



Actual size

WATER **it**

Water quality measurements made easy with sensing.

Product lineup Brochure for Water Quality Measurement

Universal Transmitter • Turbidity Checker • Suspended Solid Checker •
Optical Dissolved Oxygen Sensor • pH Sensor • ORP Sensor • Conductivity Sensor

2023

www.optex.co.jp





ENVIRONMENT

**Optex's sensing technology
brings safety, security,
and comfort to your life.**

Sensing Innovation.

Water is the source of life. It is an integral part of the earth's gifts for all living things.

That is why maintaining water quality is a universal theme.

Optex developed the world's first automatic transparency measurement system that can measure the turbidity and color of water accurately and continuously.

Since then, Optex's water quality sensors have kept a constant watch over the water environment at various locations.

Optex will continue to contribute to conservation of the global environment through its highly accurate and reliable sensing technology.

Optex's Water Quality Control Solutions

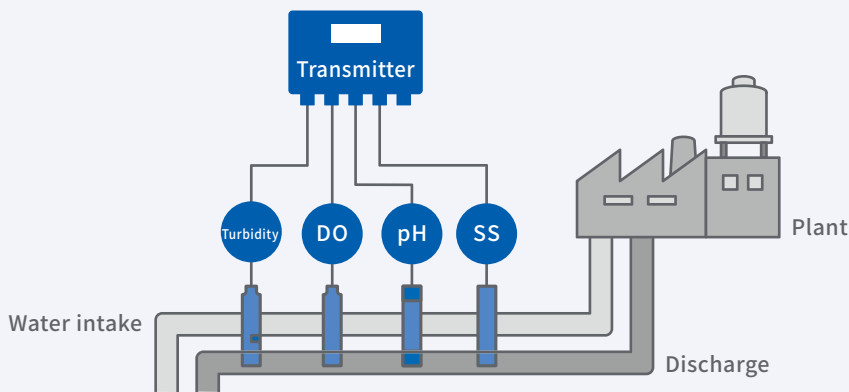


Facility

Water quality control systems for facilities (plants)

The efficiency of water quality control can be improved by monitoring in real time how wastewater is managed at plants.

- Effluent management
- Settling tank management
- Discharge monitoring



Plant



Construction site

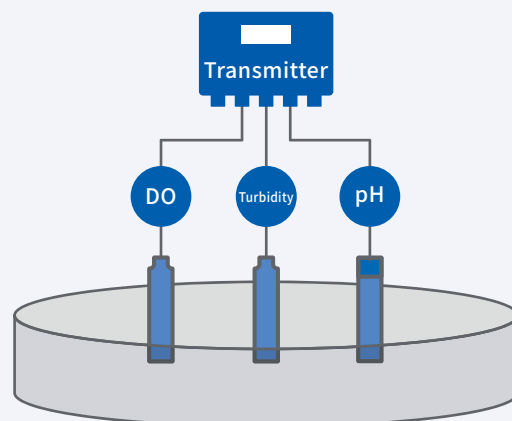


Aquaculture farm

Water quality control for aquaculture farms

Continuous measurement of water quality control in aquaculture ponds helps to improve feeding efficiency, growth efficiency, and survival rates of farmed fish.

- Management of dissolved oxygen
- Aerator paddle control

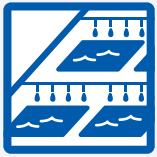


Onshore aquaculture



Marine aquaculture



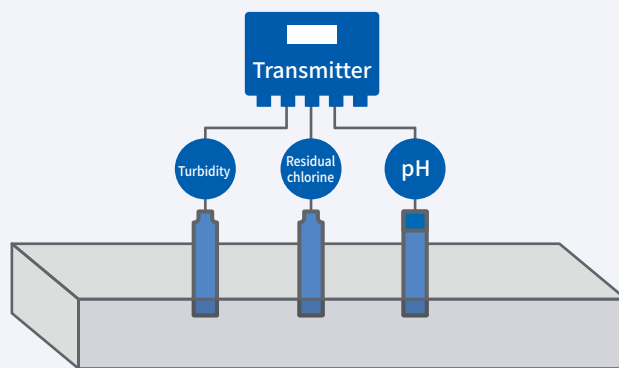


Water supply and sewage systems

Water quality control for water supply and sewage systems

Measuring water quality continuously with water quality sensors installed at each water purification process can ensure delivery of water that is safe for daily use.

- Water intake management
- Membrane rupture monitoring
- Pipe end management



Water treatment plant



End of water pipe

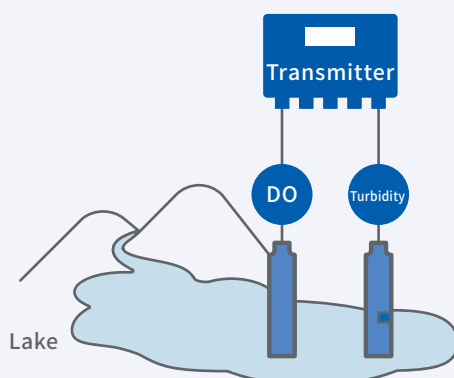


Natural environment

Water quality control for rivers and lakes

Contamination and oxygen levels in rivers and lakes can be continuously monitored.

- Dissolved oxygen monitoring
- Turbidity monitoring



River



Lake and reservoir • Dam



Various water quality sensors in a single unit

A universal transmitter that is extremely easy to operate and expand

Universal Transmitter

SC-U1(E)



■ Two sensor input channels

When an optional expansion board is added:
Up to four input channels.

■ Four relay output channels

Can be used to generate output when the measured reading exceeds the set alarm level.

Can also be synchronized to revolving lights or control panels.

When an optional expansion board is added: Up to eight output channels.

■ Two 4 to 20 mA output channels

Each channel can generate 4 to 20 mA measured sensor readings.

When an optional expansion board is added: Up to four output channels.

