HACH DOC023.97.80170 LDO Sensor User Manual

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Contents [hide]

Specifications

Specifications are subject to change without notice.
The product has only the approvals listed and the registrations, certificates and declarations officially provided with the product. The usage of this product in an application for which it is not permitted is not approved by the manufacturer.

Specification	Details
Wetted materials	**Standard Probe, Standard Class 1-Div 2 Probe** • CPVC, sensor end and cable end • Polyurethane, over-molding on cable end and cable jacket • 316 stainless steel body and screws • Viton, O-ring • Noryl, nut on the cable end
	Standard Seawater Probe, Seawater Class 1-Div 2 Probe • CPVC, sensor end and cable end • Polyurethane, over-molding on cable end and cable jacket • PVC seawater body • Seawater epoxy sealant • Noryl, nut on the cable end
IP classification	IP68
Wetted materials (sensor cap)	Acrylic
Measurement range (dissolved oxygen)	0 to 20 ppm (0 to 20 mg/L)
	0 to 200% saturation
Measurement accuracy (dissolved oxygen)	Below 5 ppm: ± 0.1 ppm
	Above 5 ppm: ± 0.2 ppm
Repeatability (dissolved oxygen)	0.1 ppm (mg/L)
Response time (dissolved oxygen)	T_{90}<40 seconds
	T_{95}<60 seconds
Resolution, sensor (dissolved oxygen)	0.01 ppm (mg/L); 0.1% saturation.
Measurement range (temperature)	0 to 50 °C (32 to 122 °F)

Measurement accuracy (temperature)	± 0.2 °C (± 0.36 °F)
Interferences	No interferences from the following: H_2S, pH, K+, Na+, Mg2+, Ca2+, NH$_4$ +, Al3+, Pb2+, Cd2+, Zn2+, Cr (total), Fe2+, Fe3+, Mn2+, Cu2+, Ni 2+,Co2+, CN–, NO$_3$ –, SO$_4$ 2–, S2–, PO$_4$ 3–, Cl–, Anion Active Tensides, Crude Oils, Cl$_2$ < 4 ppm
Storage temperature	–20 to 70 °C (–4 to 158 °F)
Maximum temperature	0 to 50 ºC (32 to 122 °F)
Hazardous location classification (9020000-C1D2 sensor only)	Class I Division 2, Groups A–D, T4 / Class I, Zone 2 Group 2C, T4 Note: This product does not fulfill the requirements of the 94/9/EC Directive (ATEX Directive).
Certifications (9020000-C1D2 sensor only)	ETL listed to ANSI/ISA, CSA and FM standards for use in hazardous location.Note: This product does not fulfill the requirements of the 94/9/EC Directive (ATEX Directive).
Minimum flow rate	Not required
Calibration/verification	Air calibration: One point, 100% water-saturated air
	Sample calibration: Comparison with standard instrument
Probe immersion depth and pressure limits	Pressure Limits at 34 m (112 ft.), 345 kPa (50 psi) maximum; accuracy may not be maintained at this depth
Sensor cable	10 m (30 ft) integral cable with quick disconnect plug (all sensor types) Up to 100 m possible with extension cables (non-Class I, Division 2 sensor types only)Up to 1000 m with junction box (non-Class I, Division 2 sensor types only)
Probe weight	1.0 kg (2 lb, 3 oz)
Probe dimensions	Standard probe (diameter x length): 49.53 x 255.27 mm (1.95 x10.05 in.)
	Seawater probe (diameter x length): 60.45 x 255.27 mm (2.38 x10.05 in.)
Power requirements	12 VDC, 0.25 A, 3 W
Warranty	Probe: 3 years against manufacturing defects
	Sensor cap: 2 years against manufacturing defects

General information

In no event will the manufacturer be liable for damages resulting from any improper use of product or failure to comply with the instructions in the manual. The manufacturer reserves the right to make changes in this manual and the products it describes at any time, without notice or obligation. Revised editions are found on the manufacturer's website.

Safety information

The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is soley responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. Do not use or install this equipment in any manner other than that specified in this manual.

Use of hazard information

 DANGER
Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

 WARNING
Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

 CAUTION
Indicates a potentially hazardous situation that may result in minor or moderate injury.

NOTICE
Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.

Precautionary labels

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed. A symbol on the instrument is referenced in the manual with a precautionary statement.

	This is the safety alert symbol. Obey all safety messages that follow this symbol to avoid potential injury. If on the instrument, refer to the instruction manual for operation or safety information.
	This symbol indicates the presence of a light source that may have the potential to cause minor eye injury. Obey all messages that follow this symbol to avoid potential eye injury.
	This symbol indicates the presence of devices sensitive to Electro-static Discharge (ESD) and indicates that care must be taken to prevent damage with the equipment.
	Electrical equipment marked with this symbol may not be disposed of in European domestic or public disposal systems. Return old or end-of-life equipment to the manufacturer for disposal at no charge to the user.

Compliance and certification

CAUTION

This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

Canadian Radio Interference-Causing Equipment Regulation, ICES-003, Class A:
Supporting test records reside with the manufacturer.

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

Cet appareil numérique de classe A répond à toutes les exigences de la réglementation canadienne sur les équipements provoquant des interférences.00000

FCC Part 15, Class "A" Limits
Supporting test records reside with the manufacturer. The device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. The equipment may not cause harmful interference.
2. The equipment must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their expense. The following techniques can be used to reduce interference problems:

1. Disconnect the equipment from its power source to verify that it is or is not the source of the interference.
2. If the equipment is connected to the same outlet as the device experiencing interference, connect the equipment to a different outlet.
3. Move the equipment away from the device receiving the interference.
4. Reposition the receiving antenna for the device receiving the interference.

