Oakton PC2700 pH and Conductivity Meter Calibration and Use

1. PH EQUIPMENT AND SUPPLIES

    1.1. Oakton PC2700 (S/N CP354757)

    1.2. Combination pH Electrode

        1.2.1. Keep electrode stored in pH 4 buffer solution. The fill solution level should not fall more than 0.25" below the cap. If it is below this level, fill with KCl before use.

    1.3. Automatic Temperature Compensation (ATC) probe

    1.4. Buffer solution, pH 7, Fisher Scientific

    1.5. Buffer solution, pH 4, Fisher Scientific

    1.6. Secondary buffer solution, pH 7, Orion

    1.7. Small plastic cups

    1.8. Squirt bottle with deionized (DI) water

2. CONDUCTIVITY EQUIPMENT AND SUPPLIES

    2.1. Oakton PC2700 (S/N CP354757)

    2.2. Conductivity Probe

        2.2.1. Electrode is stored dry. If electrode has been stored dry for some time, soak the electrode in alcohol or clean water for a few minutes to ensure better accuracy.

    2.3. Conductivity Standard, 100 umhos/cm, Fisher Scientific

    2.4. Conductivity Standard, 1000 umhos/cm, Fisher Scientific

    2.5. Conductivity Standard, 10000 umhos/cm, Fisher Scientific

    2.6. Small plastic cups

    2.7. Squirt bottle with DI water

3. PH CALIBRATION

    3.1. Turn meter on, and, if necessary, press "**mode**" until "**Measure pH**" is listed at the top of the screen.

        3.1.1. Press setup from the measurement screen and select **Buffer Group**. Choose the **Custom** calibration group. Go down to **Cal Points** and specify 2 calibration points.

    3.2. In the measure mode (**Meas**), thoroughly rinse the electrode with DI water and place into a cup containing the Fisher pH 7 buffer and stir. Use this reading for the initial pH in the pH meter log. The meter will return to the pH measurement screen.

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3.3. Press "**Cal"** to enter calibration mode. If necessary, click "**Clr-C"** then "**enter"** to clear the previous calibration. Submerge the pH electrode and ATC probe in the Fisher pH 7 buffer solution. When the reading is stable, use the up and down arrows to adjust the upper pH value displayed on the screen to the appropriate pH buffer (the reading is stable when the number displayed on the screen will go from faded to bold). Press "**enter"** to confirm the calibration value. When the calibration for the point is successful, the accepted value will be visible in the beaker icon on the screen.

3.4. Rinse the pH and ATC electrodes with DI water and repeat Step 3.3 for the Fisher pH 4 buffer. Once the calibration has been performed with all buffers, the percentage slope will be displayed at the bottom by the beaker icons, which should display 4 and 7 Press "**Esc"** at any time to save the calibration. The calibration passes if % slope is within 90-102%.

Repeat Steps 3.3-3.4 if calibration fails.

3.5. Click the measure icon and take a final reading with the pH 7 Orion buffer solution.

If it does not read at a pH of 6.9-7.1, repeat Steps 3.3-3.4.

3.6. Record the calibration in the *pH_Meter_Log* in LIMS **Laboratory / Technical / Laboratory Logbook**.

4. CONDUCTIVITY CALIBRATION

4.1. Turn meter on, and, if necessary, press "**mode**" until "**Measure Cond**" is listed at the top of the screen.

4.2. Press "**Cal"** to enter calibration mode. If necessary, click "**Clr-C"** then **"enter"** to clear the previous calibration. Submerge the conductivity probe and ATC probe in the 100 umhos/cm standard solution. When the reading is stable, use the up and down arrows to adjust the upper conductivity value displayed on the screen to the appropriate salinity standard (the reading is stable when the number displayed on the screen will go from faded to bold). Press "**enter"** to confirm the calibration value.

4.3. Rinse the conductivity probe with DI water and repeat Step 4.2 for the 1000 umhos/cm and 10000 umhos/cm standards. Press "**Esc"** at any time to save the calibration.

4.4. Press the "**Meas"** tab and take a final reading with the 1000 umhos/cm standard solution.

If it does not read between 950-1050 umhos/cm (5% deviation), repeat steps 4.2-4.3.

4.5. Record the calibration in the *Conductivity_Meter_Log* in LIMS **Laboratory / Technical / Laboratory Logbook**.

5. pH/CONDUCTIVITY MEASUREMENT

5.1. Make sure meter is in the appropriate measure mode. If not, press the "**Mode"** tab to change. Rinse the ATC probe and pH electrode if measuring pH, or the conductivity

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probe if measuring salinity. Place the appropriate probes into the solution to be read, and stir the solution.

5.2. When the reading stabilizes and the numbers go from faded to bold, record the measurement.

5.3. To shut down, hold down the power button at the bottom of the screen. Return the probes to their appropriate storage solutions: pH electrode into pH 4 buffer solution, Conductivity electrode is stored dry.

6. CALIBRATION OF ATC PROBE

6.1. The ATC probe should be calibrated annually against a NIST traceable temperature probe or sooner if temperature readings are suspect.

6.2. Place the ATC probe and NIST traceable probe in a large beaker of DI water (600 ml or larger) and acclimate to room temperature for at least 1 hour.

6.3. Press Cal from any mode and select **Temp.** The upper display shows the active temperature while the lower display shows the last calibration and offset.

6.4. Press the up and down arrows to adjust the temperature to match the reading to 0.1 ˚C of the NIST traceable probe.

6.5. Press **Enter** to accept the calibration temperature.

6.6. Document the calibration in LIMS **Laboratory / Technical / Equipment Editor** and in DEAR/Labs/Lab5/Biology/BenchCommon/Calibrations/Thermometer.

7. REFERENCES

7.1. Standard Methods 4500-H^+-2000

7.2. Oakton PC2700 series instruction manual.

APPENDIX OF CHANGES

03/21/2022 Updated section 2.2.1 to reflect current method of storage for conductivity electrode. Edited syntax and semantics for clarity.

02/22/2023 Removed references to pH 10 buffer solution. Updated where to document ATC probe calibration.

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