



EcoSense[®] ODO200

EcoSense[®] ODO200M

Dissolved oxygen & temperature
instrument

USER MANUAL

English

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CONTENTS

Warranty	i
Introduction	1
Getting Started	1
Package Contents	1
Initial Inspection	2
Precautions	2
The Probe	2
Initial Setup	2
Preparing the Probe	3
Battery Installation	4
Key Pad	5
Main Display	7
Operational Procedures - Taking Measurements	8
Measurement Modes - % or mg/L	8
Sampling modes - Continuous or Manual	8
Saving, Viewing and Deleting Data	9
Calibration	9
Temperature	9
Dissolved Oxygen	9
Downloading Data to a Computer - ODO200M Only	11
Recal Timer - ODO200M Only	11
Date/Time Settings - ODO200M Only	11
Maintenance and Troubleshooting	12
Sensor Maintenance - Dissolved Oxygen	12
Cleaning the Sensor Cap	12
Sensor Cap Replacement	12
Entering Sensor Cap Coefficients into the EcoSense ODO200/ODO200M	14
Rehydrating the Sensor Cap	15

Sensor Maintenance - Temperature	15
Sensor Storage	15
Short-term Storage	15
Long-term Storage	15
Troubleshooting	16
Error Messages on Display	16
Opening the Data File with Excel®	17
Specifications	19
Accessories / Part Numbers	20
Contact Information and Service	21
Ordering and Technical Support	21
Service Information	21
Recycling	22
Appendix A-DO% Calibration Values	23

WARRANTY

The EcoSense® ODO200/ODO200M Instrument, probe, cable and sensor cap are warranted for one year from date of purchase by the end user against defects in materials and workmanship, exclusive of batteries and any damage caused by defective batteries. Within the warranty period, YSI will repair or replace, at its sole discretion, free of charge, any product that YSI determines to be covered by this warranty.

To exercise this warranty, write or call your local YSI representative, or contact YSI Customer Service in Yellow Springs, Ohio at +1 937 767-7241, 800-765-4974 or visit YSI.com for a Product Return Form. Send the product and proof of purchase, transportation prepaid, to the Authorized Service Center selected by YSI. Repair or replacement will be made and the product returned, transportation prepaid. Repaired or replaced products are warranted for the balance of the original warranty period, or at least 90 days from date of repair or replacement.

Limitation of Warranty

This Warranty does not apply to any YSI product damage or failure caused by: (i) failure to install, operate or use the product in accordance with YSI's written instructions; (ii) abuse or misuse of the product; (iii) failure to maintain the product in accordance with YSI's written instructions or standard industry procedure; (iv) any improper repairs to the product; (v) use by you of defective or improper components or parts in servicing or repairing the product; or (vi) modification of the product in any way not expressly authorized by YSI.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. YSI'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, AND THIS SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE PRODUCT COVERED BY THIS WARRANTY. IN NO EVENT SHALL YSI BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECTIVE PRODUCT COVERED BY THIS WARRANTY.

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INTRODUCTION

Thank you for purchasing the EcoSense ODO200/ODO200M, a precise handheld instrument that measures temperature and dissolved oxygen in % and mg/L. The EcoSense ODO200/ODO200M measures dissolved oxygen in water using optical, lifetime luminescence technology and uses a digital signal to send information between the instrument and probe. Key advantages of the EcoSense ODO200/ODO200M include the elimination of sensor flow dependence (stirring) and sensor warm-up time, greater stability, less frequent calibrations, and the elimination of frequent membrane/electrolyte changes. This instrument uses one 9V battery.

Key differences between the YSI ODO200 and ODO200M include:

- ODO200 can store 50 data sets, while the ODO200M can store 250 data sets.
- A real-time clock is included on the ODO200M for date/time stamp of saved data.
- The ODO200M features a waterproof USB port with cover that will allow customers to download stored measurement data to a PC.
- A recal prompt on the ODO200M allows users to select a recalibration interval.

For additional product specification information, please visit ysi.com or contact Technical Support at 800-897-4151 (+1 937 767-7241) or info@ysi.com.

GETTING STARTED

PACKAGE CONTENTS

Item #	Contents
606329	ODO200 meter, manual, and 9V battery
606324	ODO200 meter, manual, 9V battery, transport case, probe with 1 meter cable
606325	ODO200 meter, manual, 9V battery, transport case, probe with 4 meter cable
606305	ODO200 meter, manual, 9V battery, transport case, probe with 10 meter cable
601023	ODO200M meter, manual, USB cable, and 9V battery

Item #	Contents
601024	ODO200M meter, manual, USB cable, 9V battery, transport case, probe with 1 meter cable
601025	ODO200M meter, manual, USB cable, 9V battery, transport case, probe with 4 meter cable
601026	ODO200M meter, manual, USB cable, 9V battery, transport case, probe with 10 meter cable

INITIAL INSPECTION

Carefully unpack the instrument and accessories and inspect for damage. Compare received parts with items on the packing list. If any parts are damaged or missing, contact YSI Customer Service at 800-897-4151 (+1 937 767-7241) or the authorized YSI distributor where the instrument was purchased.

PRECAUTIONS

THE PROBE

Sensor caps last longer if stored in a moist environment and kept clean and free of scratches in the paint layer. Erratic readings can result from damaged or dirty caps. If unstable readings occur from large scratches in the paint or dye layer, replace the sensor cap. See the Maintenance and Troubleshooting section of this manual for information on how to clean or replace the sensor cap. The average sensor cap replacement interval is 12 to 18 months, although they may last longer.