5. Try combinations of the above.

Product overview

DANGER

⚠️ Chemical or biological hazards. If this instrument is used to monitor a treatment process and/or chemical feed system for which there are regulatory limits and monitoring requirements related to public health, public safety, food or beverage manufacture or processing, it is the responsibility of the user of this instrument to know and abide by any applicable regulation and to have sufficient and appropriate mechanisms in place for compliance with applicable regulations in the event of malfunction of the instrument.0

This sensor is designed to work with a controller for data collection and operation. The sensor can be used with several controllers. Refer to the controller-specific user manual for more information.

The primary applications for this sensor are municipal and industrial wastewater applications. LDO sensor technology does not consume oxygen, and can measure DO concentration in low or no-flow applications. Refer to **Figure 1.**
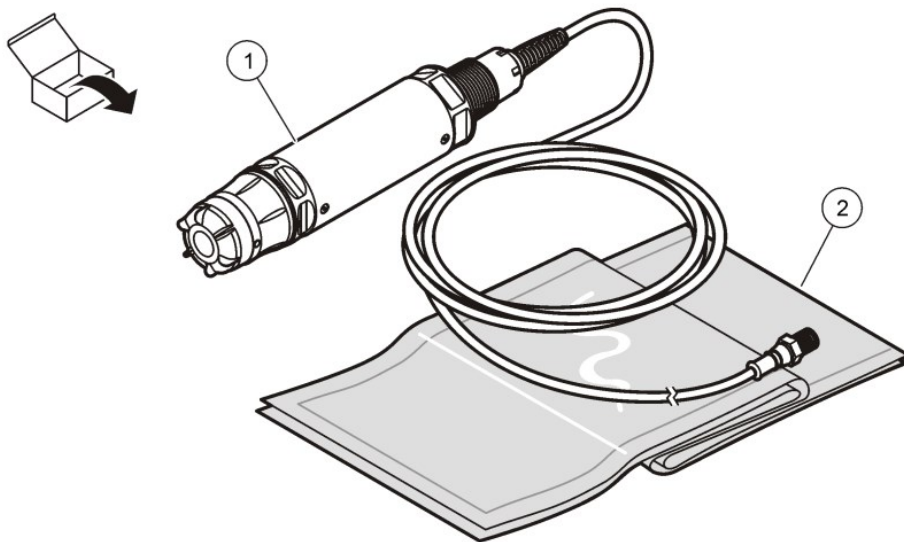
Figure 1 LDO sensor
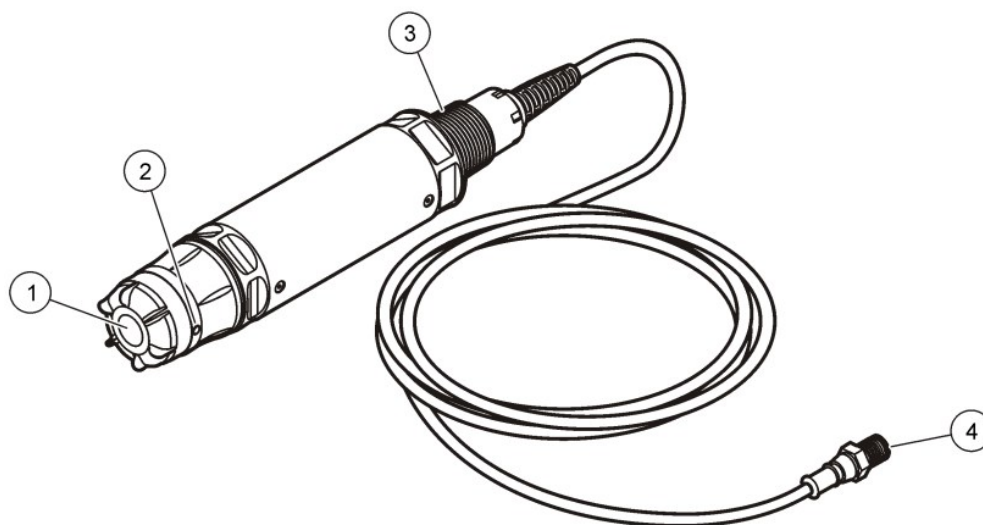
1. Sensor cap
2. Temperature sensor
3. 1-inch NPT
4. Connector, quick-connect (standard)

LDO Sensor component list

Make sure that all components shown in **Figure 2** have been received. If any items are missing or damaged, contact the manufacturer or a sales representative immediately. Refer to **Figure 2.**

Figure 2 Sensor component list

1. LDO sensor1
2. Calibration bags (2x)

Installation

Validate the sensor type

⚠ **DANGER**

☢ Explosion hazard. Connect only peripheral components that are clearly marked as certified for Class 1, Division 2 Hazardous Locations.

⚠ **DANGER**

Explosion hazard. Do not connect or disconnect electrical components or circuits to the equipment unless power has been removed or the area is known to be non-hazardous

NOTICE
Use only a hazardous location certified sensor and cable lock in hazardous locations. The hazardous location certified version of this product does not fulfill the requirements of the 94/9/EC Directive (ATEX Directive).

