

# EL200

## Mono & Multi-Channel Water Controller



Specialist Of UV  
Spectroscopy



## > EL200 Multi-Channel Water Controller

*The EL200 is a configurable water controller that can adapt to many different probes and configurations, mono or multi-channel, among pH, ORP, dissolved oxygen, conductivity, chlorine, turbidity, total suspended solids (TSS) and temperature.*

includes basically:

one pH/ORP input

two 4-20 mA inputs for analogic probes (dissolved oxygen, chlorine, turbidity)

one RS485 port for up to 4 digital probes (dissolved oxygen, turbidity, pH, ORP). two 4-20 mA outputs

four relays contacts for high/low alarms multiplexing or probe default

one RS232 port for Modbus communication or web server with an Ethernet or Wi-Fi interface

one RS485 port for Modbus communication

one or two modules can be added for conductivity probe, additional 4-20 mA inputs or additional 4-20 mA outputs.

user-friendly interface can display all the values as well as graphs of the recorded measurements over last 24 hours.

USB port allows to transfer the recorded measurements that may be imported to Excel for treatments graphs. The USB port can also be used to save the configuration or to update the internal software.

web-based interface allows the control and the troubleshooting at distance with an internet browser a computer, tablet or smart phone.



**TETHYS**  
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## Designed for rugged environment with lightning protection.

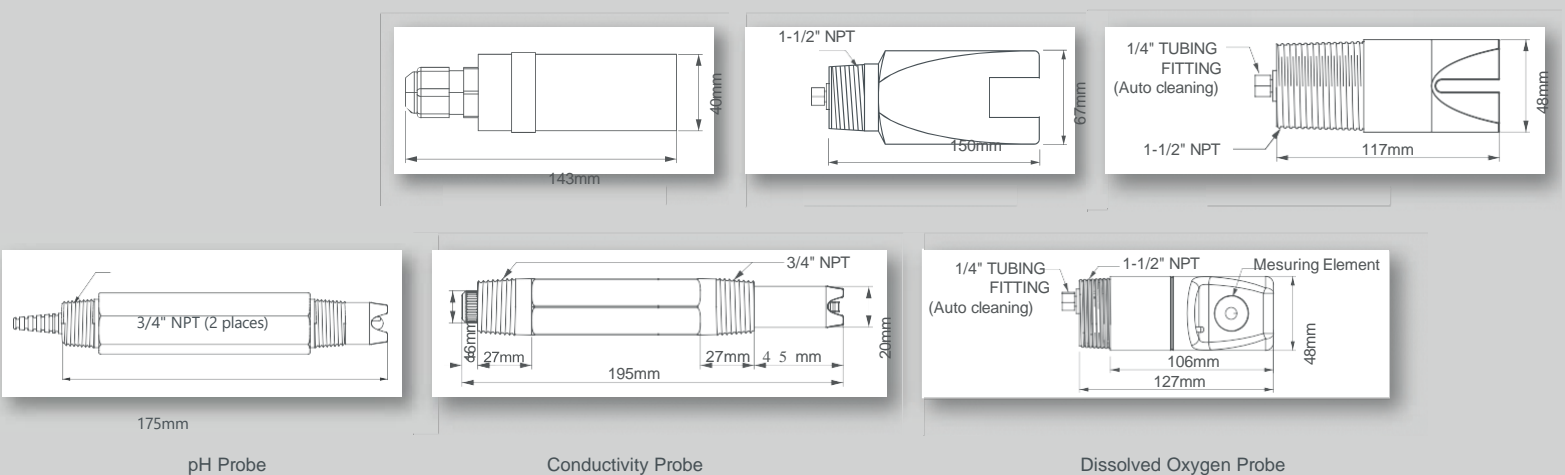
The EL200 controller is designed to be use outside if necessary thanks to an aluminum casted NEMA4x/IP65 enclosure.

Special protection against lightning is installed on each probe inputs as well as on the power input and communication ports.

The touch screen is protected by an acid resistant protection film to assume an efficient long-term protection.

