

Instruction Manual

pH 300/310

Waterproof Hand-held pH / mV / Temperature Meter



OAKTON

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Preface

This manual serves to explain the use of the waterproof pH 300/310 hand-held meter. It functions in two ways, firstly as a step by step guide to help you to operate the meter. Secondly, it serves as a handy reference guide. It is written to cover as many anticipated applications of the waterproof pH 300/310 meter as possible. If there are doubts in the use of the meter, please do not hesitate to contact the nearest Authorized Distributor.

Eutech Instruments/ Oakton Instruments cannot accept any responsibility for damage or malfunction to the meter caused by improper use of the instrument.

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1 INTRODUCTION

Thank you for selecting this meter. The waterproof pH 300/310 Hand-held meter is a microprocessor-based instrument that is designed to be handy and user-friendly. It is capable of measuring pH, mV and temperature. It is designed to be handy and capable of allowing one-hand operation. It is completely WATERPROOF --- and it FLOATS!

This meter has many user-friendly features – all of which are completely accessible through the water-resistant membrane keypad. Your meter includes a temperature probe, two electrode holders, batteries, instruction manual and a warranty card. Complete portable testing versions, including a rugged carrying case and calibration solutions, are also available. Refer to the Accessories section for more information.

Please read this manual thoroughly before operating your meter.



2 DISPLAY AND KEYPAD FUNCTIONS

2.1 Display

The LCD has a primary and secondary display.

- The primary display shows the measured pH, mV or Relative mV value.
- The secondary display shows the measured temperature.

The display also shows error messages, keypad functions and program functions. See Figure 1.

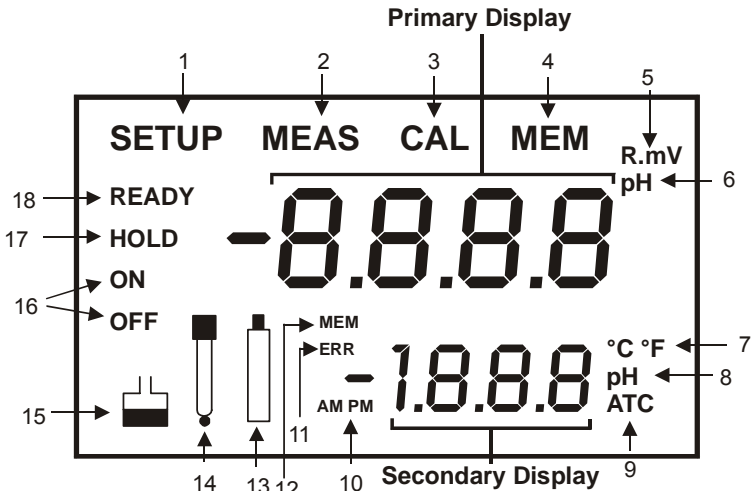


Figure 1: Full LCD Screen

- | | | |
|---------------------------------|--|-------------------------------|
| 1. SETUp mode indicator | 7. Temperature indicator (°F available on pH 310 meter only) | 13. Low battery indicator |
| 2. MEASurement mode indicator | 8. pH buffer selection indicator | 14. Probe indicator |
| 3. CALibration indicator | 9. Automatic Temperature Compensation indicator | 15. Buffer indicator |
| 4. MEMory recall mode indicator | 10. Clock indicator (pH 310 meter only) | 16. Function ON/OFF indicator |
| 5. mV or Relative mV indicator | 11. ERRor indicator | 17. HOLD indicator |
| 6. pH indicator | 12. MEMory location indicator | 18. READY indicator |

2.2 Keypad

The large membrane keypad makes the instrument easy to use. Each button, when pressed, has a corresponding graphic indicator on the LCD. See Figure 2. Some buttons have several functions depending on its mode of operation.

Key	Function
ON/OFF	Powers on and shuts off the meter. When you switch on the meter, the meter starts up in the mode that you last switched off from. For example, if you shut the meter off in mV measurement mode, the meter will be in mV measurement mode when you switch the meter on.
HOLD	Freezes the measured reading. To activate, press HOLD while in measurement mode. To release, press HOLD again. <i>pH 310 model only:</i> When auto endpoint feature is switched on, it automatically holds reading after 5 seconds of stability. The HOLD indicator appears on the display. Press HOLD to release auto endpoint feature.
MODE	Selects the measurement parameter. Press MODE to toggle between pH, mV (or relative mV) and date/time <i>[date/time feature available on pH 310 model only]</i> .
CAL/MEAS	Toggles between Calibration and Measurement mode. 1. If you were in pH Measurement mode, press CAL/MEAS to enter pH Calibration mode. NOTE: Temperature calibration is available from pH Calibration mode. See page 13 for directions. 2. If you were in mV Measurement mode, press CAL/MEAS to enter mV Calibration mode. While in SETUP main menu, pressing CAL/MEAS takes you out directly into the measurement mode.
ENTER	1. To confirm your calibration values in Calibration mode. 2. To confirm selections in SETUP mode.
MI/▲ & MR/▼	In Measurement mode: Press MI/▲ (memory input) to store values with its corresponding temperature values in the memory. Press MR/▼ (memory recall) to retrieve data from memory. In SETUP mode: Press to scroll through the setup subgroup programs. In mV calibration mode: Press to adjust the calibration value.
SETUP	Takes you into the SETUP mode. This mode lets you customize meter preference and defaults, and view calibration and electrode offset data.

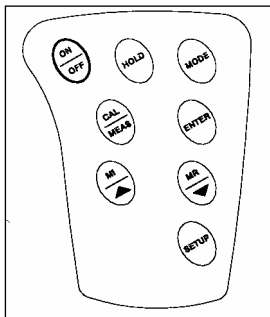


Figure 2 - Keypad

2.3 Inserting the Batteries

Four AAA batteries are included with your meter.

1. Use a Philips screwdriver to remove the two screws holding the battery cover. See Figure 3 below.
2. Remove battery cover to expose batteries.
3. Insert batteries. Follow the diagram inside the cover for correct polarity.
4. Replace the battery cover into its original position using the two screws removed earlier.

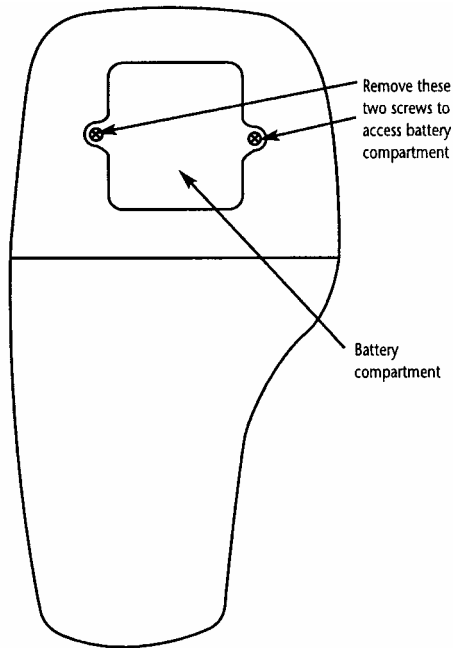


Figure 3 - Back panel of meter showing battery compartment

2.4 Connecting the Electrode and Temperature Probe

The waterproof pH 300/310 handheld pH meter uses any standard pH, ORP, or ISE electrode with a BNC connector. For Automatic Temperature Compensation (ATC), this meter requires a temperature probe with a special 6-pin connector.

Use either:

- All electrode with a BNC connector and a separate temperature probe with 6-pin connector (EC-PHWPTM-01W/ 35618-05).
- A “3-in-1” combination pH electrode with temperature probe designed specifically for pH 300 and pH 310 waterproof meters.

Refer to “Accessories” section on page 43 for more information on temperature probe and other electrodes.

NOTE: Keep connectors dry and clean. Do not touch connector with soiled hands.

To connect the pH, ORP or ISE electrode:

1. Slide the BNC connector of the probe over the BNC connector socket on the meter. Make sure the slots of the connector are in line with the posts of the socket. Rotate and push the connector clockwise until it locks.
5. To remove electrode, push and rotate the connector counterclockwise. While holding onto the metal part of the connector, pull it away from the meter.

CAUTION: Do not pull on the probe cord or the probe wires might disconnect.

To connect the temperature probe:

1. Line up the notch and 6 pins on the probe connector with the holes in the connector located on the top of the meter. Push down and screw the metal sleeve to lock the probe connector into place. See Figure 4.
6. To remove probe, unscrew the metal sleeve and slide up the probe connector. While holding onto metal sleeve, pull probe away from the meter.

CAUTION: Do not pull on the probe cord or the probe wires might disconnect.