■ Waterproof structure for use outdoors (IP65)

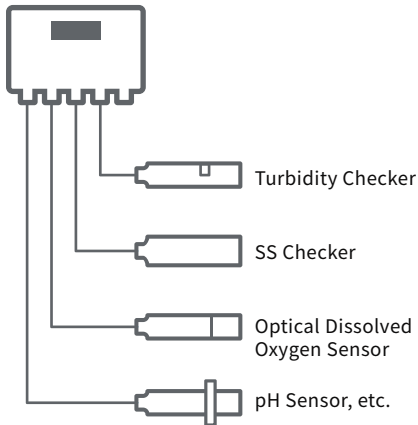
Highly waterproof for use in various locations.

● Our sensor line-up that can be connected



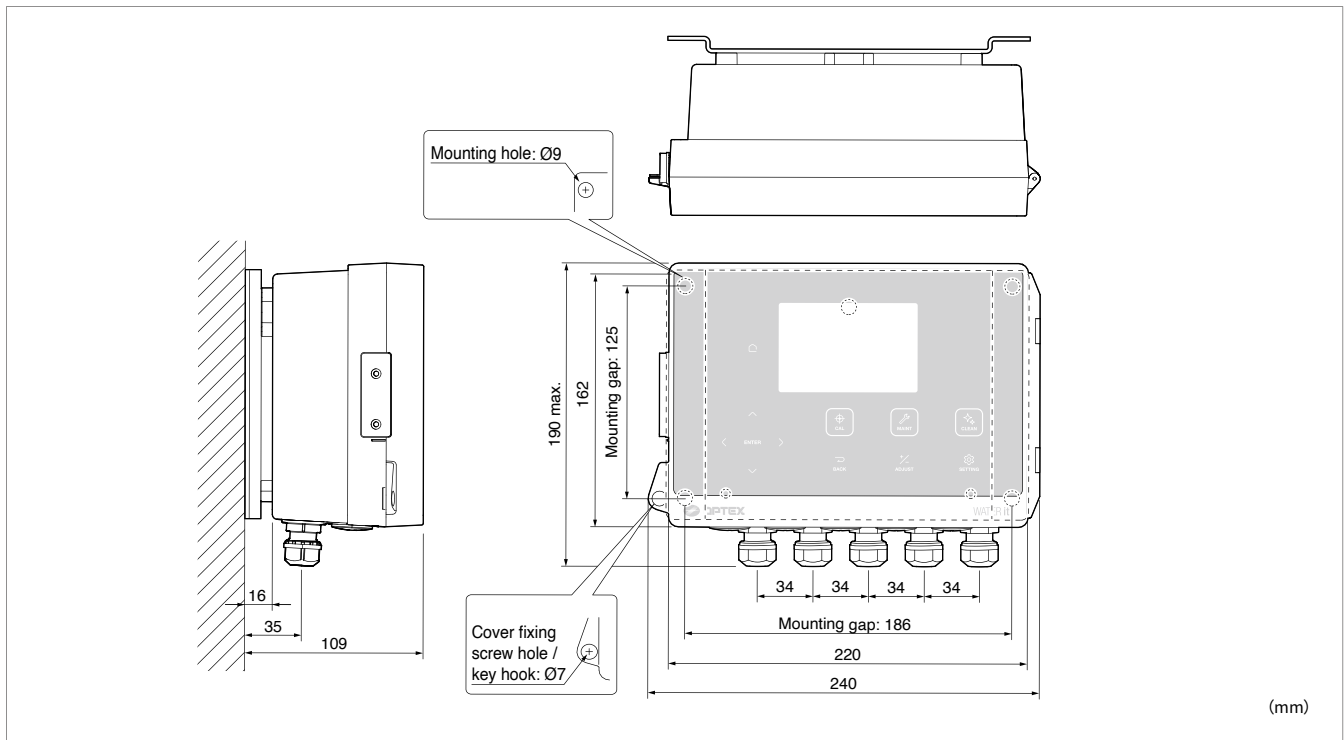
● System Image

Universal Transmitter



Model	SC-U1(E)
Power supply voltage	100 to 240 VAC ±10% 50/60 Hz
Power consumption	1 sensor connected: 20 VA max.(normal), up to 35 VA 2 sensors connected: 25 VA max.(normal), up to 40 VA 4 sensors connected (using SC-U-EB): 30 VA max. (normal), up to 50 VA (analog signal output 20 mA)
Output	Signal output: 2 channels Using SC-U-EB: 4 channels 4 to 20 mA (resistance load 600Ω max.)
	Relay output: 4 channels Using SC-U-EB: 8 channels Non-voltage C contact (Capacity: 240 VAC, 1 A resistance load)
Input	Sensor: 2 channels Using SC-U-EB: 4 channels
	Gateway: 1 channel
Ambient operating temperature	-20 to 50°C, Humidity 95%Rh or less (Avoid direct sunlight)
Main material	Polycarbonate
Dimensions	Approx. 162 (H) x 240 (W) x 109 (D) mm
Weight	Approx. 1.8 kg (including mounting bracket)
Degree of protection	Water jet proof type (IP65)

● Dimensions



● Options



**Sensor input expansion/
output expansion board (SC-U-EB)**

Attaching to Universal Transmitter SC-U1 makes it possible to add two sensor channels, two 4 to 20 mA output channels and four relay output channels.

Easier and more compact turbidity checks

Wide measurement range and extremely easy to maintain

Turbidity Checker

TC-3000-D

TC-3000SP-D

(For seawater)

Wastewater



Drinking water



Extremely effective wiper cleaning

The detection window is cleaned by a wiper that ensures dirt is removed. Maintenance is easy, just requiring you to check the window surface once a month.



Sapphire glass for easy cleaning

The scratch-resistant sapphire glass allows you to scrub the window surface during maintenance.



