

User's Guide



Oyster pH - Conductivity - TDS - Temperature Meters

Models

34135-A

341350

341350-P

34145A

341450

341450-P



INTRODUCTION

Congratulations on your purchase of the Extech's Oyster Series meter or meter kit. These devices measure pH/Conductivity plus TDS or Temperature. These meters are intended for routine laboratory and field testing. Accurate measurements are provided in a battery operated, portable meter with a hinged display that can be adjusted to any viewing angle.

Model 34135-A measures pH, Conductivity and TDS. The 'A' indicates 'meter-only'.

Models 341350 and 341350-P are kits which include the 34135A and all the necessary accessories. The 'P' indicates Polymer type electrode (341350 has glass electrode).

Model 34145-A measures pH, Conductivity & Temperature. 'A' indicates 'meter-only'.

Models 341450 and 341450-P are kits which include the 34145A and all the necessary accessories. The 'P' indicates Polymer type electrode (341450 has glass electrode).

SPECIFICATIONS

	Range (resolution)	Accuracy
Conductivity	10 - 19,990 μ S (10 μ S)	\pm 0.5%
Temperature (34145-A only)	-30 to 105 $^{\circ}$ C	\pm 0.5 $^{\circ}$ C
pH	0.00 to 14.00pH (0.01pH)	\pm 0.02pH
TDS (34135-A only)	10 - 19,990ppm (10ppm)	\pm 0.5%
Auto/Manual Temperature Compensation	Manual for pH/Auto for conductivity/TDS; 0-100 $^{\circ}$ C; Correction: 2% per $^{\circ}$ C	
Power	9V battery or optional AC adapter	
Display	3-1/2 Digit LCD (90 to 180 $^{\circ}$ adjustable viewing angle)	
Overrange Indication	Automatic (1---) on all ranges	
Low Battery Indication	Automatic	
Dimensions/Weight	3.75 x 4.25 x 2" (96 x 108 x 45mm) / 12 oz (340g)	
Accessories supplied	9V battery, plus:	
	341350 kit	pH electrode, pH buffers, bottle, case, glass conductivity cell
	341350-P	pH electrode, pH buffers, bottle, case, polymer conductivity cell
	341450 kit	pH electrode, pH buffers, bottle, case, glass conductivity cell, stainless steel temperature probe
	341450-P	pH electrode, pH buffers, bottle, case, polymer conductivity cell, stainless steel temperature probe

METER DESCRIPTION

1. LCD display
2. Battery compartment
3. AC adapter input
4. Electrode and Temperature probe input jacks
5. Electrode
6. Neck-strap fasteners
7. Function keys



OPERATING INSTRUCTIONS

pH Calibration

1. Calibrate the meter and electrode before each use to ensure accuracy.
2. Connect the pH electrode via the BNC connector to the meter.
3. Open the meter to the fully extended position. Open the battery cover and install a 9V battery. Replace the cover and turn the unit ON. The LCD indication should appear.
4. Slide the SELECT switch to pH
5. Adjust the TEMP °C knob to approximate the solution temperature.
6. Remove the wetting cap from the tip of the electrode. Rinse in de-ionized water, blot dry and place the electrode in a 7.00 pH buffer solution. Allow to stand for approximately one minute or until the display stabilizes.
7. Adjust the CALIB knob until the display reads 7.00.
8. Remove the electrode from the buffer and rinse it in distilled water and blot dry. Place the electrode in a 4 or 10 pH buffer solution and allow to stand for approximately 1 minute or until the display stabilizes.
9. Adjust the SLOPE knob until the display reads 4.00 or 10.00 (as required).
10. Repeat steps 6 through 9 until no further adjustment is necessary.

pH Measurement

1. Place the electrode in the sample solution and read the pH value on the LCD.
2. When all measurements have been taken, unplug the electrode or cell and rinse in distilled water, shake and store as described below.

Conductivity / TDS Calibration

The conductivity cell calibration should be performed frequently to ensure accuracy.

1. Connect the conductivity cell to the input socket on the side of the meter.
2. Prepare a conductivity solution of approximately the same value as the solution to be measured. The solution should be prepared at 25°C.
3. Set the meter to the uS/cm or TDS mode.
4. Place the cell in calibration solution and allow the reading to stabilize.
5. Adjust the Cell knob until the display reads the value of the calibration solution.
Example: For a 12560uS/cm conductivity solution the display will read 1256. The user must multiply the reading x 10.

Conductivity/TDS Measurements (Multiply readings by 10)

1. Place the electrode in the sample solution.
2. When finished, unplug the electrode or cell and rinse in distilled water.

Temperature Measurement (34145-A only)

1. Set the mode switch to Temperature.
2. Connect the temperature probe to the meter via the meter's phone jack.
3. The LCD will indicate the temperature in °C.
4. Immerse the probe at least 1/3 of the way below the surface of the solution.
5. Allow enough time for the electrode to reach the sample's temperature.

Care of the Conductivity/TDS Cell

To prepare the cell, remove any outer protective sheath that may be used in shipping.