Avoid substances that may damage probe materials such as concentrated acid, caustics and strong solvents. Probe materials include urethane (cable), Xenoy (probe body), acrylic (sensor cap) and acetal and stainless steel (probe guard).

To prevent the sensor cap from drying out, store the probe in the gray calibration/storage sleeve with a moistened, clean sponge. In the event the sensor cap dries out, rehydrate it following the instructions in the Maintenance and Troubleshooting section of this manual.

INITIAL SETUP

Throughout the manual, the term "probe" refers to the end of the cable where the sensor is located, the term "sensor" refers to the Optical Dissolved Oxygen sensing portion of the cable/probe assembly, and the term "sensor cap" refers to the removable sensing cap that is replaced about once per year (Figure 1).

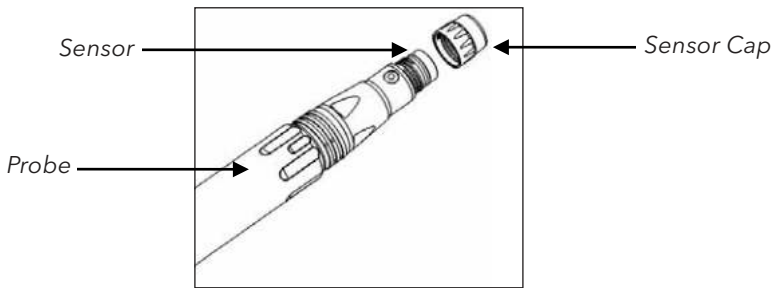


Figure 1

PREPARING THE PROBE

Each sensor cap has unique calibration coefficients associated with it. These coefficients are labeled on the instruction sheet included with each EcoSense cable/probe assembly and replacement sensor cap.

Remove the probe/cable assembly from the shipping container and locate the sensor cap instruction sheet. Be sure to save the instruction sheet in case you need to reload these calibration coefficients.

New probe/cable assemblies have the sensor cap installed and coefficients loaded into the probe at the factory. When a cable is installed, the coefficients are automatically sent to the instrument.

Preparing the probe for the first time:

1. Remove the probe guard from the probe by turning it counterclockwise.
2. Remove the red storage cap which contains a moist sponge from the end of the probe by pulling it straight off the sensor. Save this to use later for long term storage.
3. Reinstall the probe guard by sliding it carefully over the sensor and then threading it onto the cable/probe assembly with a clockwise rotation (Figure 2).
4. Locate the gray calibration/storage sleeve that was shipped with your probe/cable assembly. Moisten the sponge in the gray calibration/storage with a small amount of clean water.
5. Slide the calibration/storage sleeve over the probe guard to keep the probe in a moist environment for storage and calibration (Figure 3). It is important to always keep your sensor in a moist environment so the sensor cap does not dry out.

6. Connect the cable to the instrument by aligning the connectors, pushing them together and then screwing down the retainer clockwise.

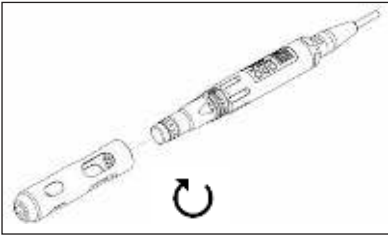


Figure 2

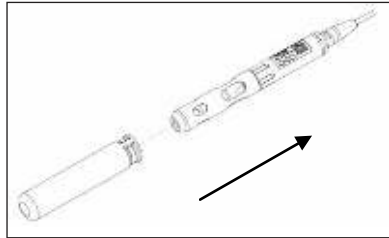


Figure 3

BATTERY INSTALLATION

To install (or replace) the battery, remove the two battery cover screws and battery cover. Replace the 9V battery. Replace the battery cover and o-ring (be sure to align the o-ring correctly to prevent a bad seal) and fasten the two battery cover screws.

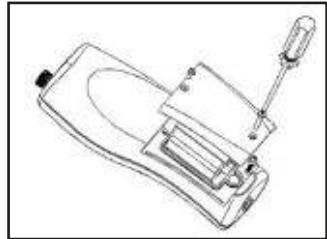


Figure 4

An initial display of "LOW BAT" on the LCD indicates approximately one hour of battery life for unit operation within specifications. Replace battery when "LOW BAT" appears on the LCD.

Battery Disposal

This instrument is powered by a 9 volt battery, which the user must remove and dispose of when the battery no longer powers the instrument. Disposal requirements vary by country and region, and users are expected to understand and follow the battery disposal requirements for their specific locale.

KEY PAD

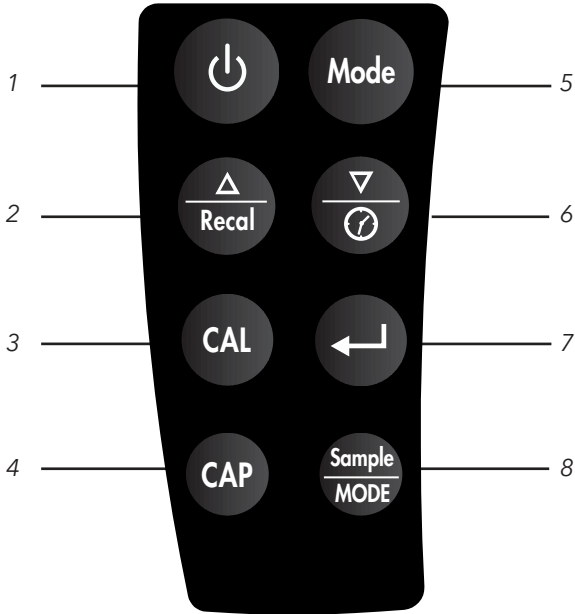





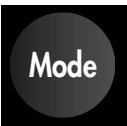





Figure 5

The ODO200 does not include "Recal" on the Up key or a  symbol on the Down key.

