

SPECIFICATION SHEET



pH Electrode for Bioprocess DO Electrode for Bioprocess

ELP-045/046/047/048
ELD-011/012/013/015

The pH electrode and dissolved oxygen (DO) electrode for bioprocessing (fermentation) must be sterilized repeatedly with each container, and therefore must be constructed to withstand high pressure at high temperature.

Our bioprocess electrode exhibits excellent long-term performance even under such severe conditions of use.

Since both electrodes are lead-free, they are environmentally friendly.

Features of pH electrodes

- The glass electrode is safe to handle because the glass electrode uses a Strong film with mechanical strength about 10 times higher than that of our conventional glass film.
- The reference electrode is a KCl-free gel type that is easy to maintain. In addition, because of the double junction, the potential is stabilized and the silver ion trap (chelating resin) is used. The junction is hard to clog.
- The cooking sterilization temperature corresponds to 135°C.
- The mini-jar insertion type has four lengths. Stainless steel holders and welded sockets are also available for mounting on the side of the tank.

Features of Dissolved Oxygen (DO) electrodes

- The membrane of a polarographic electrode, which was previously a single-layer FEP membrane have realized with a SUS mesh use of sandwiched high-strength laminated films for improved durability and longer life.
- Since the internal electrode (working electrode and counter electrode) was made into a cartridge for the first time (Japanese Patent No. 4405653), only the electrodes can be replaced, reducing running costs.
- Since the electrode body is made of SUS316L, the electrode body can be handled safely.
- There are no pressure balancing holes, so contamination does not occur.
- The mini-jar insertion type has three lengths. In addition, tank side mounting type and welded socket type are provided.



pH/DO electrode for the mini-jar

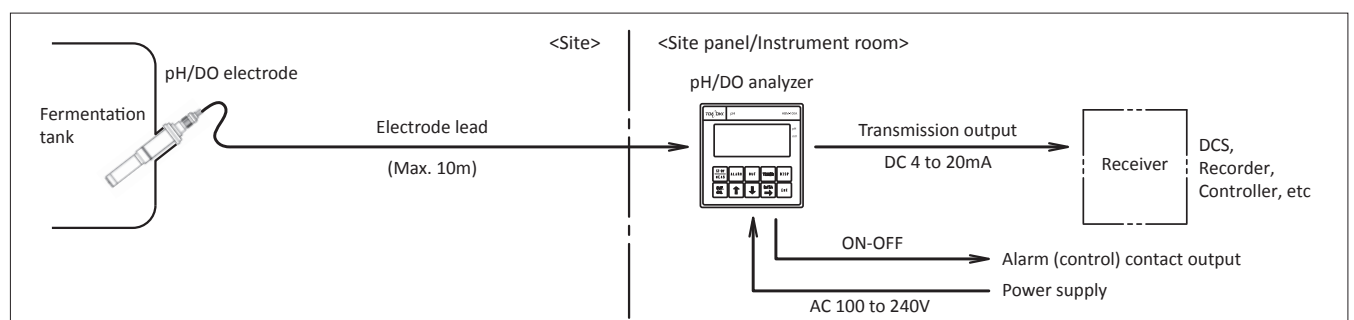


pH detector for the tank



Dissolved Oxygen (DO) detector for the tank

System configuration



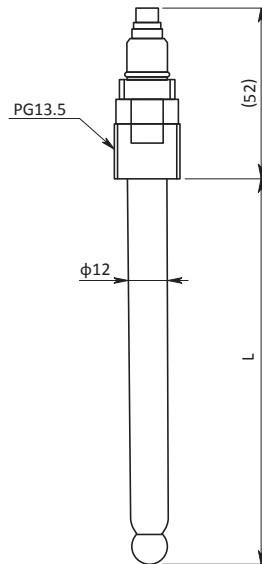
■ pH Electrode for Bioprocess(Fermentation)

● For mini-jar ELP-045/046/047/048

Standard Specifications

Measurement method : Glass electrode method
 Measurement range : pH 0 to 14(At the time of precision measurement pH 0 to 12)
 Use Temperature : Measured at 0 to 50°C
 : Sterilized at 135°C or less
 Use Pressure : Measured at 37°C 0.5MPa or less
 : Sterilized at 135°C 0.3MPa or less
 Internal electrode : Silver-silver chloride
 Inner Solution for : 3.3mol/L KCl gels
 Reference Electrode
 Material of wetted parts : glass, ceramics
 Lead wire : Leadless type, Connector connection
 Outer diameter of : $\phi 12$
 electrode glass part
 Mounting method : Insertion type
 Dimensions under : As shown in the
 thread : right figure

