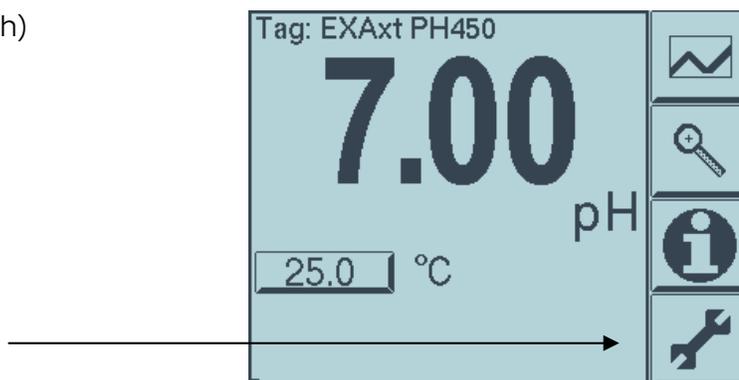


## PH450 Analyzer Proper Calibration Steps

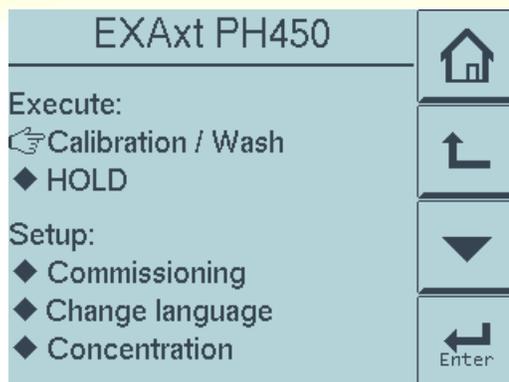
Before any electrodes are placed into initial service and then about once a month thereafter, depending on the application, a two point calibration of the electrodes are required. A two point calibration corrects for changes in the output of the pH electrode (slope) and the millivolt offset ( $E_o$ ) of the reference electrode, by comparing these values to those of known buffer solutions. The EXA Instruments utilize preprogrammed buffer tables in the Auto Cal function. These pre-programmed values are based on pure N.I.S.T. buffers, which correspond to 6.86 pH, 4.01 pH and 9.18 pH at 25° C. Many plants use N.I.S.T. traceable or technical grade buffers, which are pure NBS buffers that have been adjusted to read 7.00, 4.00 and 10.00 respectively. If traceable buffers are used, and the default values in the preprogrammed Buffer Tables have not been changed, an error of .14 pH ( $7.00 - 6.86 = .14$ ) will occur. To eliminate this situation, either pure NBS buffers should be used or the Buffer Tables in the instrument should be reprogrammed to match the values of the buffers being used. For further information regarding NBS vs NBS Traceable buffers, refer to the **Technical Note TNA0917 "A Word about...pH Buffers."** For information regarding the reprogramming of the EXA PH450 refer to **"Technical Note TNA0905 "PH450 Analyzer Programming Custom Buffer Tables."**

When performing a calibration, always start with fresh buffer solutions. You will need two buffers (preferably 7.00 and 4.00) and some deionized water to rinse the electrodes. Place a sample of the 7.00 buffer solution in the sample cup attached to the flow-through housing. Take the electrode assembly out of the flow-through housing, clean and wipe the probes, then immerse it in the sample cup.

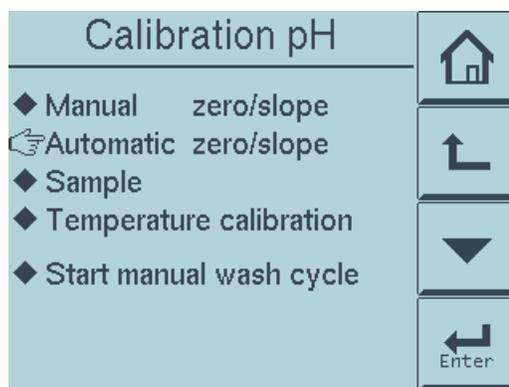
- 1.) Click on the settings icon (wrench)



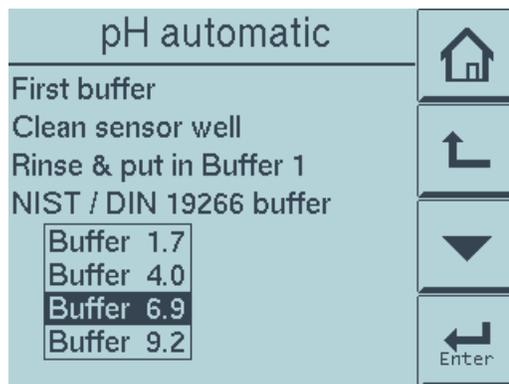
2.) Using either the the  scroll key or by clicking directly on the diamond next to Calibration/ Wash, select it.