Number	Key	Description
1		Power key. Turns the unit on or off.
2		Up/Recal key. Used to scroll thru saved data in Recall mode; select the data deletion option in Delete mode; and adjust inputs for salinity correction, calibration and sensor cap coefficients. Press and hold Up/Recal for 3 seconds to access the Recal Timer input display (ODO200M only).
3		Calibration key. Press to calibrate the dissolved oxygen sensor.

4		<p>Cap key. Press to enter new sensor cap coefficients.</p>
5		<p>Mode key. Adjusts between measurement modes (% , mg/L), recalling saved data (rCL) and deleting saved data (dEL).</p>
6		<p>Down/Recall key. Used to scroll thru saved data in Recall mode; select the data deletion option in Delete mode; and adjust inputs for salinity correction, calibration and sensor cap coefficients.</p> <p>On the ODO200M, a short press (i.e. key is not held) changes the display in the upper right corner to be either Date or Time. Pressing and holding for 3 seconds will allow date and time information to be updated. Pressing and holding for 6 seconds will allow for the date (e.g. MM/DD/YYYY) and time format (12 or 24 hour) settings to be changed.</p>
7		<p>Enter key. Used to confirm calibration, to save data from run screen, to select data mode (rCL/dEL), and confirm coefficient entries.</p>
8		<p>Sample/Mode key. Press and hold for 3 seconds to switch between continuous and manual measurement modes. Press and release to restart the measurement when in manual mode. <u>Continuous mode</u>: the instrument will continuously update the dissolved oxygen measurement. <u>Manual mode</u>: the instrument will update the DO reading until reaching a stable measurement. The stable measurement will be 'locked' on the display until the user initiates a new measurement reading by pressing the Sample/Mode key.</p>

MAIN DISPLAY

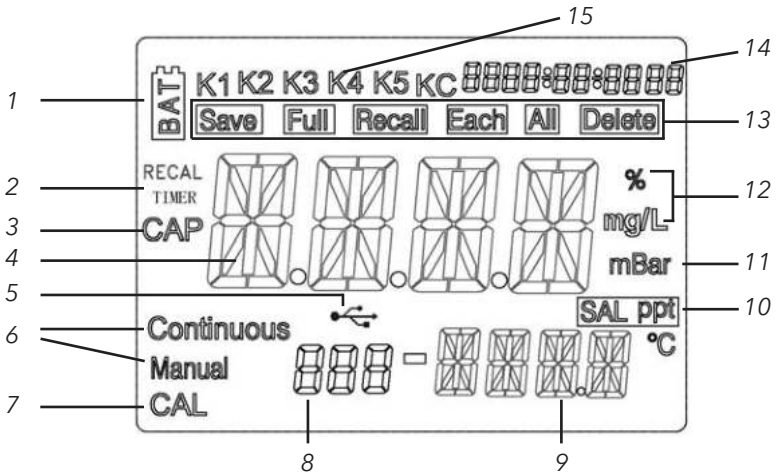



Figure 6

Number	Description
1	BAT: Low battery indicator.
2	Recal Timer indicator (ODO200M only)
3	CAP: Displayed when the sensor cap coefficients are being adjusted by the user.
4	Main display for dissolved oxygen measurements in either % or mg/L.
5	USB/PC connection indicator (ODO200M only)
6	Continuous or Manual sampling mode indicator. When in Manual mode, manual will blink until the measurement is stable.
7	CAL: Calibration mode indicator.
8	Data record indicator.
9	Temperature reading in Celsius.
10	SAL ppt: Displays during calibration when user is prompted for the approximate salinity (in ppt) of the sample to be tested.
11	mbar: Displays during calibration to prompt user for true barometric pressure.
12	Dissolved Oxygen units (% or mg/L)
13	Save, Full, Recall, Each, All, Delete: Instrument's data storage indicators.

<i>Number</i>	<i>Description</i>
14	Date/Time display (ODO200M only)
15	K1, K2, K3, K4, K5, KC: Sensor cap coefficient indicators when entering new sensor cap coefficients.

OPERATIONAL PROCEDURES - TAKING MEASUREMENTS

Press  to turn the unit on or off. When turned on, the instrument will perform a self-diagnostic test during which an error message may display. This is normal. After the self-diagnostic test completes, the temperature displays in the lower right and the dissolved oxygen measurement displays in the center of the display (figure 6). The unit is ready for operation. If necessary, perform a 1-point dissolved oxygen calibration. The digital instrument and probe can hold its calibration for many months but should be verified regularly.

Immerse the probe into the sample solution to take a measurement.

When the unit is not in use, turn it off to save battery life. It is not necessary to recalibrate the instrument after turning it off and back on. The instrument has a 30 minute auto shut off feature when not in use.

MEASUREMENT MODES - % OR mg/L

This unit provides three distinct measurements: Temperature and Dissolved Oxygen in either % or mg/L.

