DO70G optical dissolved oxygen sensor is designed for use in water treatment plants such as sewage treatment works and effluent activated sludge processes. This optical sensor has a fast response time and good long-term stability, and features replaceable sensor cap and cable for easy maintenance. A temperature sensor is incorporated for compensation. The DO70G sensor can be used in either the PB350G/PB360G floating ball holder or in the DOX8HS submersion type holder.

Features
DO Sensor with Long-term Stability and Short Stabilization Time
- A optical DO sensor that uses a phase measurement method and realizing stable measurements over a long period of time.
- Measuring range of 0 to 25 mg/L.
- A sensor cap that is easily replaceable by anyone.

System
Refer to GS 12J05D02-00E for DO402G dissolved oxygen converter and GS 12J05C02-00E for holders.

CAUTION
Installation Location of Holders (Submersion Type, etc)
The holder should be used in a place that is as vibration free as possible. Using the holder in a place where it is affected by vibration, may result in damage to the holder.
## GENERAL SPECIFICATIONS

Object of Measurement:
Concentration of oxygen dissolved in sewage and drainage (water);
cannot be used with organic solvents.

Principle of Measurement:
Optical (fluorescence) measurement method

Measurement Range: 0 to 25 mg/L
Note: The measurement range must be entered through the dissolved oxygen converter.

Temperature of Measurement water: 0 to 50°C
Flow rate: 2 m/sec or less
Pressure: 0 to 500 kPa
Resistance Temperature Detector (RTD): 22k NTC

Construction:
Sensor unit; Stainless steel (316L SS)
O-ring; Ethylene Propylene Rubber (EPDM)
Permeable membrane; Silicone resin
Cable shielding; Heat-resistant flexible PVC

Sensor Cable:
For code -03E, -05E, -10E
Length; 3 m, 5 m, 10 m
Terminal shape; pin (for converter), M4 Ring (for power supply unit)

For code -05D, -10D, -15D, -20D
Length; 5 m, 10 m, 15 m, 20 m
Terminal shape; pin

Weight:
Sensor; Approx. 0.1 kg
Cable:
For -03E: Approx. 0.1 kg/m + 0.1 kg
For -05D: Approx. 0.8 kg/m + 0.8 kg

Power supply
DO402G; from DOX10 Power Supply Unit
FLX402; from FLXA402

### CHARACTERISTICS

Repeatability: 0.1 mg/L or 3% FS, whichever is greater

Temperature Compensation Error:
Within ±3% FS for a ±5°C change in the range of 0 to 40°C

Response Time: Within 120 sec. (90% response) (including sensor)

## GENERAL SPECIFICATIONS, OTHERS

• DOX10 Power Supply Unit
Used for supplying power to DO70G.
Construction: JIS waterproof (IP53)
Case material: Fiberglass reinforced polycarbonate resin
Case color: Grayish green (Munsell 2.5GY5.0/1.0)
Installation method:
Bracket mount (mounting bracket; Optional)
Wall mount (mounting bracket; Optional)

Electrical connections:
Watertight plastic gland with cable.
( applicable cable O.D.: ø6 ~ ø12)
Conduit adaptor (optional available)

Ambient temperature: -10 to 55°C
Humidity: 10 to 90% RH (no condensation)
Power supply: 100/115/230V AC 50/60 Hz
Acceptable range: Rated voltage ±15%
Output voltage: 24V DC ±1V
Terminal block: M4
Weight:
Body; Approx. 1.6 kg
Mounting bracket; Approx. 0.7 kg
Attached cable; Approx. 0.3 kg

**Note**
The DOX10 may not be usable depending on the relevant standard of your region. If you need to do so, use a power supply that meets the following specifications.

• Use a power supply that is appropriate for the relevant standard in your region.
• Use a power supply with an output voltage in the range of 24 V DC ± 10% and power consumption of 1 W or higher.
• For wiring the DO70G, connect the input and output cables of the 24 V power supply by separating them by a minimum spatial distance of 3 mm and creepage distance of 6 mm.

• DOX8W Calibration Set (optional)
This is necessary if the span calibration is to be done using a saturated dissolved oxygen solution.

