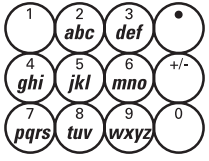
Shortcut Keys	Description
1 measure (esc)	Press the *measure* key to return the meter to the measurement mode. The *measure* key can be used as an escape key in most menus and modes.
2 ▲	Press the ▲ key to scroll up through a list of items on the display.
3 ▼	Press the ▼ key to scroll down through a list of items on the display.
• log/print	Press the *log/print* key to manually log, print, or log and print a measurement.
4 cal	Press the *cal* key to enter the calibration mode.
5 mode	Press the *mode* key to change the measurement mode for each channel.
6 method	Press the *method* key to access the methods list. Methods can be selected from the list and run on the meter. Methods can also be edited, copied, deleted, printed or current settings can be saved.
+/- log view	Press the *log view* key to view the data log and calibration log.
7 setup	Press the *setup* key to enter the setup menu.

Shortcut Keys	Description
8 res	Press the *res* key to change the measurement resolution for each channel.
9 auto	Press the *auto* key to access the autosampler setup menu.
0 stirrer	Press the *stirrer* key to turn the stirrer probe on or off.

Alphanumeric Keypad



Use the alphanumeric keypad when entering the electrode serial number, sample ID number and passwords. The alphanumeric keypad works in the same way as a cell phone keypad. For example, press the 2 key to enter 2, A, B or C. Enter the letter B by pressing the 2 key three times (2 → A → B). Uppercase or lowercase letters can be entered by pressing the same key. For example, enter the letter a by pressing the 2 key five times (2 → A → B → C → a). The meter will automatically advance to the next digit when no keys are pressed for three seconds.

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Quick Start Guide

Thermo Scientific Orion

Dual Star pH/ISE Dual Channel Meter

Meter Connections

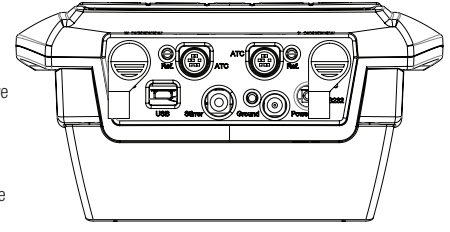
The **BNC**, **Ref**, and **ATC** connections are labeled as Channel 1 or Channel 2 on the ridge above the Thermo Scientific™ Orion™ Dual Star™ meter connections. Using the meter orientations shown in the figure below, the channel 2 connections are on the left and the channel 1 connections are on the right.

Connect pH electrodes, ion selective electrodes (ISE) or ORP electrodes with BNC or waterproof BNC connectors to the channel 1 and channel 2 **BNC** inputs.

Connect reference electrodes with 2.5 mm pin-tip connectors to the channel 1 and channel 2 **Ref** inputs.

Connect ATC probes with 8 pin MiniDIN connectors to the channel 1 and channel 2 **ATC** inputs.

Connect the Thermo Scientific™ Orion Star™ series stirrer probe to the **Stirrer** input. The stirrer probe can be purchased separately using catalog number 096019.



Select the appropriate wall outlet plug and slide the plug into the groove on the power adapter. Connect the power adapter to the **Power** input and to a wall outlet.

EZ Startup Menu

It is highly recommended that the EZ Startup™ menu be completed the first time that the Orion Dual Star meter is used. The EZ Startup menu sets important meter parameters, such as the displayed language, date and time, measurement mode and read type for each channel, and data output settings. To access the EZ Startup menu from the measurement mode, press the *setup* key, press the ▲ / ▼ keys to highlight EZ Startup and press the *f2 (select)* key.

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Setting the Measurement Mode

The measurement mode (displayed to the right of the measurement value) determines the type of calibration that the meter will perform on each channel.

1. In the measurement mode, press the *mode* key.
2. Dual channel display only: Press the ▲ / ▼ keys to highlight Channel 1 or Channel 2 and press the *f2 (accept)* key.
3. Press the ▲ / ▼ keys to highlight pH, ISE, mV, RmV or ORP as the measurement mode and press the *f2 (accept)* key.
4. If the ISE mode is selected, the meter will prompt the user to select the ISE units. Press the ▲ / ▼ keys to highlight the units and press the *f2 (accept)* key.
5. The meter will return to the measurement mode.