The dissolved oxygen measurement unit is indicated on the right side of the display. Press Mode to switch between % and mg/L.

SAMPLING MODES - CONTINUOUS OR MANUAL


The sampling mode can be set to Manual or Continuous.

Press and hold the Sample/Mode key for 3 seconds to switch between Continuous and Manual mode. When in Manual mode, press and release Sample/Mode to initiate a new measurement.

Continuous mode: the instrument will continuously update the dissolved oxygen measurement.

Manual mode: the instrument will update the DO reading until reaching a stable measurement. The stable measurement will 'lock' on the display until the user initiates a new measurement by pressing the Sample/Mode key. Manual mode conserves battery power.

SAVING, VIEWING AND DELETING DATA

The ODO200 can save 50 data records, while the ODO200M can save 250 data records. When in measurement mode, press  Enter to save a record. The instrument will confirm saving the data by displaying SAVE and the data record number for one second. "Full" is displayed when trying to save data and memory is full. To view saved data, press Mode until Recall (rCL) is displayed and then press Enter. Use the Up or Down arrow keys to review different saved records. Press Mode to escape back to measurement mode.

To delete data records, press Mode while in measurement mode until Delete (dEL) is displayed. Press Enter. "All" will be displayed and blinking. Press the Up or Down arrow key to switch between delete 'All' or 'Each' options. Select either 'All' or 'Each' by pressing Enter while that option is displayed.

If 'All' is selected, all records will be deleted from memory and 'None' will be displayed. Press Mode twice to return to the measurement mode.

If 'Each' is selected, the Up and Down arrow keys will allow you to scroll through the saved data records. Press Enter to delete the selected record. All records after the deleted record will shift up to keep the records in sequential order. For example, if record 3 is deleted, record 4 will become record 3 and record 5 will become record 4. Press Mode twice to return to the measurement mode.

CALIBRATION

TEMPERATURE

All cables have a built-in thermistor. Temperature calibration is not available or required. To verify the temperature sensor, compare it to a NIST traceable thermistor by touching the thermistors together and observing the measurements.

DISSOLVED OXYGEN

The sensor is an optical luminescent sensor which has greater stability and is less susceptible to calibration drift than traditional

electrochemical sensors. This increased stability means the instrument can hold its calibration for many months; however, calibration should be verified regularly for highest data accuracy.

To verify the instrument's calibration, place the sensor in its calibration environment and check to see that the DO% is reading its calibration value based on the barometric pressure. Refer to Appendix A for the DO% calibration values based on barometric pressure.

Calibration Requirements:

- The approximate true barometric pressure in millibars (mBar) of the location at the time of calibration.

$$\begin{aligned} \text{True Barometric Pressure (mmHg)} = \\ [\text{Corrected BP mmHg}] - [2.5 * (\text{Local Altitude in ft. above sea level}/100)] \\ \text{mBar} = \text{mmHg} * 1.333 \end{aligned}$$

- The approximate salinity of the water to be analyzed. Fresh water's salinity value is approximate zero parts per thousand (ppt). Seawater has an approximate salinity of 35 ppt.

1. Moisten the sponge in the gray storage sleeve with a small amount of clean water. The moistened sponge creates a 100% water-saturated air environment for the probe, which is ideal for calibration, transport, and storage of the probe.
2. Make sure there are no water droplets on the sensor cap or temperature sensor and then install the storage sleeve over the guarded probe. Make sure the DO and temperature sensors are not touching the sponge or immersed in water. Turn the instrument on and wait approximately 5 to 10 minutes for the storage sleeve to become completely saturated and to allow the temperature and dissolved oxygen sensors to stabilize.
3. Press CAL.
4. The display prompts for the local, true barometric pressure in mBar (millibars). Use the Up and Down Arrow keys to increase or decrease the barometric pressure value, then press Enter.
5. The display will show the current dissolved oxygen measurement on the main display and the calibration value in the lower right corner. Wait for the DO measurement to stabilize, then press Enter.
6. The display prompts for the approximate salinity of the water to be analyzed. Use the Up and Down Arrow keys to increase or decrease the salinity compensation value to the salinity value of your sample (between 0 to 40 parts per thousand [ppt]). When the correct salinity displays, press Enter.
7. The unit holds calibration for several months, even when powered off and on.

DOWNLOADING DATA TO A COMPUTER - ODO200M ONLY

The ODO200M features a micro USB connection that allows the instrument to be connected to a computer with Windows 7 or Windows 10 as the operating system. Once connected, data saved to the meter can be downloaded to the computer.

1. A USB cable is included with all ODO200M instruments. Plug the micro USB connector into the ODO200M instrument and the USB connector into a computer.
2. Turn the ODO200M instrument on. A driver will install from the instrument to the computer.
3. Open Windows Explorer. The PC will recognize the instrument as a removable drive.
4. Copy and paste the .csv file from the instrument to a location on the computer. This file can be opened in Excel®.



Windows Explorer Icon


Note: The original .csv file should be left on the ODO200M instrument. Do not try to modify this file.

Note: If the .csv file is opened with Excel® and the data is not formatted correctly (e.g. a temperature reading is interpreted as a date), please refer to the Troubleshooting section.

5. The instrument can be disconnected from the computer. The original .csv file should still be located on the ODO200M instrument.


RECAL TIMER - ODO200M ONLY




The Recal Timer feature provides a reminder to recalibrate the DO probe. If enabled, 'Recal' will be displayed when the user-defined interval has elapsed.




