Application Note
Aegis_pH_Calibration:

Waste Water pH Sites
Keypad & Browser Users

1. 1 & 2 Point pH Calibration

Single Point pH Calibration

Cooling towers either control the pH within a narrow range or the conductivity/bleed controls maintain a relatively fixed pH. In either case, sampling the water, measuring its pH and single point calibration of the pH sensor results in an accurate pH measurement.

Single point calibration requires a pH tester but does not require removal of the sensor or flow shutdown to the sampling piping. Its quick & simple but may not be applicable to your application.

Two Point pH Calibration

Waste water pH or process pH applications may measure and/or control over a wide pH range. Two point pH calibration is used for these sites.

Calibration of pH requires flow shutdown to the sampling piping and removal of the pH sensor and the following sequence:

1	Place the pH sensor in the 1st buffer.	Buffers can be any value & in any order.
2	Enter the value of the 1st buffer into the controller.	
3	Wait for the pH display to stabilize & ENTER/SUBMIT	Time to stabilize increases at lower temperatures.
4	Place the pH sensor in the 2nd Buffer.	
5	Enter the value of the 2nd buffer into the controller.	Buffers must be at least 1 pH apart. 10 & 4 buffers are typically used
6	Wait for the pH display to stabilize & ENTER/SUBMIT	Keypad users key ENTER. Browser users select SUBMIT

The controller either displays the modified pH following a successful calibration or provides an error message to both Keypad & Browser users.

Selecting a pH Calibration Method

Users with Aegis controllers running '**M**' series firmware may select either 1 or 2 point pH calibration for each measured pH.
Users with Aegis controllers running '**A**' series firmware support only1 pH calibration for cooling tower applications.

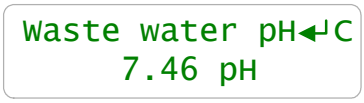
2. Solution Grounds

Amplified pH sensor typically includes a solution ground in the pH sensor.
If you using the BLUE, 12mm – ½" pH sensors, you'll need to put a solution ground in the buffer solution connecting a wire to the ground terminal on the pH card and exposing a ¼" of bare wire immersed in the buffer.
Do not 2 point calibrate 12mm pH sensors without a solution ground wire in the buffer.

3. Keypad pH Calibration

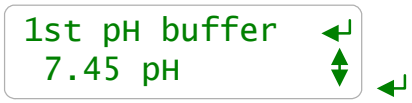
2 Point Calibration

Key **UP** or **DOWN** to the target pH sensor then press **ENTER**.

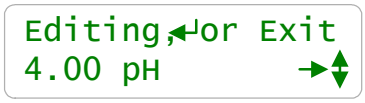


Press **ENTER** @ **Calibrate**.

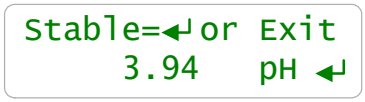
Press **ENTER** @ **1st pH buffer**.
You can use 10 buffer then 4 buffer or any 2 buffers more than 1pH apart, in any order.



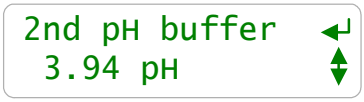
Key **RIGHT** to move the underline and then **UP** or **DOWN** to change the number.
Press **ENTER** or **EXIT** to escape.



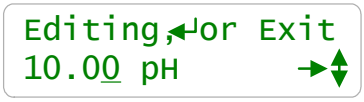
Press **ENTER** when the displayed pH has stopped changing.
This user set the digits after the decimal =2.
You may be displaying more or fewer digits after the decimal.



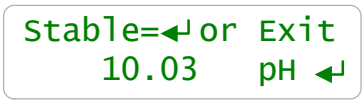
Press **ENTER** @ **2nd pH buffer**.



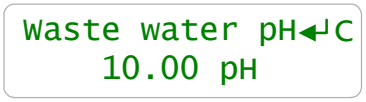
Key **RIGHT** to move the underline and then **UP** or **DOWN** to change the number.
Press **ENTER** or **EXIT** to escape.



Press **ENTER** when the displayed pH has stopped changing.