Compact size for installation anywhere

The palm-sized, compact design allows for easy installation anywhere—simply drop it in.

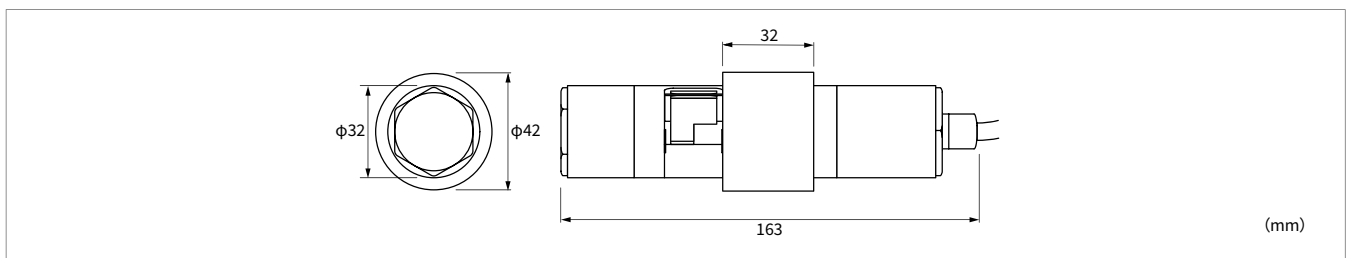


Model	TC-3000-D	TC-3000SP-D (for seawater)
Measuring range	0 to 3000 FTU	
Display resolution	0.0 to 99.9 FTU: 0.1 FTU	
	100 to 499 FTU: 1 FTU	
	500 to 3000 FTU: 5 FTU	
Cleaning system	Both sided swing wiper cleaning system	
Operating temperature	0 to 40°C (unfrozen)	
Major material	Main body: SUS316L	Main body: SUS329J4L
	Sapphire glass, fluorocarbon rubber, EPDM, POM	
Dimensions	Φ32 × 163 mm (excluding Hanging Attachment)	
Weight	Approx. 930 g	
Degree of protection	IP68, maximum depth of 2 meters (underwater type)	
Sensor cable length	9 m	

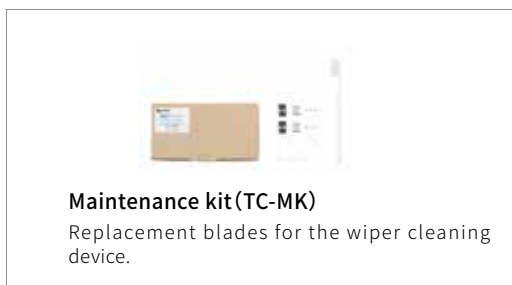
Wide measurement range and three-step display resolution

•Measuring range 0 to 3000 FTU •Display resolution 0.0 to 99.9 FTU: 0.1 FTU 100 to 499 FTU: 1 FTU 500 to 3000 FTU: 5 FTU

Dimensions



Options



Low turbidity check with drop-in method

Turbidity Checker
TSC-10-D

Drinking water 



Resolution of 0.01 NTU

The minimum display resolution is 0.01 NTU. You can check the turbidity in greater detail.

Highly effective wiper cleaning

A built-in wiper cleaning device allows for easy maintenance simply by regularly checking and cleaning the window surfaces.



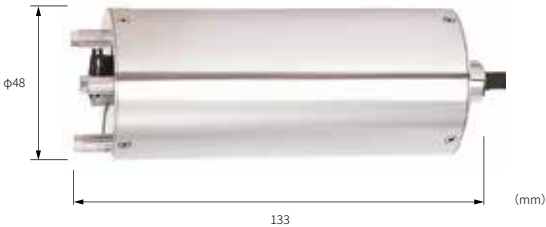
Uses highly durable sapphire glass

The scratch-resistant sapphire glass allows you to scrub the window surface during maintenance.

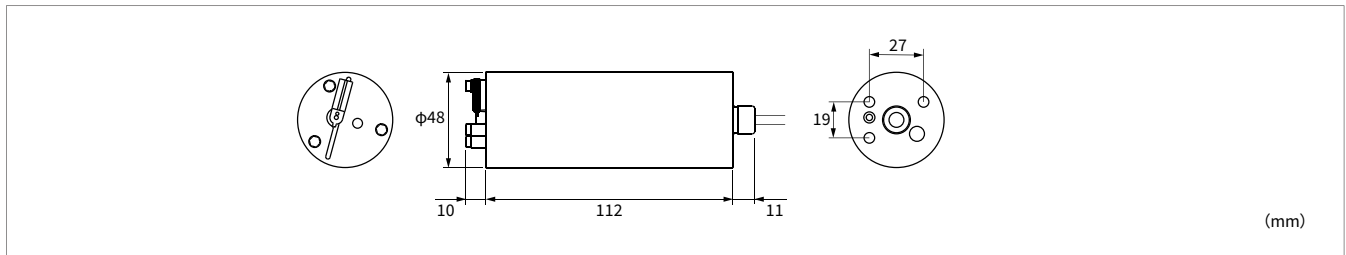
Compact design

The palm-sized, compact design allows for easy installation.

Model	TSC-10-D
Measurement range	0.00 to 1000.0 NTU (formazin standard solution) 0.00 to 100.0 度 (polystyrene standard solution)
Display resolution	0.00 to 19.99: 0.01 20.0 to 1000.0: 0.1
Cleaning system	Wiper cleaning system
Operating temperature	0 to 40°C (unfrozen)
Major material	SUS316L, Sapphire glass, Fluorocarbon rubber, EPDM, PVC (cable)
Dimensions	Approx. $\Phi 48 \times 133$ mm
Weight	Approx. 1.1 kg
Degree of protection	IP68, maximum depth of 2 meters (underwater type)
Sensor cable length	9 m



●Dimensions



●Options

Maintenance kit (TSC-MK)
Replacement blades for the wiper cleaning device.