After pressing the **Up/Recal** key and holding for 3 seconds, use the arrow keys to adjust the value for the recal prompt in number of days. Press Enter  to confirm. The instrument will return to the run screen.

Any value between 0 and 60 days can be selected. Set the value to 0 to disable the Recal Timer.

DATE/TIME SETTINGS - ODO200M ONLY

A short press (i.e. key is not held) of the **Down**/ key changes the display in the upper right corner to be either Date or Time.

Press and hold the **Down/** key for 3 seconds to set date and time information. Use the arrow keys to adjust Hour, Minute (Min) and Second (Sec). Press Enter  to confirm each selection. After adjusting time, adjust date information by using the arrow keys to adjust the MM (month), DD (Day) and YYYY (Year) information. Press Enter  to confirm each selection.

Press and hold the **Down/** key for 6 seconds to set the date/time format. Use the arrow keys to display the desired Date format (MM/DD/YYYY, DD/MM/YYYY, or YYYY/MM/DD), followed by Enter  to confirm the selection. Next, use the arrow keys to display the desired Time format (12-hour or 24-hour), followed by Enter  to confirm the selection.

MAINTENANCE AND TROUBLESHOOTING

SENSOR MAINTENANCE - DISSOLVED OXYGEN

CLEANING THE SENSOR CAP

The Sensor Cap should be kept clean since some types of fouling can consume or produce oxygen or block the water sample from reaching the sensor which could affect the dissolved oxygen measurements.

To clean the Sensor Cap, gently wipe away any fouling with a lens cleaning tissue that has been moistened with water. Do not use organic solvents to clean the Sensor Cap. Using an organic solvent to clean the Sensor Cap may cause permanent damage to the cap. For example, alcohol will dissolve the outer paint layer and other organic solvents will likely dissolve the dye in the cap. Dissolving or scratching the paint or dye layer will cause erratic dissolved oxygen measurements.

To disinfect the probe, soak the probe in 3% hydrogen peroxide for 15 to 30 minutes and then rinse it with clean water.

SENSOR CAP REPLACEMENT

The sensor cap should be replaced about once per year but may last longer. It should also be replaced if it is cracked or damaged (see Troubleshooting section for instructions on how to inspect the cap for damage). The instruction sheet shipped with the replacement ODO sensor cap includes the calibration coefficients specific to your sensor cap.

The replacement ODO sensor cap is shipped in a humidified container. The package should not be opened until ready for use. Once the sensor cap has been installed on the sensor as described below, it is important to keep the sensor in a 100% humid environment. Therefore, the sensor should be stored in either the gray calibration/storage sleeve with a moistened sponge or immersed in water, see Sensor Storage for more information. If the sensor dries out, refer to the Rehydration procedure in this manual.

Refer to Figure 7 below when following the instructions for replacing the cap.

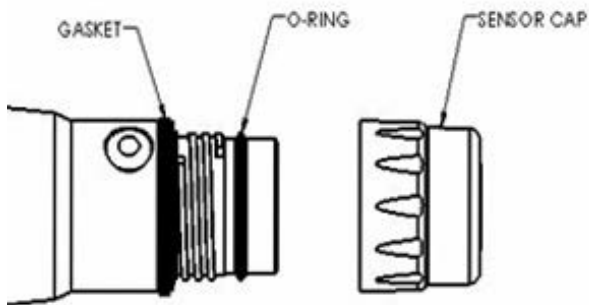


Figure 7

Caution: Avoid touching the sensing end of the sensor cap during the following maintenance procedures.

1. Remove the old sensor cap assembly from the sensor by grasping the probe body with one hand and then rotating the sensor cap counterclockwise until it is completely free. Do not use any tools for this procedure.
2. Inspect the o-ring on the probe for damage. If there is any indication of damage, carefully remove the o-ring and replace it with the new o-ring included with the replacement sensor cap. Do not use any tools to remove the o-ring.
3. Ensure that the o-ring installed on the probe is clean. If necessary, wipe clean with a lint free cloth or replace the o-ring as described in the previous step.
4. Locate the o-ring lubricant included with the new sensor cap. Apply a thin coat of o-ring lubricant to the installed o-ring. Remove any excess o-ring lubricant from the o-ring and/or probe with a lens cleaning tissue.
5. Remove the new sensor cap from its hydrated container and dry the inside cavity of the sensor cap with lens cleaning tissue. Next,

clean the clear surface of the sensor on the end of the probe with lens cleaning tissue.

6. Using clockwise motion, thread the new sensor cap onto the probe assembly until it is finger-tight. The o-ring should be compressed between the sensor cap and probe. Do not over-tighten the sensor cap and do not use any tools for the installation process.
7. After installing the new sensor cap, store the sensor in the gray calibration/storage sleeve with a moistened sponge.
8. Follow the procedures below for entering in the new sensor cap's coefficients into the EcoSense ODO200/ODO200M instrument.

