

DULCOTEST® sensors for dissolved oxygen

Reliable online measurement of dissolved oxygen – with DULCOTEST® sensors

LENNTECH
WATER TREATMENT SOLUTIONS

ProMinent®



Measuring ranges: 0.05 – 10 mg/l and 0.1 – 20 mg/l

The measured variable "dissolved oxygen" indicates the volume of gaseous oxygen physically dissolved in the aqueous phase in mg/l (ppm) or the oxygen saturation of water in %. The new type DO 3 is based on visual measurement of fluorescence and can be connected to the

process in an immersion pipe or in a flow fitting. It can be used to monitor water rich in oxygen, such as surface water, potable water as well as for the control of the aeration of aeration tanks in clarification plants.

Your benefits

- Efficient process management by precise online measurement in real-time
- A wide range of optimised connections of the sensors to the process
- Minimal maintenance due to visual measuring principle with type DO 3
- Maximum measuring sensitivity due to amperometric measuring principle with type DO 2
- Integrated temperature measurement (Pt 1000) compensates for the influence of temperature
- Diaphragm-covered electrodes for reduced dependence on flow and cross-sensitivities

Field of application

- Waste water treatment: Optimisation of the oxygen input into the aeration tank (biological stage) of clarification plants for energy saving
- Fish farming: Control of oxygen input in water that needs to be treated for aquaculture
- Potable water supply: Optimisation of the aeration stage in waterworks
- Environmental technology: Quality assessment of surface water

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Technical Data

Dissolved oxygen sensor DO 3-mA

Widely used sensor for the measurement of oxygen dissolved in water above 0.1 ppm to oxygen saturation. For installation in standard immersion pipes or in the bypass line of the process flow. Use in aeration tanks of clarification plants, waterworks, in fish breeding or to monitor surface water. Minimal maintenance due to visual measuring principle.

Your benefits

- Measured variable: Dissolved oxygen, minimal maintenance in contaminated water due to visual measuring principle
- Factory calibration stable for a long time. Calibration only needed following replacement of the visual sensor cap
- Rod-shaped construction for simple installation into standard immersion pipes and ProMinent bypass fittings
- No flow dependence and minimised faults due to ingredients in the water due to the visual measuring principle of quenching
- Long lifetime of fluorescence dye and simple replacement by replacement of the sensor cap

Measured variable	Dissolved oxygen
Calibration	On atmospheric oxygen or by reference measurement in the process water
Measuring accuracy	±0.1 mg/l
Response time sensor t_{90}	< 60 s at 25 °C from air to nitrogen
Temperature	0 ... 50 °C
Temperature correction	integrated Pt1000, fed to the outside
Max. pressure	2.0 bar
Intake flow	Measurement even possible without flow
Supply voltage	18...30 V DC
Electrical connection	Fixed cable, 10 m
Output signal	4...20 mA assigned to the measuring range, temperature-corrected, calibrated and galvanically isolated
Enclosure rating	IP 68
Process integration	a) Immersion by immersion pipe (PVC, d40/DN 32, provided by the customer). The connection is possible using the immersion pipe adapter (reducing nipple, order no. 356924) and the 45° angle (order no. 356335). Both parts are included in the scope of delivery: and can be ordered as an accessory (also see Accessories). b) Installation into ProMinent bypass fittings, type DGMa with mounting kit 791818 and type DLG III with mounting kit 815079
Measuring and control equipment	DACb as of firmware 02.01.01.02 with complete calibration functionality and all correction variables (temperature, salinity, air pressure, height above sea level). Displayed units: [ppm] and [% oxygen saturation] DACA, AEGIS II, D1C: calibration only possible by the input of a reference concentration determined from the process water. Only temperature correction variable. Displayed unit: [ppm]
Typical applications	Control of oxygen input into the aeration tank (clarification plant), control of oxygen input in water works, breeding of fish and shrimps, conditioning of the water of large aquaria in zoos, assessment of the biological condition of surface water.
Resistance to	Contaminated water and the following chemical compounds: carbon dioxide, hydrogen sulfide, sulfur dioxide, ethylene oxide and against gamma sterilisation.
Interference by	Oxidant (e.g. chlorine, chlorine dioxide, ozone) and many organic solvents (e.g. chloroform, toluene, acetone)
Measuring principle, technology	optical: Measurement of the relaxation time of a pulsed fluorescence beam

	Measuring range	Order no.
DO 3-mA-20 ppm	0.10...20.0 mg/l	1094609

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Dissolved oxygen sensor DO 2-mA

Sensor for the measurement of dissolved oxygen, specifically optimised for control of oxygen concentrations in the aeration tank of clarification plants. Integrated in a floating ball with a Venturi cleaning function.

Your benefits

- Measured variable: Dissolved oxygen, no interference by turbidity or discolouration by the amperometric measuring principle
- Integration of the encapsulated transducer into a specially shaped float ball, creating a Venturi flow, which helps to clean the sensor membrane
- Diaphragm-covered sensor minimises faults caused by changing flow or ingredients in the water
- Minimal maintenance and long service life due to encapsulated transducer (easily replaceable thanks to bayonet fitting)
- Measuring electrodes protected by pore-free, dirt-repellent diaphragm
- Long service life of the electrolyte at low to medium oxygen concentrations, as occur in the aeration tanks of clarification plants, by means of optimised membrane thickness
- Stable zero point by means of large diaphragm-covered electrodes

Measured variable	Dissolved oxygen
Calibration	either on oxygen or by reference measurement in the process water
Measuring accuracy	±0.05 mg/l
Response time sensor t₉₀	22 s
Temperature	0 ... 50 °C
Temperature correction	–
Max. pressure	1.0 bar
Intake flow	Minimum: 0.05 m/s
Supply voltage	12...30 V DC
Electrical connection	Fixed lead, 10 m
Output signal	4...20 mA measuring range calibrated, temperature-corrected and electrically isolated
Enclosure rating	IP 68
Process integration	As a float with venturi grooves to increase the flow of sample water for the self-cleaning of the sensor part. Supplied with adapter for connection to PVC pipes with outside diameter: 50 mm and railing bracket, also for PVC pipes with outside diameter: 50 mm (see accessories). The customer must provide the straight PVC tube and a 45 ° standard elbow for gluing to PVC pipes (outside diameter 50 mm).
Measuring and control equipment	D1C
Typical applications	Control of oxygen input into the aeration tank (clarification plant).
Resistance to	Contaminated water
Interference by	Oxidant (e.g. chlorine, chlorine dioxide, ozone) and many organic solvents (e.g. chloroform, toluene, acetone) and hydrogen sulfide
Measuring principle, technology	Amperometric, 2 electrodes, membrane-covered, encapsulated transducer integrated in ball float

	Measuring range	Order no.
DO 2-mA-10 ppm	0.05...10.0 mg/l	1020533

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