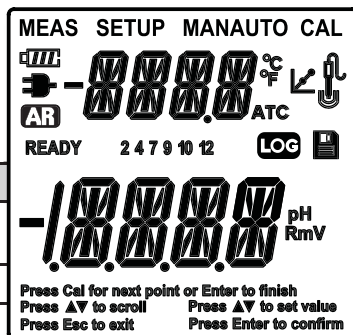


## Display Information

Display Icon	Description																					
<b>MEAS</b>	Indicates that the meter is in the measurement mode.																					
<b>SETUP</b>	Indicates that the meter is in setup mode.																					
<b>CAL</b>	Indicates that the meter is in the calibration mode.																					
<b>MAN</b>	Shown when a manual calibration is being done.																					
<b>AUTO</b>	Shown when using automatic buffer calibration. Default setting.																					
	Shows the battery status (more bars = more power remaining). Blinks when power is low and the battery needs to be changed. (Batteries included with the portable meter Orion Star A121 pH meter.)																					
	Shown when the meter is running on AC power. (Adapter included with the benchtop meter Orion Star A111 pH meter.)																					
<b>AR</b>	Shown when the meter is on AUTO-READ mode. Default setting. AR and unit of measurements will blink until the reading is stable. When the reading is stable it is held on the screen and AR is lit. Press <b>measure (esc)</b> to take a new reading.																					
<b>Ready</b>	Unit of measurement will blink until the reading is stable. When the reading is stable, READY is lit.																					
<b>2,4,7,9,10,12</b>	Buffer points that have been calibrated are displayed as follows: <table border="1" data-bbox="286 826 1084 954"> <thead> <tr> <th>Displayed Buffer Value</th> <th>2</th> <th>4</th> <th>7</th> <th>9</th> <th>10</th> <th>12</th> </tr> </thead> <tbody> <tr> <td>Calibrated USA Buffer Value (at 25°C)</td> <td>1.68</td> <td>4.01</td> <td>7.00</td> <td>-</td> <td>10.01</td> <td>12.46</td> </tr> <tr> <td>Calibrated DIN Buffer Value (at 25°C)</td> <td>1.68</td> <td>4.01</td> <td>6.86</td> <td>9.18</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Displayed Buffer Value	2	4	7	9	10	12	Calibrated USA Buffer Value (at 25°C)	1.68	4.01	7.00	-	10.01	12.46	Calibrated DIN Buffer Value (at 25°C)	1.68	4.01	6.86	9.18	-	-
Displayed Buffer Value	2	4	7	9	10	12																
Calibrated USA Buffer Value (at 25°C)	1.68	4.01	7.00	-	10.01	12.46																
Calibrated DIN Buffer Value (at 25°C)	1.68	4.01	6.86	9.18	-	-																
	Appears after a complete calibration.																					
	Shows the electrode condition. If the icon is blinking, the electrode condition is bad. Consult the electrode user guide.																					
	Displayed when a reading is stored into the memory.																					
<b>LOG</b>	Displayed when viewing stored readings.																					
<b>Secondary display</b>	Shows temperature reading in measurement mode and setup menu in setup mode.																					
<b>Primary display</b>	Measured value in selected mode.																					
<b>Instructions</b>	Located below the primary display. These phrases aid in the setup menu and calibration modes.																					



English

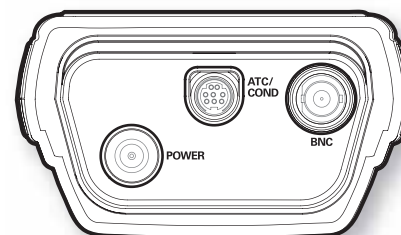
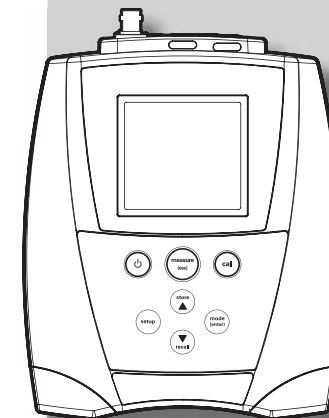
pH

