Orion Star A329 All Parameters Field Check and Field Measurement

Approved by: ______________________________

WWA Director

Reviewed by: ______________________________

Volunteer Monitoring Coordinator

This abbreviated SOP describes how to use the Orion multimeter for measuring temperature (°C), DO %, DO mg/L, pH, specific conductivity mS/cm or uS/cm, salinity psu and TDS ppm and performing field checks.

These steps are to be followed for field checks and for sample measurements.

1. **Turn on the meter.** To turn the Orion A329 meter on push the (power/light) key. This will automatically bring you to the measurement screen:

   ![Figure 1. Measurement screen](image)

2. **Prepare the sensors.**
   a. Remove the **pH probe** from the storage solution bottle by slightly loosening the cap, thereby releasing the vacuum and enabling easier removal of the probe. Rinse with deionized (DI) water and blot dry with the soft kimwipes provided in the sampling kit.
   b. Remove the **DO probe** from the white calibration tube. Screw on the metal shield.
   c. The **conductivity probe** needs no preparation.
3. Place the sensors into the fluids to be measured
   a. Field checks: Place the conductivity probe into the conductivity check standard and the pH probe into the pH 6.0 buffer. The DO probe is checked with air-saturated water.
   b. Sample: Place the probes into the water sample. Do not submerge the pH probe above the blue line. Measure DO/%DO first, then conductivity/TDS/salinity, and finally pH using the following steps.

4. How to adjust the display screen
   a. For DO: Press f3 (channel) repeatedly until you see the dissolved oxygen screen. Then press mode repeatedly to toggle through %, mg/L; DO measurement is mg/L and %. To return to the measurement screen: press f3 (channel) to return to the measurement screen as shown in Figure 1.
   b. For Conductivity: Press f3 (channel) repeatedly until you see the conductivity screen. Then press mode repeatedly to toggle through µS/cm or mS/cm for conductivity and TDS. To return to the measurement screen: press f3 (channel) to return to the measurement screen as shown in Figure 1.
   c. For pH: Press f3 (channel) repeatedly until you see the pH screen. There is no need to use mode for pH. To return to the measurement screen, press f3 (channel) to return to the measurement display, as shown in Figure 1.

5. How to measure check standards.
   a. Swirl the probes gently to dislodge any air bubbles.
   b. Reading. The display will show that the probe is stabilizing, i.e. Stabilizing…. Ready AR will begin flashing on the screen. When a reading has stabilized, Ready AR will stop flashing.
   c. Recording. Once a reading has stabilized, record the value and temperature on the field datasheet. (See Step 4 for instructions on how to toggle between display screens to find the DO % and mg/L, conductivity/TDS/salinity, and pH results. Each result has an associated temperature measurement which is also recorded on the field datasheet (Form VM2000M).
   d. Repeat measurements. Three readings are required for field checks. To initiate a second measurement, press Measure. The display will again show that the probe is stabilizing, i.e. Stabilizing…. Ready AR will begin flashing on the screen. When a reading has stabilized, Ready AR will stop flashing. Repeat until the minimum number of measurements has been obtained.

To simultaneously restabilize all three probes, return to the measurement display (Fig. 1) and press...
e. Additional measurements may be required to meet drift criteria as noted on the field datasheets.

6. For measuring samples.

a. **Start with DO.** Gently swirl the probe while measuring. Make a minimum of three measurements. For each measurement, record DO (mg/L), %DO and temperature (°C). Check for drift using the criteria on the field datasheet. Make more measurements as needed.

b. **Next measure conductivity.** Gently swirl the probe while measuring. Make a minimum of three measurements. For each measurement, write down conductivity (µS/cm or mS/cm), TDS (mg/L or g/L), salinity (‰) and temperature. Check for drift using the criteria on the field datasheet. Make more measurements as needed.

c. **Last measure pH.** Gently swirl the probe while measuring. Make a minimum of three measurements. For each measurement, write down pH and temperature. Make more measurements as needed.

7. If you have had any problems, note those in the **Comments** section of the field datasheet and contact the volunteer coordinator.

8. You have now completed all water quality meter readings.

**REVISION HISTORY**

<table>
<thead>
<tr>
<th>SOP Revision #</th>
<th>Revision Date</th>
<th>Section Modified</th>
<th>Modification</th>
<th>Reason Changed</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>9/7/16</td>
<td>All</td>
<td>Added header/footer to include program name, SOP number, revision date/number, issue date, and page numbering. Added approval sign offs and revision history sections.</td>
<td>Updating for better document control. Updated check standards to reflect use of conductivity probe with pH probe in solutions for pH readings.</td>
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<td>Revised check standard information.</td>
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<td>Proofreading edits by Christine Ellis</td>
<td>To improve clarity and fix typos.</td>
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