Interference parameters: | NO interferences from surfactants; Cl ₂ , PES, O ₃ , must not be present; Sulphides poison the measurements, aqueous solution >3% phenol destroys the membrane | |
| Range: | 0.0 ...200 ppm Hydrogen Peroxide | 0... 2000 ppm Hydrogen Peroxide |
| Resolution: | 0.1 ppm | 1 ppm |
| Signal (nominal slope): | -10 mV/ppm | -1 mV/ppm |
| Power supply: | ±5 to ±12,5 Vdc / 10-25 Vdc / 25mA | |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | |
| Operating temperature: | > 5 ...< 45°C, automatic compensation by integrated sensor; changes at temp. <5°C | |
| pH range: | pH 2÷pH 12 | |
| Flow rate / Pressure: | approximately 30 l/h / 1 bar, no sudden pressur, impulses and/or fluctuations | |
| Run-in time / Response: | first start-up approx. 3 hours / T90 approx. 5....10 min | |
| Slope adjustment: | all the device by analytical determination; Zero point calibration NOT necessary | |
| Connection: | 4 poles screwable connector (NOT provided with cable, see cable for CLS sensors) | |
| Material / Dimensions: | PVC-U, Stainless steel 1.4571 / diam. approx 25 mm / Length approx.175 mm | |
| Maintenance: | recommended measure signal control at least once a week; replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months | |
| Storage: | probe can be stored frost-free, dry, without electrolyte for unlimited time at >5-<40°C membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M7N Membrane Cap spare EWP7/W spare bottle 100ml | |
| Available upon request: | available on request sensor with digital output in mA | |



| | CLS WP10 L-A12n Hydrogen Peroxide | WP10-20%A 12n Hydrog.Peroxide |
|----------------------------|---|--------------------------------------|
| Application Fields: | All types of water treatment especially for high H₂O₂ concentration | |
| Measuring method: | membrane-covered, amperometric 2 electrodes system with integrated electronics | |
| Interference parameters: | NO interferences from surfactants; Cl ₂ , PES, O ₃ , must not be present; Sulphides poison the measurements, aqueous solution >3% phenol destroys the membrane | |
| Range: | 0.0-2% (20.000 ppm) | 0.0-20% (200.000 ppm) |
| Resolution: | 0.001% (10 ppm) | 0.01% (100 ppm) |
| Signal (nominal slope): | -1000 mV/% (-0,1 mV/ppm) | -100 mV/ppm (-0,01 mV/ppm) |
| Power supply: | ±11,5 to ±13 Vdc / ±6 Vdc / approx.40mA | |
| Output signal: | analog output 0.. - 2000 mV (max.-2500mV) /Output 1 KΩ / WITH galvanic isolation | |
| Operating temperature: | > 5 ...< 45°C, automatic compensation by integrated sensor; changes at temp. <5°C | |
| pH range: | pH 2÷pH 11 | |
| Flow rate / Pressure: | approximately 30 l/h / 1 bar, no sudden pressur, impulses and/or fluctuations | |
| Run-in time / Response: | first start-up approx. 3 hours / T90 approx. 5....10 min | |
| Slope adjustment: | all the device by analytical determination; Zero point calibration NOT necessary | |
| Connection: | 4 poles screwable connector (NOT provided with cable, see cable for CLS sensors) | |
| Material / Dimensions: | PVC-U, Stainless steel 1.4571 / diam. approx 25 mm / Length approx.195 mm | |
| Maintenance: | recommended measure signal control at least once a week; replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months | |
| Storage: | probe can be stored frost-free, dry, without electrolyte for unlimited time at >5-<40°C membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M10G with G-holder EWP7/W spare bottle 100ml | |
| Available upon request: | available on request sensor with digital output in mA | |