## Robust Industrial Probes

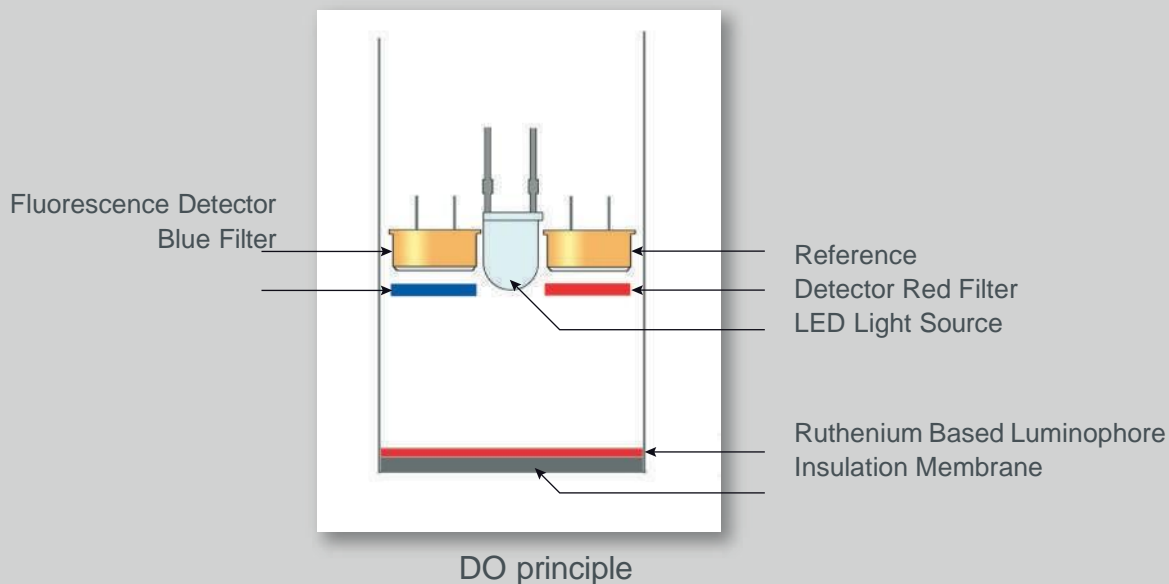
All the probes are specially designed for harsh environments with high levels of suspended solid.



Probes and dimensions are only for illustrations.

## Quenching Fluorescence based Oxygen Probe

- The dissolved oxygen probe is based on the fluorescence method for a lower maintenance and higher stability.
- At the opposite of galvanic and polarographic probes, the fluorescence-based probes requires no electrolyte refill, no membrane change and no routine calibration. No flow is needed because there is no oxygen consumption.
- They also perform very well in harsh environments that normally destroy other conventional sensors.



## Auto-cleaning Probes

The EL200 delivers a free potential contact to drive solenoid valve on compressed air to clean the probes equipped with air cleaning.

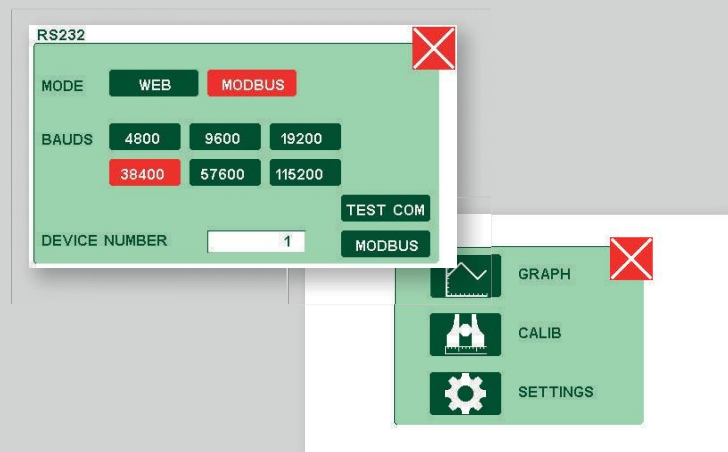
The period and cleaning time are adjustable to adapt to different applications

## User-Friendly Interface

The colour touch screen and intuitive interface available in 8 different languages (Chinese, English, French, German, Italian, Portuguese, Spanish, Turkish) makes very easy to test or configure the analyser.

A number of test functions allows to test and troubleshoot each element of the controller to setup quickly a maintenance diagnostic.

The complete configuration can be saved on a USB key and reload if necessary.



## Communication

*Two 4-20 mA output are available on the main board, and two additional 4-20 mA modules can be plugged.*

The RS232 port and the RS485 port support the MODBUS protocol to transmit each measuring channel value to a SCADA system. Additional parameters are available like status code, error code, calibration values.

A web interface makes possible to drive remotely the analyser from any computer, tablet or smart phone with a web browser. For this, an external Wi-Fi or Ethernet module must be added to connect it to an existing network with an internet gateway.

A USB port enables to download on any USB key the last 24 hours recorded measurements as well as a diagnostic file containing the configuration and useful information for remote troubleshooting.

The recorded measurements file can be imported to Excel for graphs or other treatments. The software of the controller can be upgraded by connecting a USB key.