Transparency function in SS checker

SS Checker

TS-1000-D

TS-1000SP-D

(For seawater)

Wastewater



Drinking water



Extremely effective wiper cleaning

The detection window is cleaned by a wiper that ensures dirt is removed. Maintenance is easy, just requiring you to check the window surface once a month.



Sapphire glass for easy cleaning

The scratch-resistant sapphire glass allows you to scrub the window surface during maintenance.



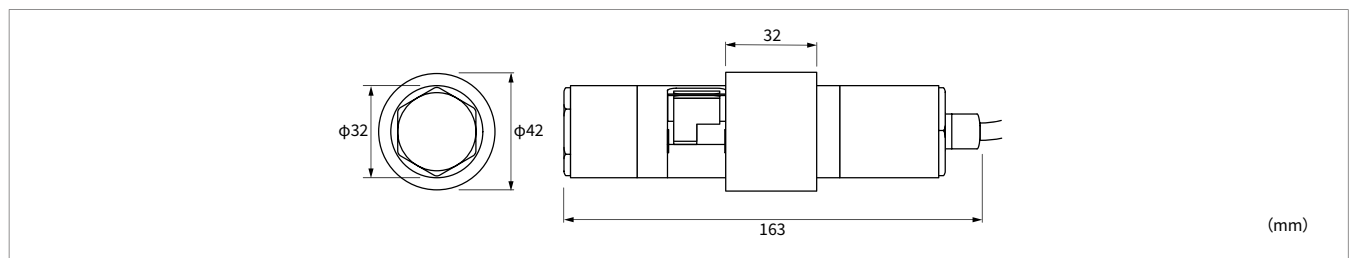
Compact size for installation anywhere

The palm-sized, compact design allows for easy installation anywhere—simply drop it in.

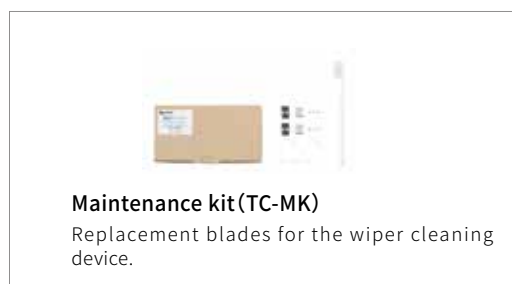


Model	TS-1000-D	TS-1000SP-D (for seawater)
Measurement range	SS: 0.0 to 1000 mg/L (kaolin) Transparency: 0 to 100 cm (JIS K 0102 2016)	
Display resolution	SS: 0.0 to 49.9 mg/L: 0.1 mg/L 50 to 1000 mg/L: 1 mg/L Transparency: 0 to 100 cm: 1 cm	
Cleaning system	Both sided swing wiper cleaning system	
Operating temperature	0 to 40°C (unfrozen)	
Major material	Main body: SUS316L	Main body: SUS329J4L
	Sapphire glass, fluorocarbon rubber, EPDM, POM	
Dimensions	$\phi 32 \times 163$ mm (excluding Hanging Attachment)	
Weight	Approx. 930 g	
Degree of protection	IP68, maximum depth of 2 meters (underwater type)	
Sensor cable length	9 m	

Dimensions



Options



Best cost performance model in the industry

Transparency function in SS checker

TS-Mx-D

Wastewater



Wide measurement range of up to 50,000 mg/L

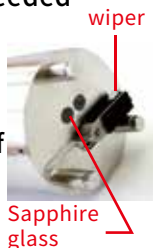
Can be used for MLSS monitoring of aeration tanks and SS monitoring of raw water and treatment processes.

Easy to handle and operate

No complicated settings and operation is simple and easy for anyone to understand.

Built-in wiper cleaning device, no additional accessories needed

Ensures that dirt is removed. Maintenance is easy, just requiring you to check and clean the window surface once a month.



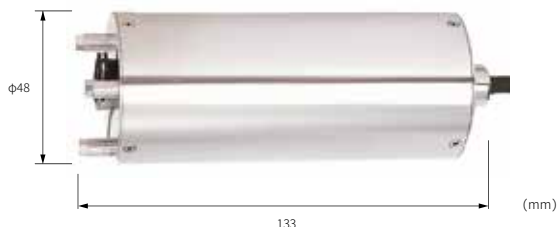
Sapphire glass for scratch proof

The scratch-resistant sapphire glass allows you to scrub the window surface during maintenance.

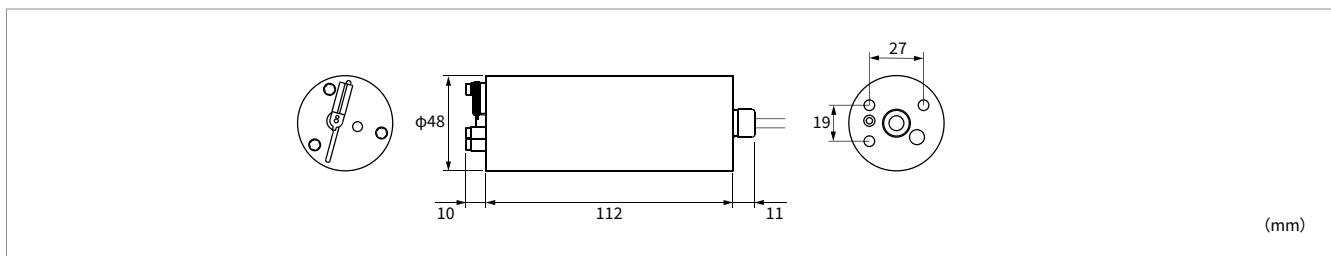
Compact design

The palm-sized, compact design allows for easy installation.