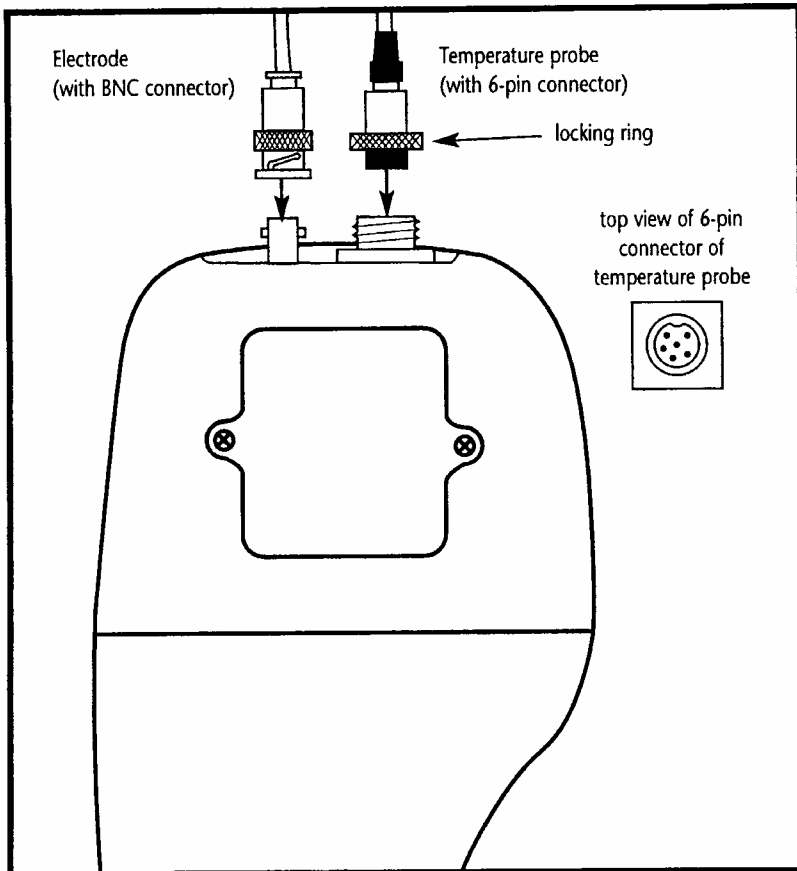


Figure 4 - Connection for pH Electrode (BNC) and Temperature probe (6-pin connector)

2.5 Attaching the Electrode Holder to the Meter

The waterproof pH 300/310 handheld meter comes complete with two electrode holders. They are designed to facilitate one-hand operation. Attach two electrode holders if you have a separate electrode and temperature probe. Care must always be taken to avoid use of excessive force in the process of attaching these components.

1. Locate the slot on the right-hand side of the meter.

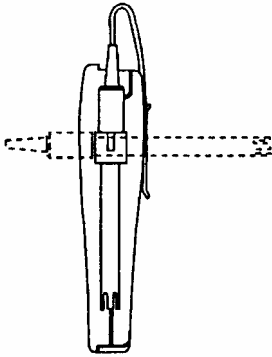


Figure 6 - Electrode can be placed in different positions with holder

2. Gently slide the flange of the holder into the slot on the meter. Make sure the holder is secured properly into the slot. See figure 5.

3. You can attach the electrode holder in different positions. See figure 6.

To attach a second electrode holder:

4. Align the flange of the second electrode holder with the slot of the first holder.
5. Slide the flange of the second holder into the slot of the first holder until the tops of the holders are aligned and secure. See figure 7.

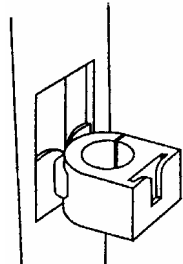


Figure 5 - Holder slot into right-hand side of meter

2.6 Inserting the Electrode into the Electrode Holder

Do not use excessive force when inserting electrodes into the holders.

Insert the pH electrode into the opening of the first holder until the top housing of the electrode touches the top of the holder.

If you are using a separate temperature probe, insert the probe into the opening of the second holder until the ridge on the housing touches the top of the holder.

NOTE: The holder is designed for probes 12 mm in diameter. Electrodes larger than 12 mm may not fit in the holder. Forcing the electrode into the opening may damage the holder or your electrode.

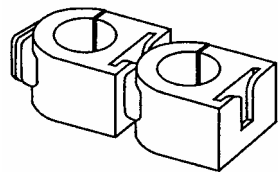


Figure 7 - Two holders

3 CALIBRATION

3.1 Important Information on Meter Calibration

When you re-calibrate your meter, old pH, Rel mV and mV calibration points are replaced on a point by point basis. For example, if you previously calibrated your meter at pH 4.01, 7.00, and 10.01, and you have now re-calibrated at pH 7.00, the meter retains the old calibration data at pH 4.01 and pH 10.01. To view current calibration points, see Program P2.0 in the SETUP section on page 26.

To completely re-calibrate your meter, or when you use a replacement probe, it is best to set the meter to its factory defaults and re-calibrate the meter at all points. To reset the meter to its factory defaults, see the SETUP section, Program P5.0, page 34 (for pH 300 meter) or Program P6.0, page 37 (for pH 310 meter).

3.2 Preparing the Meter for Calibration

Before starting calibration, make sure you are in the correct measurement mode. When you switch on the meter, the meter starts up in the units last used. For example, if you shut the meter off in “mV” units, the meter will read “mV” units when you switch the meter on.

Be sure to remove the protective electrode storage bottle or rubber cap of the electrode before calibration or measurement. If the electrode has been stored dry, wet the electrode in tap water for 10 minutes before calibrating or taking readings to saturate the pH electrode surface and minimize drift.

Wash your electrode in deionized water after use, and store in electrode storage solution. If storage solution is not available, use pH 4.01 or 7.00 buffer solution.

Do not reuse buffer solutions after calibration. Contaminants in the solution can affect the calibration, and eventually the accuracy of the measurements. See page 43 for information on our high-quality pH buffer solutions.

pH 300 meter calibration

The pH 300 meter is capable of up to 5-point pH calibration to ensure accuracy across the entire pH range of the meter. Select from the following buffer options:

- USA buffers --- pH 1.68; 4.01, 7.00, 10.01, and 12.45.

The meter automatically recognizes and calibrates to these standard buffer values, which makes pH calibration faster and easier.

pH 310 meter calibration

The pH 310 meter features three separate internationally-recognized buffer standards. Select the buffer standard you require in SETUP mode Program 4.0 (see pages 27 & 34 for more information). The pH 310 meter is capable of up to 6-point pH calibration, depending on the buffer standard selection. Select from the following buffer options:

- USA buffers --- pH 1.68, 4.01, 7.00, 10.01, and 12.45.
- NIST buffers --- pH 1.68, 4.01, 6.86, 9.18, and 12.45.
- DIN buffers --- pH 1.09, 3.06, 4.65, 6.79, 9.23, and 12.75.

The meter automatically recognizes and calibrates to these standard buffer values, which makes pH calibration faster and easier.

3.3 pH Calibration

NOTE: We recommend that you perform at least 2-point calibration using standard buffers that bracket (one above and one below) the expected sample range. You can perform a 1-point calibration, but make sure that the buffer value is close to the sample value you are measuring.

1. If necessary, press the MODE key to select pH mode. The pH indicator appears in the upper right hand corner of the display.
2. Rinse the probe thoroughly with de-ionized water or a rinse solution. Do not wipe the probe; this causes a build-up of electrostatic charge on the glass surface.
3. Dip the probe into the calibration buffer. The end of the probe must be completely immersed into the sample. Stir the probe gently to create a homogeneous sample.
4. Press CAL/MEAS to enter pH calibration mode. The CAL indicator will be shown. The primary display will show the measured reading while the smaller secondary display will indicate the pH standard buffer solution.
5. Wait for the measured pH value to stabilize.
6. Press ENTER to confirm calibration. The meter is now calibrated to the current buffer.

See figure 8.

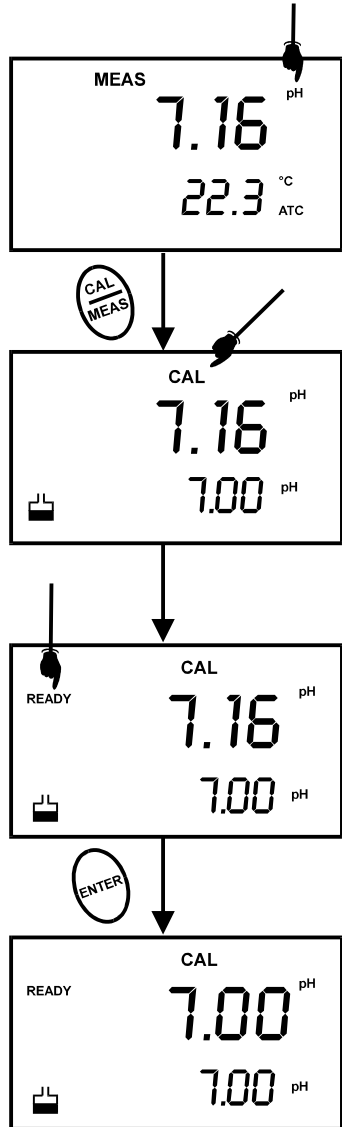


Figure 8 - pH Calibration

7. Rinse the probe with de-ionized water or a rinse solution, and place it in the next pH buffer.
8. Follow steps 5 and 6 for additional calibration points. See Figure 9.
9. When all the calibration points as set in the Unit Configuration Setup (see P4.2 on page 31) are completed, the meter returns to Measurement mode automatically. However, if you wish to terminate the calibration without completing the number of points as set in the Unit Configuration Setup menu, press CAL/MEAS to return to pH measurement mode.

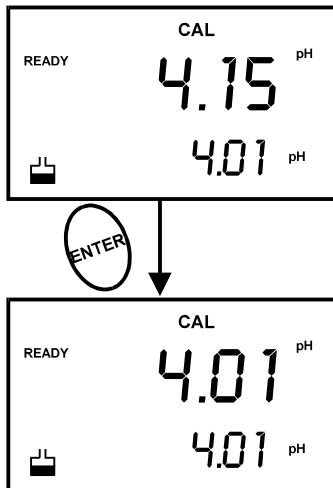


Figure 9 - Next point calibration for pH 4.01

NOTES:

To exit from pH calibration mode without confirming calibration, DO NOT press ENTER in step 6. Press CAL/MEAS instead.

If the selected buffer value is not within ± 1.0 pH from the measured pH value: the electrode and buffer icon blink and the ERR annunciator appears in the lower left corner of the display. Figure 10.

To limit the number of pH buffer values available during calibration, see SETUP section P4.2 on page 31.