## > EL200 Parameters Specifications

Parameter	Range	Resolution	Accuracy (with standard reference)
pH Temperature	pH: 0~14 Temp: 0~80oC	0.01pH 0.01 oC	+/-0.01pH +/-0.1oC
COD/TSS /TOC/BOD (high range probe)	COD: 0~5000mg/L TSS: 0~5000mg/L TOC: 0~5000mg/L BOD: 0~5000mg/L	COD: 0.01mg/L TSS: 0.01mg/L TOC: 0.01mg/L BOD: 0.01mg/L	COD: +/-2% reading TSS: +/-2% reading TOC: +/-2% reading BOD: +/-2% reading
COD/TSS /TOC/BOD (low range probe)	COD: 0~100mg/L TSS: 0~100mg/L TOC: 0~100mg/L BOD: 0~100mg/L	COD: 0.01mg/L TSS: 0.01mg/L TOC: 0.01mg/L BOD: 0.01mg/L	COD: +/-2% reading TSS: +/-2% reading TOC: +/-2% reading BOD: +/-2% reading
TSS (external probe)	0-1500mg/l TSS 0-30000 mg/l TSS	0.01mg/L	+/- 2% of reading or +/- 5mg/l TSS which is greater
Turbidity	0-40 NTU 0-100 NTU 0-400 NTU	0.01 NTU	±2% reading or ±0.015 NTU whichever is greater up to 20 NTU, ±5% reading above 20 NTU
Free Residual Chlorine or Total Chlorine	0-5mg/L 0-20mg/L	0.01mg/L	<+/- 0.1 mg/l or +/-2% reading which is greater
DO	0-25mg/L	0.01mg/L	+/-2% reading
Conductivity	0-20 µS(K=0.01) 0-100/200 µS (K=0.1) 0-2000 µS (K=1) 0-20 ms (K=10)	0.01uS 0.1uS 1uS 0.01mS	+/-1% reading
ORP	+/-2000 mV	1mV	+/-2% reading

## > EL200 General Specifications

Inputs	pH / ORP 2 X 4-20 mA input, 2-wire or 4-wire (15v DC galvanically isolated source, 50 mA maxi)
Outputs	2 x 4-20mA active output (load of 500 ohm maxi)
Relays	4x electromechanical SPDT (form C) contact, 5 A Programmable individually for high or low alarm, probe default or stream multiplexing
Free sockets	2x free sockets for additional modules among: Conductivity module 4-20mA input module, 2-wire or 4-wire (15v DC source, 50 mA maxi) 4-20mA active output (load of 500 ohm maxi)
Measuring mode	Continuous
Memory	288 lines of measurements (up to 16 channels) with time
Power supply	100 - 240 VAC 47/63 Hz 10 VA or 24V DC 0.5 A maxi Protection for peak current 8/20 $\mu$ S up to 8 kA
Touch	Colour TFT LCD 480x272 pixels with LED backlight
Screen	RS232, MODBUS or HTTP/Web interface ( <i>Windows with IE9/10/11, Android with Opera, Apple i-phone with Safari</i> )
Communication	RS485 port for MODBUS communication RS485 port for digital probes (DO, TSS, pH, ORP) USB Optional Wi-Fi and Ethernet interfaces
Certifications	CE, EN 61010-1, EN 61326
Enclosure	IP65/NEMA 4X, Aluminum with epoxy coating for wall mounting Optional pipe mounting brackets.
Dimensions	140 x 140 x 91 mm
Operation temperature	-20~55oC
Weight	2 kg approx.

## > EL200 Parts references

### Basic unit

**EL200 Mono & multi channel water controller**  
One pH/ORP input  
Two 4-20 mA input, 2-wire or 4-wire (15V DC galvanically isolated source)  
Two 4-20 mA outputs  
Four relays, SPTD contacts (form C)  
RS232 included with screw terminal (Modbus or Web)  
RS485 included with screw terminal (Modbus)  
RS485 included with screw terminal (for external digital probes)  
USB port included for USB key connection  
2 free sockets for input or output modules (not included, refer options)  
Color graphic display 480x272 pixel with touch screen  
Built-in data logger, memory 288 measurements for each parameter  
7 available glands for inputs / outputs  
Power supply ~100-240 VAC 47-63 Hz with power cord 2 meters or 24V DC, 0.5A  
Enclosure IP65/Nema4X 140x140x91mm

### Measurement module by electrode

**PH500 pH module**  
Range: 0- 14  
ATC input for platinum RTD 700 Ohm

**ELPH pH online and temperature electrode, general purpose**  
Range: 0- 14  
Temperature: 0-80°C  
6 meters of cable  
Built-in ATC RTD 700 Ohm

**ELPH-D pH online electrode, differential sensor**  
Range: 0-14  
6 meters of cable length  
Built-in ATC RTD 100 ohm

**CHLSET Amperometric chlorine set**  
Range: 0 - 20 mg/ C/2  
Built-in temperature compensation,  
Includes chlorine electrode, pH electrode,  
electrode holder, flow meter, mounting plate,  
and 3 feet cable.

