GREISINGER

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Englisch

Operating Manual

Optical oxygen transmitter

GODOX 200

Companies / Brands of the GHM

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GREISINGER
HONSBERG
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Keep for later use.

Inhalt

1 General Advice

Read this document carefully and get used to the operation of the device before you use it. Keep this document within easy reach near the device for consulting in case of doubt.

Mounting, start-up, operating, maintenance and removing from operation must be done by qualified, specially trained staff that have carefully read and understood this manual before starting any work.

The manufacturer will assume no liability or warranty in case of usage for other purpose than the intended one, ignoring this manual, operating by unqualified staff as well as unauthorized modifications to the device. The manufacturer is not liable for any costs or damages incurred at the user or third parties because of the usage or application of this device, in particular in case of improper use of the device, misuse or malfunction of the connection or of the device.

The manufacturer is not liable for misprints.

2 Intended use

The oxygen transmitter GODOX 200 is a robust measruring system for low maintenance /permanent operation in water.

In comparion to electrochemical sensors it operates without electrolyte, measuring is performend with luminiscence duration method. Together with the complete data calculation incl automatic ambient pressure and temperature compensation this is a hassle free package.

Measurement down to 30 m is possible.

Expected life time of the replaceable membrane in normal operation is 2 years.

The variant –PS is completely manufactured in PVC an therefore permanent seawater proof.

The instrument has to be supplied by a suitable voltage source (see specification).

The output is performed with two norm signal outputs, configurable between 4-20mA or 0-5 V.

2.1 Safety signs and symbols

Warning notices are marked in this manual as shown below:

 DANGER	Warning! Symbol warns of impending danger, death, serious bodily injury or serious property damage if ignored.
	Attention! Symbol warns of potential hazards or hazardous situations that can cause damage on the equipment or the environment if ignored.
	Note! Symbol indicates incidents that have an indirect impact on the operation or can trigger an unforeseen reaction if ignored.

2.2 Safety Instructions

This device has been designed and tested in accordance to the safety regulations for electronic devices. However, its trouble-free operation and reliability cannot be guaranteed unless the standard safety measures and special safety advises given in this manual will be adhered to when using it.

1. Trouble-free operation and reliability of the device can only be guaranteed if it is not subjected to any other climatic conditions than those stated under “Specification”.
   Transporting the device from a cold to a warm environment condensation may result in a failure of the function. In such a case make sure the device temperature has adjusted to the ambient temperature before trying a new start-up.
2. General instructions and safety regulations for electric, light and heavy current plants, including domestic safety regulations (e.g. VDE), have to be observed.

3. 

Whenever there may be a risk whatsoever involved in running it, the device has to be switched off immediately and to be marked accordingly to avoid re-starting. Operator safety may be a risk if:
- there is visible damage to the device
- the device is not working as specified
- the device has been stored under unsuitable conditions for a longer time

In case of doubt, please return device to manufacturer for repair or maintenance.

4. 

Do not use this product as safety or emergency stop device or in any other application where failure of the product could result in personal injury or material damage.
Failure to comply with these instructions could result in death or serious injury and material damage.

3 Scope of Supply

- Transmitter containing sensor body and read out electronics, connected via cable
- Storage bottle
- Operating manual

4 Installation

4.1 Terminal assignment of cable

Loose cable ends:

Nr	Color	Description
1	red	Supply +
2	black	Supply - / GND
3	green	Output O_2 concentration
4	white	Output O_2 saturation

The outputs can be changed from voltage (0-5 V) to current (4-20 mA) mode via switch

5 Operation

5.1 General information about the oxygen measuring

Please observe the following points when measuring dissolved oxygen:

- **For measuring remove the protective flask.**
- **Sensor may eventually have to be calibrated** (See ***Section 5.2,*** Calibration).
- **The temperatures of the sensor and of the liquid to be measured have to be identical** (if necessary, wait till temperatures match)
- **The sensor has to be submerged at least 3 cm into the liquid to being measured**

5.1.1 Temperature Compensation / Ambient Pressure Compensation

The unit is equipped with automatic temperature compensation.
The unit is equipped with automatic ambient pressure compensation – no adjustment of pressure or elevation is needed.

5.1.2 Salinity Compensation

The Optical DO converter also provides a salinity compensation switch between fresh water and seawater. The “saturation” outputs are not affected by the salinity compensation, only the “concentration” outputs are corrected for compensation through the compensation factor ***S***.
O2_concentration (mg/l compensated) = O2_concentration (mg/l, uncompensated) × ***S***
Compensation factor *S* is a function of temperature and salinity. For fresh water, salinity=0 ppt, *S*=1; for seawater, salinity=35 ppt, *S*=0.816 at 22°C.

5.2 Calibration

Location of calibration pinhole: (See „CAL“)

1) Place the Optical DO probe in the 100% saturation condition and wait at least 2 minutes.
2) Put a needle into the pinhole marked with “CAL” and press for 3 seconds and then release.