Model	L (mm)
ELP-045	120
ELP-046	220
ELP-047	320
ELP-048	420

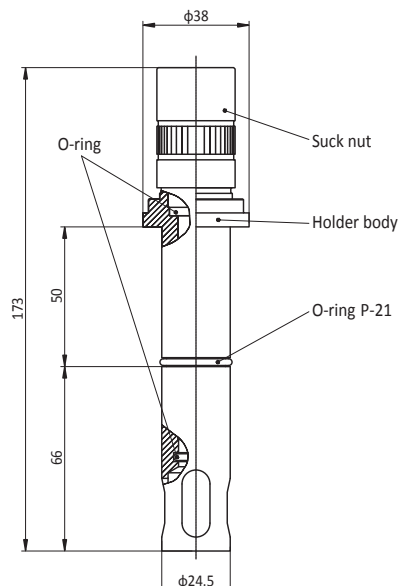


Mounting example for mini-jar

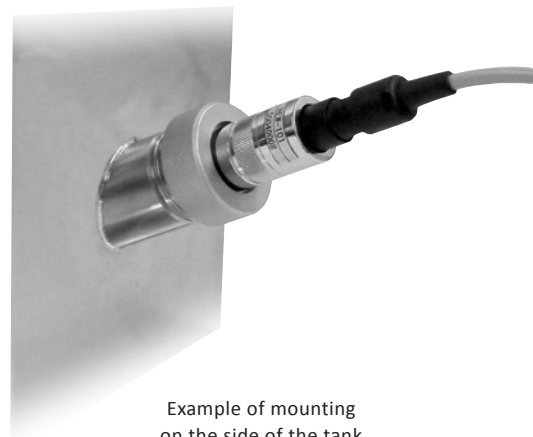
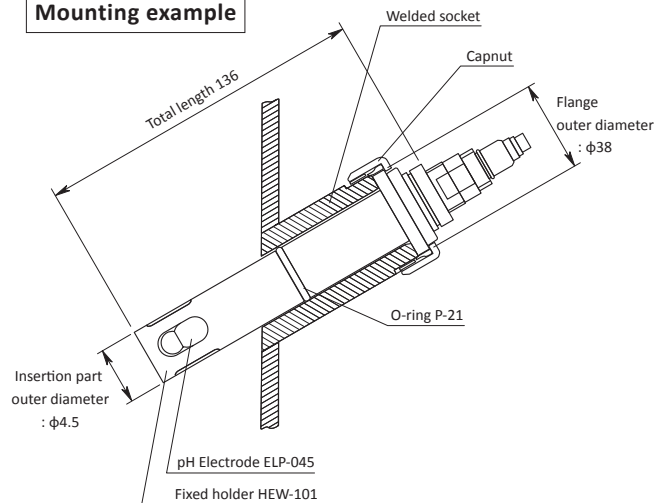
● Fixed holder for tank HEW-101

Standard Specifications

Combined Electrode : ELP-045
 Material of wetted parts : SUS316L
 Mounting flange : $\phi 38$
 outer diameter
 Insertion part outer : $\phi 24.5$
 diameter
 O ring for seal : P21 FKM
 Size below flange : 116mm