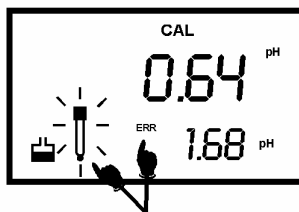


Figure 10 - Err message and electrode icon will appear if incorrect buffer are used

3.4 Relative mV Calibration

1. While in the measurement function, press MODE to enter the mV mode. The mV indicator appears in the upper right hand corner. See figure at right.
2. Press the CAL/MEAS key. The CAL indicator appears above the primary display. The primary display shows the relative mV reading and the secondary display shows the absolute mV value.

NOTE: If you have never calibrated relative mV or if the meter has been reset, the value shown in the primary display is the same as the absolute mV value.

NOTE: "R." annunciator will appear once mV calibration is performed, an indication of mV offset.

3. Press the MI/▲ or MR/▼ keys to enter the relative mV value that matches your desired reading.
4. Press the ENTER key to confirm the reading and to return to the measurement mode. The primary display now shows the relative mV reading.

NOTES:

To view the mV offset value, use the SETUP mode Program P3.1. See page 27 for instructions.

To reset all calibration and offset values in memory to the factory default settings, use:

- In pH 300 meter: SETUP Program P 5.0. See page 34.
- In pH 310 meter: SETUP Program P 6.0. See page 37.

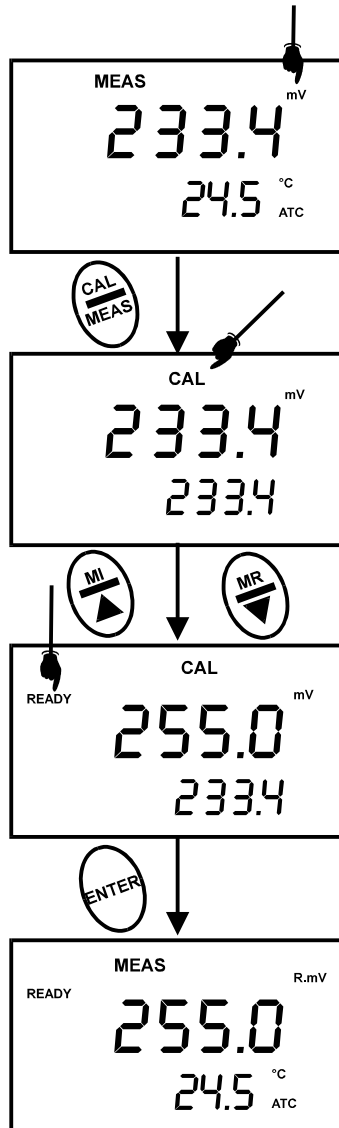


Figure 11 - mV calibration

3.5 Temperature Calibration

The temperature sensor is factory calibrated. Calibrate the temperature probe only if you suspect temperature errors that may have occurred over a long period of time or if you have a replacement probe.

Temperature Calibration

1. Make sure the ATC probe (or temperature connector of the electrode) is attached to the 6-pin connector. The ATC annunciator will appear at the right-hand side of the LCD.
2. Switch the meter on. Press the MODE key to select pH mode.
3. Press the CAL/MEAS key to enter pH calibration mode. The CAL indicator will appear above the primary display.
4. While in pH calibration mode, press the MODE key to enter temperature calibration mode. The primary display shows the temperature reading with last set offset and the secondary display shows the factory default temperature value.
5. Dip the ATC probe (or electrode) into a solution of known temperature (i.e. a temperature bath). Allow time for the temperature probe to stabilize.
6. Scroll with the MI/▲ or MR/▼ keys to set the correct temperature value (i.e. the temperature of the temperature bath). You can adjust the reading in increments of 0.1 °C.
7. Once you have selected the correct temperature, press the ENTER key. The meter automatically returns to pH measurement mode. See Figure 12.

NOTES:

- You can offset the temperature reading up to $\pm 5^{\circ}\text{C}$ from original reading.
- To exit this program without confirming the temperature calibration value, DO NOT press ENTER. Press CAL/MEAS instead.

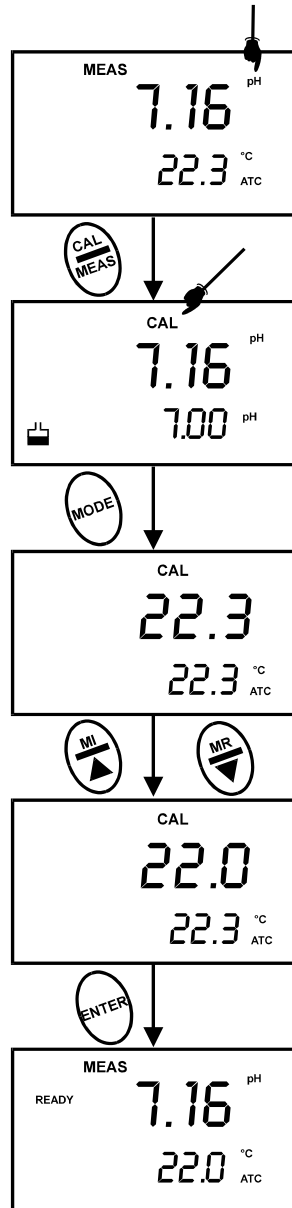


Figure 12 - Temperature calibration

4 MEASUREMENT

This meter is capable of taking measurements with automatic or manual temperature compensation. Automatic temperature compensation only occurs when a temperature sensor is plugged into the meter. If there is no temperature sensor plugged into the meter, the default manual temperature setting is automatically 25 °C. You can manually set the temperature to match your working conditions using a separate thermometer.

4.1 Automatic Temperature Compensation

For automatic temperature compensation (ATC) simply plug the temperature probe into the meter (see page 6 for directions). The ATC indicator will light up on the LCD. See figure 13.

NOTE: If you are using a temperature probe, the probe must be submersed in the liquid you are measuring.

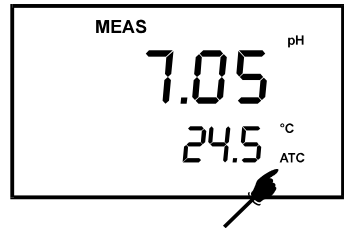


Figure 13 - ATC annunciator will light up when connected to temperature probe

4.2 Manual Temperature Compensation

IMPORTANT: For manual compensation, you must disconnect the temperature probe (see page 6).

1. Switch the meter on. Press the MODE key to select pH mode.
2. Press the CAL/MEAS key to enter pH calibration mode. The CAL indicator will appear above the primary display.
3. While in pH calibration mode, press the MODE key to enter temperature calibration mode. The primary display shows the current temperature setting and the secondary display shows the default value 25 °C.
4. Check the temperature of your sample using an accurate thermometer.
5. Press the MI/▲ or MR/▼ keys to set the temperature to the measured value from step 4.
6. Press ENTER to confirm the selected temperature and to return to the pH measurement mode.

See Figure 14.

The meter will now compensate pH readings for the manually set temperature.

NOTES:

To exit this program without confirming the manual temperature compensation value, DO NOT press ENTER in step 6. Press CAL/MEAS instead.

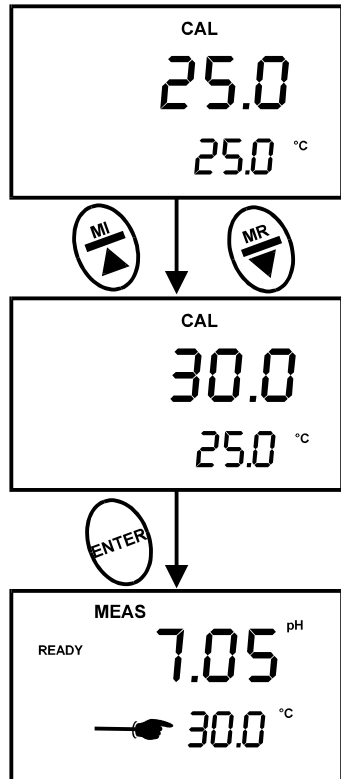


Figure 14 - Manual temperature compensation

4.3 Taking Measurements

Be sure to remove the electrode soaker bottle or protective rubber cap on the electrode before measurement.

To take readings:

1. Rinse the probe with de-ionized or distilled water before use to remove any impurities adhering to the probe body. If the pH electrode has dehydrated, soak it for 30 minutes in electrode storage solution or 2M – 4M KCl solution (sold separately).
2. Press ON to switch on meter. The MEAS annunciator appears on the top center of the LCD. The ATC indicator appears in the lower right-hand corner to indicate Automatic Temperature Compensation (see page 15 to set Manual Temperature Compensation). See Figure 15.
3. Dip the probe into the sample.

When dipping the probe into the sample, the sensor or the glass bulb of the electrode must be completely immersed into the sample. Stir the probe gently in the sample to create a homogeneous sample.

4. Allow time for the reading to stabilize. Note the reading on the display.
5. To toggle between pH and mV (or Rel mV) readings, press the MODE key.

Taking measurements with READY indicator selected on

If the READY indicator has been activated, the READY annunciator lights when the reading is stable
*. *Switch the READY indicator on or off in SETUP program P 4.1. See page 30 for directions.*

* *The READY indicator appears and the reading holds until the measured value exceeds the tolerance (± 0.02 pH; ± 0.8 mV <400; ± 1.2 mV > 400). Then, the READY annunciator turns off.*

Taking measurements with the auto endpoint feature selected on

NOTE: This feature is available on model pH 310 only.

When a reading is stable for more than 5 seconds, the auto endpoint feature will automatically “hold” the reading. The “hold” indicator appears on the left side of the display. Press the HOLD key to release the reading. Switch the Auto endpoint feature on or off in SETUP program P 4.1, see page 30 for instructions.

