HORIBA
Process & Environmental

ON-SITE Industrial Water Quality Meter H-1 Series

Industrial Optical Dissolved Oxygen Meter

HD-200FL

Unequaled ease of maintenance with optical sensors

For managing aeration tanks in sewage plants, factory effluent treatment facilities, and other facilities.

Transmitter
HD-200FL

Probe
DO-2000

Optical dissolved oxygen sensor with no electrolyte replacement and rugged membrane. Highly intelligent, including automatic recognition of membrane properties when replacing the sensor cap.

The HD-200FL is an optical (fluorescent) dissolved oxygen meter suitable for monitoring aeration tanks used for sewage treatment, effluent treatment, and other processes. Compared to conventional membrane polarographic type sensors, there is no need for electrolyte (internal fluid) replacement or warming up. Characteristics of optical sensors are utilized to realize unequaled improvement in ease of maintenance and reduction in running costs. Moreover, it features enhanced user-friendliness, with sensor caps that have built-in memory and a membrane replacement notification function.

ON-SITE Industrial water quality meter H-1 Series

Industrial optical dissolved oxygen meter

HD-200FL

Tough

- Rugged membrane
- Flow independent
- Less affected by interference
- Long-life LED light source (10 years or longer)

Easy maintenance

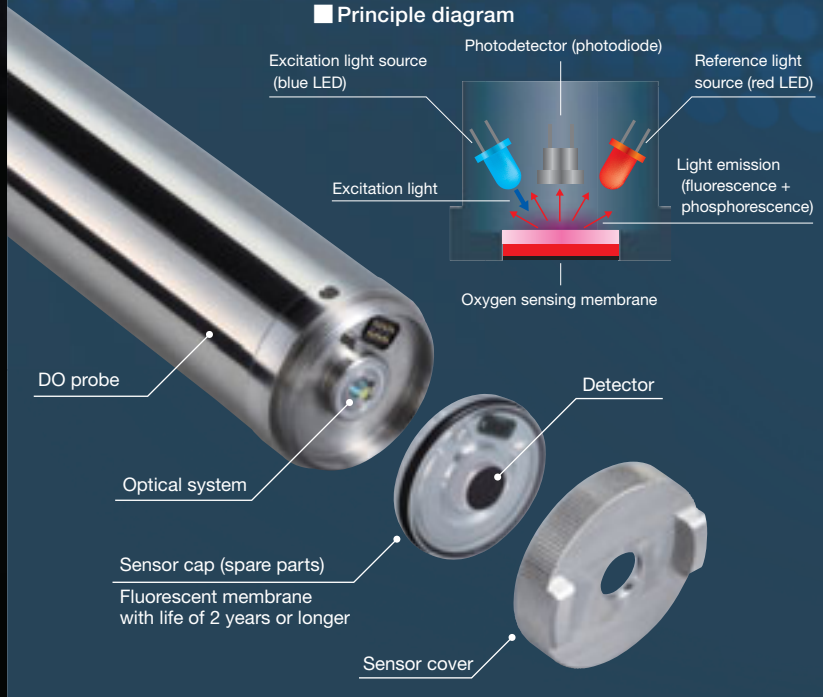
- Longer sensor cap replacement cycle
- Electrolyte-free
  - ▶No worry about replacement and degradation
- Longer calibration cycle
  - ▶Low drift
- No warming-up time

Intelligence

- Sensor cap replacement notification function
  - ▶Counts number of light emissions
- Self-diagnosis function
  - ▶Light source errors, sensor cap detection errors
- Automatic recognition of parameters after replacing sensor cap (fluorescent membrane)
  - ▶Sensor cap with built-in memory

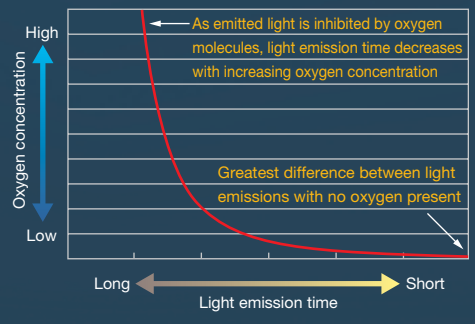
Optical DO sensor Principles and structure

■Principle diagram



■Measurement principles

Exposing an oxygen sensing membrane that contains a special fluorescent substance with excitation light causes fluorescent light to be emitted.
The light emission intensity will be strongest in the absence of oxygen, and will decrease by quenching if oxygen molecules are present. Light emission time shows the same relationship as strength of light emission intensity, being the longest in the absence of oxygen, and shortest in its presence. Oxygen concentration and light emission time are inversely related, as shown in the diagram below. Light emission time measurement employs the phase difference detection method, which is mostly unaffected by dirt on the sensor surface and changes in sensitivity.