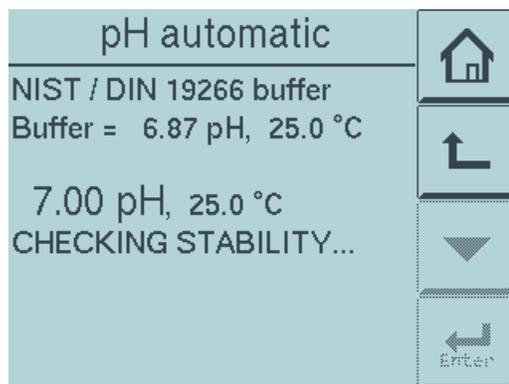
3.) Next, selected the diamond next to Automatic zer/slope



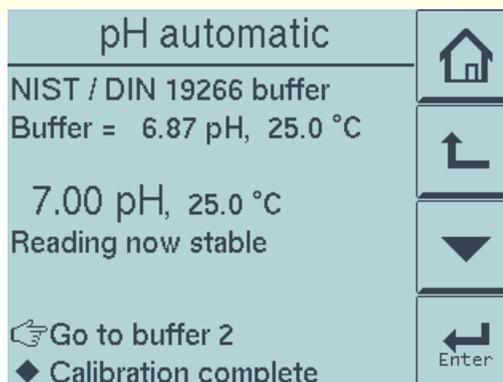
4.) On the following screen in the box at the bottom, use the  scroll key to select the 6.9 buffer



5.) The main display will start flashing and continues to flash until the reading has stabilized for 5 seconds and does not change by more than .02 pH units.

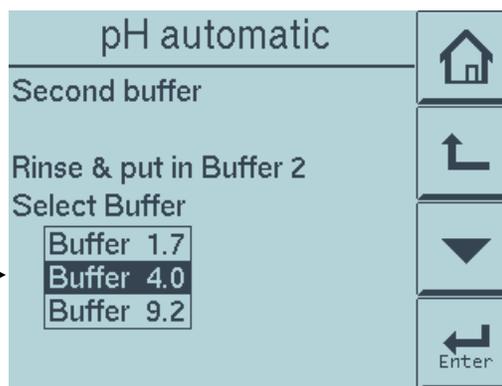


6.) Once the reading has stabilized, the main display will lock onto the reading and store it in memory. Press the Diamond next to Go to Buffer 2.

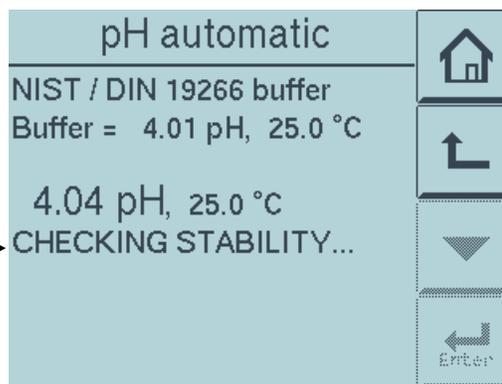


7.) Remove the electrode assembly from the 7.00 buffer and rinse it thoroughly in deionized water, then blot the electrodes to remove any excess water. Immerse the electrode assembly in a sample cup of 4 buffer solution.

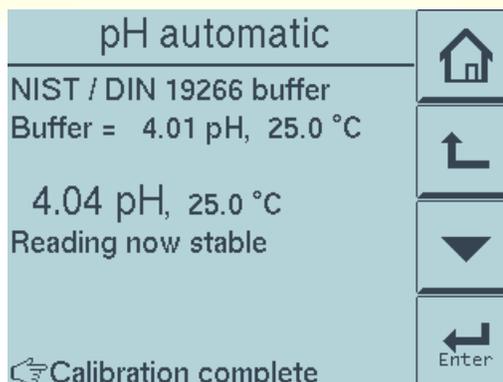
8.) On the following screen in the box at the bottom, use the  scroll key to select the 4.0 buffer



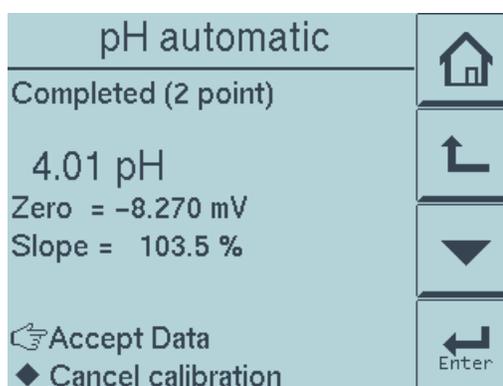
9.) The main display will start flashing and continues to flash until the reading has stabilized for 5 seconds and does not change by more than .02 pH units.



