

Dissolved Oxygen Analyzers D0402G/D0202G/D0202S



D0402G

4-wire dissolved oxygen analyzer

D0202G, D0202S

2-wire dissolved oxygen analyzer

Bulletin 12J05A03-01E

www.yokogawa.com/an/

“...Because water quality is critical to your process and your world...”

As a global citizen, Yokogawa is fully aware that water is a precious natural resource and as a global supplier, we know that water quality is a critical factor in the biotechnical process industries. Our response to growing environmental and quality concerns is the EXA DO402 and DO202 dissolved oxygen analyzer systems. Each system is designed to monitor water quality in water and wastewater treatment plants and in biotechnical processes requiring precise measurement of oxygen levels.

Yokogawa's Dissolved Oxygen analyzer systems have been developed with broad range flexibility making them equally suitable for measurement in aerobic and anaerobic water treatment processes. The EXA Dissolved Oxygen analyzers give accurate measurement and have built-in compensation for factors that can influence oxygen levels including temperature, barometric pressure and salinity levels. These automatically compensated values can be presented as parts per million, mg/litre, ppb or as percentage saturation.

The key word to describe Yokogawa's Dissolved Oxygen analyzers is reliability, at both ends of the analytical process. The sensor solutions give fast, precise response and are designed for reliable performance with minimal maintenance. The EXA transmitters combine microprocessor-based diagnostics with an easy operator interface, guiding operators through programming menus with yes/no dialogues.



Galvanic cell sensors for water quality monitoring

The EXA Dissolved Oxygen water quality solution starts with the Yokogawa DO30 sensor, which gives continuous accurate measurement with minimal maintenance. It is designed for use in water treatment plants such as sewage treatment works, effluent activated sludge processing and potable water treatment. It is also well suited to monitoring of the quality of surface waters such as in rivers and lakes, and in intake protection and fish farming. Depending on the application, the DO30 sensor is supplied with either the PB30 floating ball fitting or FD30 immersion fitting.



“...continuous reliable performance...”

FD30 Immersion fitting

When the DO30 sensor is installed in tanks, open vessels or drains, an FD30 PVC immersion fitting is placed at the measurement point. This point needs to be selected so that the sensor remains immersed at all times. The DO30 sensor is supplied with a cable in lengths of between 0.5 and 2.0 m and if required, with a flange mounting.

When supplied without a flange, a mounting set and jet cleaner are offered as options. The jet cleaner is recommended for applications with heavy solids in order to prevent build-up of deposits and consequently, fouling of the sensor membrane. The membrane can be monitored for integrity using the DO402 or DO202 diagnostics.

Regular cleaning by spraying water or air can extend the period of continuous measurement and reduce maintenance. The EXA DO402 analyzer has a built-in auto-wash timer for cleaning of the sensor membrane. The sprayer has a built-in (no return) valve to prevent process liquid penetrating the cleaning system.



Floating ball fitting

The PB30 floating ball fitting ensures accurate measurement with minimal maintenance. The constant movement of the floating ball with wave action at the tank surface provides good flow for sampling at the membrane surface. The floating ball also assures a constant insertion depth without edges or hollows to collect deposits that cause fouling.

The sensor is surrounded by a brass ring, which facilitates checking the membrane integrity. As the sensor and floating ball are precisely aligned, they can be lifted out of the water for easy cleaning. But basically, maintenance is easy and only periodic inspections and calibrations are required. For convenience, the PB30 floating ball can be fitted with a winch mounting mechanism, specified as a complete unit with the sensor and cable.



“...Yokogawa’s DO402, DO202 analyzers and application specific sensors require a minimum of maintenance...”

Polarographic sensors for bio-processing applications

Dissolved oxygen is an effective way of monitoring various biochemical processes. But because of the harsh process conditions, many DO sensors are unreliable and require constant maintenance which results in increased costs and the lifetime of the sensor is short. There is now an effective solution; the Yokogawa EXA DO402 and DO202 analyzers with the Oxyferm (ppm) and Oxygold (ppb*) sensor. This durable sensor has been designed specifically for harsh biotechnical process conditions to give long-term stability with minimal maintenance.

Most dissolved oxygen sensors operate on the principle of oxygen reduction at the surface of a noble metal electrode (cathode). But this design is known to lead to problems during calibration, such as interference from other substances. These problems have been addressed in the Oxyferm and Oxygold electrodes by covering the polarographic sensor with a gas permeable membrane. This membrane technology makes the difference. The OXYferm and OXYgold have a laminated membrane, comprising a thin layer of TEFLON for high selectivity and fast response, silicone rubber for elasticity, and steel mesh for mechanical stability. This unique combination ensures that the membrane can withstand the rigors of steam sterilisation up to a temperature of 130°C.