ENTERING SENSOR CAP COEFFICIENTS INTO THE ECOSENSE ODO200/ODO200M

After installing a new sensor cap, connect the probe/cable assembly to the instrument and turn the instrument on. Locate the Calibration Code Label at the top of the instruction sheet and note the six numbers which are listed as K1 through K5 and KC. These six numbers contain the calibration code for this particular sensor cap. Follow these instructions to enter the new calibration coefficients into your instrument:

1. Press and hold the CAP key for 3 seconds. The CAP key is located in the lower left corner of the keypad.
2. The instrument will prompt for K1 and show 8 alpha/numeric values with the first value blinking.
3. Use the up and down arrow keys to adjust the first value to match the first value of the new cap's K1. Press the Enter key to accept.
4. Continue using the up and down arrow keys to adjust all 8 alpha/numeric values for K1 pressing the Enter key to confirm each entry.
5. After confirming the last value for K1, the instrument will prompt you for K2. Follow the instructions in step 3 and 4 to enter and confirm the value for K2. Continue with K3, K4 and K5.
6. After confirming K5, the EcoSense ODO200/ODO200M will prompt you for KC. KC has two values. Follow the instructions in step 3 and 4 to enter the coefficients. After confirming KC, the instrument will return to the measurement screen.
7. After entering the Sensor Cap Coefficients, perform a 1-point calibration as described in the Calibration Section.
8. Press and hold the CAP key for 3 seconds at any time to exit and cancel the cap coefficient update.

If errors are made in entering the Sensor Cap Coefficients, the instrument will block the update and an error message will appear on the display and the instrument will return to the K1 entry screen. If

you see this error message, re-enter the coefficients and check them carefully for correct transcription from the Calibration Coefficient Label.

The coefficient values are hexadecimal. Due to the display, 6 and b look very similar. Hexadecimal values will be displayed as: A, b, C, d, E, F, 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

If you continue to get an error message after several entry attempts, contact YSI Technical Support for assistance.

REHYDRATING THE SENSOR CAP

The Sensor Cap must remain in a moist environment; see Sensor Storage for storage recommendations. If the sensor cap is allowed to dry out, it is likely to drift slightly at the beginning of your next study unless it is rehydrated. If the cap dries out, you can rehydrate it by soaking the probe tip with the sensor cap installed in room temperature tap water for 24 hours. After rehydration is complete, recalibrate and be sure to store the probe in a moist environment.

SENSOR MAINTENANCE - TEMPERATURE

You must keep the temperature portion of the sensor free of build up. Other than that, the sensor requires no maintenance. A soft bristle brush, like a tooth brush can be used to scrub the temperature sensor if needed.

SENSOR STORAGE

SHORT-TERM STORAGE

When the ODO sensor is not in use, store it in a moist environment.

For short-term storage (less than 30 days), moisten the sponge in the calibration/storage sleeve with a small amount of clean water and place this over the probe with the sensor cap and sensor guard installed. This will provide a 100% saturated air environment.

LONG-TERM STORAGE

For long-term storage (>30 days), remove the battery from the instrument. Moisten the sponge in the calibration/storage sleeve with a small amount of clean water and place this over the probe with the sensor cap and sensor guard installed. Inspect the sponge every 30 days to make sure it is still moist.

Alternatively, you can place the probe with sensor cap directly in a beaker or other container of water, making sure that the water does not evaporate over time.

TROUBLESHOOTING

Erroneous dissolved oxygen readings typically indicate a need to clean the sensor cap, replace the sensor cap, and/or recalibrate the instrument. First, clean the sensor cap following the instructions in the Maintenance section and then perform a calibration. If erroneous readings persist, inspect the sensor cap for damage (cracks, large scratches in paint or dye layer), replace if necessary, enter new coefficients and then attempt to recalibrate the instrument.

If the sensor cap is not damaged, try to rehydrate the sensor cap then recalibrate.

If you are still getting erroneous dissolved oxygen readings, try replacing the sensor cap, enter the new coefficients and then recalibrate. If the erroneous readings continue, contact YSI Technical Support to help determine the next step.

ERROR MESSAGES ON DISPLAY

<i>Symptom</i>	<i>Possible Solution</i>
Instrument will not turn on, the BAT symbol displays on the screen.	<ol style="list-style-type: none">1. Low battery voltage, replace batteries.2. Batteries installed incorrectly, check battery polarity.3. Return system for service.
Temperature values display Over or Undr on Run screen.	<ol style="list-style-type: none">1. Sample temperature is less than 0° C or more than +50°C. Increase or decrease the sample temperature to bring within the allowable range.2. Contact YSI Tech Support. Possible temperature sensor failure.
Instrument will not calibrate dissolved oxygen.	<ol style="list-style-type: none">1. Verify calibration routine - correct barometric pressure, salinity input, and calibration environment.2. Allow sufficient stabilization time for dissolved oxygen and temperature.3. Check sensor cap. Clean, rehydrate or replace as necessary.4. Contact YSI Tech Support.

<i>Symptom</i>	<i>Possible Solution</i>
DO readings are inaccurate.	<ol style="list-style-type: none"> 1. Verify temperature readings are accurate. 2. Sample temperature should be between 0 and 45 °C, the temperature compensation range for DO mg/L. 3. DO sensor not properly calibrated, recalibrate the sensor. 4. Check sensor cap. Clean, rehydrate or replace as necessary. Recalibrate. 5. Contact YSI Tech Support.
Dissolved Oxygen values display Over or Undr on Run screen.	<ol style="list-style-type: none"> 1. Sample dissolved oxygen concentration is more than 20 mg/L or 200%, or less than 0.0 mg/L or 0.0%. 2. Verify temperature readings are accurate. 3. DO sensor not properly calibrated, recalibrate the sensor. 4. Check sensor cap. Clean, rehydrate or replace as necessary. Recalibrate. 5. Contact YSI Tech Support.

