pH/ORP Meter Keypad
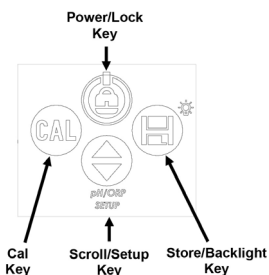
The pH/ORP Meter has four tactile keys that are used to setup and operate this instrument.

Power/Lock Key

pH/ORP SETUP

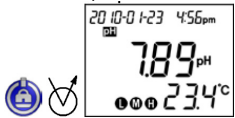**Cal Key** **Scroll/Setup Key** **Store/Backlight Key**

PREPARING THE METER

1. Install the electrode by removing the electrode collar, orienting the electrode at the 4-pin connector (the electrode is indexed to only fit in one position – rotate until the connectors slide together), and then reinstall collar.
2. Remove the battery cover and install 2 new CR2032 batteries (included in box). Inspect the rubber seal and reinstall the battery cover.
3. It is recommended to condition the electrode prior to use. If you have a soaker bottle attached to the sensing end of the electrode and the soaking solution is visible in the bottle, the electrode is already conditioned. If not, soak the electrode in a pH 4 buffer solution or 4M KCl Solution for 30 minutes or more prior to use.
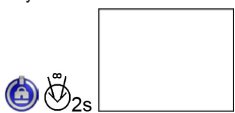
OPERATING THE METER

A. Power ON/OFF
To turn the pH/ORP Meter on, press the Power Key:

To turn the pH/ORP Meter off, press and hold the Power Key for 2 seconds:
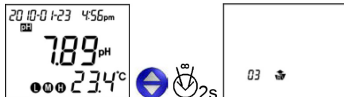

B. Set-up Your Preferences
The pH/ORP Meter can be customized to your preferences in regard to the pH calibration buffer set that is auto-recognized, the time and date, and Celsius or Fahrenheit temperature display. When replacing batteries, these settings do need to be reset. You can also recall stored data or erase that data in setup mode.

To enter the setup mode, press Scroll/Setup Key for at least 2 seconds. Then use Scroll Key to toggle through 4 set-up options:
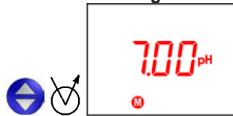1. Recall Stored Data
2. Auto-recognized Buffer Sets
3. Date & Time
4. Temperature display (ºC/ºF)

Entering setup mode – press the Scroll/Setup Key for at least 2 seconds:

The first setup option is recall stored data - refer to the Section G regarding Recalling Stored Data.
If you press the Scroll/Setup Key again, the next setup option is the auto recognized Buffer Sets option.
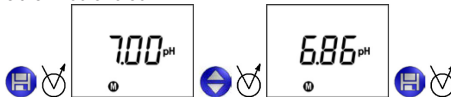
B1. Set Auto recognized Buffer Sets

The options for Buffer Sets are either:
4.01/7.00/10.00 – popular in the USA (designated as "7.00")
Or
4.01/6.86/9.18 – NIST, popular in Europe, Asia (designated as "6.86")

NOTE: Because the ORP Measurement is a relative measurement, it does not have a calibration procedure.
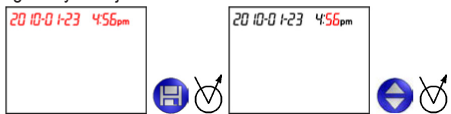
To adjust the Buffer sets, press Store/Backlight Key once and then use the Scroll/Setup Key to adjust the value to either 7.00 or 6.86.

Press the Store/Backlight Key to select the Buffer Set and return to measurement mode.

B2. Set Date and Time
Within setup mode, scroll to the screen that only shows the date & time to adjust this data. Press the Store/Backlight Key to adjust the time and date:
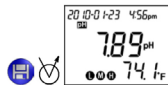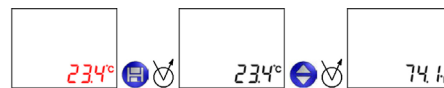

By pressing the Scroll/Setup Key, you will move through the minutes, hour, day, month, and year info. To adjust the data, use the Power/Lock Key to increase the value, or the Cal Key to decrease the value. Use the Store/Backlight Key to save the adjusted value and move to the next data point. When the Date & time are accurate, press the Store/Backlight Key to go back to measurement mode.