* ppb sensor can be used with the DO202 only.

Model and Suffix Codes

DO402G

Model	Suffix Code	Option Code	Description
DO402G	-----	-----	Dissolved Oxygen Converter
Type	-1	-----	General
Power Supply	-1	-----	115V +/-15% AC, 50/60 Hz
Voltage	-2	-----	230V +/-15% AC, 50/60 Hz
	-5	-----	100V +/-15% AC, 50/60 Hz
Language	-E	-----	English
Options	Mounting Hardware	/U	Pipe, wall mounting bracket (Stainless steel)
		/PM	Panel mounting bracket (Stainless steel)
	Hood	/H3	Hood for sun protection (Carbon steel)
		/H4	Hood for sun protection (Stainless steel)
	Tag Plate	/SCT	Stainless steel tag plate
	Conduit Adapter	/AFTG	G 1/2
		/ANSI	1/2 NPT
		/X1	Epoxy baked finish ^(*)

*1 The housing is coated with epoxy resin.

Refer to GS12J5D2-E for detail.

DO202G

Model	Suffix Code	Option Code	Description
DO202G	-----	-----	2-wire Dissolved oxygen transmitter
Type	-A	-----	mA with HART
	-P	-----	Profibus
	-F	-----	FF
Language	-E	-----	English
Options	Mounting Hardware	/U	Pipe, Wall mounting bracket (Stainless steel)
		/PM	Panel mounting bracket (Stainless steel)
	Hood	/H	Hood for sun protection (Carbon steel)
		/H2	Hood for sun protection (Stainless steel)
	Tag Plate	/SCT	Stainless steel tag plate
	Conduit Adapter	/AFTG	G 1/2
		/ANSI	1/2NPT
		/TB	Screw terminal ^(*)
		/X1	Epoxy baked finish ^(*)

*1 It can be specified when the suffix code -A is selected.

*2 The housing is coated with epoxy resin.

DO202S

Model	Suffix Code	Option Code	Description
DO202S	-----	-----	2-wire Dissolved oxygen transmitter
Type	-A	-----	Intrinsically safe mA with HART
	-P	-----	Intrinsically safe Profibus
	-F	-----	Intrinsically safe FF
	-B	-----	Non Incendive FF ^(*)
	-N	-----	Non Incendive mA with HART ^(*)
	-D	-----	Non-Incendive Profibus ^(*)
Language	-E	-----	English
Options	Mounting Hardware	/U	Pipe, wall mounting bracket (Stainless steel)
		/PM	Panel mounting bracket (Stainless steel)
	Hood	/H	Hood for sun protection (Carbon steel)
		/H2	Hood for sun protection (Stainless steel)
	Tag Plate	/SCT	Stainless steel tag plate
	Conduit Adapter	/AFTG	G 1/2
		/ANSI	1/2NPT
		/X1	Epoxy baked finish ^(*)

*1 The housing is coated with epoxy resin.

*2 When the instrument with Suffix Code "-B,-N,-D" is used, take measures so that the display window is not exposed to direct sunlight.

Refer to GS12J05C01-01E for detail.

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VigilantPlant is Yokogawa's automation concept for safe, reliable, and profitable plant operations. VigilantPlant aims to enable an ongoing state of Operational Excellence where plant personnel are watchful and attentive, well-informed, and ready to take actions that optimize plant and business performance.

YOKOGAWA ELECTRIC CORPORATION

World Headquarters

9-32, Nakacho 2-chome, Musashino-shi,
Tokyo 180-8750, JAPAN
Tel.: +81-422-52-6316 Fax.: +81-422-52-6619

World Sales Headquarters

9-32, Nakacho 2-chome, Musashino-shi,
Tokyo 180-8750, JAPAN
Tel.: +81-422-52-6339 Fax.: +81-422-52-6552
<http://www.yokogawa.com/an/>

YOKOGAWA ENGINEERING ASIA PTE. LTD.

5 Bedok South Road, Singapore 469270,
SINGAPORE
<http://www.yokogawa.com/sg/>

YOKOGAWA EUROPE B.V.

Euroweg 2, 3825 HD Amersfoort,
THE NETHERLANDS

<http://www.yokogawa.com/eu/>

YOKOGAWA CORPORATION OF AMERICA

2 Dart Road, Newnan, GA 30265-1094, U.S.A.

<http://www.yokogawa.com/us/>

YOKOGAWA AMERICA DO SUL LTDA.

Prace Acapulco, 31-Santo Amaro, Sao Paulo,
SP-BRAZIL, CEP-04675-190
<http://www.yokogawa.com.br/>

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