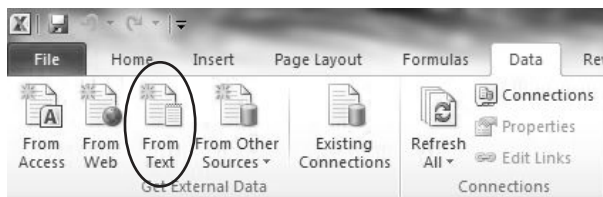
OPENING THE DATA FILE WITH EXCEL®

Depending on the region and language setting of your PC, measurement data might be formatted incorrectly by Excel® when the data file is opened.

This is sometimes encountered with German set as the PC language, as a German date format typically utilizes a decimal (DD.MM.YYYY). The ODO200M utilizes a decimal as the radix, so a temperature of **31.1** is sometimes interpreted by Excel® as **31. Jan** when German is set as the PC language.

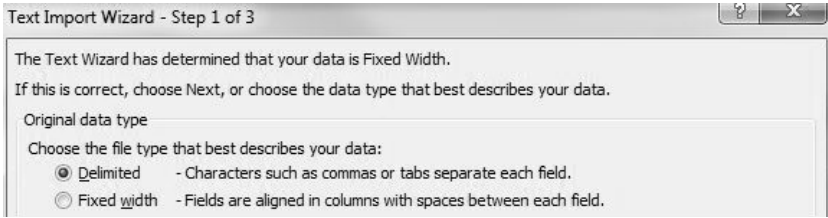
If a data file is opened in Excel® and measurement data is incorrectly interpreted as something other than a number, please follow these steps:

1. Open a blank Excel® spreadsheet.
2. Go to the **Data** tab and select **From Text**.

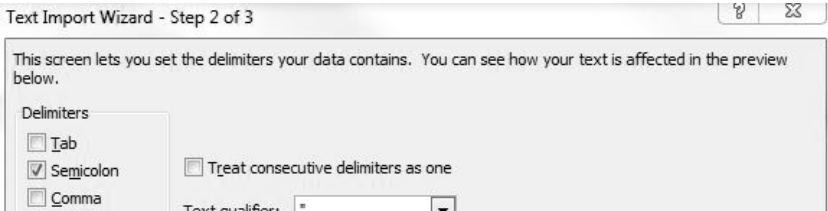


3. Choose to **Import** the data file you have copied to your PC. Don't select the original data file that is still on the instrument.

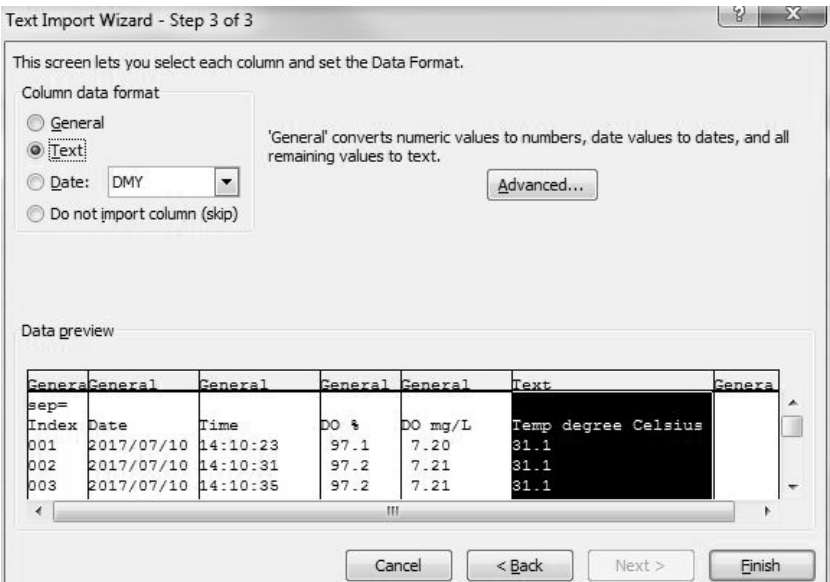
4. Under Step 1 of the Text Import Wizard, choose **Delimited**.



5. Under Step 2 of the Text Import Wizard, choose **Semicolon**.



6. Under Step 3, click on the column with the incorrectly formatted data. This column should be highlighted in black. Choose **Text** under **Column data format**. Do this for each column with incorrectly formatted data.



7. Select **Finish**, then choose where you want the data to be placed on your opened spreadsheet.

SPECIFICATIONS

These specifications represent typical performance and are subject to change without notice. For the latest product specification information, please visit YSI's website at ysi.com or contact YSI Tech Support.

<i>Parameter</i>	<i>Range</i>	<i>Resolution</i>	<i>Accuracy</i>
<i>Temperature</i>	0 to 50 °C*	0.1 °C	± 0.3 °C
<i>Dissolved Oxygen</i>	0.0 to 200% air saturation	0.1% air saturation	± 1.5% of reading or ± 1.5% air saturation, whichever is greater
	0.00 to 20.0 mg/L	0.01 mg/L	± 1.5% of reading or ± 1.5 mg/L, whichever is greater