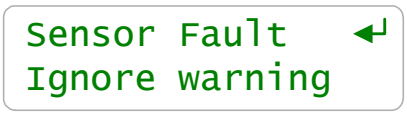
The current, calibrated pH displays on a successful calibration.
See the following page for fault displays.



3. Keypad pH Calibration continued

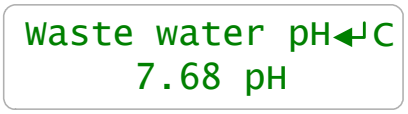
Sensor Fault displays if the calibration resulted in a pH correction of more than +/- 1pH. Indicates a sensor, wiring or test method problem.

Sensor Fault



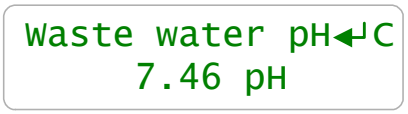
Ignore = ↵

Press **ENTER** and the sensor calibrates. Tracking and pH control problems are likely.



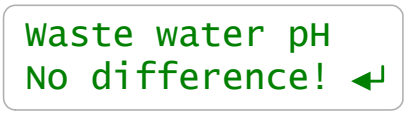
Escape =

Press **EXIT** and the sensor return to the pH value prior to calibration.



No Difference! displays if the calibration measured two pHs less than 1 pH apart. Typically caused by a keying error or a failure to move the pH sensor between buffers..

No Difference Fault



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Press **ENTER** and re-calibrate.

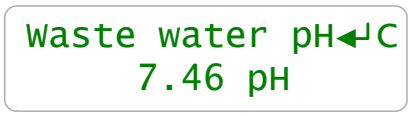
Sidebar:
The fault responses to pH calibration are the same for both 1 & 2 point pH calibration.

See the following page & the **Factory Reset** option to return the pH sensor measurement to its default settings.

3. Keypad pH Calibration continued

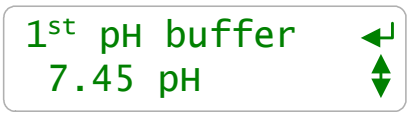
Select 1 or 2 Point

Key **UP** or **DOWN** to the target pH sensor then press **ENTER**.



Press **ENTER** and @ **Calibrate**
For **Factory Reset** & 1 **Point Calib** option

Press **DOWN** @ **1st pH buffer.**
If **1 Point Calib** = **YES**, **Enter Value** displays In place of **1st pH buffer**.



Press **ENTER** and @ **Factory Reset** to return the pH sensor measurement to it's default calibration.

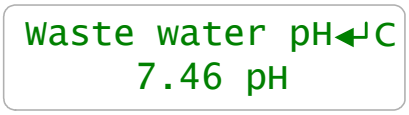
Press **ENTER, DOWN, ENTER** and @ **1 Point Calib.** to select 2 point pH calibration.

Sidebar:
Select **Factory Reset** to help you diagnose a problem sensor:
1. If you are more than 1 pH away from the actual pH you may have a failed pH sensor.
2. If the pH is not stable, verify the solution ground & make sure the excess pH cable is coiled @ the sensor & not in the enclosure.
3. If the sensor displays 5.5 when it should be 8.5 you may have miswired it.
4. Make sure the pH tip is immersed, installed vertically and not damaged. If the tip looks shiny & metallic, it's an ORP, not a pH sensor.
5. If you are measuring both ORP & pH sensors, or more than one pH sensor, verify you haven't switched cables between sensors and connection terminals.

3. Keypad pH Calibration continued

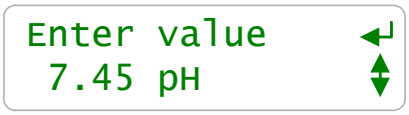
1 Point Calibration

Key **UP** or **DOWN** to the target pH sensor then press **ENTER**.

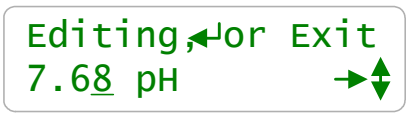


Press **ENTER** @ **Calibrate**.