For more information, refer to **Validate the sensor type** on page 7

1. Remove the connector cap from the controller. Keep the connector cap to seal the connector opening when the sensor is removed.
2. Connect the sensor to the controller. Refer to the controller manual for more information.
3. Close the safety lock over the connector.
4. To remove the connector safety lock, use a small flat screwdriver. Refer **to Figure 3.**
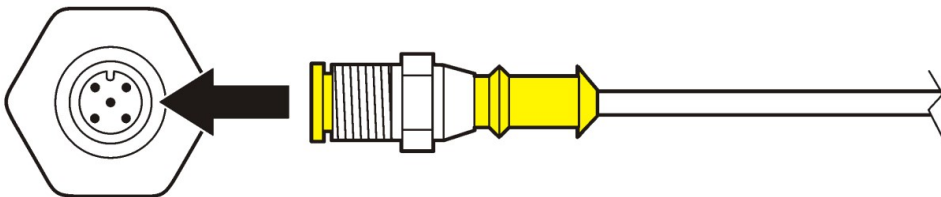
Figure 3 Connector safety lock
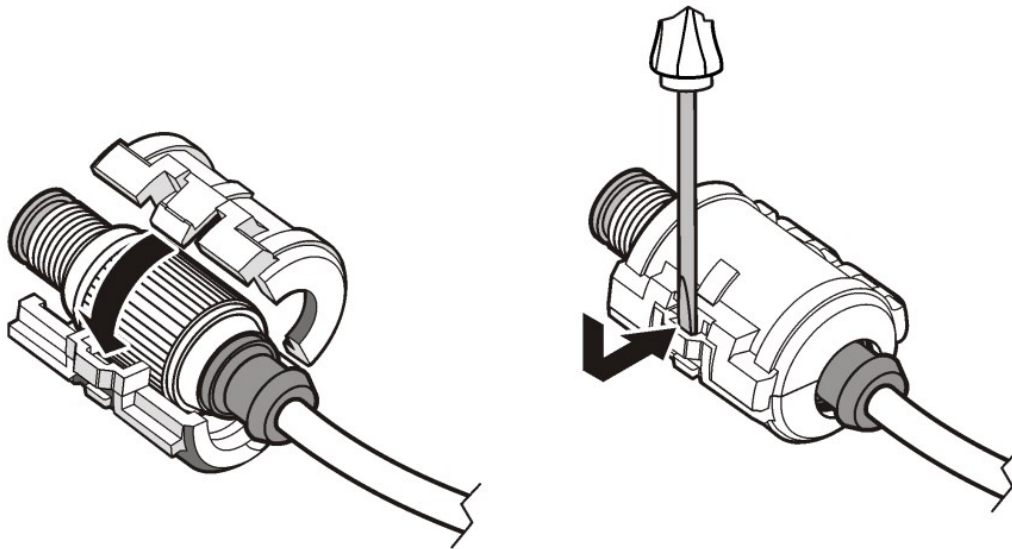
Connect the sensor in a non-hazardous location

Refer to **Figure 4** to connect an LDO sensor to an sc controller. Refer to the specific sc controller manual for hard-wiring instructions.

Figure 4 Connect the LDO sensor (non-hazardous location sensor shown)

After the sensor is attached, scan for the sensor. Refer to **Install the sensor** on page 8.

Install the sensor

There are two options to install the sensor:

- Connect the sensor while power to the controller is off. The controller will look for and install new sensors when it is turned on.
- Connect the sensor while power to the controller is on. Use the Scan Devices command to install the new sensor:

Option	Description
sc200 control	Go to MENU>TEST/MAINT>SCAN DEVICE
sc100 controlle	Go to MENU>TEST/MAINT>SCAN SENSOR
sc1000 controller	Go to MENU>SYSTEM SETUP>DEVICE MANAGEMENT>SCANNING FOR NEW DEVICES

Sensor installation op'

The installation and accessory options available for the sensor are supplied with installation] instructions in the hardware kit. Figure 5 shows several installation options. To order installation hardware, refer to Replacement parts and accessories on page 17.

