

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.



Transmitter
HD-200FL



Probe
DO-2000

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

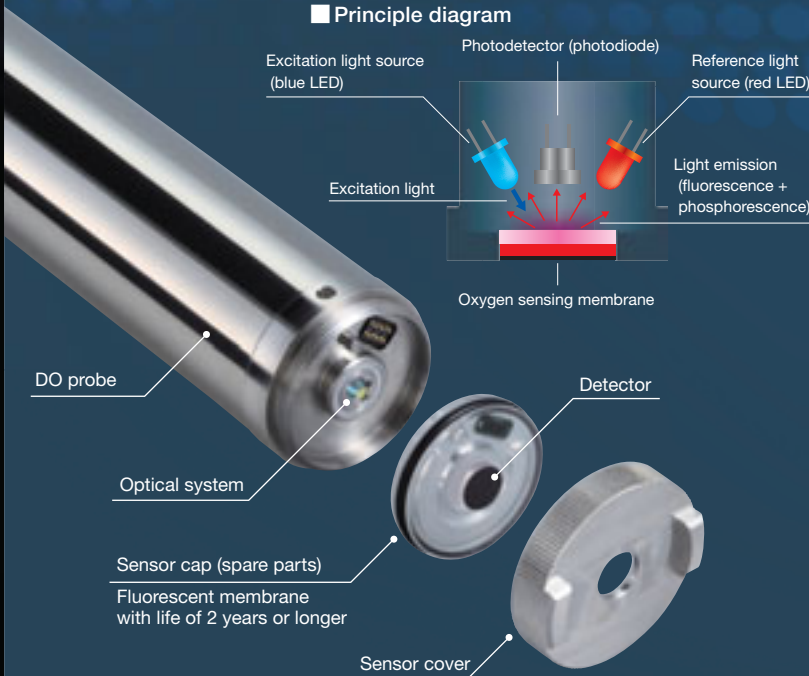
- Longer sensor cap replacement cycle
 - ▶ No worry about replacement and degradation
- Electrolyte-free
- Longer calibration cycle
 - ▶ Low drift
- No warming-up time

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

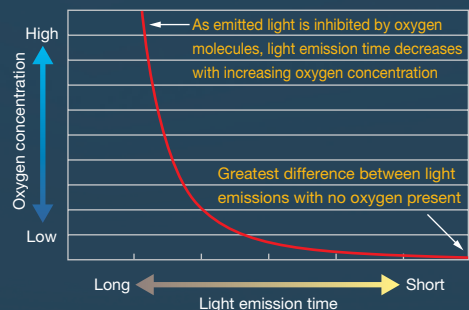
■ Principle diagram



■ Measurement principles

Exposing an oxygen sensing membrane that contains a special fluorescent substance with excitation light causes fluorescent light to be emitted.

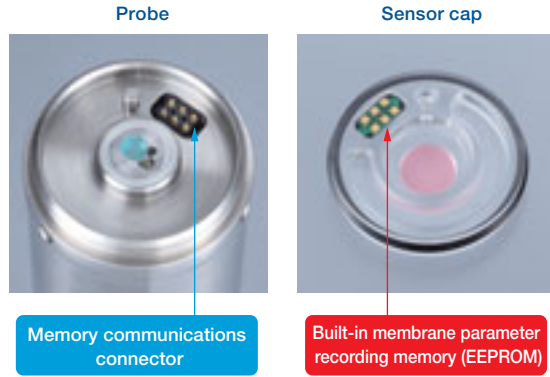
The light emission intensity will be strongest in the absence of oxygen, and will decrease by quenching if oxygen molecules are present. Light emission time shows the same relationship as strength of light emission intensity, being the longest in the absence of oxygen, and shortest in its presence. Oxygen 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.

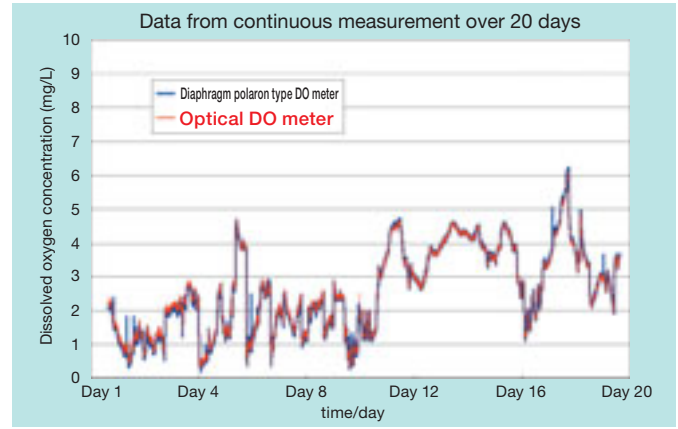
>> IC built-in memory sensor cap

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.

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.