**ORPS00 ORP module**  
Range: -2000 mV- +2000 mV

**ELORP ORP online electrode, general purpose**  
Range: -2000 mV- +2000 mV  
6 meters of cable

**CONDS00 Conductivity module**  
Range: 0 - 700  $\mu$ S to 0 - 100 ms  
ATC input for platinum RTD 100 Ohm

**ELCOND-1 Conductivity online electrode**  
Range: 0 - 20 mS  
Cell constant k=1.0 cm<sup>-1</sup>(medium range)  
6 meters of cable  
Built-in ATC RTD 100 Ohm

**ELCOND-0.01 Conductivity online electrode**  
Range: 0 - 100/200  $\mu$ S  
Cell constant k=0.01 cm<sup>-1</sup> (very low range)  
6 meters of cable  
Built-in ATC RTD 100 Ohm

**ELCOND-0.1 Conductivity online electrode**  
Range: 0 - 2000  $\mu$ S  
Cell constant k=0.1 cm<sup>-1</sup>(low range)  
6 meters of cable  
Built-in ATC RTD 100 Ohm

**ELCOND-10 Conductivity online electrode**  
Range: 0 - 200 mS  
Cell constant k=70.0 cm<sup>-1</sup> (high range)  
6 meters of cable  
Built-in ATC RTD 100 Ohm

**ICOND Inductive conductivity online probe**  
Range: 0 - 700 mS  
3 meters of cable  
Built-in temperature compensation at 2.2%/°C  
4-20 mA output

### Input modules

**IN4-20-500 4-20 mA input module**  
Isolated 4-20 mA input  
Impedance: 700 Ohm

### Output modules

**OUT4-20-500 4-20 mA output module**  
Isolated 4-20 mA output  
Active output, Max load 500 Ohm

## > EL200 Parts references

### **Measurement by Optical method**

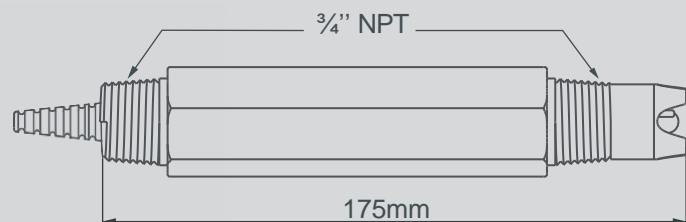
<b>DO-F</b>	<b>Dissolved oxygen probe by fluorescence</b> Range: 0 – 20 mg/l O <sub>2</sub> 6 meters of cable	<b>EXT-TURBNEPH-H</b>	<b>Nephelometric turbidity probes high range</b> Range: 0 - 400 NTU 10 meters cable
<b>DO-F-AC</b>	<b>Dissolved oxygen probe by fluorescence with automatic cleaning</b> Range 0 - 25 mg/l O <sub>2</sub> 10 meters of cable	<b>EXT-TURBNEPH-L</b>	<b>Nephelometric turbidity probes medium range</b> Range: 0 - 40 NTU 10 meters cable
<b>EXT-TURB-H</b>	<b>Total suspended solid (TSS probes high range)</b> High range: 0 - 30,000 mg/l TSS 10 meters cable		
<b>EXT-TURB-L</b>	<b>Total suspended solid (TSS probes low range)</b> Low range: 0 - 1500 mg/l TSS 10 meters cable		



## > pH/Temperature sensor general purpose

The HORIBA/Tethys General Purpose pH sensor with ¾" NPT front and rear threads is a rugged pH probe with Ryton body, suitable for many industrial water applications. Front and rear mounting threads allow in-pipe (continuous measurement) or submersible installations of the pH sensor. This pH sensor offers excellent chemical and shock resistance.

pH Range	0 - 14
Response Time	5 seconds to 95% of full response
pH Sensor Type	Convertible style combination pH sensor
Body Material	Ryton
Reference	Double Junction with porous Teflon
Mounting	Immersion or In-line
Temperature Range	0 - 80 °C
Maximum Pressure	100 psi (7 bar)
Temperature Element	Pt100 RTD
Temperature Compensation	Automatic
Connection	Screw terminal
Cable Length	6 meters
Mounting threads	¾" NPT treads, front & rear
Sensor Protection	IP68



**ELPH** pH online electrode, general purpose  
Range: 0 – 14 pH  
Temperature: 0–80oC  
6 meters of cable length  
Built-in ATC

## > UV200 COD/TSS BOD TOC equivalent measurement

The HORIBA/Tethys UV200 probe offers a simple way to measure organic matter in surface water or industrial/municipal wastewater. It must be calibrated for each application to give an equivalent COD/TSS, BOD or TOC measurement depending on the composition of the sample. It is based on a new light source technology offering a compact and economical solution with a long service life.

Measurement Range	0 - 600 Abs/m (equivalent to 0 - 5000 mg/L COD/TSS, BOD, TOC in water) 0- 200 Abs/m (equivalent to 0 - 100 mg/L COD in water)
Accuracy (by reading)	± 2% on standard solution
Measurement technique	UV light absorbance
Optical Path	3 or 10 mm
Response Time	10 seconds
Turbidity compensation	Integrated by dual-beam method
Light source lifetime	> 5 years
Mounting	Immersion
Probe cleaning system	Air cleaning option available
Temperature range	-20 to 70 °C
Body Material	Stainless Steel 316L
Wet Material	SS 316L, PTFE, Quartz, FKM, PE, Neoprene
Connection	Screw terminal
Cable length	10 meters
Sensor Protection	IP68