MEMBRANE SENSORS CLS series



| | CLS OZ1H dissolved ozone | CLS OZ1HN dissolved ozone |
|--|---|-----------------------------|
| Application Fields: swimming pools, drinking water, process water; NOT compatible with tensides | | |
| Measuring method: | membrane-covered, amperometric 2 electrodes system with integrated electronics | |
| Interference parameters: | Cl ₂ : is measured with a factor of 0.03 / ClO ₂ : is measured with a factor of 0.7 | |
| Range: | 0.005 ...2 ppm dissolved ozone | 0... 20 ppm dissolved ozone |
| Resolution: | 0.001 ppm | 0.01 ppm |
| Signal (nominal slope): | -1000 mV/ppm | -100 mV/ppm |
| Power supply: | ±5 to ±15 Vdc / 10mA | |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | |
| Operating temperature: | > 5 ...< 45°C, automatic compensation by integrated sensor; changes at temp. <5°C | |
| pH range: | pH 2÷pH 11 | |
| Flow rate / Pressure: | approximately 30 l/h / 1 bar, no sudden pressur, impulses and/or fluctuations | |
| Run-in time / Response: | first start-up approx. 2 hours / T90 approx. 15 sec | |
| Slope adjustment: | all the device by analytical determination; Zero point calibration NOT necessary | |
| Connection: | 4 poles screwable adaptor (NOT provided with cable, see cable for CLS sensors) | |
| Material / Dimensions: | semi permeable membrane, PVC-U / Diam.25mm, Length 175mm | |
| Maintenance: | recommended measure signal control at least once a week; replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months | |
| Storage: | probe can be stored frost-free, dry, without electrolyte for unlimited time at >5-<40°C membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M20 Membrane Cap spare EOZ1 spare bottle 100ml | |
| Available upon request: | available on request sensor with digital output in mA | |



| | CLS OZ7H dissolved ozone | CLS OZ7HN dissolved ozone |
|---|---|-----------------------------|
| Application Fields: all types of water treatment (bottle washer, CIP plants, rinser); COMPATIBLE with tensides | | |
| Measuring method: | membrane-covered, amperometric 2 electrodes system with integrated electronics | |
| Interference parameters: | Cl ₂ : OZ7H: leads to measurement values increased by 1.5% / OZ7N: negligible ClO ₂ : OZ7N: leads to a measurement value increased by 6% | |
| Range: | 0.005 ...2 ppm dissolved ozone | 0... 10 ppm dissolved ozone |
| Resolution: | 0.001 ppm | 0.01 ppm |
| Signal (nominal slope): | -1000 mV/ppm | -100 mV/ppm |
| Power supply: | ±5 to ±15 Vdc / 10mA | |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | |
| Operating temperature: | > 5 ...< 50°C, automatic compensation; changes at temp. <5°C per hours | |
| pH range: | pH 2÷pH 12 | |
| Flow rate / Pressure: | approximately 30 l/h / 1 bar, no sudden pressur, impulses and/or fluctuations | |
| Run-in time / Response: | first start-up approx. 1 hours / T90 approx. 50 sec | |
| Slope adjustment: | all the device by analytical determination; Zero point calibration NOT necessary | |
| Connection: | 4 poles screwable adaptor (NOT provided with cable, see cable for CLS sensors) | |
| Material / Dimensions: | PVC-U body, Stainless steel 1.4571 electropolished | |
| Maintenance: | recommended measure signal control at least once a week; replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months | |
| Storage: | probe can be stored frost-free, dry, without electrolyte for unlimited time at >5-<40°C membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M7N O3 Membrane Cap spare: only OZ7H M7D O3 Membrane Cap spare: only OZ7n EOZ7/W spare bottle 100ml | |
| Available upon request: | available on request sensor with digital output in mA | |