Figure 5 Installation options

1. Rail mount
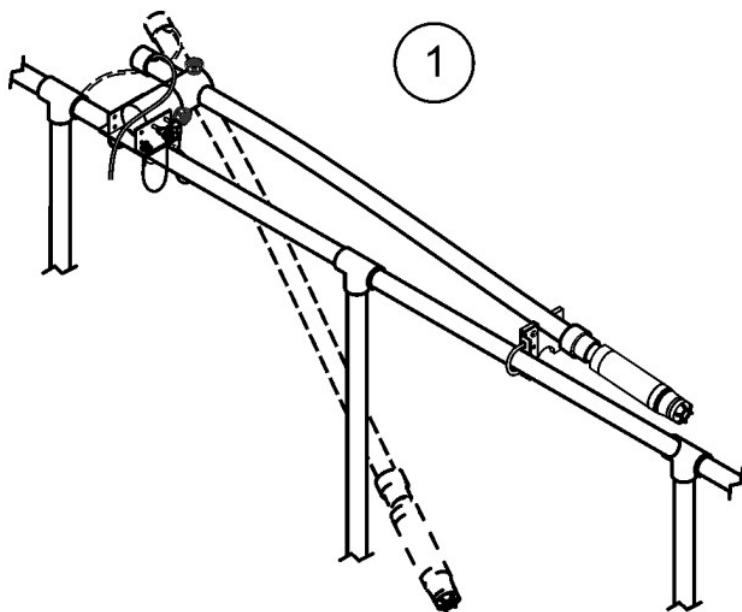
2. Float mount
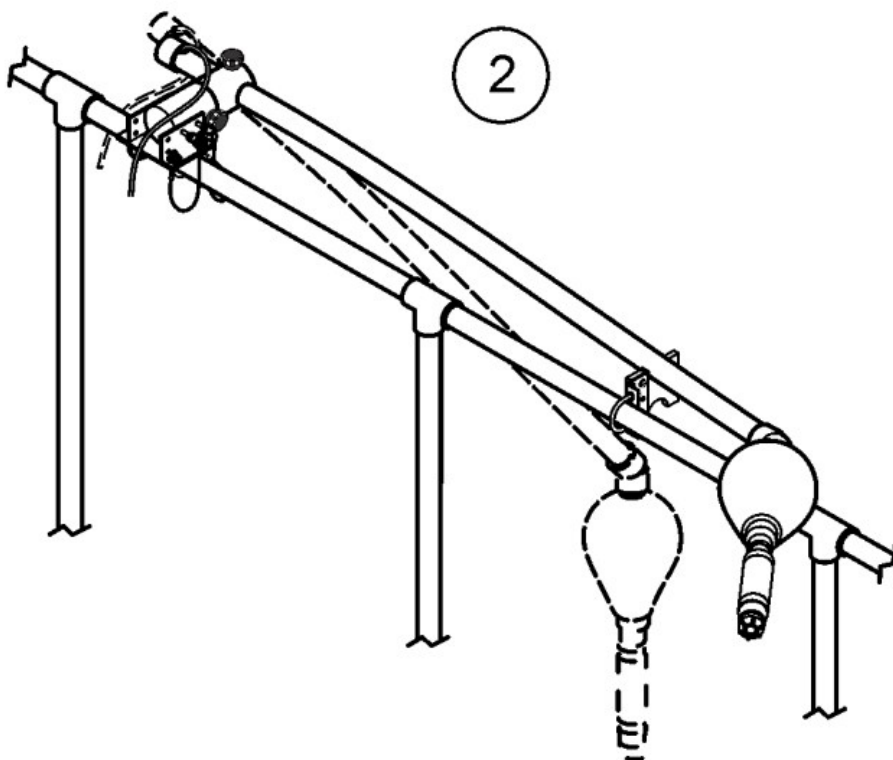
3. Air blast system mount (not seawater probe comp
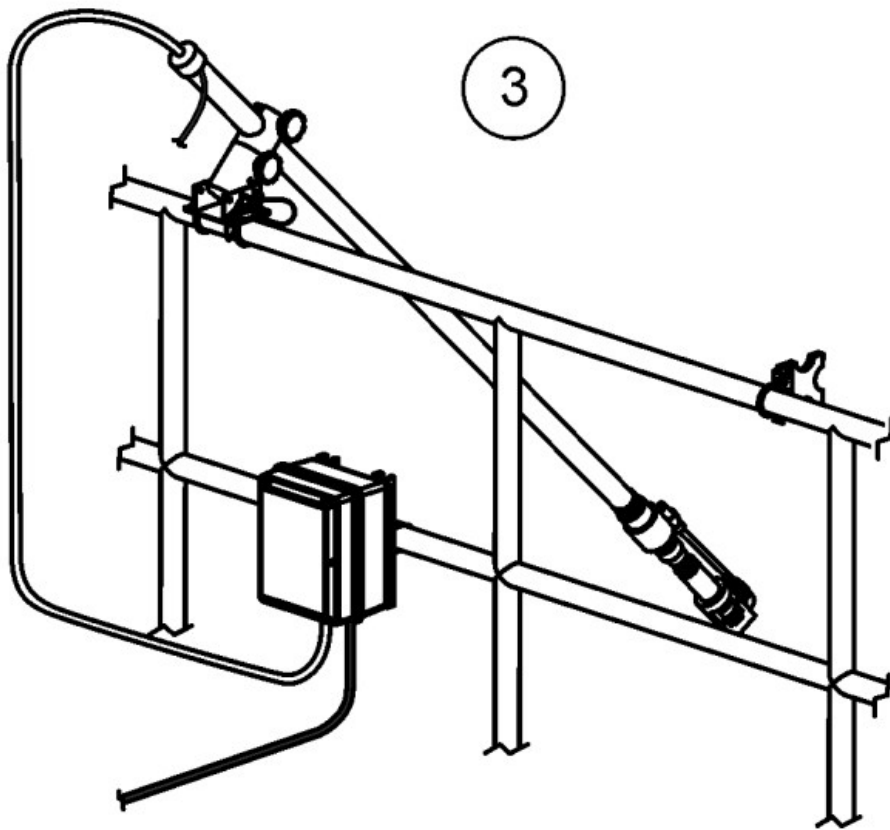
4. Chain mount
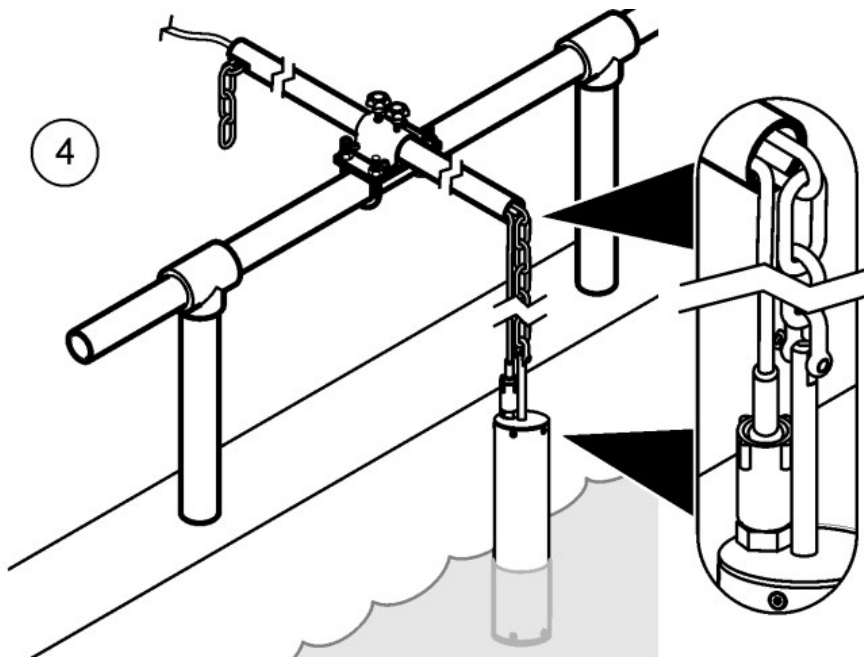
5. Union mount (not seawater probe compatible)
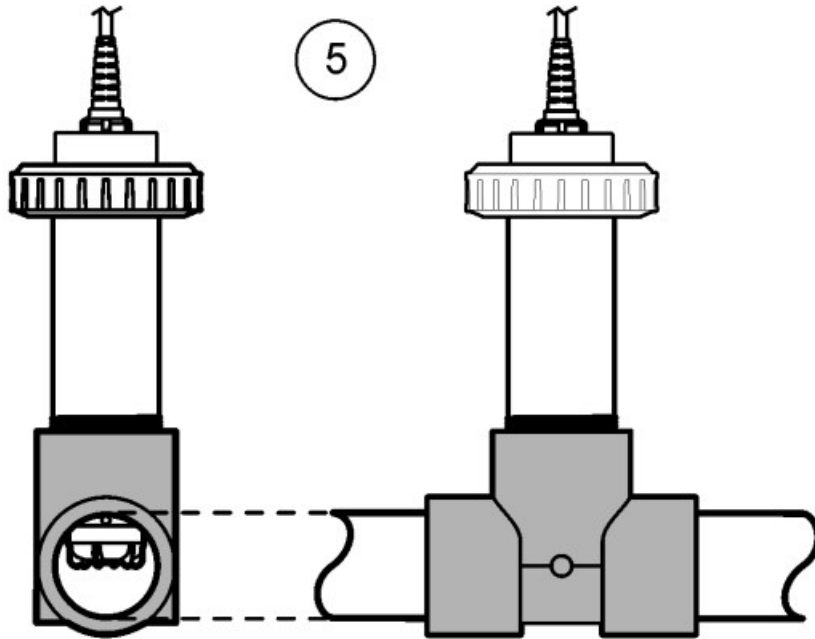
Operation