### UV200-H

#### UV probe

Optical path 3 mm  
0 - 600 Abs/m (equivalent to 0 - 5000 mg/L COD/TSS in water)

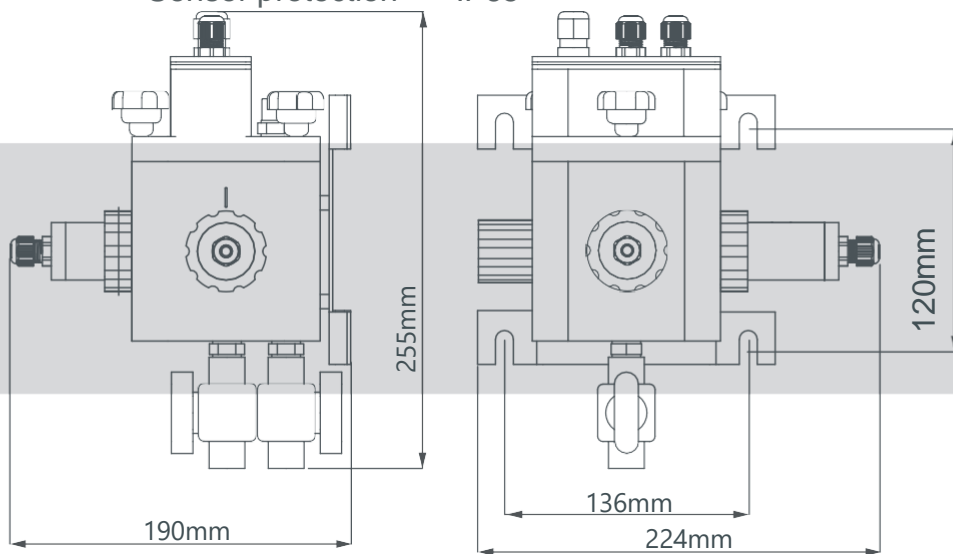
### UV200-L

#### UV probe

Optical path 10 mm  
0 - 200 Abs/m (equivalent to 0 - 100 mg/L COD/TSS in water)

# TURB200 Turbidity Sensor

Measurement Method	Nephelometric
Measurement Range	0 - 100 NTU
Detection Limit	0.015 NTU
Repeatability	±0.01 NTU
Accuracy	±2% or ±0.015 NTU whichever is greater up to 20 NTU, ±5% above 20 NTU
Detector	90° scattered light detector.
Light source	Visible laser diode (or infrared laser diode on request), lifetime > 5 years
Bubble trap	Integrated
Capacity	250 mL
Inlet/Outlet fittings	9.6 mm external diameter plastic tubing
Operating temperature range	-5 to 60 °C
Working pressure	Maximum 3 bar at 25°C
Body material	PVC
Wet Material	PVC, PP, FKM, Quartz
Connection	Screw terminal
Cable length	3 meters
Mounting	On wall by 4 screws
Sensor protection	IP65

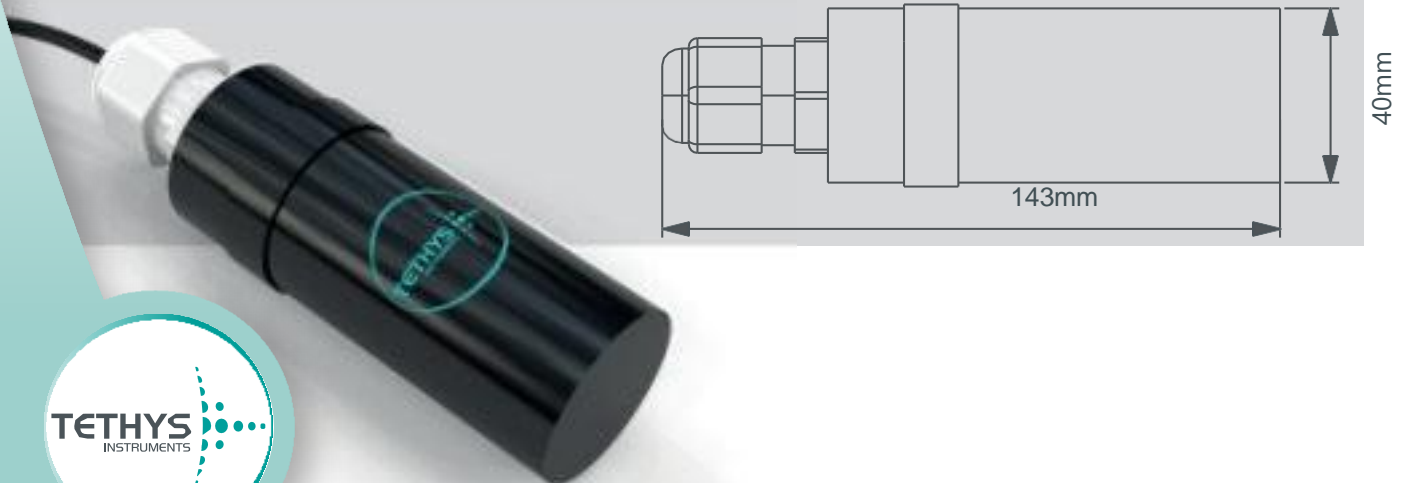


## >Turbidity probe

The HORIBATethys turbidity probe is based on the nephelometric method (ISO 7027 - EN 27027). A light beam is sent to the sample through an optical lens. The light scattered at 90° by the particles in suspension is collected by the probe through a second lens and it is converted into an electrical signal proportional to the turbidity of the sample.