MEMBRANE SENSORS CLS series



| | BR1-N Bromine measurement | BR1N-A12n Bromine measurement |
|---|--|--------------------------------------|
| Application: measure of Hypobromous acid HOBr for Drinking water; swimming-pool; process water | | |
| Measuring method: | membrane-covered amperometric 3-electrodes system with integrated electronics | |
| Suitable bromine agents: | hypobromous acid (HOBr) 1-Bromo-3-chloro-5.5-dimethyl-hydantoin (BCDMH) | |
| Interference parameters: | Cl2: is measured / ClO2: is measured / O3: is measured | |
| Range/Resolution/Signal: | 0.05..20 ppm (mg/l) / Resolution 0.01 ppm / Signal (nominal slope) -100 mV/ppm | |
| Power supply BR1N: | ±5 to ±15 Vdc / 10mA | |
| Output signal BR1N: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | |
| Power supply BR1NA12n: | ±12Vdc (11,3 -13 Vdc) / ±6 Vdc approx.40mA | |
| Output signal BR1NA12n: | analog output 0.. - 2000 mV (max.-2500mV) /Output 1 KΩ / WITH galvanic isolation | |
| Operating temperature: | > 5 ... < 45°C / automatic compensation by an integrated temperature sensor | |
| pH range: | pH 6,5 ÷ pH 9,5 | |
| Flow rate / Pressure: | approximately 30 l/h / 0,5 bar, no pressure surges, impulses and/or fluctuations | |
| Run-in time / Response: | first start-up approx. 2 hours / T90 approx.2 min | |
| Slope adjustment: | by analytical determination of bromine concentration; Zero point cal. NOT necessary recommended DPD1 method | |
| Connection: | 4 poles screwable adaptor (NOT provided with cable, see cable for CLS sensors) | |
| Material: | microporous hydrophilic membrane; PVC-U body, St.steel 1.4571 electropolished | |
| Dimensions: | diameter approx 25 mm / Length (analog sensor) approximately 175 mm | |
| Maintenance: | regular control of the measuring signal: at least once a week replacement of the membrane cap: once a year (depending on the water quality). replacement of electrolyte: every 3 - 6 months | |
| Storage: | probe: it can be stored frost-free, dry and without electrolyte for unlimited time at >5->40°C; Membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | |
| Spare parts: | M48.1 membrane Cap spare / EBR1/Gel electrolyte GEL spare bottle 100ml | |
| Available upon request: | available on request sensor with digital output in mA WITH galvanic isolation | |



| | PES7H peracetic acid | PES7N peracetic acid | PES7L peracetic acid |
|--|--|-----------------------------|-----------------------------|
| Application Fields: all water treatment, conductivity acids are tolerated, Tensides must NOT be present | | | |
| Measuring method: | membrane-covered, amperometric 2 electrodes system with integrated electronics | | |
| Interference parameters: | O3: is measured with a factor of 2.500 / ClO2: is measured with a factor of 1 H2O2: is measured with a factor of 0.005 | | |
| Influence of conductivity acids: | 1 % sulfuric acid or 1 % nitric acid in the water have no influence on the sensor or the measuring behaviour respectively | | |
| Range/Resolution/Signal: | PES7H 0-200 ppm / Resolution 0.1 ppm / Signal -10 mV/ppm | | |
| Range/Resolution/Signal: | PES7N 0-2000 ppm / Resolution 1 ppm / Signal -1 mV/ppm | | |
| Range/Resolution/Signal: | PES7L 0-2%.....0-20000 ppm / Resolution 0.001% ppm 10 / Signal -0.1 mV/ppm | | |
| Power supply: | ±5 to ±12,5 Vdc / 10-25 Vdc 5mA | | |
| Output signal: | analog voltage output 0 .. - 2000 mV/Output resistance 1 KΩ / NO galvanic isolation | | |
| Operating temperature: | > 5 ... < 45°C, automatic compensation by integrated sensor; changes at temp. <5°C | | |
| pH range: | pH 1÷pH 7 | | |
| Flow rate / Pressure: | approximately 30 l/h / 1 bar, no sudden pressur, impulses and/or fluctuations | | |
| Run-in time / Response: | first start-up approx. 1 hour / T90 approx. 3 min. | | |
| Slope adjustment: | all the device by analytical determination; Zero point calibration NOT necessary | | |
| Connection: | 4 poles screwable connector (NOT provided with cable, see cable for CLS sensors) | | |
| Material / Dimensions: | PVC-U body, Stainless steel 1.4571 electropolished | | |
| Maintenance: | recommended measure signal control at least once a week; replace membrane cap once a year, depending on water quality. Replace electrolyte every 3-6 months probe can be stored frost-free, dry, without electrolyte for unlimited time at >5-<40°C membrane cap: used membrane cap cannot be stored; electrolyte: in the original bottle, protected from sun light at least 1 year >5...<25°C | | |
| Storage: | | | |
| Spare parts: | M7N Membrane Cap spare for PES7H-PES7N / M7L Membrane Cap spare PES7L EPS7/W spare bottle 100ml for PES7H-PES7N / EPS7L/W spare bottle for PES7L | | |