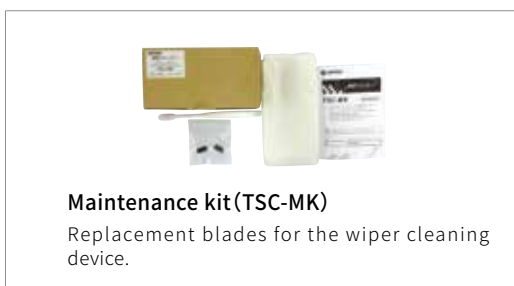
Model	TS-Mx-D
Measurement range	0 to 50000 mg/L (kaolin)
Display resolution	0 to 50000 mg/L: 10 mg/L
Cleaning system	Wiper cleaning system
Operating temperature	0 to 40°C (unfrozen)
Major material	SUS316L, Sapphire glass, Fluorocarbon rubber, EPDM, PVC (cable)
Dimensions	Approx. $\Phi 48 \times 133$ mm
Weight	Approx. 1.1 kg
Degree of protection	IP68, maximum depth of 2 meters (underwater type)
Sensor cable length	9 m



●Dimensions



●Options



Much easier to maintain and operate than a membrane type

Optical Dissolved Oxygen Sensor DOS-20

Wastewater



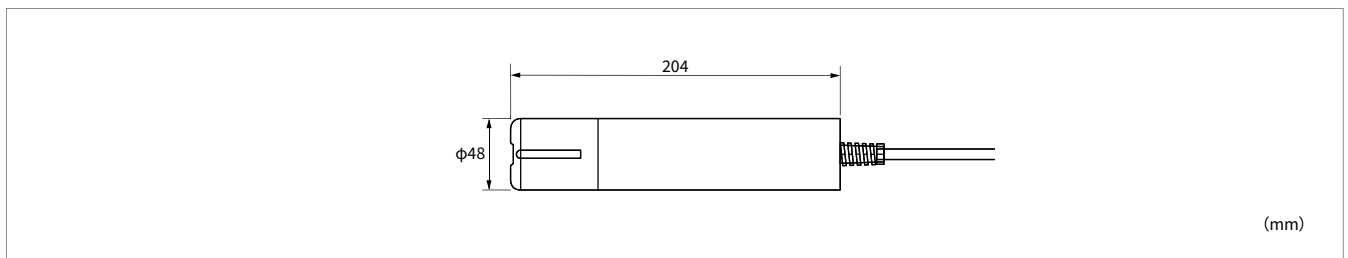
Aquaculture



- Corrosion-resistant resin housing
- Reduced maintenance load and easy operation compared to membrane type
- Three types of transmitters are available to meet a variety of installation conditions: outdoor freestanding, built-in control panel, and DIN-compatible.

Model	DOS-20
Measurement item	Dissolved Oxygen concentration (mg/L) Temperature (°C) Dissolved oxygen saturation (%) Oxygen Partial Pressure (kPa)
Measurement range (Display resolution)	Dissolved oxygen concentration: 0.00 to 50.00 mg/L (0.01 mg/L) Temperature: 0.0 to 50.0°C (0.1°C) Dissolved oxygen % saturation: 0.0 to 200.0 (0.1%) Oxygen partial pressure: 0.0 to 150.0 kPa (0.1 kPa)
Measurement resolution	± 0.1 mg/L (0 to 8 mg/L) ± 0.2 mg/L (8 to 20 mg/L) ± 10% of reading (20 to 50 mg/L)
Response time	90% response: < 45 seconds 95% response: < 60 seconds (Water temperature: 25°C)
Operating temperature	0 to 50°C (unfrozen)
Major material	ABS
Dimensions	Φ44 × 204 mm
Weight	Approx. 850 g (including cable length of 10 m)
Degree of protection	IP68, maximum depth of 200 meters (underwater type)
Sensor cable length	10 m

● Dimensions



● Options

Replacement sensor cap (DOS-CP)
A consumable item that you should replace about once every year.

Can be used at various locations for
both wastewater and drinking water
Sensors that are extremely easy to maintain



pH Sensor
SE-pH-D

Wastewater



Drinking water



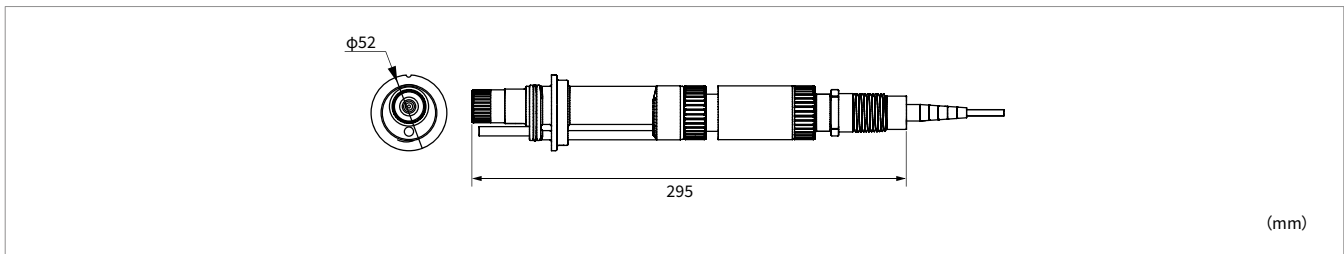
Easy quick-replacement electrodes

Can be replaced easily without tools or rewiring.




Model	SE-pH-D	
Measuring item	pH/temperature	
Measurement range	pH	0.00 to 14.00 pH
	Temperature	0.0 to 60.0°C
	Electromotive force	-500.00 to 500.00 mV
Display resolution	pH	0.01pH
	Temperature	0.1°C
	Electromotive force	0.01 mV
Operating temperature	0 to 60°C	
Dimensions	Φ52 × 295 mm	
Weight	0.57 kg	
Cable length	6 m	
Main material	PPS	

Dimensions



Options



Replacement electrode for SE-pH-D (SE-pH-EL)
Electrodes are consumable items. Please replace them regularly.