The probe uses infrared light and the measurement is not affected by the colour of the sample. They are suitable for turbidity measurement in water quality monitoring and industrial water treatment and aquaculture.

Measurement Range	0 - 40 NTU, 0 - 400 NTU
Measurement Technique	Nephelometric
Detector	90° scattered light detector
Light Source	Infrared
Temperature Range	-5 to 50 °C
Working Pressure	6 bar maximum at 25 °C
Body Material	PVC
Connection	Screw terminal
Mounting	In-line or In-flow
Cable Length	10 meters
Sensor Protection	IP68



**TETHYS**  
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**EXT-TURBNEPH-H** Nephelometric turbidity probe high range  
0 - 400 NTU

10 meters of cable length

**EXT-TURBNEPH-L** Nephelometric turbidity probe low range  
0 - 40 NTU

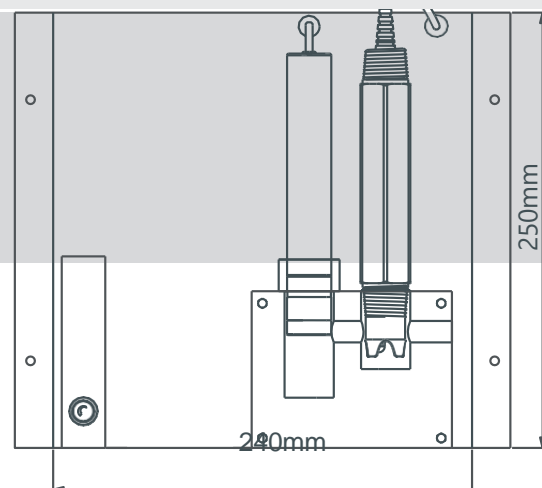
10 meters of cable length

The HORIBA/Tethys chlorine sensor is based on proven amperometric measurement technology. It is factory calibrated and zero calibration is not required. Its long-lasting membrane cap is replaceable with a refillable gel electrolyte. It is suitable for the measurement of residual chlorine (free or total) in various industrial water and wastewater applications.

specifications

Measurement Range	0 - 20 mg/L
Accuracy	± 0.1 mg/L
Repeatability	± 0.05 mg/L (25 °C)
Measurement Technique	Membrane-covered, three electrode amperometric technology
Reproducibility	± 4%
Response Time	90 second to 90% (t90), 25 °C
Operating Temperature	0 to 50 °C
Operating Pressure	15 psi (1 bar)
Operating pH	4 -12, automatic pH compensation
Flow Requirement	30 to 60 L/h

Material	Body Housing : PVC, ABS Membrane : Hydrophilic PTFE Electrode : Silver-Silver Halide/Gold/316SS
Temperature Compensation	In-built, Automatic
Connection	Screw terminal
Cable Length	1 meter
Sensor Protection	IP65

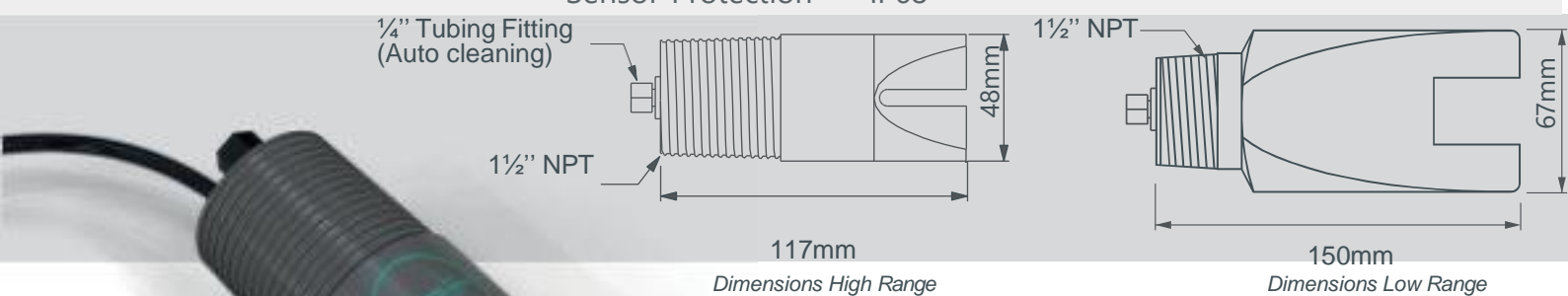


- CHLSET** Amperometric chlorine set  
0 - 20 mg/L Cl<sub>2</sub>  
Includes chlorine electrode, pH electrode, electrode holder, flow meter, mounting plate
- ELCHL** Amperometric chlorine electrode
- ELCHL-M** Membrane cap for chlorine electrode
- ELCHL-R** Refillable electrolyte for chlorine electrode
- ELPH** pH/Temp online electrode, general purpose