4 WIRES OPEN END CABLES+CONNECTOR FOR CLS SENSORS

| | | | |
|------------------------------------|-------------------|--------------------|------------------|
| Models available and cable length: | | | |
| AG CABLE 0.7 | cable length 0,7m | AG CABLE 2 | cable length 2m |
| AG CABLE 5 | cable length 5m | AG CABLE 15 | cable length 15m |

OXYGEN SENSOR

SENSOXY dissolved oxygen sensor with cable

Application: Water treatment, Waste water treatment, swimming pools, fish farms; composting facilities



| | |
|--|--|
| Measuring method: | measurement of the electrical current affected by the partial pressure of oxygen |
| Electrode system: | Silver platinum combination / membrane |
| Range: | 40 ppb ... 40 ppm of dissolved oxygen |
| Current in air at 25°C: | 40 ... 80 nA |
| Residual current: | in nitrogen < 0.5% (relative to current in air) |
| Oxygen consumption: | Ca. 20 ng/h in air at 25 °C |
| Working temperature: | 0 ... 60 °C |
| Operating temperature: | -10... 60°C / automatic compensation by NTC sensor 22kOhm |
| Temperature response: | 3.1%/K |
| Drift at room temperature under constant conditions: | < 5% every 2 months at 25°C in water |
| Flow rate / Pressure: | approx.± 0.03 m/s / 4 bar, no sudden pressure, impulse vibrations or fluctuations |
| Pressure range: | 0 ... 4 bar |
| Max. CO2 partial pressure: | 0.01 bar |
| Response time T _{98%} : | Max. 60 s at 25 °C, from air to nitrogen |
| Polarization voltage: | -670 ± 50 mV |
| Stabilization time: | < 1 hour |
| Electrical connector: | mounting: PG 13.5 thread / 5 meter fixed cable |
| Wetted materials: | Stainless steel 1.4435, silicone, EPDM with FDA approval; Surface of steel: 0.4 µm |
| Dimensions: | shaft diameter: 12 mm |
| Electrolyte: | OXYLYTE, alkaline |
| ATEX approval: | Yes, CE 0035 II 1/2 G Ex ia IIC T4/T5/T6 |

OPEN AMPEROMETRIC CHLORINE CELLS

AMPEROMETRIC CHLORINE CELL CLC4



CLC4 is an Open system amperometric cell able to measure inorganic free chlorine with the possibility to control the actual incoming water flow hosting a proximity switch for output signal (switch upon request). Keeping a good maintenance and a steady flow, will obtain great results with competitive prices. Self-cleaning cell with glass balls. **To be used with special adaptor.**

- Range 0÷10 ppm. Electrode Platinum/Copper in vertical position to avoid bubbles
- Flow adjustment: 40÷50 l/h or by visual adjustment (to be steady and continuous)
- Max pressure 5 bar - Max temperature 5÷60°C
- Flow rate 40÷50 l/h or by visual adjustment (to be steady and continuous)

AMPEROMETRIC CHLORINE MULTIFUNCTIONS CLC2-3



CLC2/3 Open system amperometric cell able to measure organic and inorganic free chlorine with 0-10 mg/l reading (ppm), with regulation of the water flow in examination, 2 electrodes holders, suitable to host temperature probe and proximity switch. **CLC2 without** proximity switch. Keeping good maintenance and steady flow will obtain great results with competitive prices. **To be used with special adaptor**

- Self-cleaning cell with glass balls
- Range 0÷10 ppm. Electrode Platinum/Copper in vertical position to avoid bubbles
- Flow adjustment: 40÷50 l/h or by visual adjustment (to be steady and continuous)
- 2 electrodes holder, Proximity switch and temperature probe
- Max pressure 5 bar - Max temperature 5÷60°C

MAINTENANCE KIT CLC



Cleaning kit comprising: peristaltic, accessories and fitting

CLC series is still a valid and economic alternative to more expensive sensors. FWT suggest a simple solution for maintenance: operator, before opening the system, must simply let the peristaltic pump to inject the same acid (commercial HCL around 10% concentration) that is used to correct the pH in the systems or at least a simple detergent. Let the peristaltic work for 2/3 minutes until copper electrode is restored to natural colour. This will avoid problems and guarantee a steady measurement. Available integral Timer functions with controllers for automatic operations.

