

English

Thermo Scientific Orion Star™ Plus DO Meter

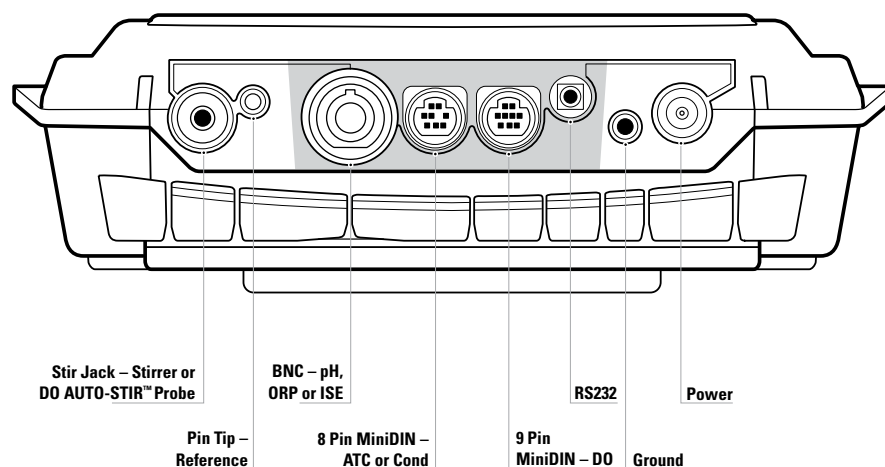
DO

Quick Start Guide

Key Description

| | | | | | | | |
|--|-----------|--|------------|--|-------------|--|-----------------------------|
| | power | | up arrow | | line select | | stir (benchtop meters only) |
| | calibrate | | down arrow | | setup | | |
| | measure | | digit | | view log | | |

Meter Connections



All connectors on the 5-Star Plus benchtop meter are depicted above. All connectors on the 5-Star Plus portable meter are highlighted in gray.

The 3-Star Plus and 4-Star Plus meters will have fewer connectors. For example, the 3-Star Plus portable DO meter will only have 9 pin miniDIN, 8 pin miniDIN (for ATC probe only) and RS232 connectors.

For the complete Orion Star™ and Star Plus meter user guide, visit www.thermo.com/water.

Preparation

1. Power adapter (benchtop meters only) – Select the appropriate wall outlet plug and slide the plug plate into the groove on the back of the adapter. **See A.**

Batteries – Select four AA alkaline batteries. Confirm that the meter is off and remove the battery cover. Orient and insert the batteries as depicted in the battery compartment housing. Replace the cover. **See B and C.**

2. Prepare the DO probe according to the directions in the probe user guide. In general, these steps include:

- Unscrew the membrane cap from the DO probe, fill the membrane cap about ¾ full with polarographic electrolyte solution and screw the membrane cap onto the DO probe.
- Connect the DO probe to the meter and allow the probe to polarize for about 30 to 60 minutes.

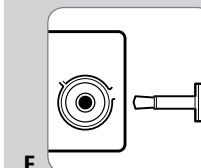
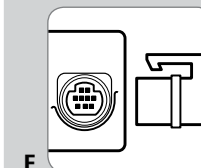
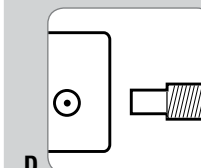
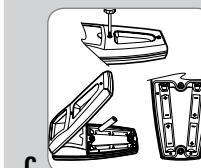
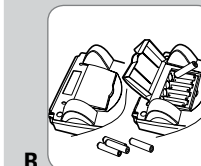
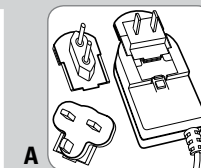
Note: A DO reading of zero and no change in temperature indicates that the DO probe is not fully connected to the meter. Disconnect the DO probe and then firmly reconnect the DO probe to the meter.

3. Prepare the calibration sleeve or BOD bottle.

- To prepare the calibration sleeve, remove the cap from the sleeve and remove the sponge from the cap. Saturate the sponge with distilled water and squeeze all of the excess water out of the sponge. Reassemble the calibration sleeve and insert the DO probe.
- To prepare a BOD bottle, fill the bottle with about 50 mL of distilled water. Insert the DO probe into the BOD bottle. Use a Thermo Scientific Orion BOD bottle adapter if the DO probe does not fit directly into the bottle. Make sure that the probe is suspended about half an inch above the distilled water and there is no water on the surface of the DO probe membrane.

4. Meter connections – Connect the power adapter to the meter and then to the wall outlet (benchtop meters only). **See D.** Connect the DO probe to the 9 pin miniDIN input on the meter. **See E.** Connect the stirrer probe or the stir connector on the AUTO-STIR™ BOD probe to the stir jack input on the meter (benchtop meters only). **See F.**

Note: All unused inputs on the meter should be covered with the black caps.