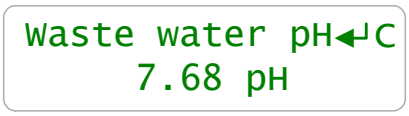
Press **ENTER** @ **Enter Value**.
Grab a sample @ the pH sensor & measure its pH



Key **RIGHT** to move the underline and then **UP** or **DOWN** to change the number.
Press **ENTER** or **EXIT** to escape & end calibration.

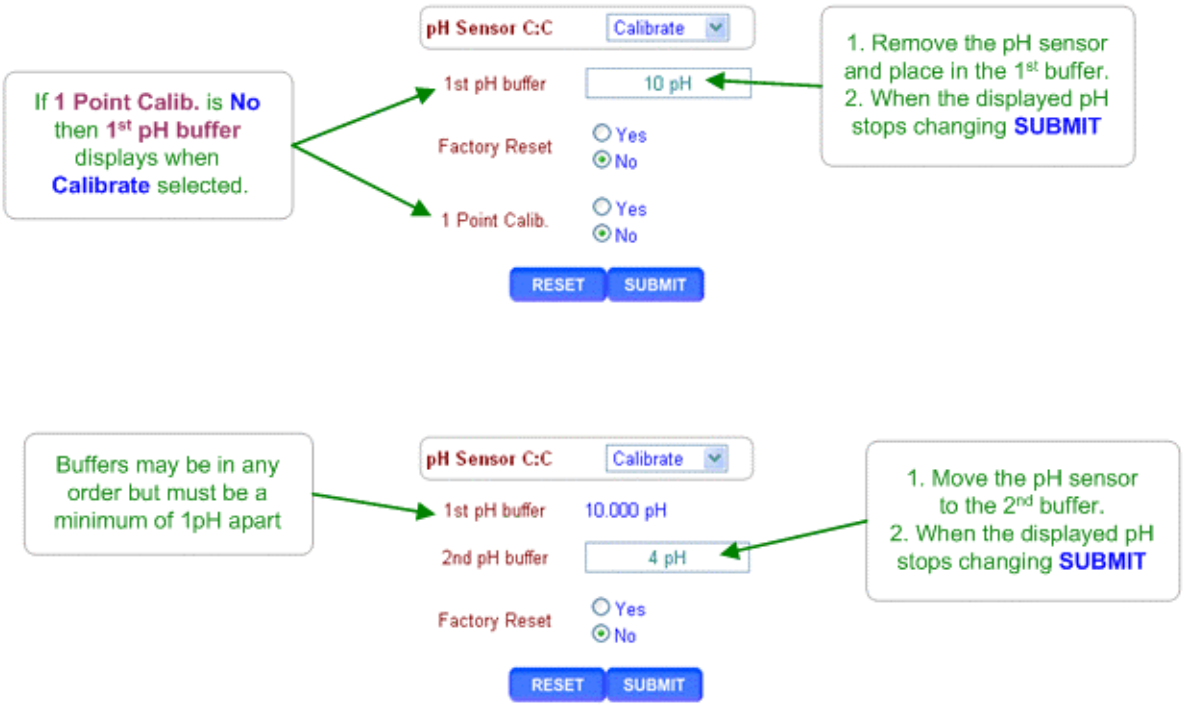


The current, calibrated pH displays on a successful calibration.
See the page 2 for fault displays.