OTHER SENSORS



PROXIMITY SWITCH

| | |
|------------------------------|--|
| Model SPROX | Inductive proximity switch to detect in-coming flow, suitable for OFF-Line sensor holders "Base module" and chlorine cell model CLC3 |
|------------------------------|--|



TEMPERATURE SENSOR

| | |
|--------------------------------|--|
| Model STEMP-N | Temperature sensor PT100 "cap" type, suitable for OFF-Line sensor holders "Base module" and chlorine cell model CLC3. Material PVC 1/2" thread, Tmax 45°C , Max pressure 5 bar, provided with 5 m cable |
|--------------------------------|--|



TEMPERATURE SENSOR PT100 suitable for OFF-Line sensor holders "Electrode module"

| | |
|---------------------------------|---|
| Model SPT100 G | Temperature sensor, GLASS PYREX body, Tmax 100°C , Max pressure 2 bar, provided with 5 m cable |
| Model SPT100 A | Temperature sensor, AISI 316 body, Tmax 200°C , Max pressure 2 bar, provided with 5 m cable |

CONDUCTIVITY SENSORS



SCD series

SCD is a standard simple conductivity probe with two electrode system. It's suitable for many basic applications at a short distance (max 10/15m).

| Model | Range | Electrodes | Body | Connection | Cable length |
|---------|---------------|------------|------|------------|--------------|
| SCD k1 | 20.000µS | AISI | PVC | 1/2" | 3m |
| SCD k5 | 200 - 2.000µS | AISI | PVC | 1/2" | 3m |
| STCD k1 | 20.000µS | AISI | PTFE | 1/2" | 3m |
| STCD k5 | 200 - 2.000µS | AISI | PTFE | 1/2" | 3m |



STGCD series

STGCD is a standard simple conductivity probe with two GRAPHYTE electrode system allowing to work with more accuracy at high conductivity ranges. It's suitable for many basic applications at a short distance (max 10m).

| Model | Range | Electrodes | Body | Connection | Cable length |
|----------|------------------|------------|------|------------|--------------|
| STGCD k1 | 20.000-200.000µS | GRAPHITE | PTFE | 1/2" | 3m |
| STGCD k5 | 200 - 2.000µS | GRAPHITE | PTFE | 1/2" | 3m |



SCDT4 series

SCDT4 is a conductivity probe with two electrode system and integrated temperature sensor for automatic temperature compensation. It's suitable for many stringent requirements applications at a longer distance.

| Model | Range | Electrodes | Body | Connection | Cable length |
|----------|---------------|------------|------|------------|-------------------|
| SCDT4 k1 | 20.000µS | AISI | PVC | 1/2" | 3m (up to 15/20m) |
| SCDT4 k5 | 200 - 2.000µS | AISI | PVC | 1/2" | 3m (up to 15/20m) |



CONDUCTIVITY BUFFER SOLUTIONS

| Model | Description |
|-----------------|---|
| SCD1413 | Conductivity solution 1413 µS / cm 25°C (1278 µS / cm 20°), 500ml |
| SCD12880 | Conductivity solution 12880 µS / cm 25°C (11670 µS / cm 20°), 500ml |



FWT di Tommaso Commonara
Via della Piscina 5,
Ariccia 00072, ITALY
Tel +39 06 9311940 / 06 93895003
Fax +39 06 93160328

rev.01_0114

tel: +39 06 9311940
tel: +39 06 93895003
fax: +39 06 93160328
info@fwtsystems.it
service@fwtsystems.it

