

INSTRUCTIONS FOR THE 06916 pH ELECTRODE CALIBRATION KIT

ATTENTION!

Your controller must be calibrated
to the electrode(s) before using.
Otherwise the readings will not be accurate.

Store kit in a cool dry place.

This kit includes:

2 ea. Calibration bottles with 50 ml level marks.

5 ea. Yellow pillows (pH 7.0 @ 25°C)

5 ea. Red pillows (pH 4.0 @ 25°C, 4.01 @ 25°C)

You will also need a some tap water, either running or in a container, and a clean container of distilled or deionized water for rinsing.

Cleaning goes hand in hand with calibration; the electrode should always be cleaned before recalibrating. The flat surfaced electrode used in the Ratio:Guard™ controller was selected for easy cleaning.

Cleaning and calibration should be done regularly to keep your instrument operating accurately. You should clean and recalibrate your electrode every 2-3 weeks or any time you suspect that the reading may not be correct.

All pH electrodes eventually wear out. At some point, when the electrode will not calibrate, it will need to be replaced.

You will probably want to turn pH control off during the calibration procedure, as it will probably otherwise result in a pH alarm.

Mixing the Buffer Solutions

Always mix fresh buffer solutions. You may calibrate more than one electrode in a solution. However you should never save solutions for use at a later date.

CAUTION!

THE POWDERS IN THESE PILLOWS MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION. DO NOT INGEST.

IN CASE OF CONTACT: Immediately flush eyes with water for 15 minutes. Call a physician. Wash skin with soap and plenty of water.

INGESTION: Induce vomiting by sticking finger down throat. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION: Remove to fresh air.

KEEP AWAY FROM CHILDREN!

- (1) Rinse both plastic bottles with tap water and then with distilled water.
- (2) Fill each bottle about half way with distilled water. *NOTE: You must use distilled or de ionized water.*
- (3) Carefully open the yellow pillow and pour the powder into one of the calibration bottles.
- (4) Open the red pillow and pour it into the other bottle.
- (5) Fill both bottles to the 50 ml calibration line with distilled water.
- (6) Arrange the yellow and red buffer solutions and the tap water and distilled water containers so they are easily accessible during the calibration procedure.

CALIBRATION PROCEDURE FOR THE MODEL P-1

- (1) Close the bypass isolation valves.
- (2) Carefully remove the electrode from the sensor fitting.
- (3) Clean the electrode.
- (4) Rinse the electrode in tap water, then dip in distilled water.
- (5) Dip the electrode in the yellow pH 7 buffer.
- (6) Press the MODE and either the \uparrow or \downarrow key. The display will show CAL. Now, before the display changes, press both the MODE and ENTER keys. Keep them pressed until the display changes to a blinking PH7.

Now, with the electrode in the pH 7 buffer, press the ENTER key; the display will stop blinking. The calibration process takes about 30 seconds.

If calibration is successful the message **good** will briefly appear and then the display will change to a blinking PH 4.

- (7) Rinse the electrode in tap water, then dip in distilled water. This should be done relatively quickly.
- (8) Dip the electrode in the red pH 4 (4.01) buffer.
- (9) Press the ENTER key. The calibration process is repeated for the pH 4 solution. Again, if calibration is successful, the message **good** will briefly appear and then the controller will enter normal operation.
- (10) Calibration is complete. Rinse the electrode in tap water and reinstall in the line.
- (11) Open the bypass isolation valves.
- (12) If pH control has been turned off, reset the setpoints to turn it back on.

If you have more than one unit to calibrate, you may do so by repeating this procedure. When finished, discard all solutions and the rinse water. Do not pour the distilled rinse water back in the original container!

Calibration Problems

The controller has some internal standards against which it checks the buffer solutions during calibration. If the values it reads are too far from what it expects, it will not proceed with calibration, but will indicate **bad** on the display and abort the process. Here are some possible causes of calibration problems, along with some suggested cures:

- (1) Contaminated reference solutions.