<Contents>
Air pump, stirrer, stirring element, bubbler, clamp, beaker, and thermometer.

Note: The calibration set can be used in common regardless of the type of holder.
Note: Zero adjusting reagent (Parts number : L9920BR) is not included. Customer needs to prepare it by referring to the next page 4.Spare Parts.
## MODEL AND SUFFIX CODES

### 1. Optical Dissolved Oxygen Sensor

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix Code</th>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO70G</td>
<td>-120</td>
<td></td>
<td>120 mm</td>
</tr>
<tr>
<td>Type</td>
<td>-E</td>
<td></td>
<td>Always -E</td>
</tr>
<tr>
<td>Cable length</td>
<td>-00N -03E -05E -10E -05D -10D -15D -20D</td>
<td>-00N -03E -05E -10E -05D -10D -15D -20D</td>
<td>No cable -03E 3 m (*1) -05E 5 m (*1) -10E 10 m (*1) -05D Digital 5 m (*2) -10D Digital 10 m (*2) -15D Digital 15 m (*2) -20D Digital 20 m (*2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/S3</td>
<td>Submersion type holder (stainless steel)</td>
</tr>
<tr>
<td>/PP</td>
<td>Submersion type holder (polypropylene)</td>
</tr>
<tr>
<td>/FPP</td>
<td>Float holder (polypropylene)</td>
</tr>
<tr>
<td>/SCT</td>
<td>Stainless steel tag plate</td>
</tr>
</tbody>
</table>

*1: The power cable is +1.5m. (Refer to "DIMENSION")
*2: For connection to FLX4A02

### 2. Power Supply Unit

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix Code</th>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOX10</td>
<td>-U</td>
<td></td>
<td>Power supply unit</td>
</tr>
<tr>
<td>Power supply</td>
<td>-U</td>
<td></td>
<td>Always -U</td>
</tr>
<tr>
<td>Cable length</td>
<td>-00 -15</td>
<td>-00 -15</td>
<td>No cable -1.5m (DO402G power supply use)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/P</td>
<td>Pipe mounting bracket</td>
</tr>
<tr>
<td>/W</td>
<td>Wall mounting bracket</td>
</tr>
<tr>
<td>/SCT</td>
<td>Stainless steel tag plate</td>
</tr>
<tr>
<td>/CB1</td>
<td>G1/2, 1pcs</td>
</tr>
<tr>
<td>/CD1</td>
<td>1/2 NPT, 1pcs</td>
</tr>
<tr>
<td>/CF1</td>
<td>M20 x 1.5, 1pcs</td>
</tr>
</tbody>
</table>

Note: The DOX10 may not be usable depending on the relevant standard of your region.

### 3. Calibration Set

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix Code</th>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOX8W</td>
<td></td>
<td>*A</td>
<td>Calibration set</td>
</tr>
</tbody>
</table>

### 4. Spare Parts

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Part No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor cap</td>
<td>K9679AN</td>
<td>Please shade the light during safe keeping. The recommendation exchange cycle of a sensor cap is 1 time in 6 to 12 months.</td>
</tr>
<tr>
<td>Zero adjusting reagent</td>
<td>L9920BR</td>
<td>Sodium sulfite 500g</td>
</tr>
<tr>
<td>O-Ring (EPDM)</td>
<td>K9691KB</td>
<td>For Adaptor Mounting</td>
</tr>
</tbody>
</table>

| Adaptor            | K9148NA  | For submersion type holder (stainless steel)                           |
|                    | K9148NB  | For submersion type holder (polypropylene)                            |
|                    | K9679CA  | For float type holder (polypropylene)                                 |

| Sensor cable       | K9679BA  | 3 m (Cable length: -03E)                                              |
|                    | K9679BB  | 5 m (Cable length: -05E)                                              |
|                    | K9679BC  | 10 m (Cable length: -10E)                                             |

|                      | K9679BD  | 5 m (Cable length: -05D)                                              |
|                      | K9679BE  | 10 m (Cable length: -10D)                                             |
|                      | K9679BF  | 15 m (Cable length: -15D)                                             |
|                      | K9679BG  | 20 m (Cable length: -20D)                                             |
DIMENSION