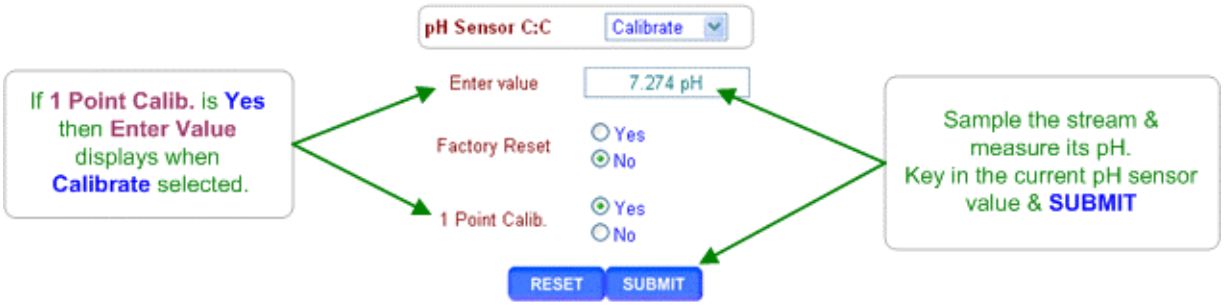


4. Browser pH Calibration

2 Point pH Calibration

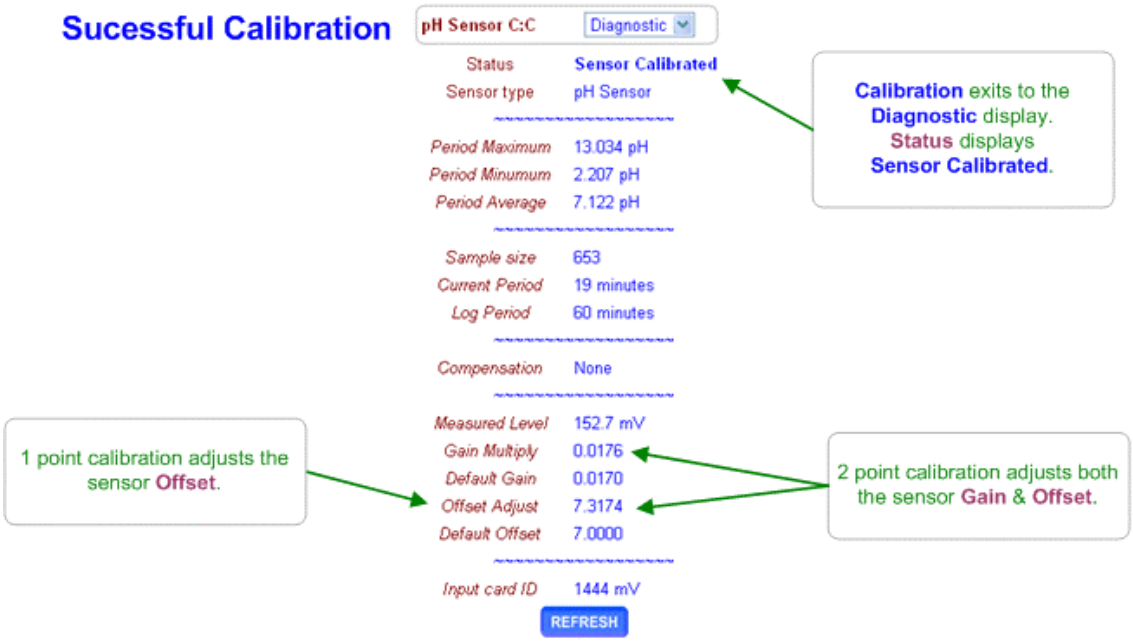


Single Point pH Calibration

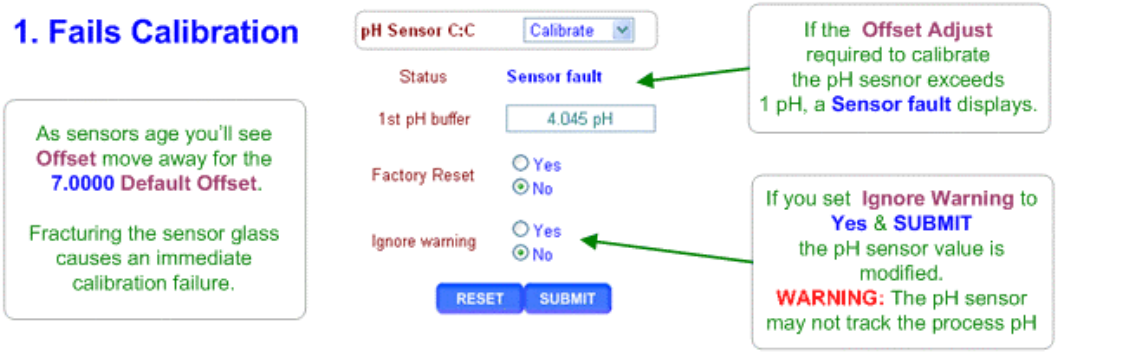


4. Browser pH Calibration continued

Sucessful Calibration



1. Fails Calibration



2. Fails Calibration