Pressure Compensation (Input during calibration)	500 to 1125 mBar (375 to 844 mmHg)
Salinity Compensation (Input during calibration)	From 0.0 to 40.0 ppt
Calibration Backup	Yes
Audio Feedback	Yes, on all keys
Power Source, Battery Life	One 9V battery (included with meter) 100 hour battery life in manual sampling mode (ODO200); 52 hour battery life in manual sampling mode (ODO200M) Real time clock (RTC) on the ODO200M also powered by CR2032 coin battery (3V)
Operating Range - Temperature	0 to 50 °C
Operating Range - Relative Humidity	Up to 95%
Instrument Casing	Waterproof IP-67 with cable connector cap installed
Weight (with battery)	281 grams (.62 lbs)
Dimensions (L x W x H)	18.9 cm x 7.9 cm x 3.8 cm (7.45 in x 3.10 in x 1.50 in)
Memory	50 data sets on the ODO200 250 data sets on the ODO200M
Auto Shutoff	Automatically powers off after 30 minutes of inactivity
Recal Timer	ODO200M only - Customer selects recalibration interval; from 0 to 60 days

Real-Time Clock (RTC) for Date/ Time Stamp of Saved Data	ODO200M only
Waterproof USB for Downloading Data to PC	ODO200M only

<i>Conforms to the following:</i>	
<i>Directives:</i>	EMC 2014/30/EU RoHS 2011/65/EU WEEE 2012/19/EU
<i>Harmonized Standards:</i>	EN61326-1:2013 (IEC 61326-1:2012) IEC 61000-3-2:2005 IEC 61000-3-3:2008 IEC 61000-4-2:2008 IEC 61000-4-3:2006 IEC 61000-4-4:2004 IEC 61000-4-6:2008 IEC 61000-4-8:2009

* Automatic dissolved oxygen temperature compensation range is 0 to 45°C

ACCESSORIES / PART NUMBERS

<i>Part Number</i>	<i>Description</i>
606326	EcoSense ODO Sensor Cap Kit
606327	1 meter (approximately 3.3 feet) probe and cable assembly*
606328	4 meter (approximately 13 feet) probe and cable assembly*
606304	10 meter (approximately 33 feet) probe and cable assembly*
605139	Carrying case, small, soft-sided (holds instrument and up to a 4 meter cable/probe assembly)
606330	Hard-sided carrying case with form fitted foam inserts

*All cables include optical-based dissolved oxygen sensor and temperature sensor.

CONTACT INFORMATION AND SERVICE

ORDERING AND TECHNICAL SUPPORT

Telephone: 800 897 4151 (US)
+1 937 767 7241 (Globally)
Monday through Friday, 8:00 AM to 5:00 ET

Fax: +1 937 767 9353 (orders)
+1 937 767 1058 (technical support)

Email: info@ysi.com

Mail: YSI Incorporated
1725 Brannum Lane
Yellow Springs, OH 45387
USA

Web address: ysi.com

When placing an order please have the following available:

- 1.) YSI account number (if available)
- 2.) Name and phone number
- 3.) Purchase Order or Credit Card
- 4.) Model Number or brief description
- 5.) Billing and shipping addresses
- 6.) Quantity

SERVICE INFORMATION

YSI has authorized service centers throughout the United States and Internationally. For the nearest service center information, please visit ysi.com and click 'Support' or contact YSI Technical Support directly at 800-897-4151.

When returning a product for service, include the Product Return form with cleaning certification. The form must be completely filled out for a YSI Service Center to accept the instrument for service. The form may be downloaded from ysi.com by clicking on the 'Support' tab, then the Product Return Form button.

RECYCLING

YSI is committed to reducing the environmental footprint in the course of doing business. Even though materials reduction is the ultimate goal, we know there must be a concerted effort to responsibly deal with materials after they've served a long, productive life-cycle. YSI's recycling program ensures that old equipment is processed in an environmentally friendly way, reducing the amount of materials going to landfills.

- Printed Circuit Boards are sent to facilities that process and reclaim as much material for recycling as possible.
- Plastics enter a material recycling process and are not incinerated or sent to landfills.
- Batteries are removed and sent to battery recyclers for dedicated metals.

When the time comes for you to recycle, follow the easy steps outlined at ysi.com.

APPENDIX A-DO% CALIBRATION VALUES

Calibration Value	Pressure			
	in Hg	mmHg	kPa	mbar
101%	30.22	767.6	102.34	1023.38
100%	29.92	760.0	101.33	1013.25
99%	29.62	752.4	100.31	1003.12
98%	29.32	744.8	99.30	992.99
97%	29.02	737.2	98.29	982.85
96%	28.72	729.6	97.27	972.72
95%	28.43	722.0	96.26	962.59
94%	28.13	714.4	95.25	952.46
93%	27.83	706.8	94.23	942.32
92%	27.53	699.2	93.22	932.19
91%	27.23	691.6	92.21	922.06
90%	26.93	684.0	91.19	911.93
89%	26.63	676.4	90.18	901.79
88%	26.33	668.8	89.17	891.66
87%	26.03	661.2	88.15	881.53
86%	25.73	653.6	87.14	871.40
85%	25.43	646.0	86.13	861.26
84%	25.13	638.4	85.11	851.13
83%	24.83	630.8	84.10	841.00
82%	24.54	623.2	83.09	830.87
81%	24.24	615.6	82.07	820.73
80%	23.94	608.0	81.06	810.60
79%	23.64	600.4	80.05	800.47
78%	23.34	592.8	79.03	790.34
77%	23.04	585.2	78.02	780.20
76%	22.74	577.6	77.01	770.07
75%	22.44	570.0	75.99	759.94
74%	22.14	562.4	74.98	749.81
73%	21.84	554.8	73.97	739.67
72%	21.54	547.2	72.95	729.54



a xylem brand

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