DO70G Optical Dissolved Oxygen Sensor

Variopin connector

Unit: mm

Cable length (code): -03E, -05E, -10E

Approx. 70
Approx. 90
L (3 m, 5 m, 10 m)

Cable length (code): -05D, -10D, -15D, -20D

Approx. 100
L (5 m, 10 m, 15 m, 20 m)

Adaptor (/S3, /PP)

Adaptor (/FPP)

Weight

PP: Approx. 20 g
SUS: Approx. 173 g

Weight

PP: Approx. 65g

Unit:mm

PPg13.5 (DIN40430)

Pgs13.5 (DIN40430)

Unit:mm

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GS 12J05D04-01E 4th Edition Oct.23, 2018-00
DOX10 Power Supply Unit

Detailed drawing of cable for Power Supply Unit

Attached Cable with DOX10 (Not supplied if suffix code “-00-N” is selected)

<table>
<thead>
<tr>
<th>Model and Suffix Code</th>
<th>L (mm)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOX10 - U - 00 - N</td>
<td>No cable</td>
<td></td>
</tr>
<tr>
<td>DOX10 - U - 15 - N</td>
<td>Approx. 1500</td>
<td></td>
</tr>
</tbody>
</table>

Weight: Approx. 0.3kg (1500 mm)
Pipe Mounting Bracket for Power Supply Unit (Option) (Option Code: /P)

Unit: mm

Pipe mounting hardware 1
- 5-ø6.5 holes
- 2-ø5.5 holes
- ø6.5×13 hole

Pipe mounting hardware 2
- 2-ø9±0.5 holes
- 4-ø10 holes

4-M5 screw

Nominal 50 A (O.D. ø60.5 pipe)
Weight: 0.7 kg
Wall Mounting Bracket for Power Supply Unit (Option) (Option Code: /W)

WIRING DIAGRAM EXAMPLE
Example with DO402G

*1: Always use a shielded cable with an OD of 6 to 12 mm.
*2: Be sure to ground the DO converter case grounding terminal (grounding resistance of 100Ω or less).
*3: Always use a cable with an OD of 6 to 12 mm.
*4: Length of the cable between DO402G and DOX10 is 1.5 m.
*5: At the circumstance influenced from noise (e.g. long transmission of contact input), insertion of a relay near DO402G is recommended for insulating.
*6: Refer to GS of “DO402G (GS 12J05D02-00E)” when contact input of DO402G is used.
*7: The DOX10 may not be usable depending on the relevant standard of your region. If you need to do so, refer to a power supply that meets the following specifications.
Inquiry Specifications Sheet for Optical Dissolved Oxygen Sensor

For inquiry on the Yokogawa optical dissolved oxygen sensor, please tick (✓) the appropriate box (☐) and fill up the relevant information in the blanks.

1. General
   Name of your company: 
   Name of inquirer: 
   Name of plant: 
   Measuring point: 
   Purpose of use: 
   □ Indication  □ Recording  □ Alarm  □ Control
   Power supply: V AC

2. Measurement Conditions
   (1) Liquid temperature: to , normal [°C]
   (2) Liquid pressure: to , normal [kPa]
   (3) Flow rate: to , normal [m/s]
   (4) Name of liquid to be measured:
   (5) Components of liquid to be measured:
   (6) Other conditions:

3. Installation environment
   (1) Ambient temperature:
   (2) Location: 
   □ Outdoors  □ Indoors
   (3) Other information:

4. Requirements
   (1) Measurement range: 
   (2) System component selection:
   □ Sensor  □ Converter  □ Power supply unit  □ Holder  □ Cleaning system
   □ Calibration set
   (3) Length of sensor cable: 
   □ 3 m  □ 5 m  □ 10 m
   (4) Type of holder:
   □ Submersion  □ Floating ball
   (5) Cleaning method:
   □ No cleaning  □ Jet cleaning
   (6) Other requirements:

Subject to change without notice.