Can be used at various locations for both wastewater and drinking water
Sensors that are extremely easy to maintain

ORP Sensor
SE-ORP-D

Wastewater



Drinking water



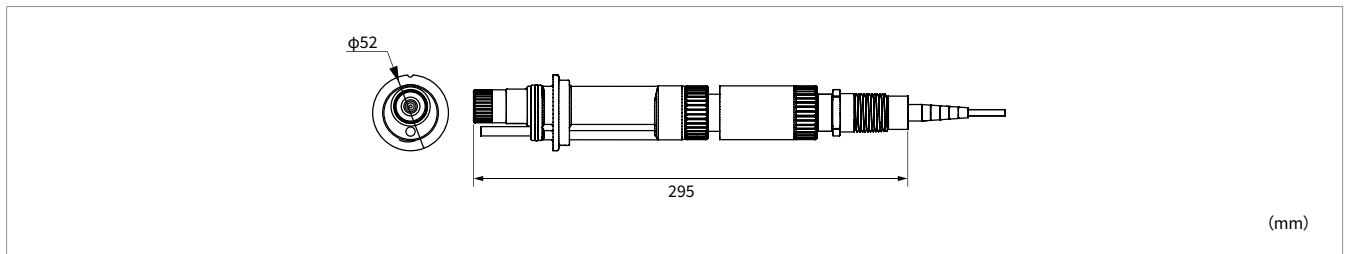
Easy quick-replacement electrodes

Can be replaced easily without tools or rewiring.



Model	SE-ORP-D
Measuring item	ORP
Measurement range	-1500 to 1500 mV
Display resolution	1 mV
Operating temperature	0 to 60°C
Dimensions	φ52 × 295 mm
Weight	0.57 kg
Cable length	6 m
Main material	PPS

Dimensions



Options

Replacement electrode for SE-ORP-D (SE-ORP-EL)
Electrodes are consumable items. Please replace them regularly.

Measures the conductivity of aqueous solutions for river water and factories
Sensors that are extremely easy to maintain

Conductivity Sensor
SE-Cond-D

Wastewater



Drinking water



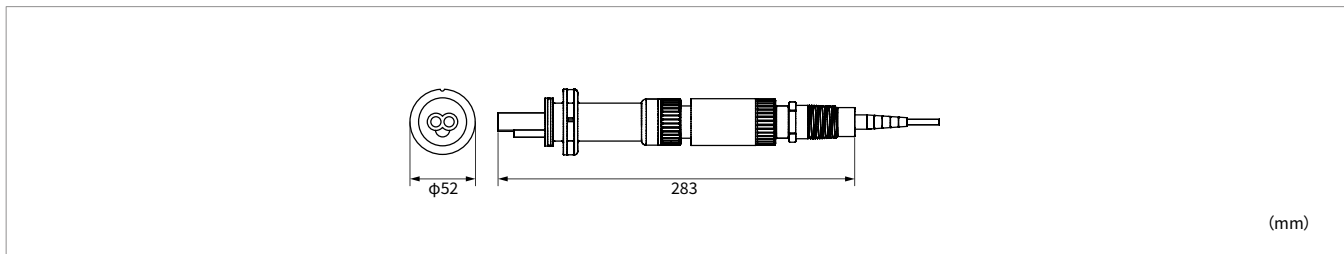
Easy quick-replacement electrodes

Can be replaced easily without tools or rewiring.



Model	SE-Cond-D
Measurement item	Conductivity
Measurement range	0.00 to 10.00 mS/cm
	0.000 to 1.000 S/m
	0.0 to 30.0 g/L
Display resolution	0.01 mS/cm
	0.001 S/m
	0.1 g/L
Operating temperature	0 to 60°C (unfrozen)
Dimensions	Φ52 × 283 mm
Weight	0.53 kg
Cable length	6 m
Main material	PPS

● Dimensions



● Options



Replacement electrode for SE-Cond-D (SE-Cond-EL)
 Electrodes are consumable items. Please replace them regularly.

Measures turbidity at drinking water levels.

Turbidity Checker (Ultra Low Range)

TC-Mi

Drinking water



Easy to install and use

Compact design with integrated defoaming tank allows for easy installation by anyone.

Reduced maintenance costs through labor-saving maintenance

Using LEDs for turbidity measurement eliminates the need to replace the light source. No need to use or replace dehumidifying agents.

Stable and high-precision measurements

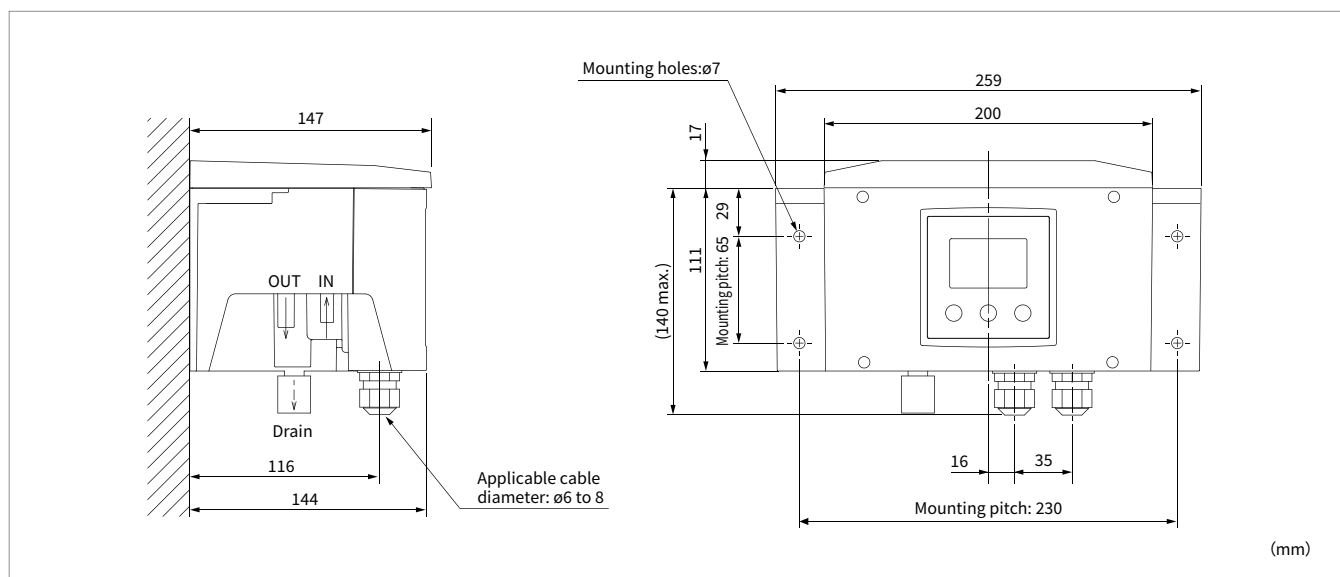
The condensation prevention function allows measurements to remain highly accurate over long periods of time.