FH-101
(Vertical type)

Float

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)

JDH-151

Accessories

◎ Extension cable

C-7E

◎ Relay box

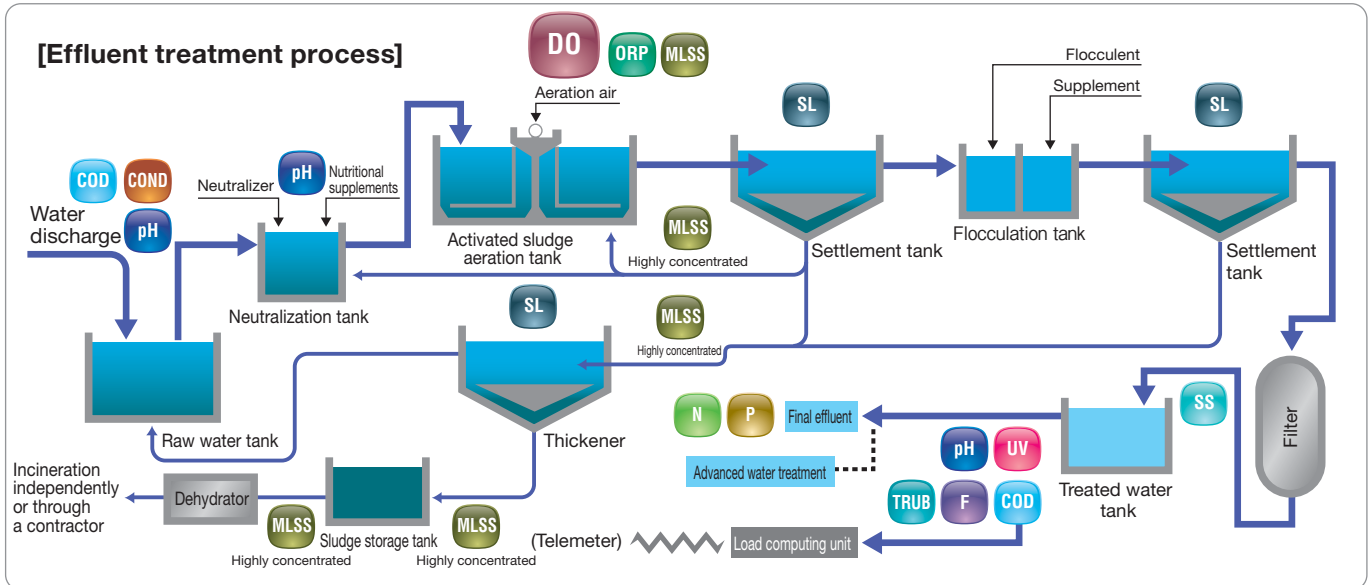
CT-25SS

◎ Mounting brackets

SP-601

MH-60

[Effluent treatment process]

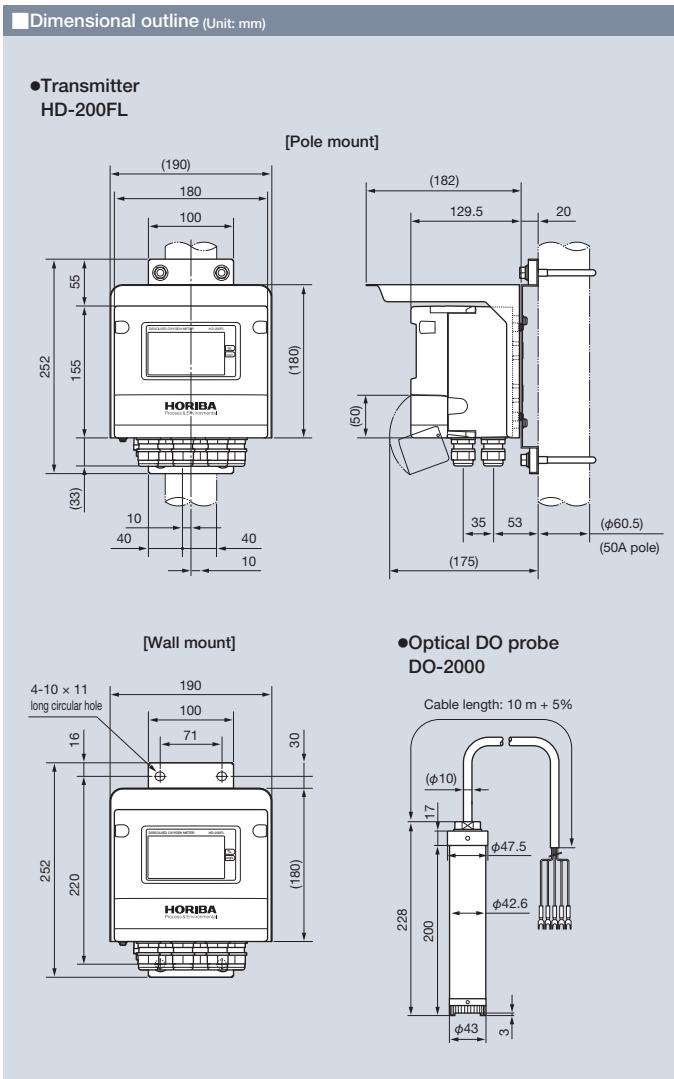


| ■ Indication converter specifications | |
|---------------------------------------|--|
| Model | HD-200FL |
| Measuring method | Optical (fluorescent) |
| Measuring range | DO: 0 to 20 mg/L Resolution: 0.01 mg/L |
| | Saturation: 0 to 200% Resolution: 0.1% |
| | Temperature: 0 to 50°C Resolution: 0.1°C |
| 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 arrester (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) |



| ■ 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.

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