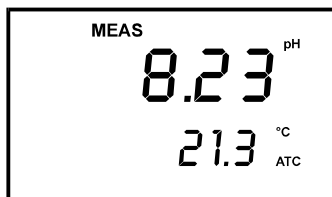


Figure 15 - Measurement mode

5 HOLD FUNCTION

This feature lets you freeze the value of the pH, mV (or Relative mV) and temperature readings for a delayed observation. HOLD can be used any time when in MEAS mode.

1. To hold a measurement, press the HOLD key while in measurement mode. "HOLD" will appear on the display. See Figure 16.
2. To release the held value, press HOLD again. Continue to take measurements.

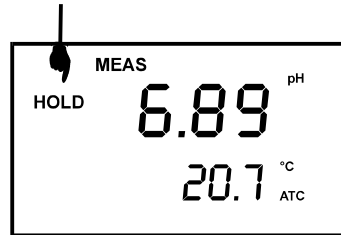


Figure 16 - HOLD feature

NOTE: This meter shuts off automatically 30 minutes after last key is pressed. If the meter is shut off either automatically or manually, the HOLD value will be lost. For longer storage, use the Memory functions described in page 18.

NOTE: *for pH 310 model only:* The pH 310 meter has an auto endpoint feature. When this feature is switched on, the display will automatically "HOLD" a reading that has been stable for more than 5 seconds. The "HOLD" indicator appears. Press the HOLD key to release the reading. To switch on or off the auto endpoint feature, see SETUP Program P 4.1 on page 30.

6 MEMORY FUNCTION

6.1 Memory Input

Your meter stores data in sets:

- pH and temperature
- mV (or relative mV) and temperature

For pH 300 meter: The pH 300 meter can store up to 16 sets of data in any combination of values. For example, you can store 7 pH and 9 mV values.

For pH 310 meter: The pH 310 meter can store up to 50 sets of data in any combination of values. In addition to the standard data set, the pH 310 meter also stores the date and time the reading was stored.

To store a reading:

1. During any measurement function (MEAS), press MI key to input any data into the memory.
2. MEM, "Sto" and memory number will flash. The meter then returns to measurement mode.

See figure 17.

NOTE: If the memory is full, the first value stored will be erased to create space for the new value.

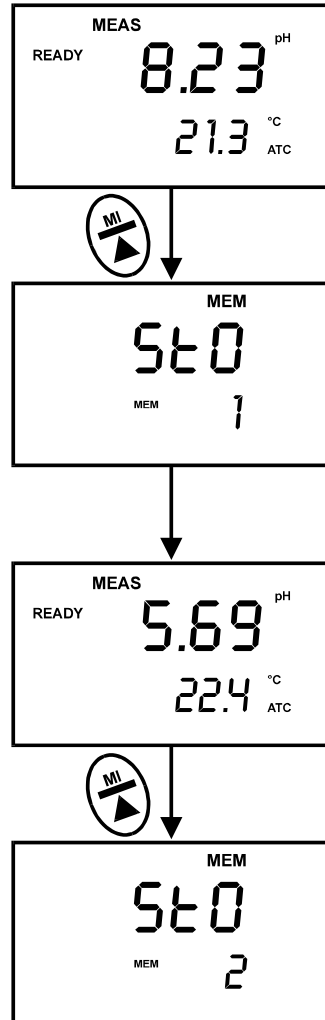


Figure 17 - Memory Input

6.2 Memory Recall

This function recalls the previous readings stored in the memory. You can only access MR from the measurement mode. Memory recall is in “Last In First Out” order.

To recall readings:

1. Press the MR key once to retrieve the last reading stored. The memory location screen – **MEM**, “**Loc**” and the memory number – will flash on the display.
2. Press the ENTER key to recall the reading stored under that memory number.

For pH 300 meter only: Press the ENTER key again to return to the “memory location” screen. See Figure 18.

For pH 310 meter only: Press the ENTER key again to view the date (Month/Day format) and time (Hour/Minute format) the reading was taken. See Figure 19.

Press ENTER key again to return to the “memory location” screen.

3. The display automatically moves to the next lower memory location screen.

See figure 20.

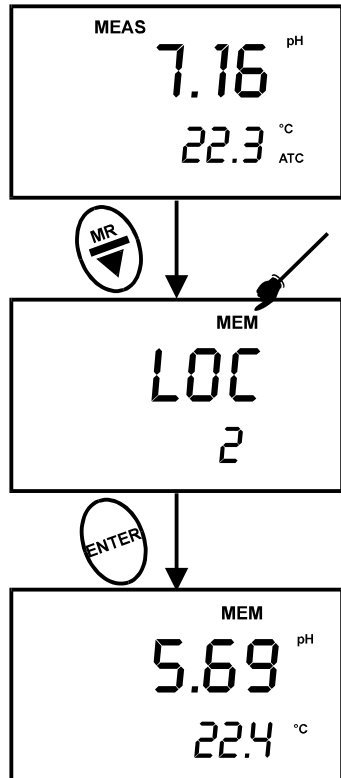


Figure 18 - Memory recall function

4. If necessary, press the MI/▲ key to select the next “memory location” screen; press the MR/▼ key to select the previous “memory location” screen.
5. Repeat steps 2 to 5 to review additional stored data sets.
6. To exit Memory Recall, press the MEAS key to return to the Measurement mode.

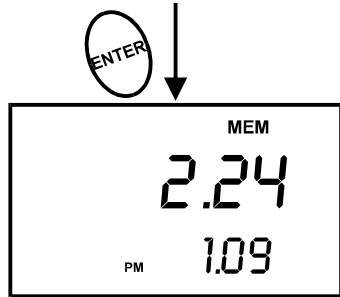


Figure 19 - View date and time
(available only for pH 310 meter)

NOTES:

Readings stored in memory are retained even if the units are turned off. To erase all readings stored in memory, use the SETUP mode P1.0 on page 25.

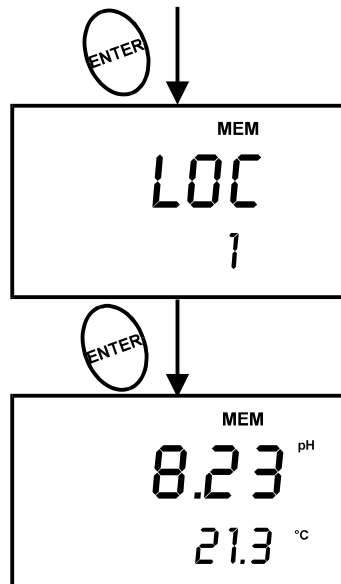


Figure 20 - Next Memory Recall value

7 ADVANCED SETUP FUNCTIONS

The advanced setup mode lets you customized your meter's preferences and defaults. This meter features different sub groups that organize all setup parameters.

The sub-groups are:

1. P1.0: Memory clear (CLr)
2. P2.0: Viewing calibration data (CAL)
3. P3.0: Viewing electrode data (ELE)
4. P4.0: Unit configuration (COF)
5. P5.0 (pH 300 only): Reset to factory default settings (rSt)
P5.0 (pH 310 only): Setting clock (CLO)
6. P6.0 (pH 310 only): Reset to factory default settings (rSt)

See Figure 21 and 22.

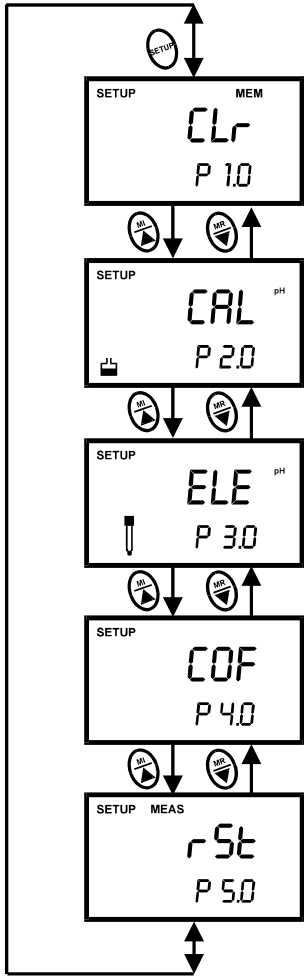


Figure 21 - pH 300 Advanced Setup Subgroups

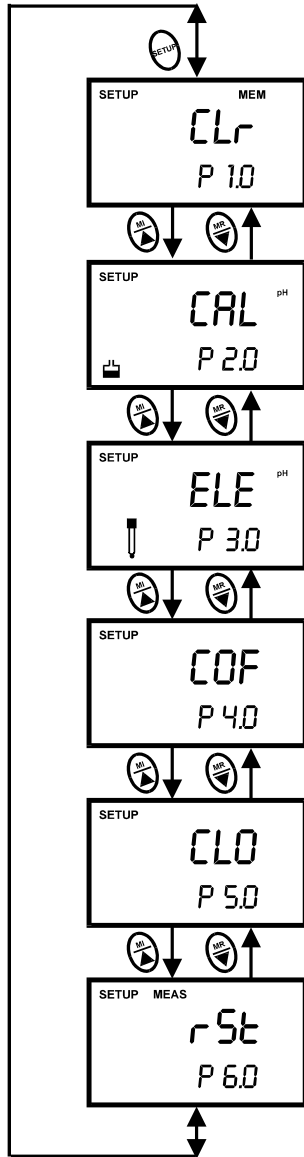



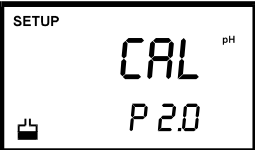
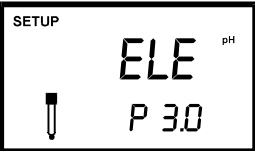

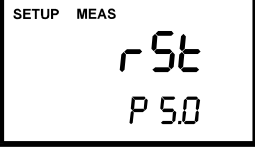
Figure 22 - pH 310 Advanced Setup Subgroups

7.1 Advanced SET-UP Mode Overview

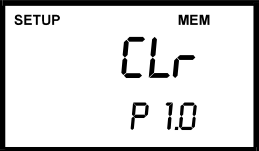


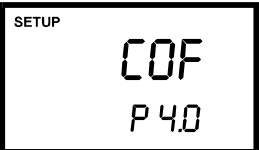
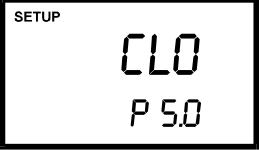
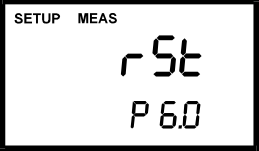
Press the SETUP key to enter Set up mode.