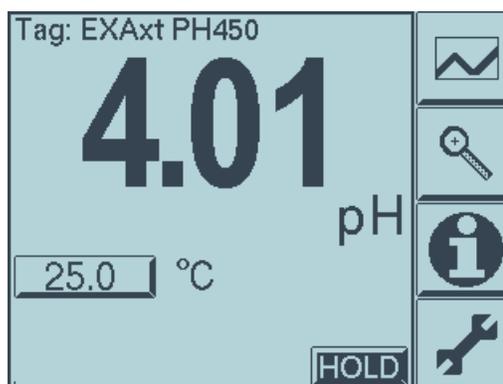
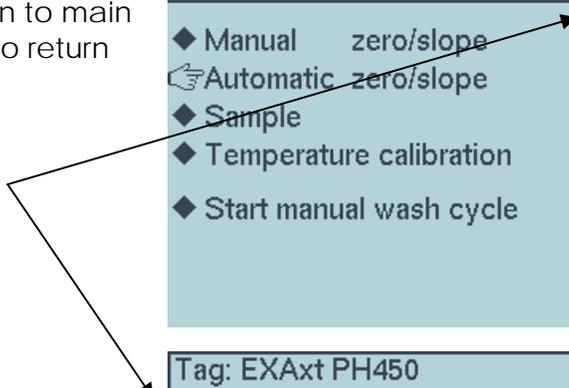
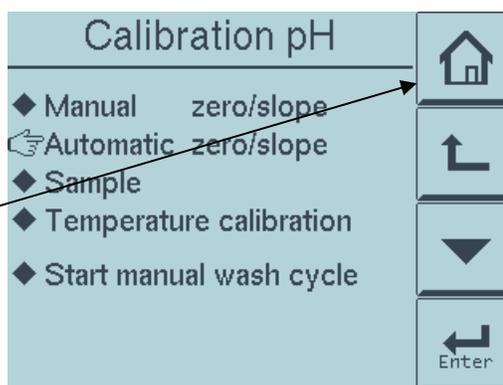
10.) Once the reading has stabilized, the main display will lock onto the reading and store it in memory. Press the diamond next to Calibration complete



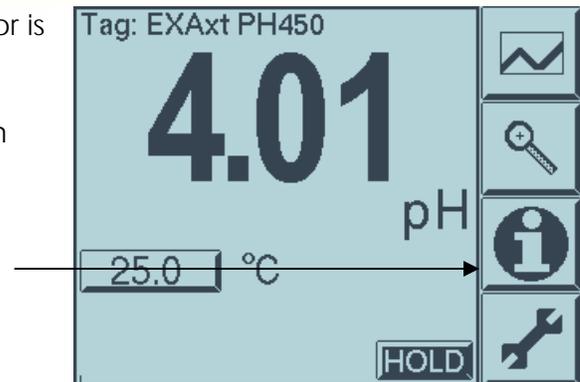
11.) To have the analyzer finish and accept calibration data press the diamond next to Accept Data



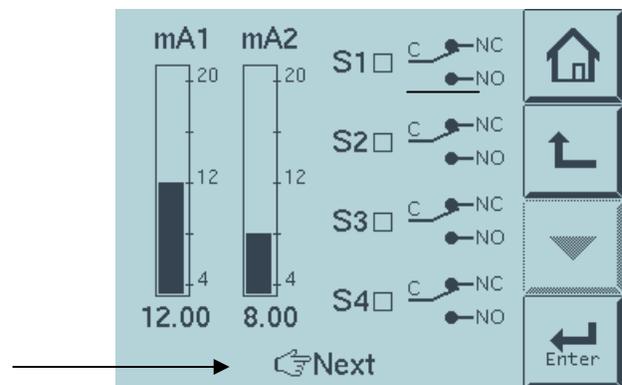
12.) The analyzer will automatically return you to the original Calibration screen. To return to main operating mode press the house icon to return to the main screen.



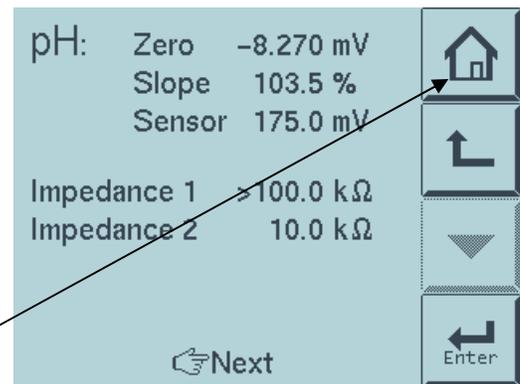
Sometimes you will want to know how your sensor is functioning. To view the sensor's zero mV output from the electrode (AS), Slope (SL) and Impedance 1 and Impedance 2. From the Main screen press the **i** icon in the circle.



The following screen will pop up. Press the diamond next to NEXT.



Then... the data screen will appear. The zero is the AS, the slope is the SL, and the impedance 2 is the impedance of the reference junction. The sensor mV reading is a continuous reading of what the sensor is seeing in normal measuring mode.



To return to normal measuring mode press the house icon.