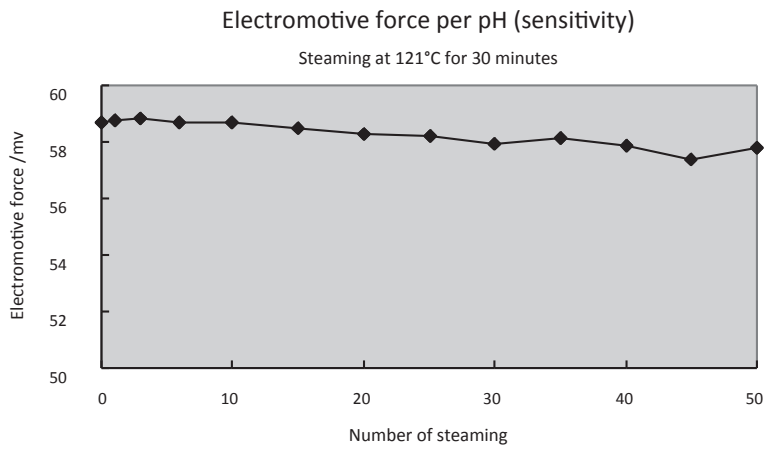
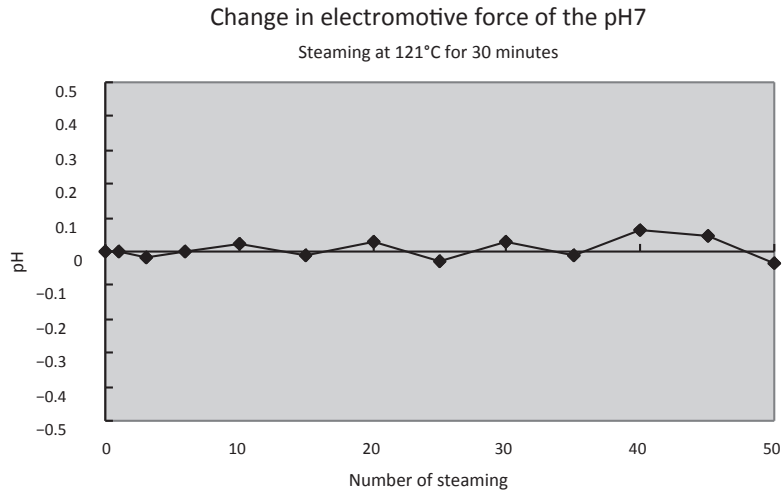


Mounting example



Example of mounting on the side of the tank

● Steaming test data

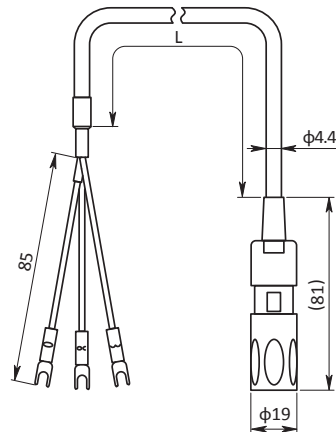


* Steaming conditions: Steaming is performed 50 times at 121°C for 30 minutes.

● The special cable ELW-046/047/048/049

Standard Specifications

Lead wire insulation : Heat resistant PVC $\phi 4.4$
and Outer Diameter
Length : 1m/3m/6m/10m
Connection of : Arrow-shaped crimp terminal (M3) \times 3
converter side
Connector structure : Drip-proof type



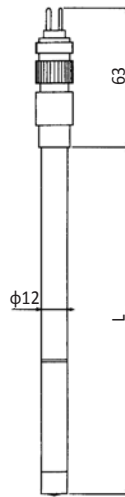
Model	L (m)
ELW-046	1
ELW-047	3
ELW-048	6
ELW-049	10

■ DO Electrode for bio-process (fermentations)

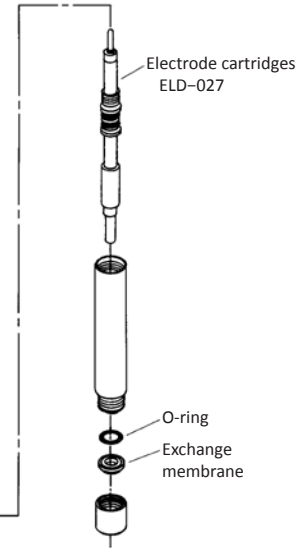
● For mini-jars ELD-011/012/013

Standard Specifications

Measurement method : Polarographic
 Measurement range : 0 to 20mg/L
 Service temperature : 0 to 50°C at the time of measurements
 range Sterilization Temperature: 130°C or less
 Operating pressure range : Measured; 0.05MPa or less at 37°C
 Sterilization at 130°C; 0.27MPa or less
 Inner Electrode : Pt-Ag
 Electrolyte : Neutral solutions containing 0.1 mol/
 L-KCl
 Materials of liquid receiving part : SUS316L, silicone rubbers, FEP
 Lead wire : Leadless type, connector connection
 Outer diameter of : $\phi 12$
 Electrode (insertion)
 Mounting method : Insertion type
 Inserting General : ELD-011...160mm
 Manager ELD-012...250mm
 ELD-013...320mm