Press the MI/▲ or MR/▼ keys to scroll through sub groups.

pH 300 meter set up mode

	<p><u>P1.0: Memory clear</u></p> <p>P1.0 Clear all stored readings</p>
	<p><u>P2.0: Viewing previous calibration data</u></p> <p>P2.1 View first calibration point (pH 1.68) P2.2 View second calibration point (pH 4.01) P2.3 View third calibration point (pH 7.00) P2.4 View fourth calibration point (pH 10.01) P2.5 View fifth calibration point (pH 12.45)</p>
	<p><u>P3.0: Viewing electrode data</u></p> <p><i>In pH measurement mode:</i></p> <p>P3.1 pH electrode offset P3.2 pH electrode slope</p> <p><i>In mV (or relative mV) measurement mode:</i></p> <p>P3.1 Relative mV offset</p>
	<p><u>P4.0: Unit configuration</u></p> <p>P4.1 READY indicator on or off P4.2 Number of calibration points: 2, 3, 4 or 5</p>
	<p><u>P5.0: Reset to factory default</u></p> <p>P5.0 Reset to factory default settings</p>

pH 310 meter setup mode

	<p><u>P1.0: Memory clear</u></p> <p>P1.0 Clear all stored readings</p>
	<p><u>P2.0: Viewing previous calibration data (USA, NIST or DIN standards)</u></p> <p>P2.1 First calibration point (plus time and date)</p> <p>P2.2 Second calibration point (plus time and date)</p> <p>P2.3 Third calibration point (plus time and date)</p> <p>P2.4 Fourth calibration point (plus time and date)</p> <p>P2.5 Fifth calibration point (plus time and date)</p> <p>P2.6 Sixth calibration point (plus time and date) (only for DIN buffer set)</p>
	<p><u>P3.0: Viewing electrode data</u></p> <p><i>In pH measurement mode:</i></p> <p>P3.1 pH electrode offset</p> <p>P3.2 pH electrode slope</p> <p><i>In mV (or relative mV) measurement mode:</i></p> <p>P3.1 Relative mV offset</p>
	<p><u>P4.0: Unit configuration</u></p> <p>P4.1 READY indicator on or off</p> <p>P4.2 Number of calibration points: 2, 3, 4 or 5 (or 6 for DIN buffer set only)</p> <p>P4.3 Calibration buffer selection sets</p> <p>P4.4 Selecting °C or °F</p>
	<p><u>P5.0: Setting Clock</u></p> <ul style="list-style-type: none"> Setting year Setting date (month/day) Setting time (hour/minute/second)
	<p><u>P6.0: Reset to factory default</u></p> <p>P6.0 Reset to factory default settings</p>

7.2 P 1.0: Memory Clear (CLr)

Use this parameter to clear all memory values when you need to store a new series of values. This lets you avoid confusing the old values with the new ones.

NO is the default setting.

NOTE: Selecting YES will wipe out all memory.

From measurement mode:

1. Press the SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view the parameter P1.0.
3. Press the ENTER key to enter parameter P1.0.
4. Press the MI/▲ or MR/▼ keys to toggle between NO and YES.
 - NO retains current memory
 - YES clears all memory.

See Figure 23.

5. Press the ENTER key to confirm selection and return to the subgroup menu. Press CAL/MEAS key to return to measurement mode.

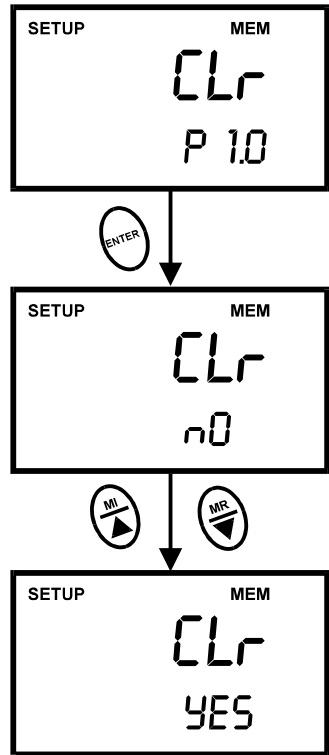


Figure 23 - P1.0: Memory Clear

7.3 P2.0: Viewing previous calibration data

This mode lets you recall previous calibration data, which helps you know when to re-calibrate your meter. This is a “view only” mode.

From measurement mode:

1. Press the SETUP key to enter Set up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P2.0.
3. *pH 300 meter only:* Press the ENTER key repeatedly to view previous calibration data. See Figure 24.
pH 310 meter only: Press the ENTER key repeatedly to view previous calibration data. The meter will first display the calibration point, and then display the date and time of calibration. See Figure 25.
4. When you have scrolled through all calibration data, you will automatically return to the subgroup menu. Press CAL/MEAS key to return to measurement mode.

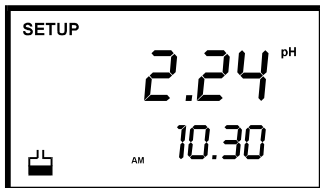


Figure 25 - Time/date appears on pH 310 meter display only

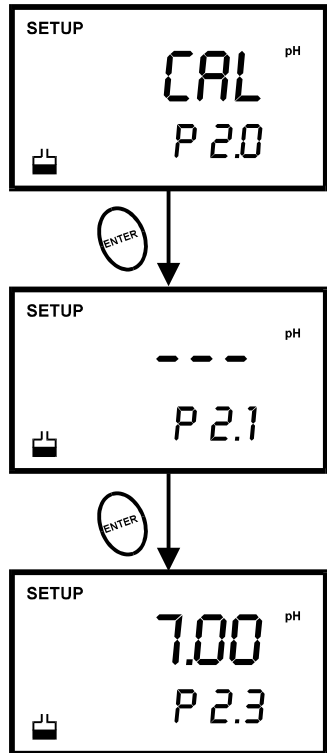


Figure 24 - P2.0: View calibration data

NOTES:

If there is no previous calibration data at a particular point, the primary display will show “----”.

7.4 P3.0: Viewing electrode data

Program 3 has two “view only” options that let you check the electrode parameters for diagnostic purposes.

From pH measurement mode, you can view the electrode's offset and slope values.

From mV measurement mode, you can view the electrode's relative mV offset value.

P3.1 & P3.2 : Electrode offset and slope

From pH measurement mode

1. Press the SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P3.0.
3. Press the ENTER key to select parameter 3.1.
4. The display shows the electrode offset value. It is the mV offset at pH 7.00. If you have not calibrated at any buffer, the primary display shows 0.0 mV.
5. Press the ENTER key to proceed to electrode slope display.
6. The display shows electrode slope in percentage. Slope displayed is the average slope based on the pH calibrations. Default setting is 100.0.
7. At any point, you can press the CAL/MEAS key to return to measurement mode.

See figure 26.

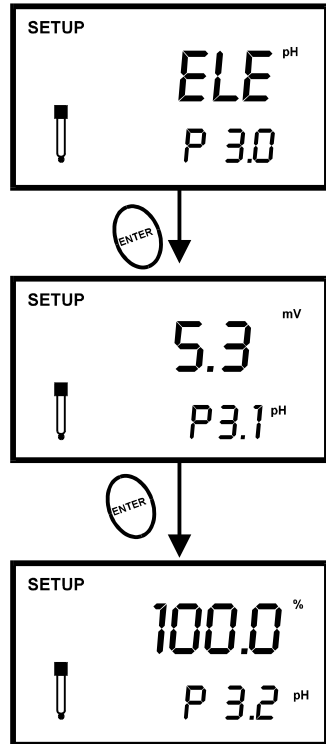


Figure 26 - Viewing electrode's offset and slope status from pH measurement mode

From mV measurement mode

If you are in mV measurement mode, the display shows the relative mV offset. You can adjust the relative mV offset in relative mV calibration mode. See page 12 for instructions.

1. If necessary, press the MODE key to select mV measurement mode.
 2. From mV measurement mode, press the SETUP key to enter Set Up mode.
 3. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P3.0.
 4. Press the ENTER key to select parameter 3.1.
 5. The display shows the electrode offset value. It is the relative mV offset. If you have not calibrated at any mV standards, the primary display shows 0.00 mV.
 6. Press the ENTER key to return to P3.0.
 7. At any point, you can press the CAL/MEAS key to return to measurement mode.
- See figure 27.