Waterproof structure for use outdoors (IP65)


Highly waterproof for use in various locations.

Model	TC-Mi
Measurement method	Hephelometric 90 to degree scattered light method
Light source	LED
Measuring range	Select from 0 to 2, 0 to 5, 0 to 20 and 0 to 100 (NTU/FNU: Formazine standard solution) Select from 0 to 2, 0 to 5 and 0 to 20
Display	LCD Monitor
Display resolution	0.0000 to 9.9999 NTU: 0.0001 NTU 10.000 to 100.00 NTU: 0.001 NTU
Output	Analog (4 to 20 mA) signal Output : resistive load 300 Ω max. Self-checking output : open collector (24 VDC 50 mA max.)
Signal output resolution	0.001 mA
Power supply voltage	24 VDC ±10%
Current consumption	Normal: 100 mA max., During activation: 600 mA Max.
Digital communication	MODBUS protocol (RS485) TC-Mi protocol (RS485)
Measuring water flow rate	100 to 200 mL/min.
Measuring water temperature	0 to +40°C (unfrozen)
Ambient temperature	-20 to +50°C, Humidity: 95%RH or less
Main material	PPO, AES, SUS316L
Dimensions	259 (W) x 157 (H) x 147 (D) mm
Weight	Approx. 2 kg
Degree of protection	IP65

Dimensions



Options



Flowmeter (TC-Mi-FL)
Used to control the measurement flow rate.

Common option list

For detectors



Maintenance kit (TC-MK)
Replacement blades for the wiper cleaning device.



Maintenance kit (TSC-MK)
Replacement blades for the wiper cleaning device.

● Common option correspondence table

	Turbidity Checker		SS Checker	
	TC-3000-D	TSC-10-D	TS-1000-D	TS-Mx-D
Maintenance kit TC-MK	●		●	
Maintenance kit TSC-MK		●		●

Dedicated option list

For optical dissolved oxygen sensor

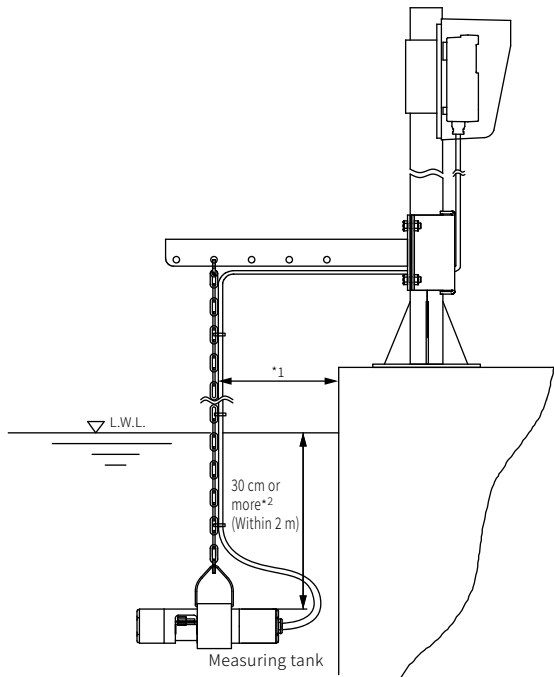


Replacement sensor cap (DOS-CP)

A consumable item that you should replace about once every year.

