

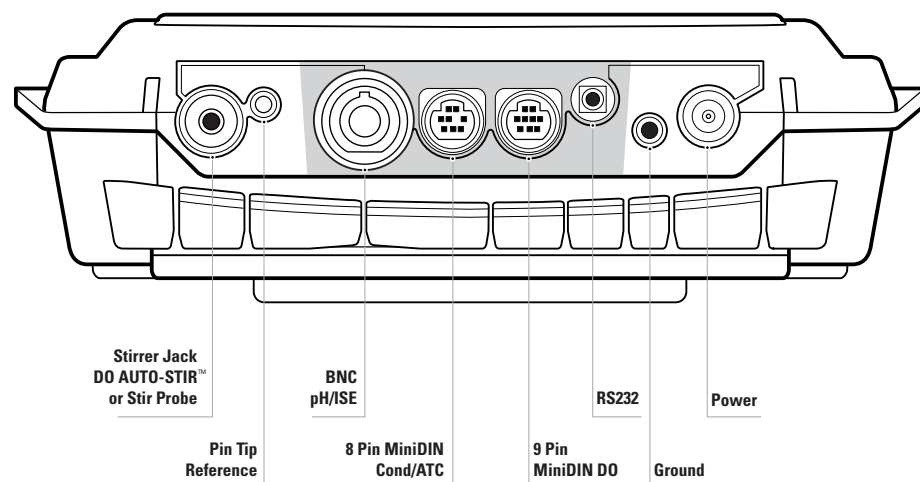
Key Description

	power		up arrow		line select		view log
	calibrate		down arrow		setup		stir
	measure		digits				

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

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

Meter Connections



For the complete Orion Star™ Series User's Guide visit www.thermo.com/water

Preparation

1. Power adapter (benchtop models only) - Select the appropriate wall socket 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 & C.**

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

- Unscrew the membrane cap from the DO probe, fill the membrane cap about $\frac{3}{4}$ full with DO probe 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 30-60 minutes.

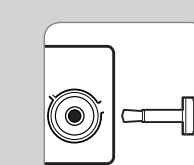
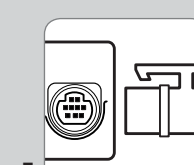
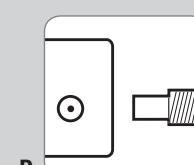
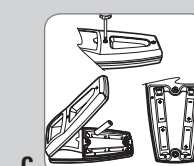
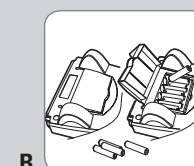
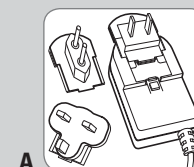
NOTE: A DO reading of zero and no change in temperature indicates that the DO probe is not connected. Firmly reconnect the DO probe to the meter. ▲

3. 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 then squeeze all 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 probe into the BOD bottle (Use an Orion BOD bottle adapter if the DO probe does not fit directly into the bottle). Make sure the probe is suspended about half an inch above the distilled water and there is no water on the surface of the DO probe.

4. Meter connections - Connect the power adapter to the meter and then to the wall socket (benchtop meters only). **See D.** Connect the DO probe to the 9 pin miniDIN input on the meter. **See E.** Connect the stir 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: Make sure that all unused inputs on the meter are covered with the black caps. ▲



Meter Overview

1. To power on the meter press the **power** key.
2. Press the **line select** key to choose the top, middle, or bottom display line. The ► icon will point to the selected line.
3. In the measurement screen press the **up arrow** key to change the value on the bottom display line to % saturation, mg/L, barometric pressure (no icon), or a blank line.
4. To escape out of any meter function, press and hold the **measure** key until the meter returns to the measurement mode.
5. The 3, 4 and 5-Star 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

1. Press the **power** key to turn on the meter. **See 1a.** Use the **line select** key to move the ► icon to the DO measurement line. **See 1b.**
2. Make sure 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.

3. Insert the probe into the prepared calibration sleeve or BOD bottle and allow five minutes for the probe to equilibrate. **See 3.**
4. Press the **calibrate** key. **See 4.**
5. When the reading stabilizes the meter will display 102.3% saturation and then proceed to the measurement mode. **See 5.**



DO Calibration Type Selection

1. Press the **setup** key.
2. Press the **up arrow** key until dO is displayed on the top line.
3. Press the **line select** key to move the ► icon to the middle line. Press the **up arrow** key until CALt is displayed.
4. Press the **line select** key to move the ► icon to the bottom line. Press the **up arrow** key to select the calibration type. Alr is default setting.
Alr = Water Saturated Air Calibration
H2O = Air Saturated Water Calibration
mAn = Manual Calibration (Winkler titration)
SEt0 = Zero Point Calibration
5. Press the **line select** key to move the ► icon to the top line.
6. Press the **measurement** key to return to the measurement mode.

Measurement Mode Selection

1. Press the **setup** key.
2. Press the **up arrow** key until rEAd is displayed on the top line.
3. Press the **line select** key to move the ► icon to the middle line. Press the **up arrow** key until tYPE is displayed.
4. Press the **line select** key to move the ► icon to the bottom line. Press the **up arrow** key to select the measurement mode. AUtO is default setting.
COnt = Continuous measurement mode
AUtO = AUTO-READ™ measurement mode
tImE = Timed measurement mode
5. Press the **line select** key to move the ► icon to the top line.
6. Press the **measure** key to return to the measurement mode

DO Measurements

1. Rinse the DO probe with deionized water, blot dry with a lint-free tissue, and insert the probe into the sample.
2. If the meter is in AUTO-READ mode, press the **measure** key to take a measurement. Once the reading stabilizes the **AR** icon will stop flashing and the display will freeze. Press the **measure** key again to take a new measurement.

If a stir probe is connected it will start stirring when the **measure** key is pressed and stop stirring when the **AR** icon stops flashing. If an AUTO-STIR™ BOD probe is connected, the stir button on the probe can be pressed to take a new measurement and begin stirring. (Benchtop meters only)
3. If the meter is in the continuous or timed measurement modes the meter will continuously take measurements and update the display. Once the reading stabilizes the **mg/L** or **%sat** icon will stop flashing.

If a stir probe or AUTO-STIR BOD probe is connected, press the **stir** key on the meter to start stirring and press the **stir** key again to stop stirring (Benchtop meters only).

Printing Data

In the AUTO-READ and continuous measurement modes, every time the **measure** key is pressed the meter logs the data on the display. In the timed measurement mode the meter logs the data at the predetermined time interval.

1. Press the **view log** key.
2. Use the **up arrow** key to scroll between CALO (print the calibration log) and SEnd (print the measurement log).
3. Press the **line select** key to print the data.