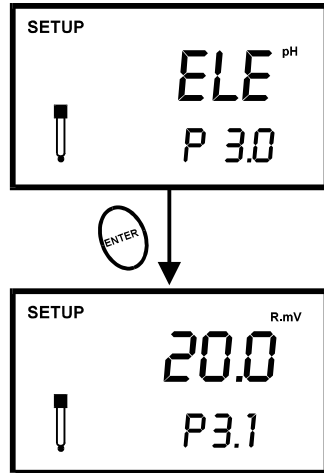


Figure 27 - View electrode offset value from mV measurement mode

7.5 P4.0: Unit configuration

This subgroup program allows you to customize the meter to your specific needs. You can program the meter to:

1. Select READY function ON or OFF (pH 310 allows you an additional feature of switching the Auto endpoint function on or off)
2. Select the number of pH calibration points
3. Select between three standard calibration buffer sets (*for pH 310 meter only*)
4. Select between °C and °F units for temperature readings (*for pH 310 meter only*)

Figure 28 on the right shows the setup sequence for this program subgroup.

NOTE: Programs P4.3 and P4.4 is only available in pH 310 meter.

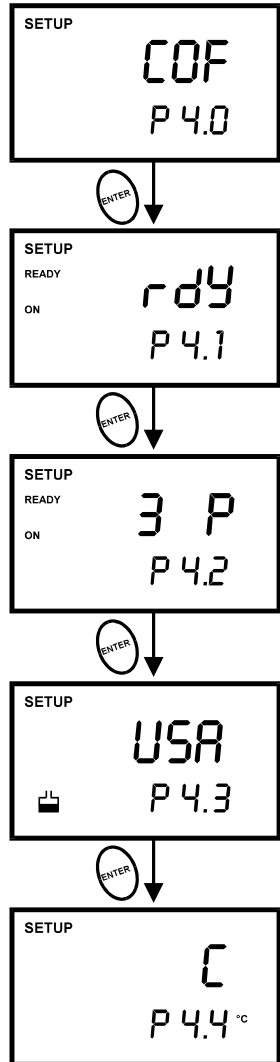


Figure 28 - P4.0: Unit configuration program (P4.3 and P4.4 available on pH 310 meter only)

P4.1: READY Indicator and auto endpoint function

Program P4.1 lets you select “READY indicator on” to indicate when the reading is stable*, or select “READY indicator off” for faster meter response.

pH 310 meter only: Program P4.1 also lets you switch the Auto endpoint function on or off. Select auto endpoint on to “hold” the reading when it is stable for more than 5 seconds. The display automatically freezes, and the HOLD indicator appears on the left side of the display. Press the HOLD key to release the display and access other functions. Select auto endpoint off to deactivate this feature.

From measurement mode

1. Press SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P4.0.
3. Press the ENTER key to select parameter 4.1.
4. Press the MI/▲ or MR/▼ keys to select the configuration you require.
 - OFF switches the READY indicator off.
 - ON switches the READY indicator on.
 - *pH 310 meter only:* ON and HOLD together switches the auto endpoint feature on.
5. Press the ENTER key to confirm selection and to proceed to step 4 of P4.2. Press the CAL/MEAS key to return to measurement mode.

NOTES:

Meter default is set for READY indicator on and auto endpoint function off.

**The READY indicator appears and the reading holds until the measured value exceeds the tolerance (± 0.02 pH; ± 0.8 mV < 400 mV; ± 1.2 mV > 400). Then the READY annunciator turns off.*

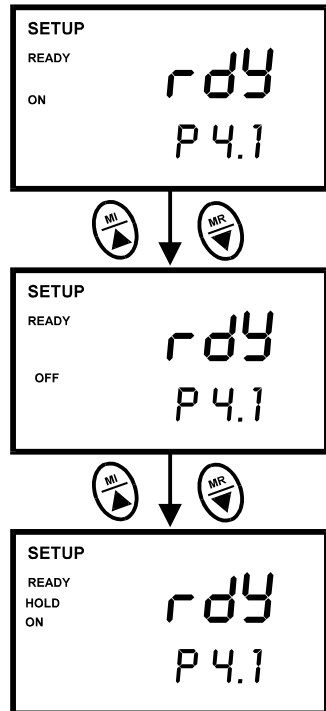


Figure 29 - P4.1: Selecting READY function)

P4.2: Selecting number of pH calibration points

Program P4.2 lets you select the number of calibration points that appear in pH calibration mode: 2, 3, 4, or 5. This lets the meter scroll through the calibration points more quickly if you regularly calibrate at less than 5 points.

From measurement mode.

1. Press SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P4.0.
3. Press the ENTER key twice to select parameter 4.2.
4. Press the MI/▲ or MR/▼ keys to select 2, 3, 4, or 5 point pH calibration (up to 6 points for DIN calibration set with pH 310 meter).
5. Press the ENTER key to confirm selection and to return to the subgroup menu. Press CAL/MEAS key to return to measurement mode.

See Figure 30.

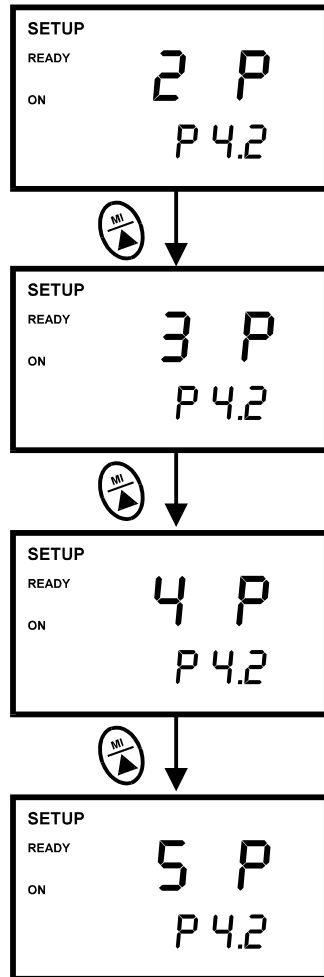


Figure 30 - P4.2: Select number of pH calibration points

P4.3 Calibration buffer selection sets

Available in pH 310 meter only

The pH 310 meter lets you select between three standard calibration buffer sets, depending on your requirements. The available sets are USA, NIST, and DIN standard calibration buffers.

From measurement mode

1. Press SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P4.0.
3. Press the ENTER key three times to select parameter 4.3.
4. Press the MI/▲ or MR/▼ keys to select the buffer set you require:
 - USA buffers – pH 1.68, 4.01, 7.00, 10.01, and 12.45.
 - NIST buffers – pH 1.68, 4.01, 6.86, 9.18, and 12.45.
 - DIN buffers – pH 1.09, 3.06, 4.65, 6.79, 9.23 and 12.75.
5. Press the ENTER key to confirm selection and return to the subgroup menu. Press CAL/MEAS key to return to measurement mode.

See Figure 31.

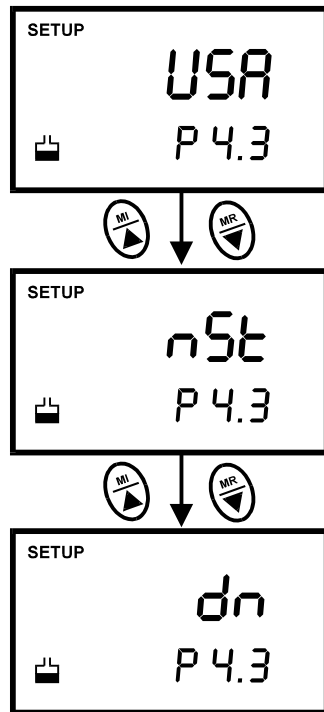


Figure 31 - P4.3: Select calibration buffer sets (pH 310 meter only)

P4.4 Selecting °C or °F

Available in pH 310 meter only

The pH 310 meter lets you select between °C and °F units for temperature readings.

From measurement mode

1. Press SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P4.0.
3. Press the ENTER key four times to select parameter 4.4.
4. Press the MI/▲ or MR/▼ keys to toggle between °C and °F.
5. Press the ENTER key to confirm selection and to return to the subgroup menu. Press the CAL/MEAS key to return to measurement mode.

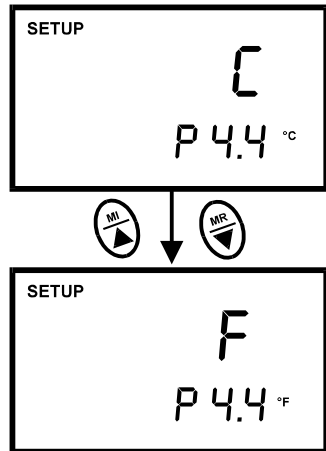


Figure 32 - P4.4: Select temperature units (pH 310 meter only)

See Figure 32.

7.6 P5.0: Resetting to factory default settings

Available in pH 300 meter only

In the pH 300 meter, Program 5 lets you reset all parameters to factory default settings. This clears all calibration data, memory, and any other setup functions you might have changed.

From measurement mode

1. Press SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P5.0.
3. Press the ENTER key to enter parameter P5.0. See Figure 33.
4. Press the MI/▲ or MR/▼ keys to toggle between NO and YES.
 - NO retains current settings
 - YES resets to factory default settings.
5. Press the ENTER key to confirm selection and to return to the measurement mode. Otherwise press CAL/MEAS key to return to measurement mode without resetting to factory default.

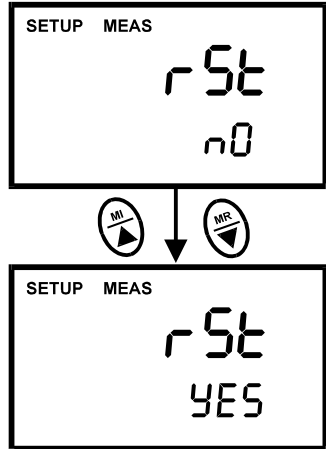


Figure 33 - P5.0: Reset to factory default values (pH 300 meter only)

7.7 P5.0: Setting the real-time clock

Available in pH 310 meter only

The pH 310 meter features a real-time calendar and clock. This helps you to meet GLP (Good Laboratory Practice) standards.