Adjustment: or to increase (+); or to decrease (-). Use the to save the adjusted data.

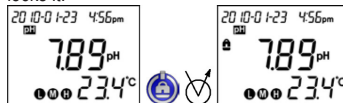### B3. Set Temperature Display to °C or °F
The pH/ORP Meter displays the temperature below the main pH or mV display. The display can be adjusted to read in Celsius (°C) or in Fahrenheit (°F).

In setup mode scroll to the temperature display option and press the Store/Backlight Key to adjust the temperature display. Use the scroll/Setup Key to toggle between °C or °F. Then use the Store/Backlight Key to save your settings and exit to measure mode:
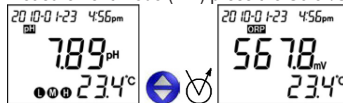

C. Lock Data
If you want to lock the current reading on your display, press the Power/Lock Key quickly. You will see a small lock icon appear to the left of the pH or mV characters. This may be used to briefly hold the data in moving water or unstable samples. This does not store the data, it just locks it.

To unlock the display, and continue in measurement mode, press the Power/Lock Key again.

D. Toggle Between pH and ORP
To toggle between pH measurement mode and ORP measurement mode (mV) press the Scroll/Setup Key

E. LCD Backlight Control
The pH/ORP Meter has a backlight for viewing in low-light conditions. The backlight should be used sparingly to avoid decreasing the battery life.

Turn the backlight on and off by using the Store/Backlight Key. Press it quickly to turn it off or on:

F. Store Data
The pH/ORP Meter will store up to 25 data points. Each point will have a number, and a date & time stamp. When the storage is full, it will overwrite the oldest data.

You can store data while the pH/ORP Meter is in measurement mode or in lock mode by pressing and holding the Store/Backlight key for at least 2 seconds. Pressing this key for less than 2 seconds will turn on the backlight instead of storing data.

G. Recall Stored Data
To recall the data you have stored in the pH/ORP Meter, you need to enter the Setup Mode and toggle to Stored Data option.

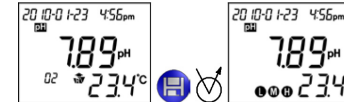To enter Setup Mode, press the Scroll/Setup Key for 2 seconds:

The first setup option is the Recall Stored Data option. It will have a number and an icon that shows a folder with the letter "R" on it. The number indicates how many data points are currently in memory.

To review the stored data, press the Store/Backlight Key quickly.

Then you can use the Scroll/Setup Key to scroll through the stored data points. By holding the Scroll/Setup key, you will quickly advance through the stored data.

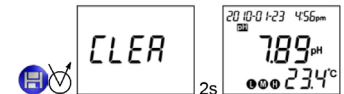To exit the Recall Stored Data mode, quickly press the Store/Backlight Key and you will return to measurement mode.

When there are no stored data points during the Recall Stored Data mode the number on the display will be 00.

H. Clearing Stored Data
To erase all stored data points, go to the Recall Stored Data mode (as described in G) and then Press the Store/Backlight Key for at least 2 seconds. The display will show CLEA and this will flash when you release the Key.

Press the Store/Backlight Key quickly and the CLEA will stop blinking and in about 2 seconds the stored data will be erased:

You can abort the data erase mode by pressing the Power/Lock Key after the display flashes CLEA. The pH/ORP Meter will return to Recall Stored Data mode.

I. Calibrating the pH/ORP Meter
The pH/ORP Meter can be calibrated for pH Measurement only. ORP is a relative measurement that does not require or allow calibration. On occasion, check the ORP reading with solutions of a known ORP value (e.g. Light's Solution or Zobell's Solution).
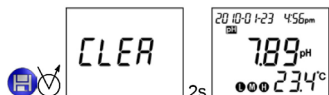
For best performance, the pH/ORP Meter should be calibrated regularly using buffers that bracket the expected pH range of the sample.