Setting the Electrode ID

The electrode ID (displayed below the channel number) is used for ISE incremental techniques and included with the datalog and calibration log entries. Some of the electrode ID options may not be accessible, depending on the selected measurement mode for the channel.

1. In the measurement mode, press the *setup* key.
2. Press the ▲ / ▼ keys to highlight Channel 1 or Channel 2 and press the *f2 (select)* key.
3. Press the ▲ / ▼ keys to highlight Electrode ID and press the *f2 (select)* key.
4. Press the ▲ / ▼ keys to highlight pH, ORP, F^- (fluoride), NH_3 (ammonia), NH_4^+ (ammonium), NO_3^- (nitrate), NO_2^- (nitrite), S^{-2} (sulfide), Cl^- (chloride), Cl_2 (chlorine), Br^- (bromide), I^- (iodide), CN^- (cyanide), Na^+ (sodium), K^+ (potassium), Ca^{+2} (calcium), Ag^+ (silver), Cu^{+2} (copper), Pb^{+2} (lead), Cd^{+2} (cadmium), ClO_4^- (perchlorate), BF_4^- (fluoroborate), SCN^- (thiocyanate), NO_X (nitrogen oxide), CO_2 (carbon dioxide), O_2 (oxygen), X^+ (monovalent cation), X^- (monovalent anion), X^{+2} (divalent cation) or X^{-2} (divalent anion) and press the *f2 (accept)* key.
5. Press the *measure* key to return to the measurement mode.

pH Calibration with Two Buffers

1. Prepare and condition the pH electrode according to the electrode user guide. Select two pH buffers that bracket the sample pH and are one to four pH units apart.
2. Connect the pH electrode, ATC probe and reference electrode (if applicable) to the channel 1 or channel 2 meter inputs and note which channel was selected. If the stirrer probe will be used, connect the stirrer probe to the meter input.
3. In the measurement mode, press the *f2 (cal)* key.
4. Dual channel display only: Press the ▲ / ▼ keys to highlight Channel 1 or Channel 2 and press the *f2 (accept)* key.
5. Rinse the pH electrode with distilled water and place into the first buffer.
6. When the electrode and buffer are ready, press the *f3 (start)* key to begin the calibration.
7. Wait for the pH value to stop flashing. If the pH value is correct, press the *f2 (accept)* key. If the pH value is incorrect, use the numeric keypad and *decimal* key to manually enter the pH of the first buffer and press the *f2 (accept)* key.
8. Press the *f2 (next)* key to proceed to the next buffer.
9. Rinse the pH electrode with distilled water and place into the second buffer.
10. When the electrode and buffer are ready, press the *f3 (start)* key.
11. Wait for the pH value to stop flashing. If the pH value is correct, press the *f2 (accept)* key. If the pH value is incorrect, use the numeric keypad and *decimal* key to manually enter the pH of the second buffer and press the *f2 (accept)* key.
12. Press the *f3 (cal done)* key. The meter will display a summary of the calibration.
13. Press the *f2 (log/print)* key to save and end the calibration, export the calibration data to the calibration log and printer or computer, if one is connected to the meter and enabled in the setup menu.

Important Note: The *f2 (log/print)* key must be pressed to save the calibration. Only pressing the *f3 (cal done)* key without pressing the *f2 (log/print)* key will not save the calibration.