From measurement mode

1. Press SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P5.0.
3. Press the ENTER key to enter parameter P5.0. The meter lets you select the century: “19—” or “20—”. The century digits will flash.
4. Press the MI/▲ or MR/▼ keys to toggle to the correct century.
5. Press ENTER key to confirm the century and move to “year” selection. The “year” digits will flash.
6. Press the MI/▲ or MR/▼ keys to toggle to the correct year. See Figure 34.
7. Press ENTER key to confirm the year and move to “month” selection. The “month” digits will flash.
8. Press the MI/▲ or MR/▼ keys to toggle to the correct month.
9. Press the ENTER key to confirm the month and move to “date” selection. The “date” digits will flash. See Figure 35 (next page).
10. Press the MI/▲ or MR/▼ keys to toggle to the correct date.
11. Press the ENTER key to confirm the date and move to “hour” selection. The “hour” digits will flash. See Figure 36 (next page).

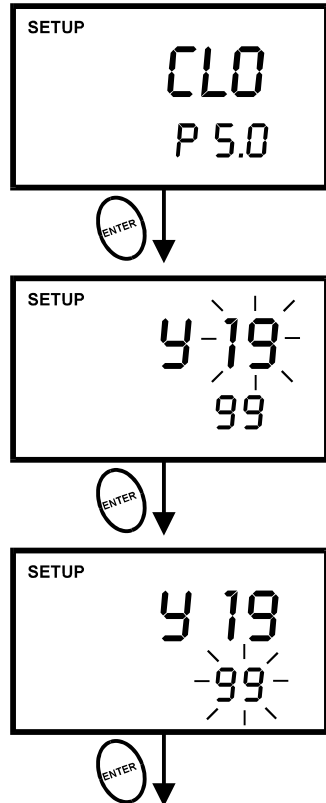


Figure 34 - P5.0: Setting century and year (pH 310 meter only)

12. Press the MI/▲ or MR/▼ keys to toggle to the correct hour. Note the “AM” and “PM” indicator on the lower portion of the display.
13. Press the ENTER key to confirm the hour and move to “minute” selection. The “minute” digits will flash.
14. Press the MI/▲ or MR/▼ keys to toggle to the correct minutes.
15. Press the ENTER key to confirm the minutes and move to “second” digits will flash. See Figure 35.
16. Press the MI/▲ or MR/▼ keys to toggle to the correct seconds.

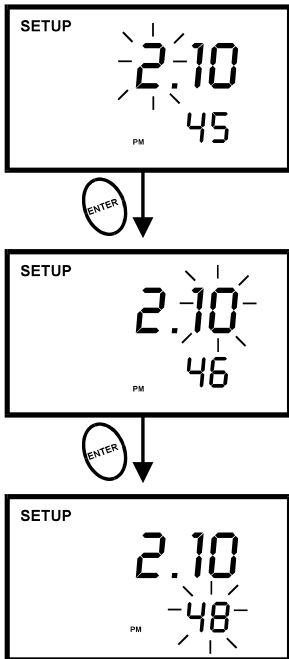


Figure 36 - P5.0: Select time (pH 310 meter only)

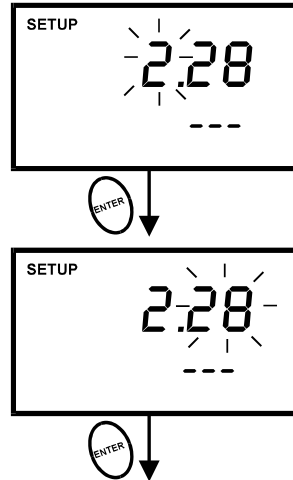


Figure 35 - P5.0: Setting month and date (pH 310 meter only)

17. Press the ENTER key to confirm the seconds and return to “century” selection.
18. Press the CAL/MEAS key to return to the subgroup menu. Press the CAL/MEAS key again to return to measurement mode.

NOTES

Press the CAL/MEAS key at any point while setting the time to return to the subgroup menu.

7.8 P6.0: Resetting to factory default settings

Available in pH 310 meter only

In the pH 310 meter, Program 6 lets you reset all parameters to factory default settings. This clears all calibration data, memory, and any other setup functions you might have changed.

From measurement mode

1. Press SETUP key to enter Set Up mode.
2. Press the MI/▲ or MR/▼ keys to scroll through subgroups until you view parameter P6.0.
3. Press the ENTER key to enter parameter P6.0.
4. Press the MI/▲ or MR/▼ keys to toggle between NO and YES.
 - 'NO' retains current settings
 - 'YES' resets to factory default settings.
5. Press the ENTER key to confirm selection and to return to the measurement mode. Otherwise press CAL/MEAS key to return to measurement mode without resetting to factory default.

See Figure 37.

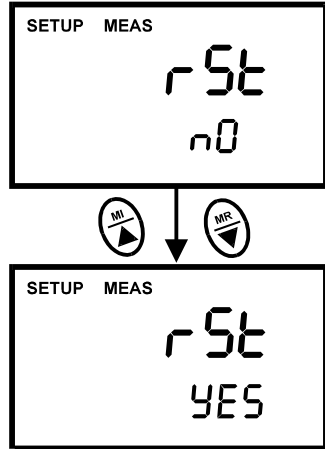


Figure 37 - P6.0: Reset to factory default values (pH 310 meter only)

8 PROBE CARE AND MAINTENANCE

Since your pH electrode is susceptible to dirt and contamination, clean it every one to three months depending on the extent and condition of use.

NOTE: For specialty electrode care, consult the instruction manual included with your electrode.

pH electrode storage

For best results, always keep the pH bulb wet. Use the protective electrode storage bottle or rubber cap filled with electrode storage solution to store your electrode. Also, you can store in a pH 4 buffer with 1/100 part of saturated KCl. Other pH buffers are OK for storage, but NEVER use distilled water for storage.

After measuring

1. Rinse the pH electrode and reference junction in de-ionized water.
2. Store the electrode as recommended above in “pH electrode storage,” or as recommended by the manufacturer.
3. Prior to next use, rinse the liquid junction with de-ionized water and tap dry – never wipe electrode.

NOTE: If this does not restore electrode to normal response, see “Reactivating the pH electrode” section below.

pH electrode cleaning

- **Salt deposits:** Dissolve the deposits by immersing the electrode in tap water for ten to fifteen minutes. Then thoroughly rinse with distilled water.
- **Oil/Grease film:** wash electrode pH bulb gently in some detergent and water. Rinse electrode tip with distilled water or use a general purpose electrode cleaner (see the Accessories section for ordering information).
- **Clogged reference junction:** Heat a diluted KCl solution to 60 to 80 °C. Place the sensing part of the electrode into the heated solution for about 10 minutes. Allow the electrode to cool in some unheated KCl solution.
- **Protein deposits:** Prepare a 1% pepsin solution in 0.1 M of HCl. Set the electrode in the solution for five to ten minutes. Rinse the electrode with distilled water.

Reactivating the pH electrode

If stored and cleaned properly, your pH electrode should be ready for immediate use. However, a dehydrated bulb may cause sluggish response. To rehydrate the bulb, immerse the electrode in a pH 4 buffer solution for 10 to 30 minutes. If this fails, the electrode requires activation. Never touch or rub glass bulb. Contact builds up an electrostatic charge.

pH electrode activation (for glass body electrodes only)

WARNING: Only qualified persons proficient with the safe handling of dangerous chemicals should perform the procedure below. Provide proper containers, fume hoods, ventilation, and waste disposal. Safety goggles and protective clothing must be worn while performing this procedure. If possible, replace with another electrode instead of performing this re-activation procedure.

1. Dip or stir the pH electrode in alcohol for 5 minutes.
2. Leave the electrode in tap water for 15 minutes.
3. Dip and stir the electrode in concentrate acid (such as HCL or H₂SO₄) for five minutes.
4. Repeat Step 2.
5. Dip and stir in strong base (NaOH) for five minutes.
6. Leave for 15 minutes in tap water.
7. Now test with standard calibration buffer solutions to see if the electrode yields acceptable results. You may repeat step 3 through 6 up to three times for better response. If the response does not improve, then your electrode is no longer functioning. Replace with a new electrode – call your distributor for information.

9 TROUBLE SHOOTING GUIDE

Problem	Cause	Solution
Power on but no display	<ul style="list-style-type: none">a). Batteries not in placeb). Batteries not in correct polarity (+ and – position).c). Weak batteries	<ul style="list-style-type: none">a). Check that batteries are in place and making good contact.b). Re-insert batteries with correct polarity.c). Replace batteries or attach optional AC adapter.
Unstable readings	<ul style="list-style-type: none">a). Air bubbles in probe.b). Dirty probe.c). Probe not deep enough in sample.d). External noise pickup or induction caused by nearby electric motor.e). Broken probe.	<ul style="list-style-type: none">a). Tap probe to remove bubbles.b). Clean the probe and re-calibrate.c). Make sure sample entirely covers the probe sensors.d). Move or switch off interfering motor.e). Replace probe. See the Accessories section, page 43.
Slow response	<ul style="list-style-type: none">a). Dirty / Oily probe.	<ul style="list-style-type: none">a). Clean probe. See “Probe Care & Maintenance”, page 38- 39.