## Thermo Scientific Orion Star A111 Benchtop & Star A121 Portable pH Meters

# Instruction Sheet

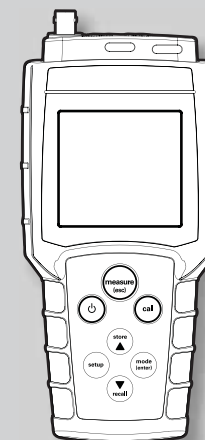
### Preparation

- Power source:
  - Power adapter (included with Orion Star A111 benchtop pH meters, sold separately for Orion Star A121 portable pH meters) – Select the appropriate wall socket plug. Slide off the clear plastic cover, and slide on the plug plate into the groove on the back of the adapter.
  - Batteries (included with Orion Star A121 portable pH meters, sold separately for Orion Star A111 benchtop pH meters) – Select four AA batteries. Confirm that the meter is off and remove the battery compartment cover. Insert batteries as shown in the battery compartment housing.
- Prepare the pH electrode according to the electrode instructions.
- Connect the appropriate item as labeled on the meter and as shown below:



### Overview

- To turn on or off the meter, press key.
- To exit any meter function, press the **measure (esc)** key to return to the measurement mode.
- The meter mode is shown at the top of the meter:
  - MEAS – for measurement mode
  - SETUP – for setup mode
  - CAL – for calibration mode
- The meter can be calibrated using up to three pH buffers.
- Press **mode (enter)** to switch between reading pH, mV, RmV or temperature.



For additional setup menu information, refer to the reference guide. The reference guide is on the included CD and available at [www.thermoscientific.com/water](http://www.thermoscientific.com/water).

©2011 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. & its subsidiaries.

Water Analysis Instruments  
[www.thermoscientific.com/water](http://www.thermoscientific.com/water)



**North America**  
166 Cummings Center  
Beverly, MA 01915 USA  
Toll Free: 1-800-225-1480  
Tel: 1-978-232-6000  
[info.water@thermo.com](mailto:info.water@thermo.com)

**Netherlands**  
Tel: (31) 033-2463887  
[info.water.uk@thermo.com](mailto:info.water.uk@thermo.com)

**China**  
Tel: (86) 21-68654588  
[wai.asia@thermofisher.com](mailto:wai.asia@thermofisher.com)










**India**  
Tel: (91) 22-4175-8800  
[wai.asia@thermofisher.com](mailto:wai.asia@thermofisher.com)

**Singapore**  
Tel: (65) 6778-6876  
[wai.asia@thermofisher.com](mailto:wai.asia@thermofisher.com)



**Japan**  
Tel: (81) 045-453-9175  
[wai.asia@thermofisher.com](mailto:wai.asia@thermofisher.com)

**Australia**  
Tel: (613) 9757-4300  
in Australia (1300) 735-296  
[InfoWaterAU@thermofisher.com](mailto:InfoWaterAU@thermofisher.com)

### Calibration

1. Prepare the pH electrode according to the electrode instructions.
2. Connect the electrode and ATC probe, if separate, to the meter. Press the  key to turn on the meter and press  to display pH for pH measurement mode.
3. Select fresh pH buffers. If calibrating more than one point (highly recommended), select pH buffers that bracket the expected sample pH and are at least one pH unit apart.
4. Press  Rinse the electrode (and ATC probe, if separate) with distilled water, blot dry and place into the buffer.
5. Wait for "READY" to appear.
  - a. With automatic buffer recognition (default, AUTO CAL appears at the top of the display): to calibrate additional points, repeat steps 4 and 5a.
  - b. With manual calibration (MAN CAL appears at the top of the display): press  or  keys to set value. To calibrate additional points repeats steps 4 and 5b.
6. When finished, press  to save and end calibration.
  - a. For one-point calibration, press  or  to edit the slope to match prior calibration (if desired) and press  to save and return to measurement mode.
  - b. For two- or three-point calibration, the average slope (SLP.A) will be displayed and the meter will automatically proceed to measurement mode.