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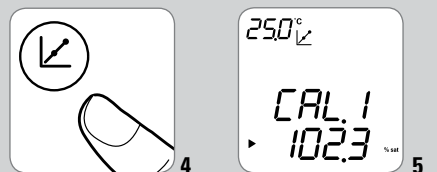
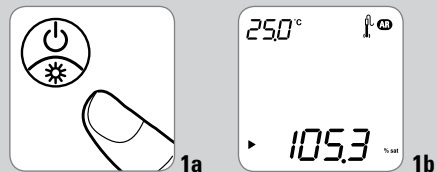
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Meter Overview

- To power on the meter, press the **power** key.
- Press the **line select** key to choose the top, middle or bottom display line. The ► icon will point to the selected line.
- In the measurement mode, press the **up arrow** or **down arrow** key to change the measurement units on the bottom display line to dissolved oxygen (% saturation), dissolved oxygen (mg/L), barometric pressure (no icon), sample temperature (no icon), electrolyte solution/membrane temperature (no icon, **m** icon after number) or a blank line.
- To escape out of any meter function, press and hold the **measure** key until the meter returns to the measurement mode.
- The 3-Star Plus, 4-Star Plus and 5-Star Plus DO meters can perform an air calibration using water saturated air, water calibration using air saturated water, manual calibration (Winkler titration) or zero point calibration.



Air Calibration

- Press the **power** key to turn on the meter. **See 1a.** In the measurement mode, press the **line select** key until the ► icon points to the bottom line and press the **up arrow** key until the **%sat** or **mg/L** icon is shown. **See 1b.**
- Make sure that the DO probe is connected to the meter and fully polarized. **See 2.**
Allow the probe to polarize for 30 to 60 minutes when the probe is first connected to the meter, the membrane cap is changed or the electrolyte solution is changed.
- Prepare the calibration sleeve or BOD bottle, insert the DO probe into the prepared calibration sleeve or BOD bottle and wait five minutes for the DO probe to equilibrate. **See 3.**
To prepare the calibration sleeve, remove the cap from the sleeve and remove the sponge from the cap. Saturate the sponge with distilled water, squeeze all the excess water out of the sponge and reassemble the calibration sleeve.
- Press the **calibrate** key. **See 4.**
- When the reading stabilizes, the meter will display 102.3% saturation and proceed to the measurement mode. **See 5.**

DO Calibration Type Selection

- In the measurement mode, press the **setup** key.
- Press the **up arrow** key until **dO** is displayed on the top line.
- Press the **line select** key to move the ► icon to the middle line. Press the **up arrow** key until **CALt** is displayed on the middle line.
- Press the **line select** key to move the ► icon to the bottom line. Press the **up arrow** key to select the calibration type as **Air** for a water saturated air calibration, **H2O** for an air saturated water calibration, **mAn** for a manual calibration (Winkler titration) or **SEt0** for a zero point calibration. Air is the default setting.
- Press the **line select** key to move the ► icon to the top line and press the **measure** key.

Measurement Mode Selection

- In the measurement mode, press the **setup** key.
- Press the **up arrow** key until **rEAd** is displayed on the top line.
- Press the **line select** key to move the ► icon to the middle line. Press the **up arrow** key until **tYPE** is displayed on the middle line.
- Press the **line select** key to move the ► icon to the bottom line. Press the **up arrow** key to select **AUt0** for the AUTO-READ™ mode, **tmE** for the timed mode or **COnT** for the continuous mode. AUt0 is the default setting.
- Press the **line select** key to move the ► icon to the top line and press the **measure** key.

Automatic Datalog Feature

- In the measurement mode, press the **setup** key.
- Press the **up arrow** key until **LOg** is displayed on the top line.
- Press the **line select** key to move the ► icon to the middle line. Press the **up arrow** key until **AUt0** is displayed on the middle line.
- Press the **line select** key to move the ► icon to the bottom line. Press the **up arrow** key to select **OFF** or **On**. OFF is the default setting.
- Press the **line select** key to move the ► icon to the top line and press the **measure** key.

DO Measurements

Turn on the automatic datalog feature to send measurements to the meter datalog or connect the meter to a printer or computer.

- Rinse the DO probe (and stirrer probe, if in use) with distilled water, blot dry with a lint-free tissue and insert into the sample.
- If the meter is in the AUTO-READ mode, press the **measure** key to start a reading. Once the reading is stable, the **AR** icon will stop flashing and the display will freeze. Press the **measure** key to take a new measurement. If the stirrer probe is in use, it will start stirring when the **measure** key is pressed and stop stirring when the **AR** icon stops flashing (benchtop meters only). If the AUTO-STIR BOD probe is in use, the stir button on the probe can be pressed to take a new measurement and start and stop stirring.

If the meter is in the continuous or timed mode, the meter will immediately start taking readings and continuously update the display. Once the reading is stable, the **%sat** or **mg/L** icon will stop flashing. If the stirrer probe is in use, press the **stir** key to start and stop stirring (benchtop meters only).

- Remove the DO probe (and stirrer probe, if in use) from the sample, rinse with distilled water, blot dry with a lint-free tissue, insert into the next sample and repeat step 2 or see the DO probe user guide for recommended storage.

Printing Data

If the automatic datalog feature is on, the meter will log a measurement every time the **measure** key is pressed (AUTO-READ and continuous modes) or the meter will log the measurement at the preset time interval (timed mode).

- Connect the meter to a printer or computer and verify the baud rate and output settings in the meter setup menu.
- In the measurement mode, press the **log view** key.
- Press the **up arrow** key to select **SEnd** to print the datalog or **CALS** to print the calibration log.
- Press the **log view** key to send the selected data to the printer or computer.