User navigation

Refer to the controller documentation for keypad description and navigation information.

Push the RIGHT arrow key on the controller multiple times to show more information on the home screen and to show a graphical display.

Configure the sensor

Use the Configure menu to enter identification information for the sensor and to change options for= data handling and storage.

For information about sensor installation, refer to Install the sensor on page 8.

Make sure that all of the Configuration menu values are correct for the application

1. Go to MENU, SENSOR SETUP, [Select Sensor], LDO SETUP, CONFIGURE.
2. Select an option, ENTER.

Option	Description
EDIT NAME	Changes the name that corresponds to the sensor on the top of the measure screen. The name is limited to 10 characters in any combination of letters, numbers, spaces or punctuation.
SET UNITS	TEMP–Sets the temperature units to °C (default) or °F.
	MEASURE–Set the measurement units in mg/L, ppm or % .
	ALT/PRESS–Set the altitude in m or ft or set the atmospheric pressure units in mmHg or torr.
ALT/PRESS	Enter the value of the altitude or atmospheric pressure.
SALINITY	Enter the salinity value. Salinity range: 0.00 to 250.00 parts per thousand. Refer to **Enter a salinity correction value** on page 11 for more information.
SIGNAL AVERAGE	Set the time interval to average signal in seconds
CLEAN INTRVL	Set the time interval for sensor cleaning in days
RESET CLN INTRVL	Set the time interval to the factory default value
LOG SETUP	Sets the time interval for data storage in the data log—1, 2, 5, 10, 15 (default), 30, 60 minutes.
SET DEFAULTS	Restores the configurable default values for the sensor. Does not change the setting for slope or offset.

Enter the atmospheric pressure value

1. Go to MENU, SENSOR SETUP, [Select Sensor], LDO SETUP, CONFIGURE, SET UNITS, AIR PRESS/ALT UNITS.
2. Select the units, ENTER.
3. Select AIR PRESS/ALT. Enter and confirm a value from **Table 1**

Table 1 Elevation (ft) and barometric pressure (mm Hg)

Ft	mm Hg	Ft	mm Hg	Ft	mm Hg	Ft	mm Hg
0	760	3000	683	6000	613	9000	548
500	746	3500	671	6500	601	9500	538
1000	733	4000	659	7000	590	10,000	527
1500	720	4500	647	7500	579	10,500	517
2000	708	5000	635	8000	568	11,000	506
2500	695	5500	624	8500	559	11,5000	—

Enter a salinity correction value

Dissolved oxygen measurements in saline samples can show an apparent DO value that is very different from the actual DO value. To correct for the influence of dissolved salts in a sample, enter a salinity correction factor.

Note: If the presence or amount of salinity in the process is unknown, consult with the treatment facility engineering staff.

1. Use a conductivity meter to measure the conductivity of the sample in mS/cm at a reference temperature of 20 °C (68 °F).
2. Use Table 2 to estimate the salinity correction factor in parts per thousand (‰) saturation.
   Note: The chloride ion concentration, in g/kg is equal to the chlorinity of the sample. Salinity is calculated with the formula: Salinity = 1.80655 × chlorinity. Salinity can be calculated with the relationship in section 2520 B of Standard Methods for the Examination of Water and Wastewater.2,
3. Go to MENU>SENSOR SETUP>[Select Sensor]>CONFIGURE>SALINITY.
4. Enter the salinity correction factor and confirm.