### Measurement

1. Prepare the pH electrode according to the electrode instructions. Press  to display pH for pH measurement mode.
2. Rinse the electrode (and ATC probe, if separate) with distilled water, blot dry and place into the sample.
3. If the meter is in AUTO-READ mode (meter default) press . If the meter is in continuous read mode, the meter will immediately start taking readings. Record the pH and temperature of the sample when "READY" is displayed and "pH" stops blinking.





**Note:** If in AUTO-READ mode and memory storage is enabled, the reading will automatically be stored when the "AR" appears. If in continuous read mode and memory storage is enabled, press **store** to store into the meter's memory.

4. Remove the electrode (and ATC probe, if separate) from the sample, rinse with distilled water, and blot dry. To continue taking measurements, place electrode (and ATC probe, if separate) into the next sample and repeat steps 3 and 4.
5. When finished measuring all samples, store electrode according to electrode instructions.



### Reviewing pH Calibration Slope Data

1. In pH measurement mode, press **setup**. Press  five times so that "6.0" is on the top, secondary display and "CAL" is on the larger, primary display.
2. Press  to view slope. If a 3-point calibration was done, press  to view the second slope segment, and  again to display the average slope (SLP.A).
3. Press  to return to measurement mode.







### pH Calibration Selection

1. In pH measurement mode, press **setup**.
2. Press  twice.
3. Press  to select automatic buffer recognition (AUTO) or manual calibration (MAN).
4. If automatic buffer recognition was chosen, press . Press  to select USA or DIN buffer set for automatic buffer recognition.








**Note:** USA buffer points are: 1.68, 4.01, 7.00, 10.01 & 12.46. DIN buffer points are 1.68, 4.01, 6.86 & 9.18. The default buffer set is for USA buffers.

5. Press  to save configuration and  to return measurement mode.

### Read Type Selection











1. In measurement mode, press **setup**.
2. Press  in setup until "4.0" is shown on the top line and "READ" is shown on the lower line. Press .
3. Press  or  to select the measurement mode:  
CONT = Continuous  
AUTO = AUTO-READ™
4. Press  to save selection. Press  to return to measurement mode.

### Keypad Information




	<i>In the measurement screen:</i> Press to take a measurement. <i>In the setup screen:</i> Press to escape the setup menu. <i>In the calibration screen:</i> Press to abort calibration.		
	Press to turn the meter on or off.		<i>In the measurement screen:</i> Press to switch between modes. <i>In the setup screen:</i> Press to confirm the selection.
	Press to enter the calibration mode.		Press to enter setup mode.
	<i>In the measurement screen:</i> Press to store the data on the screen in continuous read mode and with data logging on. <i>In the setup screen:</i> Press to scroll up in the list of options.		<i>In the measurement screen:</i> Press to see the stored data. <i>In the setup screen:</i> Press to scroll down in the list of options.

### Storing Readings into Memory

This meter stores up to 50 readings. To automatically store readings into memory after each stable reading:

1. In measurement mode, press **setup**.
2. Press  in setup until "4.0" is shown on the top line and "READ" is shown on the lower line. Press .
3. Press  or  to show "AUTO" on the second line. Press  to save selection.
4. Press  to show "5.0" on the top line and "LOG" on the lower line. Press .
5. Press  to show "ON" on the second line. Press  to save selection.
6. Press  to return to measurement mode. Each time the reading is locked onto the screen with the "AR" icon. The reading will automatically be stored in the datalog.

### Viewing Stored Readings

1. In measurement mode, press **recall**.
2. Press  or  to scroll through the memory points.
3. Press  to review the reading stored at that point.