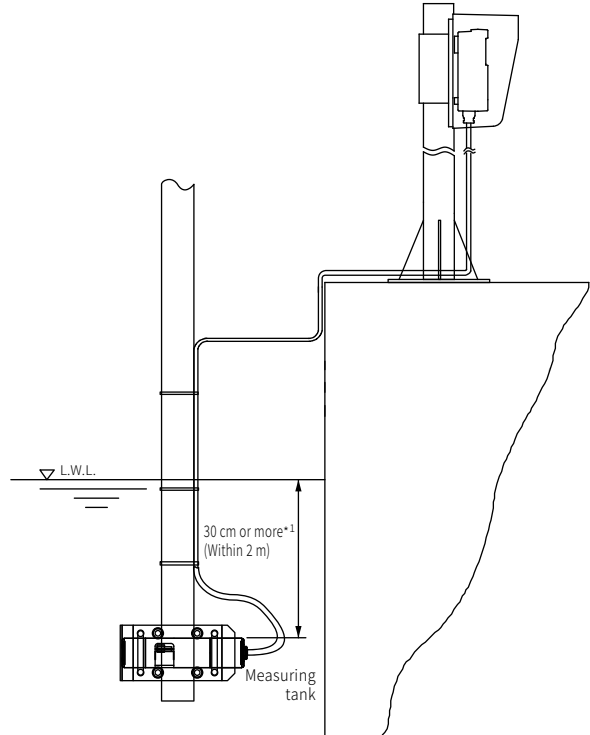
Installation examples

Turbidity Checker TC-3000-D
SS Checker TS-1000-D



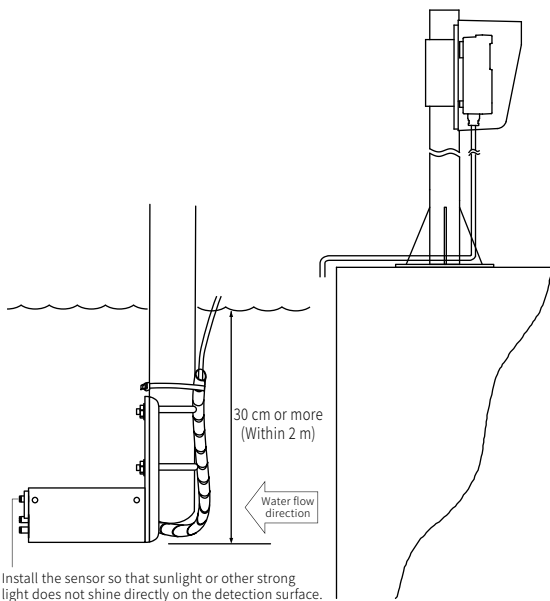
- *1: The detector may move slightly depending on the flow rate. Mount it so that it does not impact walls.
- *2: Mount the detector so that it remains submerged under the water surface even if the water level fluctuates.

Turbidity Checker TC-3000-D
SS Checker TS-1000-D

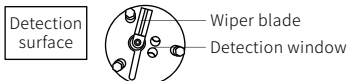


- *1: Mount the detector so that it remains submerged under the water surface even if the water level fluctuates.

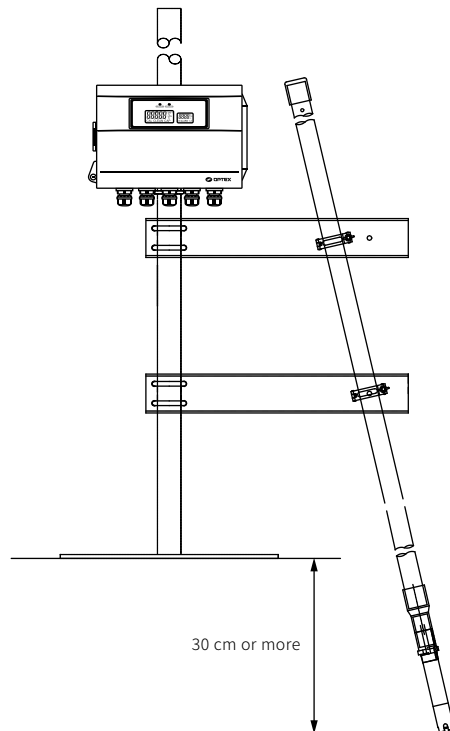
Turbidity Checker TSC-10-D
SS Checker TS-Mx-D



Install the sensor so that sunlight or other strong light does not shine directly on the detection surface.



DO Sensor DOS-20



Our opportunity for water quality measurement business

In 1993, we started our water quality measurement business with a request from Shiga Prefecture to automate the measurement of Lake Biwa's transparency.

We have been measuring the transparency of Lake Biwa daily to understand the water quality and to educate local residents.

The results of the measurements were announced on the electronic bulletin board in front of the prefectural government office and on the weather forecasts of the local TV station.



MEMO

Optex aims to usher in a brighter future with a focus on safety, security, and comfort through the use of sensing technology.

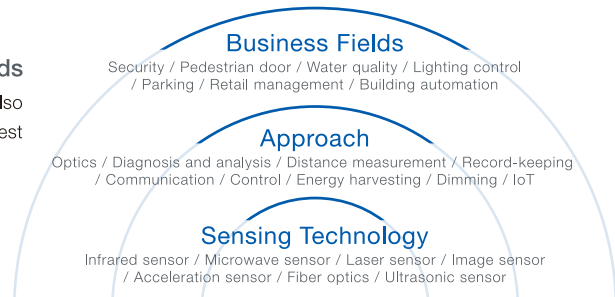
OPTEX Overview

As of January 1, 2023

Company Name	OPTEX CO., LTD.
Official website	www/optex/co.jp/e
Address [Headquarters]	5-8-12, Ogoto Otsu, Shiga, 520-0101 Japan
Representative	President / CEO Toru Kamimura
Capital	350 million yen
Description of business	Development, manufacture, and sales of various sensors, and development of new business areas including IoT
Parent Company	OPTEX GROUP CO., LTD.

Proprietary Technologies for a Wide Range of Business Fields

Using not only various reliable sensing and communication technologies but also solution-based proprietary ideas, Optex helps customers realize the best solutions to improve business activities.



OPTEX Sensing Technologies



Reliable Sensing Technology

Even in environments with numerous factors—including sunlight, small animals, and radio waves—that may interfere with sensor-based detection, Optex utilizes proprietary sensing algorithms to ensure reliable, stable detection.



Application-Based Sensor Equipment Development

Optex introduces sensors capable of accurate detection by incorporating not only knowledge of various sensor features found throughout the globe but also a comprehensive understanding of factors such as detection targets, installation environments, and applications.



Smart Data

Optex sensors work as a type of edge computing device that transmits only the necessary data (smart data), which is created by filtering out unnecessary data from large amounts of sensor data to ensure only the essential data is transmitted.

Global Expansion

Taking advantage of a global network that includes more than 20 bases, Optex provides products and services in 80 countries and regions around the world.



Global Niche Market Leader

Optex is dedicated to meeting the needs of niche markets for special-application sensors and currently boasts the leading share of the global niche market.



*Based on our own research

●The appearance and specifications are subject to change for improvement without prior notice. ●The colors might be slightly different from the actual products. ●Safety Precautions: Read the instruction manual carefully and thoroughly before using the appliance, and then use it correctly. ●The products have a limited life. Maintenance and replace it regularly.

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