## > Total Suspended Solid probe

The HORIBA/Tethys Total Suspended Solid (TSS) probe operates on the principle of single-gap light absorption to detect the presence of suspended solids. The sensors incorporate self-cleaning optics by air or water jet. Applications include measurements of total suspended solids concentration from Mixed Suspended Solids (MLSS), Return Activated Sludge (RAS), Waste Activated Sludge (WAS), clarifier effluent and plant effluent.

Measurement Low Range	0 - 1 500 mg/L
Measurement High Range	250 - 30 000 mg/L
Accuracy	+/-5 mg/L or +/-2% of reading which is greater.
Stability	2% of reading
Repeatability	2% of reading
Measurement Technique	IR light absorption
Initial Response Time	Less than 10 seconds
Material	Epoxy, PU and PVC
Sensor Drift	Less than 1% per year
Mounting	Submersible
Cleaning System	Air or water wash
Maximum Pressure	100 psi (7 bar)
Working Temperature	0 to 60 °C
Mounting Thread	1½" NPT
Connection	Screw terminal
Cable Length	10 meters
Sensor Protection	IP68



**EXT-TURB-H Total suspended solid (TSS) probe high range**  
0 - 30 000 mg/L TSS

10 meters of cable length

**EXT-TURB-L Total suspended solid (TSS) probe low range**

0 - 1 500 mg/L TSS

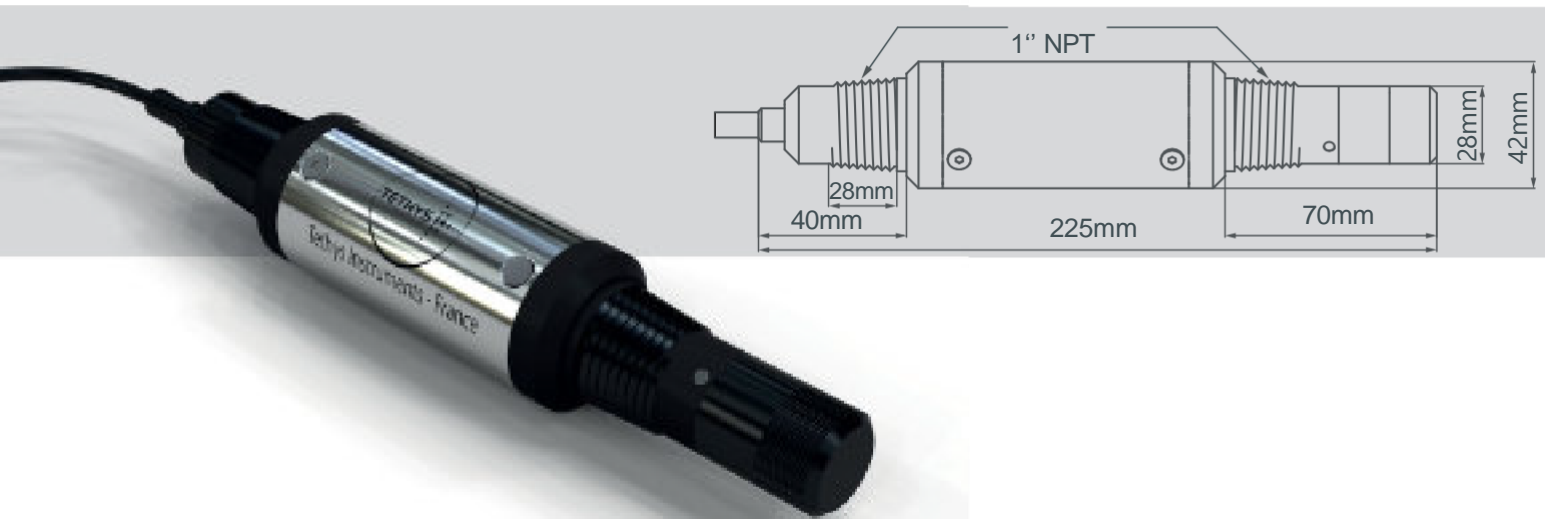
10 meters of cable length

## > Dissolved Oxygen probe DO-F

The HORIBA/Tethys Process Optical DO probe is based on proven optical technology suitable for most industrial applications. It offers full performance, replaceable sensor caps and long life. Front and rear mounting threads allow for in-pipe (continuous measurement) or submersible. The optical DO probe is suitable for measuring dissolved oxygen in various wastewater applications.