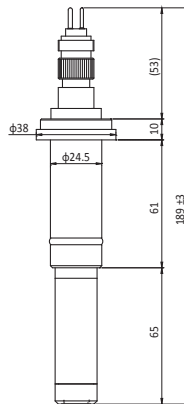
Exploded view



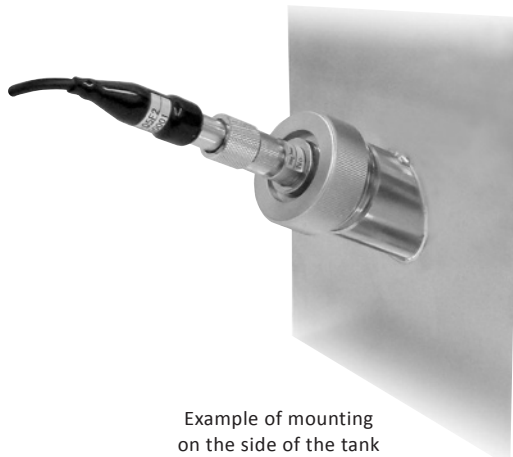
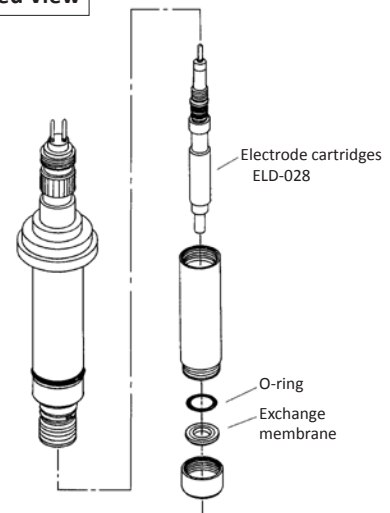
● For tanks ELD-015

Standard Specifications

Outer diameter of : $\phi 24.5$
 Electrode (insertion)
 Mounting method : Tank side insertion type
 Sealing O-ring : P21 FKM
 Length below flange : 126mm

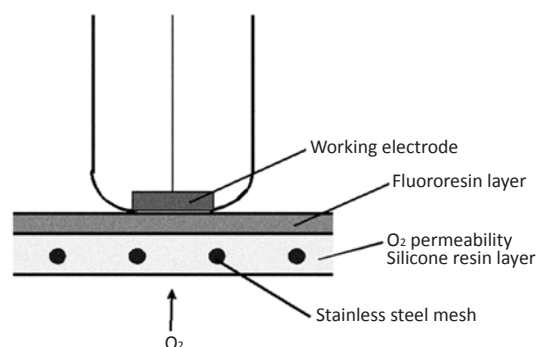


Exploded view



Example of mounting on the side of the tank

Schematic cross-sectional view of the laminated film



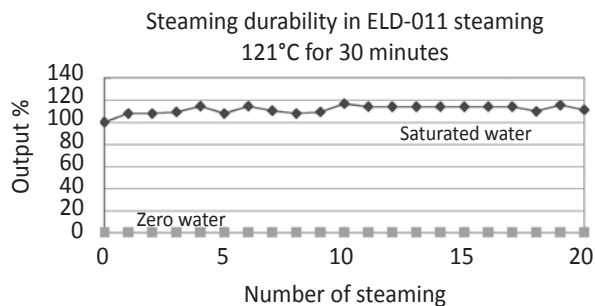
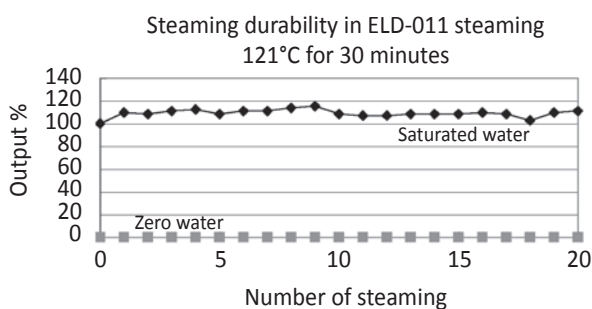
● Standard accessories

Model	Name	Amount
ELD-011 ELD-012 ELD-013	Exchange membrane for φ12 (with O-ring)	5
	Electrolyte 50mL	1
	Syringe (1mL)	1
	Blind cap	1
	O-ring (P10A)	1
ELD-015	Exchange membrane for φ25 (with O-ring)	5
	Electrolyte 50mL	1
	Syringe (2.5mL)	1
	Blind cap	1
	O-ring (P10A)	1