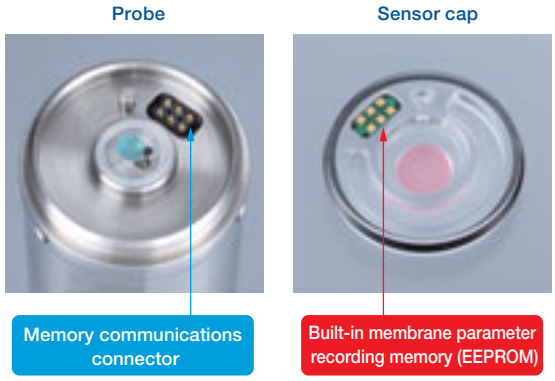


* Lifetime of sensor caps may vary with the environment in which they are used.

DO: Dissolved Oxygen

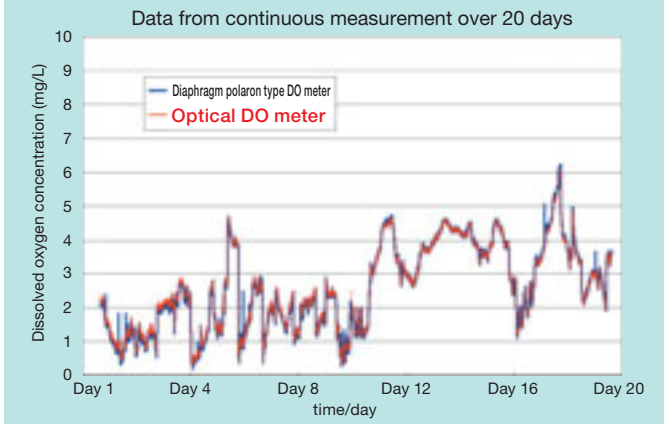
❯❯ IC built-in memory sensor cap

Automatic recognition of parameters eliminates the need to input a distinctive membrane count when replacing the sensor cap (fluorescent membrane).



❯❯ Example field test

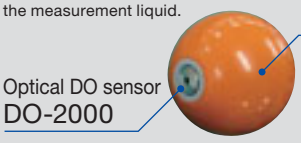
In the aeration tank (without feedback by DO)



Holder

◎Float holder

Accumulation of dirt is prevented with its self-cleaning function that uses flow rate of the measurement liquid.



The nose shape of the float is free of large bumps, keeping dirt and floc from clinging to the sensor part.

FH-101 (Vertical type)

FH-201 (Slanted type)

◎Immersion holder

DH-151 series (insertion type)

NH-15 series (drop type)

Washer

◎Immersion jet washer

JDH series

JH-15 (for drop type)

Accessories

◎Extension cable

C-7E

◎Relay box

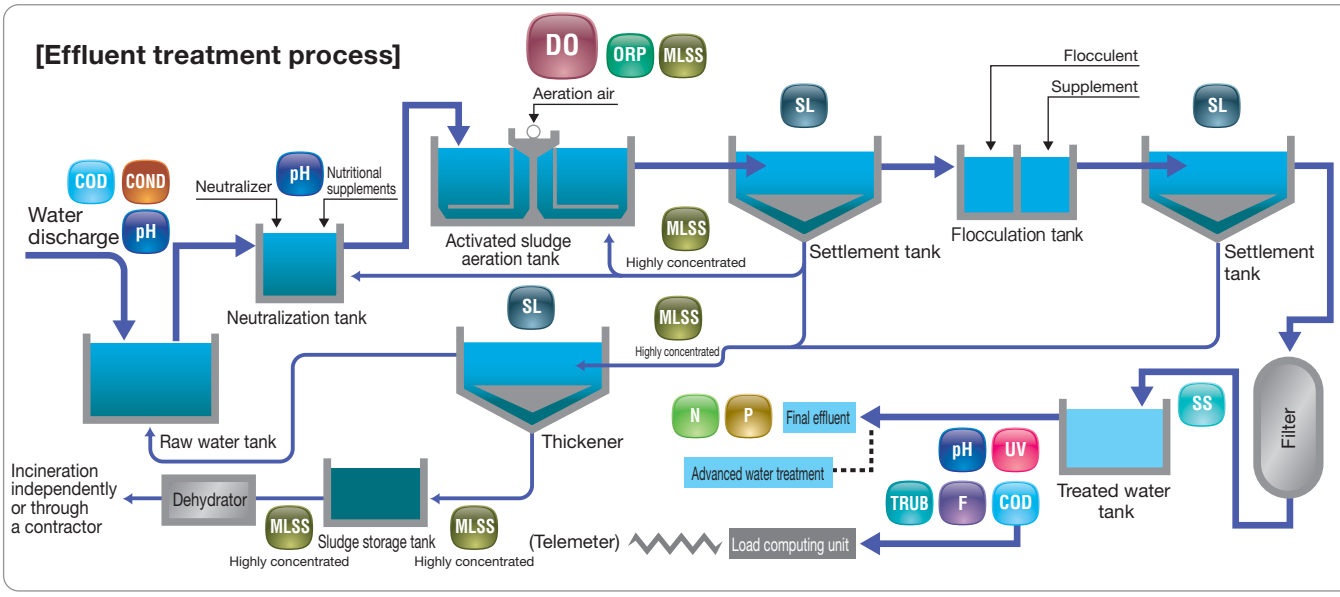
CT-25SS

◎Mounting brackets

SP-601

MH-60

[Effluent treatment process]