specification

Measurement Range	0 – 20 mg/L
Accuracy	±0.1 mg/L
Working Temperature Range	0 to 50 °C
Measurement Technique	Optical Technology Sensor Cap Replaceable, Pre-calibrated
Body Material	Stainless Steel 316 body
Maximum Pressure	100 psi (7 bar)
Maximum Temperature	80 °C
Temperature Compensation	In-built, Automatic
Mounting	Immersion or In-line
Connection	Screw terminal
Cable Length	6 meters
Mounting Threads	1" NPT treads, front & rear
Sensor Protection	IP68



## >Dissolved Oxygen probe Auto cleaning DO-F-AC

The HORIBA/Tethys Process Optical DO probe is based on proven fluorescence optical technology suitable for most industrial applications. It is robust, without spare sensor caps and has an automatic cleaning function. It is designed for submersible mounting in an open channel. The optical DO probe is suitable for measuring dissolved oxygen in various water and wastewater applications.

Measurement Range	0 - 25 mg/L
Stability per 24H	0.02 mg/L
Repeatability	0.02 mg/L
Working Temperature Range	0 to 60 °C
Measurement Technique	Fluorescence Optical Technology
Accuracy	1% of reading or 0.05 ppm
Body Material	Epoxy, Polyurethane and PVC
Sensor Drift	Less than 2% per year
Maximum Pressure	100 psi (7 bar)
Temperature Compensation	In-built, Automatic
Sensor Cleaning System	Air or water wash
Mounting	Submersible
Mounting threads	1½" NPT
Connection	Screw terminal
Cable Length	10 meters
Sensor Protection	IP68





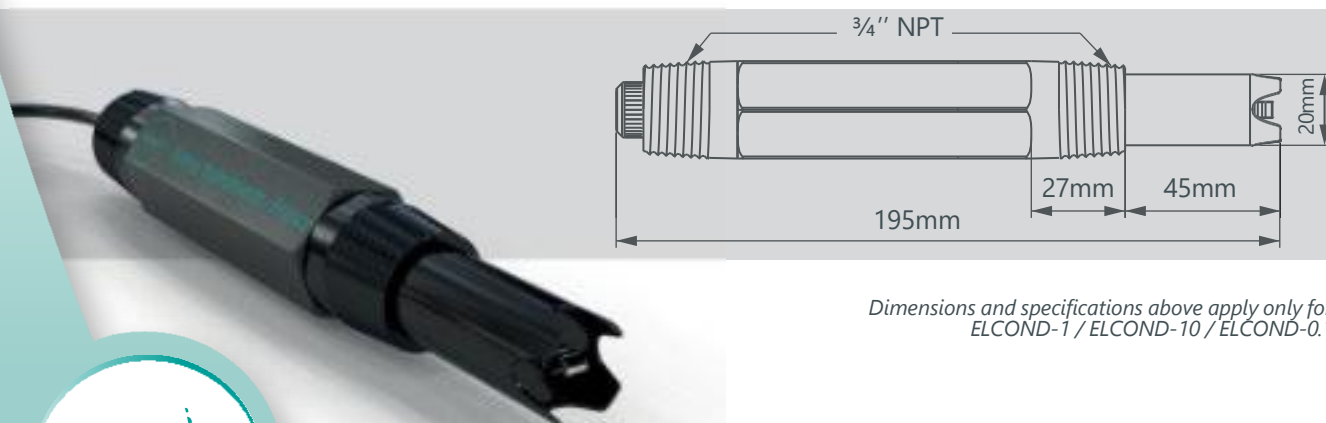
## >Conductivity probe

The HORIBA/Tethys conductivity sensor with 3/4" NPT thread is a robust probe with a polypropylene body suitable for many industrial water applications. The mounting thread allows in-pipe (flow-through) installations of the conductivity sensor. This conductivity sensor offers excellent chemical and impact resistance.

Body Material	Polypropylene
Mounting	In-line (flow-through)
Temperature Range	0 - 80 °C
Maximum Operating Pressure	100 psi (7 bar)
Temperature Element	Pt100 RTD
Temperature Compensation	Automatic
Mounting Thread	3/4" NPT threads
Connection	Screw terminal
Cable Length	6 or 3m
Sensor Protection	IP68

Measurement Range and Cell constant

Cell Constant, K	Conductivity measurement range
0.01	0 – 100/200 µS/cm
0.1	0 - 2 000 µS/cm
1	0 - 20 mS/cm
10	0 - 100 mS/cm



*Dimensions and specifications above apply only for ELCOND-1 / ELCOND-10 / ELCOND-0.1*



**HORIBA** Advanced Techno | **TETHYS** TECHNOLOGY

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*\*Please note that since April 12, 2023, the company name has changed from Tethys Instruments SAS to HORIBA Advanced Techno France SAS. All registration numbers, including the EORI and EU VAT Reg. No. remain the same.*

**Website: [www.horiba.com](http://www.horiba.com)**

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