

HD-200FL

Unequaled ease of maintenance with optical sensors

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



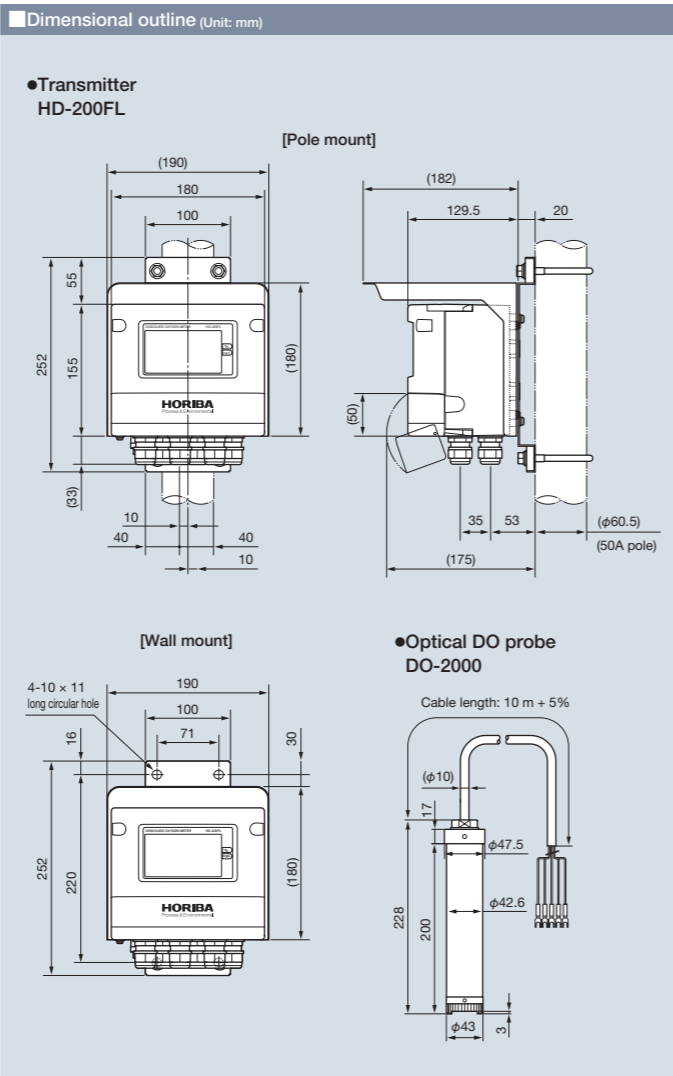
Transmitter
HD-200FL

Probe
DO-2000

■ 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
Transmission output	2 points 4 mA to 20 mA DC input/output isolated type Maximum load resistance 900 Ω
	Output 1: Dissolved oxygen concentration: Selection from preset ranges or free range input within measuring range. Output 2: Temperature: Free setting within a range between -10 and 110°C Occasional out for error: Hold or burnout to either 3.8 mA or 21 mA Transmission hold: In the maintenance mode, transmission signal is held at the latest value or preset value. In the calibration mode, transmission signal can be alive or held.
Contact output	3 points No-voltage contact output Relay contact, SPDT (1c)
	Signal R1, R2: Selectable from upper limit alarm, lower limit alarm, ON/OFF control, currently holding of transmission output, and cleaning output. (The contact is closed during alarm operation, opened normally and while the power is down.) FAIL : Error alarm (Closed in the normal state, opened in the failure state or while the power is down.) Control operation Control width: 0.02 to 4.00 mg/L (±0.02 to ±2.00 mg/L)
Cleaning output	1 point AC power control output (Applied power supply voltage) Relay contact, SPST (1a) Contact function: Solenoid valve for cleaning control
Contact input	1 point Contact shape: No-voltage "a" contact for open collector Contact function: External input for cleaning or transmission holding if cleaner is not attached.
Communication function	RS-485 2 wire system, isolated from the input/output circuit Not isolated from transmission circuit
Temperature compensation range	0 to 50°C
Calibration method	Span calibration in the air Zero: Sodium sulfite solution Span: Air or DO saturated water
Self-diagnosis function	Calibration error, sensor diagnosis error, converter error
Operating temperature range	-20 to 55°C (without freeze)
Power supply	100 to 240 V AC ±10% 50/60 Hz Power consumption: 20 VA (max)
Structure	IP65 : Mounted on 50A pole or wall
	Case: Aluminum alloy (coated with epoxy-denatured melamine resin), 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: The standard for effect on the reading by the electromagnetic field of the radiated radio frequency and by the conducted interference is within the measured dissolved oxygen value ± 0.4 mg/L.
*2: When the sensor cable, the transmission cable, or the contact input cable is extended by 30 m or more, the surge test under the EMC Directive for CE marking is not applied.
*3: An arrester (spark over voltage: 400 V) is implemented for transmission output, contact input, and communication. However, use a most suitable surge absorption element on the connection lines in accordance with the ambient environment, the situation of equipment installed, and the externally connected equipment.