Indication converter specifications

Model	HD-200FL
Measuring method	Optical (fluorescent)
Measuring range	DO: 0 to 20 mg/L Resolution: 0.01 mg/L Saturation: 0 to 200% Resolution: 0.1% Temperature: 0 to 50°C Resolution: 0.1°C
Repeatability	Within ± 1% of full scale
Linearity	Within ±2% of full scale
Transmission output	2 points 4 mA to 20 mA DC output isolated type Maximum load resistance 900 Ω Range 1: DO concentration: Freely selectable within the measurement range Range 2: Temperature: Freely selectable within the range from -10.0 to 110.0°C Alarm: Burnout function (3.8 mA or 21 mA) Hold: Selectable from previous value hold, optional value hold
Contact output	3 points Dry contact output Relay contact, SPDT (1c) Signal R1, R2: upper limit alarm, lower limit alarm, hold, Cleaning (selectable) FAIL : Alarm Control operation Control width: 0.02 to 4.00 mg/L (±0.01 to ±2.00 mg/L)
On cleaning output	1 point Wet contact output (connecting power supply voltage output) Relay contact, SPST (1a) Contact function: Solenoid Valve Control
External input	1 point Contact shape: Open connector dry 'a' contact Contact function: Cleaning Unit Control
Communication function	RS-485 2-line, insulated input/output (transmission output is not insulated)
Temperature compensation range	0 to 50°C
Temperature compensation device	Thermistor
Calibration method	Atmosphere span calibration, zero liquid (sodium sulfite) calibration, span liquid (atmosphere saturation liquid) calibration
Self-diagnosis function	Calibration error, sensor diagnosis error, converter alarm
Operating temperature range	-20 to 55°C (Should not be frozen)
Power supply	90 to 264 V AC 50/60 Hz Power consumption: 15 VA (max)
Structure	IP65 : 50 A pole or wall mounting Case: Aluminum alloy Mounting brackets, hood: SUS304
Mass	Main unit body: Approx. 3.5 kg Hood, mounting brackets: Approx. 1 kg
Regulatory compliance	CE marking, FCC
Compatible sensor	DO-2000

∗1 When extending the sensor cable, transmission cable, or contact input cable 30 m or more, the CE marking EMC directive surge test does not apply.

∗2 An arrestor (inception voltage: 400 V) is mounted on the unit for transmission output, contact input, and communications. However, an optimal surge absorber should be installed on the connecting line depending on the surrounding environment, equipment setup, externally connected devices, etc.

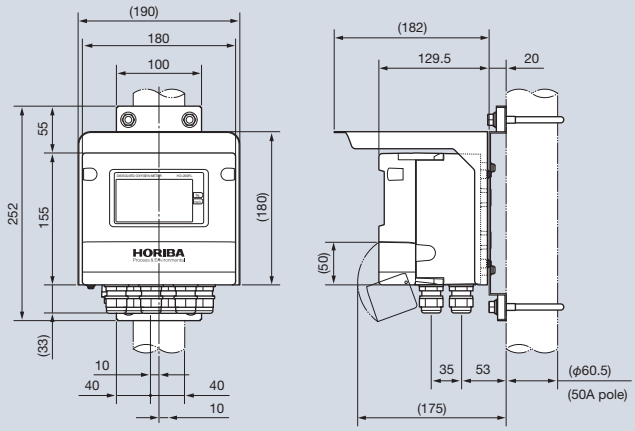
Probe specifications

Model	DO-2000
Measurement principles	Optics (fluorescence)
Sample water	0 to 50°C
Wetted material	SUS316、NBR、PVC
Response time	90% response: Within 30 s 95% response: Within 60 s
Mass	Approx. 3.0 kg (incl. 10 m cable)

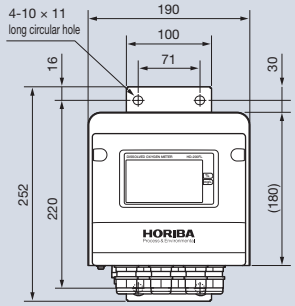
Dimensional outline (Unit: mm)

●Transmitter
HD-200FL

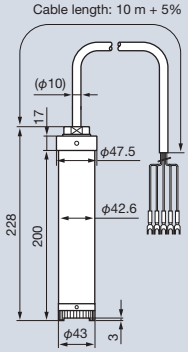
[Pole mount]



[Wall mount]



●Optical DO probe
DO-2000



Sensor cap specifications (replaceable)

Model	5700
Wetted material	NBR, PMMA
Mass	Approx. 5.0 g
Membrane memory	Built-in memory in the membrane unit, automatic recognition

Please read the operation manual before using this product to assure safe and proper handling of the product.

Manufacturer

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