For 1-pt calibration, 100% saturation can be created by one of the following means:

Air-Saturated Water

Continuously purge water with air using an air bubbler or some type of aerator until the water becomes completely saturated with air (~10 min).
Place the sensor in the air-saturated water, submerse the temperature sensor into the water and make sure the temperature, “mg/l” or “sat.%” readings becoming stable.

Water-Saturated Air

Alternatively, 1-point calibration can be done using water-saturated air: Place the sensor in a calibration bottle (standard type only) with wet sponge, be sure to wait for the readings to stabilize (at least 15 minutes).

5.3 Maintenance

Your Optical DO sensor includes a converter and the working probe with a preinstalled calibration bottle. Note that the converter contains a micro-SD card and the corresponding mebrane cap on the probe.

5.3.1 Membrane Cap

5.3.1.1 Cap Cleaning

The sensor cap is a kind of plastics with functional coatings. Although fouling of sensor cap will not affect the accuracy of testing, keeping cleaning the sensor cap after each use will extend the lifetime for a long run. To perform cleaning:
1) Rinse the probe with distilled water thoroughly.
2) Gently wipe any fouling off the cap with a tissue, avoid any contamination on the cap surface, especially when you finish measurements in a solution having chemicals.

5.3.1.2 Cap Storage

When the Optical DO Sensor is not in use, it is highly recommended to store the probe with its sensor cap in a moisten environment. Your probe is shipped with a calibration or soaker bottle, which can be used to keep a certain degree of moisture for sensor cap storage

5.4 Cap Replacement

WHEN: With care of usage, the sensor cap will be working more than two years even if minor mechanical or chemical damages occurred. However it is recommended each sensor cap should be replaced after two years or if sensor cap is damaged or reading is shifted with time due to cracks.
HOW: To process cap replacement, first unscrew counterclockwise the old or damaged sensor cap from the probe, make sure no tools will be applied to finish the following procedures:

- Double check the O-ring on the probe for positioning or any damages. If the O-ring is not at right position or bent, apply a little lubricant grease along the screws. If the O-ring is damaged, replace it with a new one included with the replacement sensor cap.

- Open the new sensor cap package and check the cap inside out, make sure the inside is clean and totally dry. If not, use lens wipes to dry and clean it.
- Place the new sensor cap onto the probe tip and clockwise rotate to assemble it, make sure the installation is just finger-tight otherwise sensor cap will be leaking once too loose, or broken if too tight.
- After a new sensor cap is installed, store the sensor either in water or in the storage bottle.
- Insert the micro-SD card included with the replacement sensor cap into the micro-SD slot on the converter.
- Calibrate the new sensor cap (See ***Section 5.2,*** Calibration).

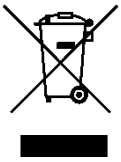
6 Reshipment and Disposal

6.1 Reshipment

All devices returned to the manufacturer have to be free of any residual of measuring media and other hazardous substances. Measuring residuals at housing or sensor may be a risk for persons or environment

Use an adequate transport package for reshipment, especially for fully functional devices. Please make sure that the device is protected in the package by enough packing materials.

6.2 Disposal instructions



The device must not be disposed in the unsorted municipal waste! Send the device directly to us (sufficiently stamped), if it should be disposed. We will dispose the device appropriate and environmentally sound.

7 Inspection of the Accuracy / Adjustment Services

The instrument can be sent to the manufacturer for adjustment and function test.
Only the manufacturer can check all systems on correct them if necessary.

Calibration certificates – DKD-certificates – other certificates:
If device should be certificated for its accuracy, this is not possible for dissolved oxygen measuring.

8 Specification

Oxygen

Sensor Type	dissolved oxygen, optical (luminescent lifetime detection)
Response time T90	<30 seconds
Oxygen saturation (% O_2sat)	
Range	0 to 200 % O_2sat
Accuracy	±1.0% of the reading
Resolution	0.1 % O_2sat
Oxygen concentration (mg/l, ppm)	
Range	0 to 20 mg/l
Accuracy	±0.1 mg/l below 1 mg/l ±0.2 mg/l above 1 mg/l
Resolution	0.01 mg/l

Temperature

Range	-5 to 50 °C
Accuracy	±0.2°C
Resolution	0.1°C

Ambient Pressure

Range	510 … 1120 hPa
Accuracy	±0.2 %
Resolution	1 hPa

Storage temperature:	-5-65 ºC
Operation temperature	-5-50 ºC
Max. pressure	3 bar or 30m water column
Supply	5...16V DC, max 160 mA

Material

Housing of sensor body	
Version standard –st	PVC/ stainless steel
Version seawater -ps	PVC
Membrane	PET

Dimensions sensor body

Length	225 mm
Mounting length	70.5 mm
Diameter	42.1 mm
Mounting diameter	28.0 mm
Process connection	1” NPT front/end (others on request)

Adjustment:	Per key to water saturated air
Electrical connection:	Loose cable ends
EMC:	In accordance with EN61326 +A1 +A2 (appendix A, class B), additional errors: < 1% FS. When connecting long leads adequate measures against voltage surges have to be taken.

9 Accessories

GSKA 200 Metal protection cap stainless steel (mechanical/bite protection)

EM 200
Replacement membrane cap set

Supply: GNG 12/300 or NG1000

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