Be sure to follow mixing procedures carefully.

- (2) Using the wrong solution for the calibration point.

- (3) Faulty, worn out, or dirty electrode.

Check the electrode for contaminants, dirt or scale. Clean the electrode if necessary.

Inspect the electrode for cracks or breaks. Replace the electrode if necessary.

- (4) Faulty pH preamplifier, cable or connections.

Check to see that all connections to the controller terminal block are secure.

The electrodes we supply have the pH preamplifier mounted directly to the electrode. This eliminates many problems common to other electrodes with long cables between electrode and preamplifier. However, if you are using the optional signal conditioner (P/N 1148-6) with other electrodes, you may have problems with dirt and moisture. Check to see that the Electrode BNC connector is clean and dry.

- (5) Unit resumes normal operation during calibration.

Too much time has elapsed between steps. Repeat step (6) of the calibration procedure to resume. You will not have to start over from the beginning.

CALIBRATION PROCEDURE FOR THE MODEL EP-1

- (1) Close the bypass isolation valves.
- (2) Carefully remove the electrode from the sensor manifold.
- (3) Clean the electrode if needed.
- (4) Rinse the electrode in tap water, then briefly in distilled water.
- (5) Dip the electrode in the yellow pH 7 buffer.
- (6) Press the yellow calibrate and the yellow pH 1 or pH 2 key, whichever corresponds to the electrode you are calibrating. The display will show **DIP IN pH 7 SOLUTION/THEN PRESS ENTER**. Press the ENTER key. The controller will display **CALIBRATING pH/PLEASE WAIT...** The calibration process takes about 30 seconds. Wait until the controller beeps and displays the message **RINSE ELECTRODE/THEN PRESS ENTER**.
- (7) Rinse the electrode in tap water, then dip briefly in distilled water. Press the ENTER key. The unit will display the message **DIP IN pH 4 SOLUTION/THEN PRESS ENTER**.
- (8) Dip the electrode in the red pH 4 (4.01) buffer.
- (9) Press the ENTER key. The calibration process is repeated for the pH 4 solution.
- (10) Calibration is complete. Rinse the electrode in tap water and reinstall in the line.
- (11) Repeat steps 2 through 10 for the second electrode if you have one.
- (12) Open the bypass isolation valves.
- (13) If pH control has been turned off, re-enter the setpoints to turn it back on.

Calibration Problems

The controller has some internal standards against which it checks the buffer solutions during calibration. If the values it reads are too far from what it expects, it will not proceed with calibration,

but will indicate **pH ERROR** and abort the process. Here are some possible causes of calibration errors, along with some suggested cures:

- (1) Contaminated reference solutions.

Be sure to follow mixing procedures carefully.

- (2) Using the wrong solution.

- (3) Faulty or dirty electrode.

Check the electrode for contaminants, dirt or scale. Clean the electrode if necessary.

Inspect the electrode for cracks or breaks. Replace the electrode if necessary.

- (4) Faulty pH preamplifier, cables or connections.

Check to see that all connections to the controller terminal block are secure.

The electrodes we supply have the pH preamplifier mounted directly to the electrode. This eliminates many problems common to other electrodes with long cables between electrode and preamplifier. However, if you are using the optional signal conditioner (P/N 1148-6) with other electrodes, you may have problems with dirt and moisture. Check to see that the Electrode BNC connector is clean and dry.

- (5) Calibrating the wrong pH electrode.

Clearing the Reminder Message

After calibrating the electrode(s) you will need to clear the reminder message. Press the blue CLEAR and blue CLEAN (pH) key. This will reset the internal timer and clear the message.

NOTE: If you have two pH electrodes, the very process of calibration will cause the calibration reminder to appear. This is because during the process the two electrodes are in solutions of widely varying pH. Even if the message had not appeared when you started the calibration procedure you will see it when you finish. Do not be alarmed; nothing is wrong with the controller when this occurs.