Table 2 Salinity saturation (‰) per conductivity value (mS/cm)

mS/cm	‰	mS/cm	‰	mS/cm	‰	mS/cm	‰
5	3	16	10	27	18	38	27
6	4	17	11	28	19	39	28
7	4	18	12	29	20	40	29
8	5	19	13	30	21	42	30
9	6	20	13	31	22	44	32
10	6	21	14	32	22	46	33
11	7	22	15	33	23	48	35
12	8	23	15	34	24	50	37
13	8	24	17	35	25	52	38
14	9	25	17	36	25	54	40
15	10	26	18	37	26		

Configure linear output on the controller

Linear outputs send probe data back to the facility PLC, SCADA or other data collection system

1. Go to the controller output setup menu.

Option	Description
sc200	Go to MENU>SETTINGS>sc200 SETUP>OUTPUT SETUP>[Select Output]>SET FUNCTION
sc100	Go to MENU>SYSTEM SETUP>OUTPUT SETUP>[Select Output]>SET FUNCTION
sc1000	Go to MENU>SYSTEM SETUP>OUTPUT SETUP>[Select Output]>SET FUNCTION

2 Standard Methods for the Examiniation of Water and Wastewater, 20th Edition. Editors Lenore S. Clesceri, Arnold E. Greenberg and Andrew D. Eaton, p. 2-48-2-29 (1998). The relationship between Chlorinity and Oxygen Solubitity is provided in the same reference in 4500-O:I p. 4 131.

2. Set the function for the controller.

Option	Description
sc200	LINEAR
sc100	LINEAR CONTROL (Default value)
sc1000	LINEAR CONTROL (Default valu

Modbus registers

A list of Modbus registers is available for network communication. Refer to the manufacturer's website for more informatio

Calibration for measurements

The sensor is calibrated to specification at the factory. The manufacturer does not recommend calibration unless periodically required by regulatory agencies. If calibration is required, let the sensor come to equilibrium with the process before calibration. Do not calibrate the sensor at setup.

Table 3 shows options for calibration.

Table 3 Calibration options0

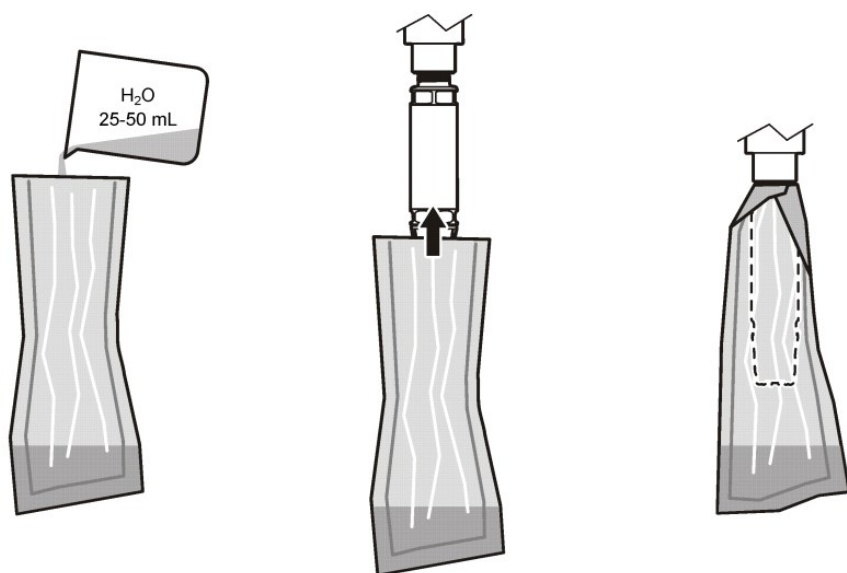| Option	Description
AIR CAL	Recommended calibration method. This calibration modifies the slope.
SAMPLE CAL	Calibration by comparison with a hand-held DO meter . This calibration modifies the offset.
RESET DFLT CAL	Resets the calibration gain (slope) and offset to the factory default: default gain=1.0; default offset=0.0

Calibration with air

Air calibration is recommended for best accuracy and repeatability

1. Remove the sensor from the process. Use a wet cloth to clean the sensor.
2. Put the cap end of the sensor in a calibration bag with 25-50 mL of water.
3. Attach the bag to the sensor body. Make sure that the sensor cap is not in contact with the water inside the calibration bag and that no water drops are on the sensor cap. Refer to **Figure 6.**
4. Select MENU, SENSOR SETUP, LDO SETUP, [Select Sensor], CALIBRATE, AIR CAL, ENTER.
5. Select the option for the output signal during calibration:

Option	Description
Active	The instrument sends the current measured output value during the calibration procedure
Hold	The sensor output value is held at the current measured value during the calibration procedure
Transfer	A preset value is sent during calibration. Refer to the controller user manual to change the preset value.

6. The controller will show "Move the sensor to air". Wait for the value to stabilize. The display will show "Complete" and the slope correction. Push ENTER.
7. When the sensor is calibrated, put the sensor back into the process. Push ENTER.

Figure 6 LDO air calibration

If the value does not stabilize, the display will show "Unable to Calibrate" followed by an error message. Table 4 shows the error message and resolution for calibration problems.

Table 4 Calibration error messages

Message	Description	Resolution
Cal fail, offset high	The calculated gain value is too high.	Repeat the calibration.
Cal fail, offset low	The calculated gain value is too low.	Repeat the calibration.
Cal fail, unstable	The value did not stabilize in the maximum allowed calibration time.	Repeat the calibration.

