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
⏻	Press the **power** key to turn the meter on. When the meter is on, press the **power** key to turn the display backlight on or off. To turn the meter off, press and hold down the **power** key for about three seconds until the meter turns off.
f1 f2 f3	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** function 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.

Shortcut Keys	Description	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.	6 method	Press the **method** key to access the methods list. Methods can be selected from the methods list and run on the meter. Methods can also be viewed, edited, copied, deleted, printed, or the current settings can be saved.
2 ▲	Press the ▲ key to scroll up through a list of items on the display.	+/- log view	Press the **log view** key to view the data log and calibration log.
3 ▼	Press the ▼ key to scroll down through a list of items on the display.	7 setup	Press the **setup** key to enter the setup menu.
• log/print	Press the **log/print** key to manually log, print, or log and print a measurement.	8 res	Press the **res** key to change the measurement resolution for each channel.
4 cal	Press the **cal** key to enter the calibration mode.	9 auto	Press the **auto** key to access the autosampler setup menu.
5 mode	Press the **mode** key to change the measurement mode for each channel.	0 stirrer	Press the **stirrer** key to turn the stirrer probe on or off. Once the **stirrer** key is pressed, a screen appears that allows the stirring speed to be set from 1 to 5 or off using the ▲ / ▼ keys.

Environmental Instruments
Water Analysis Instruments

North America
166 Cummings Center
Beverly, MA 01915 USA
Toll Free: 1-800-225-1480
Tel: 1-978-232-6000
Dom. Fax: 1-978-232-6015
Int'l Fax: 978-232-6031

Europe
P.O. Box 254, 3860 AG Nijkerk
Wallerstraat 125K, 3862 BN
Nijkerk, Netherlands
Tel: (31) 033-2463887
Fax: (31) 033-2460832

Asia Pacific
Blk 55, Ayer Rajah Crescent
#04-16/24, Singapore 139949
Tel: 65-6778-6876
Fax: 65-6773-0836

www.thermo.com/water

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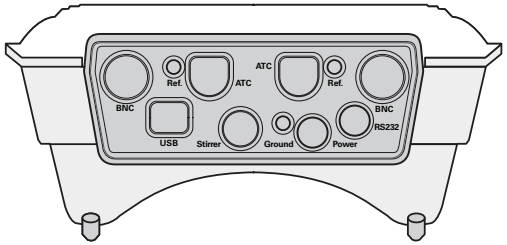
Thermo Scientific Orion DUAL STAR™ pH/ISE Meter

Quick Start Guide



Meter Connections

The **BNC**, **Ref.**, and **ATC** connections are labeled as Channel 1 or Channel 2 on the ridge above the connections. Using the meter orientation shown in the figure above, the channel 2 connections are on the left and the channel 1 connections are on the right.

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

Connect reference electrodes with standard 2.5 mm pin-tip connectors to the **Ref.** inputs.

Connect ATC probes with 8 pin MiniDIN connectors to the **ATC** inputs.

Connect the stirrer probe, Cat. No. 096019, to the **Stirrer** input. The stirrer probe must be purchased separately from the meter.

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

The first time the meter is powered up, it will automatically enter the EZ Startup menu. The EZ Startup menu allows the operator to set important meter parameters, such as the displayed language, date and time, measurement mode and read type for each channel, and data output settings. It is highly recommended that the EZ Startup menu be completed the first time that the meter is used.

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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 set the mode as pH, ISE, mV, RmV or ORP 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 set the units as ppm, mg/L, %, M or unitless 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) does not influence the calibration function, but it 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 the type of electrode as pH, ORP, fluoride (F^-), ammonia (NH_3), ammonium (NH_4^+), nitrate (NO_3^-), nitrite (NO_2^-), sulfide (S^{-2}), chloride (Cl^-), chlorine (Cl_2), bromide (Br^-), iodide (I^-), cyanide (CN^-), sodium (Na^+), potassium (K^+), calcium (Ca^{+2}), silver (Ag^+), copper (Cu^{+2}), lead (Pb^{+2}), cadmium (Cd^{+2}), perchlorate (ClO_4^-), fluoroborate (BF_4^-), thiocyanate (SCN^-), nitrogen oxide (NO_X), carbon dioxide (CO_2), oxygen (O_2), monovalent cation (X^+), monovalent anion (X^-), divalent cation (X^{+2}) or divalent anion (X^{-2}) and press the **f2 (accept)** key.
5. Press the **measure** key to return to the measurement mode.

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pH Calibration with Two Buffers

1. Prepare and condition the pH electrode according to the instructions in the electrode user guide. Select two pH buffers that bracket the expected 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 select the channel to calibrate and press the **f2 (accept)** key.
5. Rinse the pH electrode (ATC probe, stirrer probe and reference electrode, if applicable) with distilled water and place into the first buffer.
6. When the electrode and standard 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, press the **f3 (clear)** key, 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 (ATC probe, stirrer probe and reference electrode, if applicable) with distilled water and place into the second buffer.
10. When the electrode and standard are ready, press the **f3 (start)**.
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, press the **f3 (clear)** key, 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. Press the **f2 (log/print)** key to save and end the calibration, export the calibration data to the calibration log and export the calibration data to a printer or computer, if a printer or computer is connected to the meter and enabled in the setup menu. The meter will automatically proceed to the measurement mode.

ISE Calibration with Two Standards

1. Prepare and condition the ion selective electrode (ISE) according to the instructions in the electrode user guide. Prepare two calibration standards that bracket the expected 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 select the channel to calibrate and press the **f2 (accept)** key.
5. Rinse the electrode (stirrer probe and reference electrode, if applicable) 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 then press the **f3 (clear)** key, use the numeric keypad and the **decimal** key to enter the concentration of the first standard and press the **f2 (accept)** key.
8. Press the **f2 (next)** key to proceed to the next calibration standard.
9. Rinse the electrode (stirrer probe and reference electrode, if applicable) with distilled water and place into the higher concentration standard.
10. When the electrode and standard are ready, press the **f3 (start)**.
11. Wait for the concentration value to stop flashing and then press the **f3 (clear)** key, use the numeric keypad and the **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. Press the **f2 (log/print)** key to save and end the calibration, export the calibration data to the calibration log and export the calibration data to a printer or computer, if a printer or computer is connected to the meter and enabled in the setup menu. The meter will automatically proceed to the measurement mode.

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 display will show **stabilizing** until the measurement is stable. When the measurement is stable, the display will show **ready**. The display will automatically update if the measurement changes.
   - At Time Intervals – The meter will display a measurement at a set time interval (operator programmed).
   - Continuous – The meter will continuously measure and update the display. No indicator is shown on 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. To start another time delay cycle, press the **measure** key.
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. Record the pH or concentration and temperature of the sample when the meter indicates that the measurement is stable. The read type will determine how the measurements are displayed by the meter.
3. Remove the electrode (ATC probe, stirrer probe and reference electrode, if applicable) from the sample, rinse with distilled water, blot dry, place into the next sample and repeat step 2.
4. When all of the samples have been measured, store the electrode according to the instructions in the electrode user guide.