For example, if your sample will typically be in the pH 7.2 – pH 8.2 range, use the pH 7 and pH 10 (or pH 6.86 and pH 9.18) buffers to calibrate. For a full range calibration use 3 standard Buffers to calibrate the pH/ORP Meter. If you calibrate with more than 1 pH Buffer, the pH/ORP Meter will develop a slope and offset calibration curve.
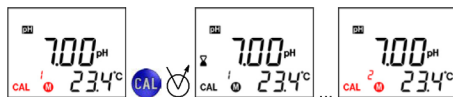
If you only use 1 buffer to calibrate, the pH/ORP Meter will just adjust the electrode offset, and use an ideal slope curve (~59 mV/decade). A 1-point calibration is less accurate, especially for older electrodes that may have developed an offset over time.

You can use the buffers in any order, but make sure you use the buffers that were selected in the Auto recognized buffer set in the setup mode (see section B1). If possible, the buffers should be at the same or similar temperature as the samples you will be measuring. For example, if you are regularly measuring the pH of warm pool water, try to warm your buffers to a similar temperature before using them for calibration.

To calibrate the pH/ORP Meter, press the Cal Key for 2 seconds:

The CAL mode icon will flash and a 1 will indicate it is looking for the first buffer (Buffer 7.00 or the M, in this example). Put the electrode into the first buffer and press the Cal Key. An hourglass icon will appear while the pH/ORP Meter calibrates to this buffer value:

When it is stabilized, the hourglass icon will disappear and the CAL and 2 icons will flash. You can either:

Exit the cal mode by pressing the Store/Backlight Key and accept a 1-point calibration.

Or (for a multipoint calibration)

Rinse the electrode, dry it and immerse it in the second buffer wait until the hourglass disappears then press the Cal Key to do a 2-point or 3-point calibration.

When it is stabilized, the hourglass icon will disappear and the CAL and 3 icons will flash. You can either:

Exit the cal mode by pressing the Store/Backlight Key and accept a 2-point calibration.

Or (for a 3-point calibration)

Rinse the electrode, dry it and immerse it in the third

buffer , wait until the hourglass disappears then press the Cal Key to do a 3-point calibration.

After the 3-point calibration, the pH/ORP Meter will return to measurement mode.

The pH/ORP Meter can now be used to accurately measure the pH or ORP in the sample.

J. Taking Measurements with the pH/ORP Meter
1. To measure the pH or ORP in your sample, the pH/ORP Meter needs to be in Measurement Mode. This is the default start-up mode when the pH/ORP Meter is turned on and is indicated by a "pH" or "ORP" icon above and to left of measurement value.
2. Confirm that the electrode has been properly stored in storage solution (see "Preparing the pH/ORP Meter"). Rinse any storage solution off the electrode and blot dry.
3. Immerse the electrode at least one inch into the sample to ensure the sensor and reference junction are surrounded by the sample.
4. When the reading stabilizes (the hour glass will disappear) you can lock, record or store the value (see sections C and F)
5. Rinse and blot dry the electrode between samples to ensure no carryover effect from sample to sample.

Error Codes and Troubleshooting

Error Code and Actions

#	Description	Range	Actions
1	Electrode not installed or bad	Thermistor: 0.5k~100k Ω	Install or replace electrode
2	pH out of range	0~14pH	Use other solution or recalibrate or replace electrode
3	Temperature out of range	0~60°C	Bring solution to the temperature within range
4	Offset out of range	–60~60mV	Use new buffer or replace electrode
5	Slope out of range	85%~115%, 50~68 (mV/pH)	Use new buffer or replace electrode
6	ORP out of range	–1800 to 1800mV	May need to check a solution of a known value within the range

TRACEABLE® pH/ORP METER INSTRUCTIONS

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