Sample CAL – calibration by comparison

This calibration method uses an alternate sensor attached to a hand-held met

1. Put the alternate sensor into the process. Put the second sensor as close as possible to the first sensor.
2. Wait for the DO value to stabilize .
3. On the controller for the first sensor, go to MENU>SENSOR SETUP>[Select Sensor]>CALIBRATE>SAMPLE CAL.
4. Select the option for the output signal during calibration:

Option	Description
Active	The instrument sends the current measured output value during the calibration procedure
Hold	The sensor output value is held at the current measured value during the calibration procedure.
Transfer	r A preset value is sent during calibration. Refer to the controller user manual to change the preset value

The controller will show:

- "Press ENTER when stabilized"
- The current dissolved oxygen measurement
- The current temperature measurement

5. When the measurement is stable, push ENTER. The display will show an entry screen.

Note: The measurement will usually stabilize in 2 to 3 minutes

If the value does not stabilize, the display will show "Unable to Calibrate" followed by an error message. Table 5 shows the error message and resolution for calibration problems.

Table 5 Sample cal error messages

Message	Description	Resolution
Cal fail, offset high	The calculated offset value is too high.	Repeat the calibration.
Cal fail, offset low	The calculated offset value is too low.	Repeat the calibration.
Cal fail, unstable	The value did not stabilize in the maximum allowed calibration time.	Repeat the calibration.

Exit the calibration procedure

1. During calibration, push the BACK key. Three options are shown:

Option	Description
ABOR	Stop the calibration. A new calibration must start from the beginning
BACK TO CAL	Return to the current calibration
LEAVE	Exit the calibration temporarily. Access to other menus is allowed while the calibration continues in the background. A calibration for a second sensor (if present) can be started. To return to the calibration, push the MENU key and select Sensor Setup, [Select Sensor].

2. Select one of the options. Confirm.

Reset calibration defaults

Calibration settings can be reset to the factory defaults. Gain and offset values are set to 1.0 and 0.0, respectively.

1. Go to MENU>SENSOR SETUP>[Select Sensor]>CALIBRATE>RESET CAL DEFLT.
2. The display will show a confirmation message. Confirm to reset the sensor to the factory default calibration curve

Maintenance

⚠️ **DANGER**

⚠️ Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

⚠️ **DANGER**

☢️ Explosion hazard. Do not connect or disconnect electrical components or circuits to the equipment unless

power has been switched off or the area is known to be non-hazardous.

⚠ DANGER

Explosion hazard. Substitution of components may impair suitability for Class 1, Division 2. Do not replace any component unless power has been switched off and the area is known to be nonhazardous

NOTICE
The hazardous location certified version of this product does not fulfill the requirements of the 94/9/EC Directive (ATEX Directive).

Maintenance schedule

The maintenance schedule shows minimum intervals for regular maintenance tasks. Perform maintenance tasks more frequently for applications that cause electrode fouling.

Note: Do not disassemble the probe for maintenance or cleaning

Maintenance task	Recommended minimum frequency
Clean the sensor	90 days
Inspect the sensor for damage	90 days
Calibrate the sensor	As recommended by regulatory agencies

Clean the sensor

Clean the exterior of the sensor with a soft, wet cloth.

Note: If the sensor cap must be removed for cleaning, do not expose the interior of the cap to direct sunlight for extended periods of time.

Set or change the clean interval

Application conditions may need shorter or longer durations between manual sensor cleanings. The default clean interval is 0 days. To change the interval, refer to the steps in this procedure.

1. Go to MENU>SENSOR SETUP>[Select Sensor]>CONFIGURE>CLEAN INTRVL.
2. Change the shown value as needed. Confirm the change.
   - To turn off the clean interval, set the value to '0

Change the sensor cap

⚠ WARNING

Potential explosion hazard. The sensor setup cap is not rated for hazardous location use.

Replacement sensor caps and setup caps are shipped with installation instructions. Refer to the included

instructions to change the cap. After the new sensor cap is installed, make sure that the lot number on the sensor cap is the same lot number that is read by Modbus. The sensor uses the calibration information from the sensor cap.

For best performance and accuracy, replace the sensor cap:

- Every two years, or more frequently if necessary
- When routine inspection shows significant erosion of the sensor cap

Troubleshooting

Diagnostic and test menu

The diagnostic and test menu shows current and historical information about the LDO sensor. To access the diagnostic and test menu, go to MENU>SENSOR SETUP>[Select Sensor]>DIAG/TEST.

Refer to **Table 6**

Table 6 DIAG/TEST menu

Option	Description
SENSOR INFO	SOFTWARE VERS—Shows the installed software version
	BOOT VERSION—Shows the installed boot version
	DRIVER VERS—Shows the installed software driver version
LOT CODE	Shows the sensor cap manufacturing lot
SERIAL NUMBER	Sensor serial number
GAIN CORR	Adjust the calibration gain value.
	Range: 0.50 to 2.00
OFFSET CORR	Adjust the calibration offset value (mg/L or ppm).
	Range: –3.00 to +3.00
PHASE DIAG	Shows the phase for total, red and blue wavelengths. Updates once per second.
AMPL DIAG	Shows the amplitude for red and blue wavelengths. Updates once per second.
DAYS TO CLEAN	Shows the number of days until the next scheduled manual cleaning.
SENSOR LIFE	Shows the number of days until the next scheduled sensor cap replacement

Error list

If an error occurs, the reading on the measurement screen flashes. Output behavior is determined by controller settings. Refer to the controller manual for details. To show the current sensor errors, go to MENU>DIAGNOSTICS>[Select Sensor]>ERROR LIST. Refer to Table 7.