● Supplements

Model	Name	code No.	Amount
ELD-011 ELD-012 ELD-013	Exchange membrane for φ12 (with O-ring)	OCA00001	5
	Electrolyte 50mL	143A461	1
	Electrode cartridges (for φ12) ELD-027	ELD027	1
	Sodium Sulfit	143A030	1
	Exchange membrane for φ25 (with O-ring)	OCA00002	5
ELD-015	Electrolyte 50mL	143A461	1
	Electrode cartridges (for φ25) ELD-028	ELD028	1
	Sodium Sulfit	143A030	1

● Steaming test data

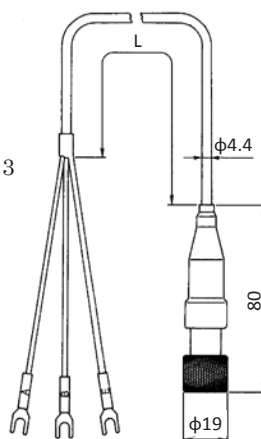


*Steaming condition: Steaming at 121°C for 30 minutes is performed 20 times without replacing the diaphragm and Electrolyte.

● The special cable ELW-074

Standard Specifications

Lead wire insulation : Heat Resistance PVC φ4.4 and Outer Diameter
 Length : 1m/3m/6m/10m
 Connection of : Arrow-shaped crimp terminal (M3) × 3 converter side
 Connector structure : Drip-proof type



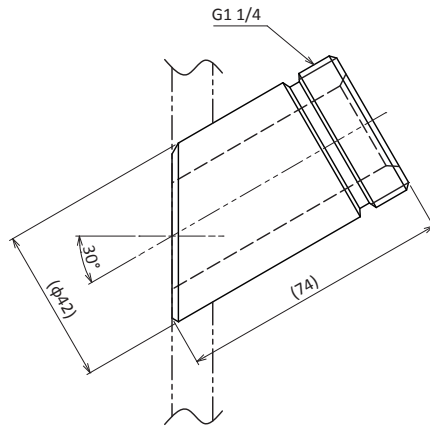
■ Mounting Equipment

Equipment to attach to the tank for the pH detector HEW-101 type (built-in pH Electrode ELP-045 type) and DO (DO) detector ELD-015 type for mounting to the side of the tank.

Welded sockets, cap nuts, blind plugs, etc. are provided.

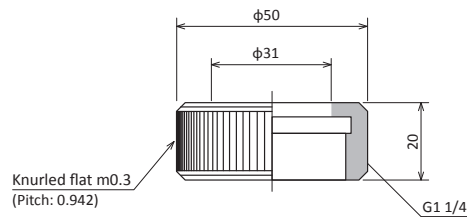
● Welded socket (for tank) Code No.: X0134900

Material : SUS316L
 Mounting angle : 30°
 Fixing screw : G1 1/4
 standard



● Weld socket cap nut Code No.: X0110100

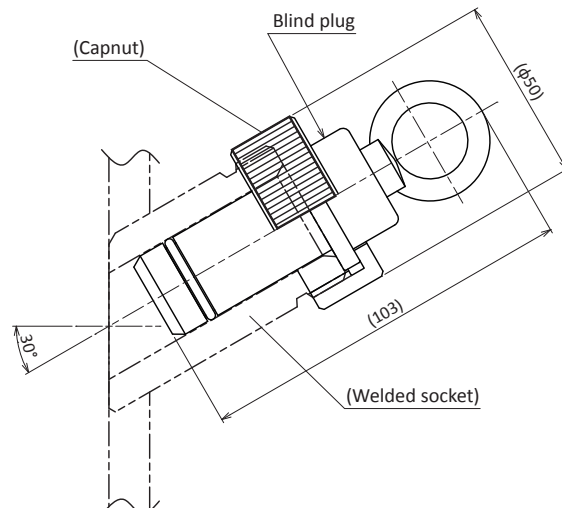
Material : BS
 Fixing screw standard : G1 1/4



● Blind plug (for tank) Code No.: BP-0149

This plug is inserted into the socket of the tank when the detector is removed.

Material : SUS316L
 Capnut : BS G1 1/4
 O-ring : P21 FKM
 Eyebolt : SUS304 M8



■ Calibration equipment

Calibration kits for calibrating pH meters and dissolved oxygen (DO) meters for bioprocesses, and portable pH meters and portable dissolved oxygen (DO) meters for cross-checking are available.

● pH calibration kit

The calibration kit for the pH meter consists of a pH7 reference solution for two-point calibration and a pH4 or pH9 reference solution and beaker. Select pH4 standard solution kit for standard measurement and pH9 standard solution kit for alkaline measurement.