■ 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)



■ Sensor cap specifications (replaceable)	
Model	5700A
Wetted material	NBR, PMMA
Mass	Approx. 5.0 g
Membrane memory	Built-in memory in the membrane unit, automatic recognition

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

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



Transmitter HD-200FL

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 unequalled 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

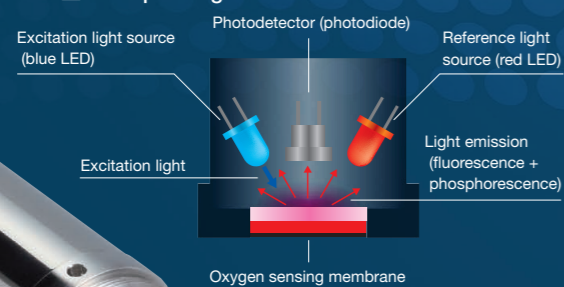
Intelligence

- 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

Probe DO-2000

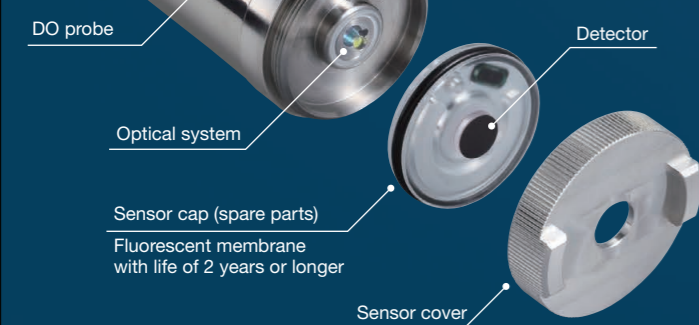
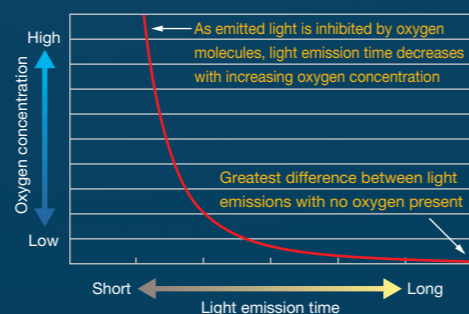
Optical DO sensor Principles and structure

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.

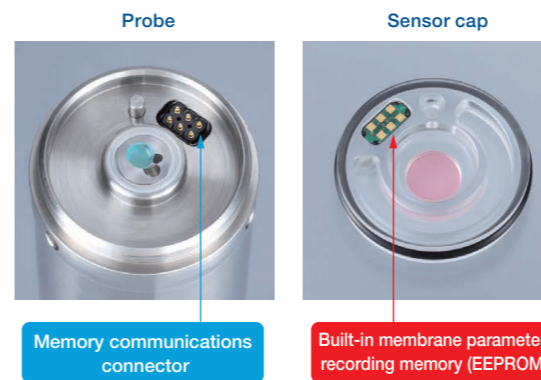


* Lifetime of sensor caps may vary with the environment in which they are used.

DO: Dissolved Oxygen

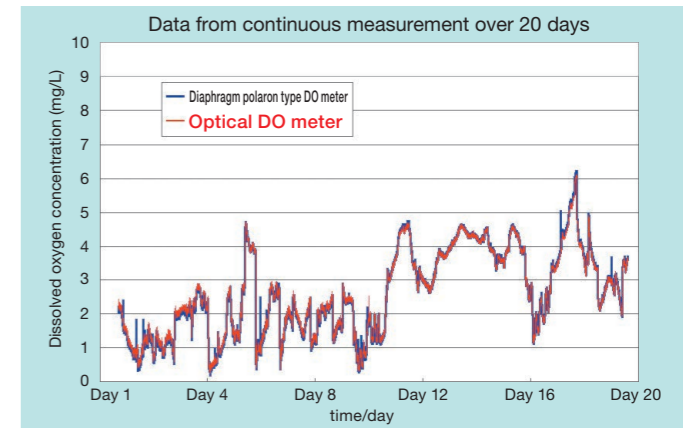
IC built-in memory sensor cap

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.

FH-101 (Vertical type)

Optical DO sensor DO-2000

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

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-50SS

etc.

[Effluent treatment process]