1. Cell Storage

On sheathed cells, replace the sheath over the cell when storing. For non-sheathed versions, soak the cell tip in de-ionized water for storage.

2. Cell Cleaning

After each use, the cell tip should be rinsed with de-ionized water. If solids build up inside the cell carefully remove with a cotton swab soaked in solvent taking care not to touch the metal parts of the inner cell.

3. Internal Cell Elements

Two platinum plates reside on the inner cell wall. These plates should be a uniform black color. If blemishes and scratches appear on these plates, the cell may need repair. If this occurs, it is suggested that the cell be returned for evaluation.

Care of the pH Electrode

1. The 60120B pH electrode is recessed in the polymer body allowing it to rest against the bottom of a beaker without damage the glass bulb. This eliminates the need for electrode holders and allows the probe to be used as a stirring rod. The sealed reference design eliminates the need for filling solutions (minimizes "dry-out"). Up to 100 psig systems can be accommodated without external pressurization.
2. The Electrode should remain in its bottle or cap until used. Afterwards, store the Electrode in its bottle. Use a pH 4 buffer solution or tap water as the storage medium.
3. If bubbles are seen in the bulb area, hold the electrode by its cap and shake downwards until bubbles are removed.
4. To improve speed of response, vigorously stir the electrode in the sample, buffer, or rinse solution.
5. After exposure to a sample, buffer, or rinse solution, shake the electrode with a snap motion to remove residual drops of solution.
6. Use part of the next sample/buffer to be measured as a rinse solution, when possible.
7. When calibrating, use a buffer as close as possible to the expected pH of the sample.
8. Keep buffers and samples at the same temperature to avoid temperature effects.
9. pH readings stabilize faster in some solutions than others; allow time to stabilize.
10. Electrodes deteriorate over time. If accuracy falls to 10% the electrode should be cleaned or replaced. If no improvement is observed, replace the electrode at once.

Electrode Storage

The electrode can be stored in the soaker bottle or wetting cap. For the storage bottle, slide the cover onto the electrode, replace the O-ring, and insert electrode into bottle firmly tightening the cap. Ensure that the bottle or cap is filled with a pH 4 buffer or tap water.

Electrode Cleaning

The type of electrode coating which occurs over time will determine the cleaning method. Soft coatings can be removed by vigorous stirring or by the use of a squirt bottle. Organic chemical (hard coatings) should be chemically removed. Only in extreme cases should the bulb be cleaned mechanically.

pH Troubleshooting Chart

Symptom	Cause	Recommended Solution
Long response time or reading drift	Clogged Junction	Soak in 4.07 M KCL @ 60°C for 30 minutes
	Strong Alkaline measurement	Soak in 0.1 M HCL overnight
	Deteriorated Gel layer	
	Protein coating on electrode surface	Soak in 1 gm Pepsin dissolved in 100ml of 0.1 m HCL for 30 minutes or as needed
	Oil, paint, dyes, suspended solids on sensor	Rinse electrode alternately with materials solvent then buffer 7.00
	Organic solvents are coating sensor	Organic mole fraction has to be less than 50% to assure reasonable readings. Limit time of measurement. Keep probe in the 7.0 buffer between readings.
	Dehydrated membrane	
Dry Bulb	Long term storage without wetting	Soak electrode tip in wetting cap filled with 1ml 7.00 buffer for 24 to 48 hours
Static Charge	Wiping electrodes	Rinse electrode in 7.0 buffer and blot. Do no wipe electrode.
Same readings in different buffers and samples	Cracked or broken bulb	Replace electrode. Use bulb guard. Avoid plunging electrode to bottom of container and spinning bars. A wetting cap will protect bulb between measurements.
Erratic LCD display	Samples have low ionic strength (lacks salt); e.g. distilled, de-ionized, boiled, lake water (high pressure)	For each 50 ml of sample add 1 drop (50uL) of SAT.KCL No alteration in pH will occur by inert KCL.

MAINTENANCE

Conductivity Cell Simulator

The meter is supplied with a cell simulator which can be used in place of the conductivity cell to provide a means to verify the operation of the meter. The simulator will produce a reading of approximately 800 - 1200uS (~1mS). The simulator should not be used as a calibration device.

This device is helpful in determining if the cause of calibration difficulties is related to the meter or (more likely) an aged or defective conductivity cell.

Battery Replacement

Install a new battery when the LOW BATTERY indication appears on the LCD. Remove the battery cover (refer to Fig. 1 for location), install new battery, and replace cover.

Calibration / Repair Services

Extech offers complete repair and calibration services for all of the products we sell. For periodic calibration, NIST certification or repair of any Extech product, call customer service for details on services available. Extech recommends that calibration be performed on an annual basis to insure calibration integrity.

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WARRANTY

EXTECH INSTRUMENTS CORPORATION warrants this instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 ext. 210 for authorization or visit our website at www.extech.com (click on Contact Extech and go to Service Department to request an RA number). A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.



Support Hotline (781) 890-7440

Tech support: Ext. 200; Email: support@extech.com

Repair>Returns: Ext. 210; Email: repair@extech.com

Website: www.extech.com

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