Applications	Products Name	Code No.
pH Standard	pH Calibration 4-7 Kit (AN)	6531680K
pH alkali	pH calibration 7-9 kit (BN)	6531690K

Kit breakdown table

○ pH Calibration 4-7 Kit (AN)	Code No.	Quantity
Polyethylene beaker (500mL)	(136C035)	3
pH4 standard solution (500mL)	(143F191)	1
pH7 standard solution (500mL)	(143F192)	1
Powder reagent for pH4 reference solution (5 bags/set for 500mL)	(143F060)	1
Powder reagent for pH7 reference solution (5 bags/set for 500mL)	(143F061)	1

○ pH calibration 7-9 kit (BN)	Code No.	Quantity
Polyethylene beaker (500mL)	(136C035)	3
pH7 standard solution (500mL)	(143F192)	1
pH9 standard solution (500mL)	(143F193)	1
Powder reagent for pH7 reference solution (5 bags/set for 500mL)	(143F061)	1
Powder reagent for pH9 reference solution (5 bags/set for 500mL)	(143F062)	1

● Dissolved Oxygen (DO) Calibration Kit

There are two calibration kits for the DO meter: one is for span calibration with air saturated water (A) and the other is for span calibration in air (B).

Product name	Applications	Code No.
DO calibration kit (A)	For span calibration with air saturated water	6151840K
DO calibration kit (B)	For span calibration in air	6151850K

[Contents of DO calibration kit (A)]


Item No.	Product name	Code No.	Quantity	Notes	Applications
1	Special grade anhydrous sodium sulfite	143A002	1	500 g bottle	For preparing zero water
2	Beaker	136C035	3	500mL made of PE	For calibration and cleaning
3	Air pump	125B248	1	Dry cell type	For air saturated water preparation
4	Dry cell	106A003	2	Single 1.5V	For air pump

[Contents of DO calibration kit (B)]

Item No.	Product name	Code No.	Quantity	Notes	Applications
1	Special grade anhydrous sodium sulfite	143A002	1	Contains 500g	For preparing zero water
2	Beaker	136C035	3	500mL made of PE	For calibration and cleaning

● Por table pH meter


For pH cross check
HM-40P



- Power-saving design, rechargeable batteries also available
- Waterproof construction (IP67:1m, immersion allowed for 30minutes)
- Data memory function (1500 data)
- Measurement range pH:pH0.00 to 14.00, 0 to 100°C

● Portable dissolved oxygen (DO) meter

For DO cross check
DO-31P



- Power-saving design, rechargeable batteries also available
- Waterproof construction (IP67:1m, immersion allowed for 30minutes)
- Data memory function (1000 data)
- Measurement range 0 to 20.00 mg/L, 0 to 200%, 0 to 50°C

■ Combined pH transmitter

Panel Mount pH Analyzer
HBM-100B



- Compact DIN96 size panel mount type
- Automatic diagnosis of the electrode status
- 2-point contact signal, DC 4 to 20mA output
- Manual temperature compensation (set sample temperature) function
- One-touch automatic calibration, various self-diagnosis functions
- Meas. range: pH -1 to 15

■ Combined DO transmitter

Panel Type DO Analyzer
OBM-102A



- Panel type DO analyzer in a compact DIN 96 size
- 2-point contacts signal, 4 to 20 mA output
- Manual temperature compensation (set sample temperature) function
- One-touch automatic calibration, various self-diagnosis functions
- Meas. range: Minimum : 0 to 1 mg/L
Maximum : 0 to 50 mg/L

Industrial pH Transmitter
HBM-160B (4-wire)



- Robust die-cast aluminum enclosure (IP65 equivalent)
- Automatic diagnosis of the electrode status
- 2-point contact signal, DC 4 to 20mA output
- Manual temperature compensation (set sample temperature) function
- One-touch automatic calibration, various self-diagnosis functions
- Meas. range:pH -1 to 15

Industrial DO Transmitter
OBM-162A (4-wire)



- Robust die-cast aluminum enclosure (IP65 equivalent)
- 2-point contact signal, DC 4 to 20mA output
- Manual temperature compensation (set sample temperature) function
- One-touch automatic calibration, various self-diagnosis functions
- Meas. range: Minimum : 0 to 1 mg/L
Maximum : 0 to 50 mg/L



DKK-TOA CORPORATION



CAUTION

Please read the operation manual carefully before using products.

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