10 ERROR MESSAGES

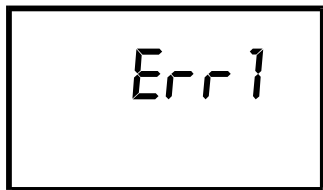
LCD Display	Indicates	Cause	Solution
Err annunciator	Unrecognized input from keypad	Wrong input in selected mode.	Release key. Select valid operations depending on mode.
CAL & Err annunciators on / Buffer and electrode indicators blink.	Calibration error.	Wrong value input at calibration. Dirty probe.	Check your input value, clean probe. See Calibration sections or Probe Maintenance section.
Battery indicator blinks	Low battery level.	Need new batteries or battery connection is bad.	Clean battery contacts. Replace batteries with fresh ones, noting polarity.
Err 1 (in primary display)	Memory write error.	Instrument too old (> 10 years). Hardware failure.	Turn meter on and off again. If message persists, return unit*.
Err. 2 (in primary display)	Memory checksum error.	Hardware failure.	Turn meter on and off again. If message persists, return unit*.
Err. 3 (in primary display)	A/D converter error.	Hardware error.	Turn meter on and off again. If message persists, return unit*.
Err. 4 (in primary display)	Keypad error.	One or more keys on the keypad are stuck.	Turn meter on and off again. If message persists, return unit*.

* See "Warranty" and "Return of Items" on pages 47 and 48.

If an error message appears in the primary display (the upper row of larger digits), switching off the meter and switching it on again may eliminate the error message. Refer to diagram on right.

If error persists, or the meter shows incorrect values, return the meter.

For a complete diagram of the display see page 2.



11 SPECIFICATIONS

SPECIFICATIONS	DESCRIPTIONS	pH 300	pH 310
pH Range	-2.00 to 16.00 pH	Yes	Yes
Resolution / Accuracy	0.01 pH / ± 0.01 pH	Yes	Yes
Slope Range	80 to 110%	Yes	Yes
Temperature Range	-10 to 110 °C (14 to 230 °F)	Yes No	Yes
Resolution / Accuracy	0.1 °C / ± 0.5 °C (0.1 °F / 0.5 °F)	Yes	Yes
Millivolt Range (Extended)	-199.9 to +199.9 mV	Yes	Yes
Resolution / Accuracy	0.1 mV / ± 0.2 mV	Yes	Yes
Millivolt Range	-1999 to +1999 mV	Yes	Yes
Resolution / Accuracy	1 mV / ± 2 mV	Yes	Yes
Temperature Compensation	Auto / Manual (from 0 to 100 °C)	Yes	Yes
Number of calibration points	1 to 5 (up to 6 for pH 310 using DIN)	Yes	Yes
Number of calibration buffers	USA: 1.68, 4.01, 7.00, 10.01, & 12.45	Yes	Yes
	NIST: 1.68, 4.01, 6.86, 9.18, & 12.45	No	Yes
	DIN: 1.09, 3.06, 4.65, 6.79, 9.23, & 12.75	No	Yes
pH Slope Display	80 to 110%	Yes	Yes
Relative mV & Offset Display	Offset up to +/-150 mV	Yes	Yes
Hold Function		Yes	Yes
Auto-hold		No	Yes
Memory	pH or mV plus temperature	16	50
Date and Time Stamping		No	Yes
Auto Power off	20 minutes after last key operation	Yes	Yes
Averaging/Stability (READY)	Selectable	Yes	Yes
Inputs	BNC & 6-pin military type	Yes	Yes
Display	Custom Dual LCD	Yes	Yes
Power Requirements	4 'AAA' Batteries	Yes	Yes
Battery Life	> 200 hours	Yes	Yes
Dimension / Weight	Meter: 19 x 10 x 6 cm; 320 g Boxed: 24 x 23 x 7 cm; 700 g	Yes	Yes

12 ACCESSORIES

Replacement Meter and Meter accessories

Item	Eutech Instruments Order Code	Oakton Instruments Order Code
Waterproof pH 300 Hand-held pH meter in carrying case kit. Complete with temperature probe, pH electrode (1m cable) and pH carrying kit set.	EC-PHWP300/02K	35617-70
Waterproof pH 310 Hand-held pH meter in carrying case kit. Complete with temperature probe, pH electrode (1m cable) and pH carrying kit set.	EC-PHWP310/02K	35618-72
Hard plastic carrying case kit for pH 300/310 meter.	EC-PHWP-KIT (with 3 pH buffer solution (pH 4.01, 7.00, & 10.01) in 60-ml bottle, and 1 empty rinse/waste water bottle (480-ml))	35614-79 (Includes five of each pH buffer pouch)
Waterproof pH 300 Hand-held pH meter complete with temperature probe only.	EC-PHWP300/01	35618-02 "Temperature probe sold separately"
Waterproof pH 310 Hand-held pH meter complete with temperature probe only.	EC-PHWP310/01	35618-12 "Temperature probe sold separately"
Temperature probe for waterproof pH 300 & pH 310 meters	EC-PHWPTEM-01W	35618-05
Epoxy body double junction pH electrode with 1-m cable.	EC-FE72522-01B	35641-51
"3-in-1" pH / Temperature combination electrode with 1-m cable for waterproof pH 300/310 meter.	EC-FE73528-01W	35808-71

Calibration Solutions

Item	Eutech Instruments Order Code	Oakton Instruments Order Code
pH 4.01 buffer solution, 480 ml bottle (1 pint)	EC-BU-4BT	00654-00
pH 7.00 buffer solution, 480 ml bottle (1 pint)	EC-BU-7BT	00654-04
pH 10.01 buffer solution, 480 ml bottle (1 pint)	EC-BU-10BT	00654-08
pH 4.01 buffer sachets, 20 ml x 20 pcs.	EC-BU-4BS	35653-01
pH 7.00 buffer sachets, 20 ml x 20 pcs.	EC-BU-7BS	35653-02
pH 10.01 buffer sachets, 20 ml x 20 pcs.	EC-BU-10BS	35653-03
pH De-ionized water rinse sachets, 20 ml x 20 pcs	EC-RIN-WT	35653-00
pH sachet assortment pack – 5 each of pH 4.01, pH 7.00, pH 10.01 and de-ionized water sachets per box.	EC-AST-PK	35653-04
Protein cleaning solution for pH electrode	EC-DPC-BT	00653-06
Storage solution for pH electrode	EC-RE-005	00653-04

Note: pH buffer solutions (480-ml bottle, 1 pint) have ± 0.01 pH accuracy at 25 °C.

Sachets are individually sealed, single use pouches containing 20 ml of fresh, contamination free calibration solution. pH buffer sachets have ± 0.01 pH accuracy at 25°C.



Carrying Case Kit for pH 300/310

13 ADDENDUM 1: METER FACTORY DEFAULT SETTINGS

Resetting the meter to factory default settings clears all calibration data and most other setup functions you might have changed. The following settings will remain as you have set them:

- Temperature unit of measure (°C or °F) – *only for pH 310 meter*
- The temperature offset calibration value.
- Clock function – *only for pH 310 meter*

Type	Parameter	P No.	Default	Remarks
CLr	Memory clear	P1.0	No	Retains your current settings
CAL	View pH calibration data	P2.1	--	Calibration data for 1st buffer
		P2.2	--	Calibration data for 2nd buffer
		P2.3	--	Calibration data for 3rd buffer
		P2.4	--	Calibration data for 4th buffer
		P2.5	--	Calibration data for 5th buffer
	<i>(only in pH 310 meter)</i>	P2.6	--	Calibration data for 6th buffer (DIN only)
ELE	View electrode offset	P3.1	0.00 mV	No offset adjustment
	View electrode slope	P3.2	100.0 %	No slope adjustment
	View relative mV offset	P3.3	0 mV	No mV adjustment
COF	Ready indicator	P4.1	Ready On	Ready indicator on; auto endpoint off
	# pH calibration points	P4.2	3	3 pH calibration points available (1 – 5 pt range)
	Calibration buffer selection sets(<i>pH 310 meter only</i>)	P4.3	USA	
	°C or °F (<i>pH 310 meter</i>)	P4.4	No default	°C or °F remains as selected
CLO	Setting year, date and time (<i>in pH 310 meter only</i>)	P5.0	No default	Year, date and time remain as selected
rSt	pH factory default			
	<i>For pH 300 meter</i> <i>For pH 310 meter</i>	P5.0 P6.0	No	Retains your current settings

14 WARRANTY

This meter is supplied with a **three** -year warranty, **six**-month warranty for probe, against significant deviations in material and workmanship.

If repair or adjustment is necessary and has not been the result of abuse or misuse within the designated period, please return – freight pre-paid – and correction will be made without charge. Eutech Instruments/ Oakton Instruments will determine if the product problem is due to deviations or customer misuse.

Out of warranty products will be repaired on a charged basis.

Exclusions

The warranty on your instrument shall not apply to defects resulting from:

- Improper or inadequate maintenance by customer
- Unauthorized modification or misuse
- Operation outside of the environment specifications of the products

15 RETURN OF ITEMS

Authorization must be obtained from our Customer Service Department or authorized distributor before returning items for any reason. A "Return Goods Authorization" (RGA) form is available through our authorized distributor. Please include data regarding the reason the items are to be returned. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Eutech Instruments/ Oakton Instruments will not be responsible for damage resulting from careless or insufficient packing. A restocking charge will be made on all unauthorized returns.

NOTE: Eutech Instruments Pte Ltd/ Oakton Instruments reserves the right to make improvements in design, construction, and appearance of products without notice.

For more information on Eutech Instruments/ Oakton Instruments' products, contact your nearest distributor or visit our website listed below:

<p>Oakton Instruments P.O Box 5136, Vernon Hills, IL 60061, USA Tel: (1) 888-462-5266 Fax: (1) 847-247-2984 E-mail: info@4oakton.com Web-site: www.4oakton.com www.oaktoninstruments.com</p>	<p>Eutech Instruments Pte Ltd. Blk 55, Ayer Rajah Crescent, #04-16/24 Singapore 139949 Tel: (65) 6778 6876 Fax: (65) 6773 0836 E-mail: marketing@eutechinst.com Web-site: www.eutechinst.com</p>	<p>Distributed by:</p>
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