Table 7 Error list for the LDO sensor

Error	Possible cause	Resolution
RED AMPL LOW (Value is below 0.01) ORBLUE AMPL LOW (Value is below 0.01)	The sensor cap is not installed, or is not installed correctly.	Remove the sensor cap and install it again.
	The light path is blocked in the sensor cap.	Inspect the inside of the sensor cap and lens.
	The sensor is not operating correctly.	Make sure that the LED is flashing. Contact the manufacturer.

Warning list

When the warning icon flashes (sc100 and sc200) or when the screen turns yellow (sc1000), a message is shown on the bottom of the measurement screen. On the sc1000, the screen turns yellow to show a warning. To show the current sensor warnings, go to MENU> DIAGNOSTICS>[Select Sensor]>WARNING LIST. Refer to **Table 8.**

Table 8 Sensor warning list

Warning	Definition	Resolution
EE SETUP ERR	Storage is corrupt. The values have been set to the factory default.	Contact technical support.
EE RSRVD ERR		
TEMP < 0 C	The process temperature is below 0 °C (32 °F)	Increase the process temperature or stop use until the process temperature is in the sensor specification range.
TEMP > 50 C	The process temperature is above 50 °C (120 °F)	Decrease the process temperature or stop use until the process temperature is in the sensor specification range.
RED AMPL LOW	Value falls below 0.03	Refer to **Table 7** on page 16 .
RED AMPL HIGH	Value is greater than 0.35	Call technical support.

Table 8 Sensor warning list (continued)

Warning	Definition	Resolution
BLUE AMPL LOW	Value is below 0.03	Refer to **Table 7** on page 16.
BLUE AMPL HIGH	Value is greater than 0.35	Call technical support.
CAP CODE FAULT	The sensor cap code has become corrupt. The code has been reset automatically to the default cap and lot codes.	Complete the sensor setup cap procedure. If no setup cap is available for the sensor cap, call technical support.

Event list

The Event list keeps a log of changes to how data is recorded by the sensor. To show sensor events, go to MENU>DIAGNOSTICS>[Select Sensor]>EVENT LIST. Refer to Table 9.

Table 9 Event list for the sensor

Event	Description
ALT/PRESSURE UNIT CHANGE	Atmospheric pressure or altitude units have changed.
ALT/PRESSURE CHANGE	The value for altitude or atmospheric pressure has changed.
TEMP UNIT CHANGE	The units for temperature have changed.
MEAS UNIT CHANGE	A new unit of measurement has changed.
SALINITY CHANGE	The value for salinity has changed.
SET DEFAULT	Sensor settings have been reset to the default values.
SENSOR SETUP CHANGE	The sensor setup has changed.
CLEAN INTERVAL TIMER CHANGE	The time between sensor cleaning has changed.
SENSOR CAP LIFE TIMER CHANGE	The time between sensor cap replacements has changed.

Replacement parts and accessories

Use only replacement parts approved by the manufacturer. Use of non-approved parts may cause personal injury, damage to the instrument or equipment malfunction.

Replacement items

Description	Item no. (US / EU)
LDO Probe, with one sensor cap and 2 calibration bags	9020000 / LXV416.99.20001
LDO Probe for seawater, with one sensor cap and two calibration bags	9020000-SW / —
LDO Probe for seawater hazardous locations, with one sensor cap and two calibration bags	9020000-C1D2-SW / —
LDO Probe for hazardous locations, with one sensor cap and 2 calibration bags	9020000-C1D2 / —
Sensor cap, replacement (includes the sensor setup cap, which is not rated for use in Class 1, Division 2 hazardous locations)	9021100 / 9021150

Accessories

Description	Item no. (US / EU)
Sensor cable lock for hazardous locations	6139900 / —
Cable, sensor extension, Class 1, Division 2 Hazardous Location, 1 m (3.3 ft)	6122402 / —
Cable, sensor extension, Class 1, Division 2 Hazardous Location, 7m (23 ft)	5796002 / —
Cable, sensor extension, Class 1, Division 2 Hazardous Location, 15 m (49.21 ft)	5796102 / —
Cable, sensor extension, Class 1, Division 2 Hazardous Location, 31 m (101.71 ft)	5796202 / —
High output air blast cleaning system, 115 V (not rated for use in hazardous locations)	6860000 / 6860003.99.0001
High output air blast cleaning system, 230 V (not ATEX rated for use in hazardous locations)	6860100 / 6860103.99.0001
Calibration bag (1x)	5796600 / 5796600
Cable, sensor extension, non-hazardous location, 7.7 m (25 ft)3	US: 5796000, 7.7 m (25 ft)
	EU: LZX849, 10 m (33 ft)
Hardware kit for pipe mount (PVC)	9253000 / LZY714.99.21810
Hardware kit for float mount (PVC)	9253100 / LZX914.99.42200
Hardware kit for air blast mount	9253500 / LZY812
Hardware kit for chain mount (stainless steel)	— / LZX914.99.11200
Hardware kit for union mount	9257000 / 9257000
HQd meter with LDO rugged probe (not rated for use in hazardous locations)	8505200 / HQ40D.99.310.000

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Documents / Resources

	HACH DOC023.97.80170 LDO Sensor [pdf] User Manual DOC023.97.80170 LDO Sensor, DOC023.97.80170, LDO Sensor, Sensor

References

- **Geräte und Reagenzien für die Wasserqualitätsanalyse | Hach**
- **Hach | Hach**