ISE Calibration with Two Standards

1. Prepare and condition the ion selective electrode (ISE) according to the electrode user guide. Prepare two calibration standards that bracket the sample concentration and differ in concentration by a factor of ten.
2. Connect the ion selective electrode and reference electrode (if applicable) to the channel 1 or channel 2 meter inputs and note which channel was selected. If the stirrer probe will be used, connect the stirrer probe to the meter input.
3. In the measurement mode, press the *f2 (cal)* key.
4. Dual channel display only: Press the ▲ / ▼ keys to highlight Channel 1 or Channel 2 and press the *f2 (accept)* key.
5. Rinse the electrode with distilled water and place into the lower concentration standard.
6. When the electrode and standard are ready, press the *f3 (start)* key to begin the calibration.
7. Wait for the concentration value to stop flashing and use the numeric keypad and *decimal* key to enter the concentration of the standard and press the *f2 (accept)* key.
8. Press the *f2 (next)* key to proceed to the next calibration standard.
9. Rinse the electrode with distilled water and place into the higher concentration standard.
10. When the electrode and standard are ready, press the *f3 (start)* key.
11. Wait for the concentration value to stop flashing and use the numeric keypad and *decimal* key to enter the concentration of the second standard and press the *f2 (accept)* key.
12. Press the *f3 (cal done)* key. The meter will display a summary of the calibration.
13. Press the *f2 (log/print)* key to save and end the calibration, export the calibration data to the calibration log and printer or computer, if one is connected to the meter and enabled in the setup menu.

Important Note: The *f2 (log/print)* key must be pressed to save the calibration. Only pressing the *f3 (cal done)* key without pressing the *f2 (log/print)* key will not save the calibration.

Setting the Read Type

1. In the measurement mode, press the *setup* key.
2. Press the ▲ / ▼ keys to highlight Channel 1 or Channel 2 and press the *f2 (select)* key.
3. Press the ▲ / ▼ keys to highlight Read Type and press the *f2 (select)* key.
4. Press the ▲ / ▼ keys to select the read type and press the *f2 (accept)* key.
   - Auto-Read – The meter will display the measurement as it stabilizes and lock and hold the measurement when it is stable. Press the *measure* key to take a new reading.
   - On Ready – The meter will display **stabilizing** when the measurement is unstable and **ready** when the measurement is stable. The display will automatically update if the measurement changes.
   - At Time Intervals – The meter will display measurements at set time intervals (operator programmed).
   - Continuous – The meter will continuously measure and update the display.
   - Value Change In Measurement – The meter will display a measurement when the measurement reaches or exceeds a set high or low value (operator programmed).
   - Timed Reading – The meter will display a measurement after a set time delay (operator programmed) and lock and hold the measurement after the time delay is reached. Press the *measure* key to start another time delay cycle.
5. Press the *measure* key to return to the measurement mode.

pH and ISE Measurements

1. Rinse the electrode (ATC probe, stirrer probe and reference electrode, if applicable) with distilled water, blot dry and place into the sample.
2. If the stirrer probe is in use, press the *stirrer* key to turn on the stirrer probe.
3. Wait for the measurement to stabilize and record the pH or concentration and temperature of the sample when the meter indicates that the measurement is stable.
4. If the stirrer probe is in use, press the *stirrer* key to turn off the stirrer probe.
5. Remove the electrode (ATC probe, stirrer probe and reference electrode, if applicable) from the sample.
6. Repeat steps 1 through 5 for all samples.
7. When all of the samples are measured, store the electrode according to the electrode user guide.

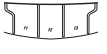
Meter Keypad

Press the shortcut keys in the measurement mode to move quickly to different meter menus and modes.

Press the ▲ / ▼ keys to scroll through lists of options on the display. These keys allow the operator to loop through the list, so the meter will return to the first item on the list after scrolling past the last item on the list.

Press the *f1*, *f2* and *f3* keys to perform the function shown above each key on the display.

If a numeric value must be entered, use the numeric keypad, *decimal* key and +/- key as required.

Keys	Description
	To turn the meter on, press and hold down the *power* key for about three seconds until the meter turns on. When the meter is on, press and quickly release the *power* key to turn the display backlight off or change the intensity of the backlight. To turn the meter off, press and hold down the *power* key for about three seconds until the meter turns off.
	Press the *f1*, *f2* and *f3* function keys to perform the action indicated on the display above each key. The the *f1*, *f2* and *f3* keys have menu-dependent functions.
channel	Press the *channel* key to display channel 1 only, channel 2 only, or a split screen with channel 1 on top and channel 2 on bottom.