



## 1 Calibrate and Calibrate

- Remove the protective storage cap from the electrode.
- Loosen the reference fill cap.
- Connect pH and temperature probes to the titrator.
- Check fill solution level If fill solution is low (1/2" from top) then fill with HI7082 electrolyte solution.
- For three point calibration, pH 8.20, 7.01, and 4.01 buffers are used.
- Fill 100 ml beakers with 50 ml buffer, respectively.
- Place a stir bar into each beaker.
- Place beaker with pH 820 buffer in beaker holder.
- Rinse probes with DI water and collect in waste container/beaker.
- Place probe holder with probes on titrator.
- Check to make sure probes are low enough that the junction is covered by the buffer but not too low that the stir bar will hit the electrode.
- Press the **CAL** key then **Electrode**. The electrode calibration screen will be displayed.
- If using pH 8.20 as endpoint, then pH 8.20 will be displayed. Up/down keys can be used to select a different value.  
**Press the STIR** key if stirrer icon is not present.
- Once pH 8.20 buffer is recognized, "**Confirm**" is displayed.
- Press the virtual key to accept the calibration point pH 7.01 will then be displayed along with "Buffer: 2".
- Remove electrode holder and rinse probes with DI water.
- Replace beaker with pH 8.20 buffer for one that has pH 7.01.
- Place electrode holder back on titrator.
- Press the dedicated **STIR** key.
- Once pH 7.01 buffer is recognized, "**Confirm**" is displayed Press the virtual key to accept the calibration point pH 4.01 will then be displayed along with "Buffer: 3".
- Remove electrode holder and rinse probes with DI water
- Replace beaker with pH 7.01 buffer for one that has pH 4.01
- Place electrode holder back on titrator Press **STIR** key
- Once pH 4.01 buffer is recognized, "**Confirm**" is displayed Press the virtual key to accept the calibration point. The initial calibration screen is displayed along with the updated date for the electrode calibration.
- Remove electrode holder and rinse probes with DI water.
- Press **ESC** to exit to measurement screen.
- Review GLP probe information (optional).
- Press **MENU** key.
- Press **GLP** virtual key.
- Select **Electrode** virtual key.
- Calibration information is displayed including: date, time, buffers used, offset and slope.
- Place the HI84502-50 titrant in the bottle holder.
- Set up syringe, valve, and tubing according to instructions.
- Select desired range by pressing the **MENU** key then the.
- Setup virtual key For measurements between 01 and 50 g/L select **Low** for measurements between 40 to 250 g/L select **high**.
- Prime the dosing system Press **CAL** key then **Prime** virtual key Press **Start** and the pump will cycle three times. Make sure to have dosing tip in waste beaker since some titrant will be lost by the prime cycle.
- Press the virtual **Start** key.
- Using the supplied 2000 µl mechanical pipette with a clean tip, add 4 ml (4000 µl) or two doses of the HI84502-55 pump calibration solution to a clean 100 ml beaker.
- Fill the beaker up to the 50 mL mark with distilled or deionized water.
- Add a stir bar in the beaker and place the beaker into the holder of the titrator.
- Place the electrode holder with probes and dosing tip over a waste container.
- Press the virtual **Continue** key. A small amount of titrant will be dosed to ensure no air bubbles are in the dosing tip.
- Place the electrode holder with both pH and temperature probes over the beaker.
- It is **important** to make sure that the dosing tip from the dispensing tube is immersed approximately 01" (025 cm) into the solution.
- Press the virtual **Continue** key.
- The calibration will begin. At the end of the calibration, "calibration, completed" will be displayed.
- Press **ESC** dedicated key to return to main measurement screen.



# How to Measure TA with the Mini Titrator

## 2 Measure of Titratable Acidity

- Verify that the instrument has been calibrated (pH and pump) before performing any titrations.
- If in pH mode, press the virtual **Titrator** key to place in titration mode.
- Verify correct measurement range is being used.
- For a low range measurement, use the 2000 µl mechanical pipette with a clean tip to add 2 ml (2000 µl) of the wine to a clean 100 ml beaker. For high range measurement, 10 ml (10,000 µl) of wine is added to a clean 100 ml beaker.
- Fill the beaker up to the 50 ml mark with DI water.
- Place the electrode holder with probes and dosing tip over a waste beaker.
- Press **Start** and **Continue**, a small amount of titrant will be dosed to ensure no air bubbles are present in the dosing tip.
- Rinse probes with DI water.
- Place beaker with a stir bar into the titrator holder Place electrode holder on top of the beaker.
- It is **important** to make sure that the dosing tip from the dispensing tube is immersed approximately 0.1" (0.25 cm) into the solution.
- Press the **Continue** virtual key to start the titration.
- After the titration is complete the total titratable acidity concentration in g/L of tartaric acid will be displayed.

## 3 Clean and Store

- Once you are finished titrating your samples, remove the pH and temperature probes from the probe holder and rinse with DI water until all wine is removed from the surface.
- Examine the pH electrode to determine if it needs to be refilled with fill solution (the level of the internal solution is less than 1/2" inch from the fill hole).
- If wine/must is present inside the pH electrode (easier to spot with red wines because you can see the red inside), then empty, rinse, and refill the electrode with fill solution. Tighten the fill hole cap.
- Fill a small beaker with cleaning solution for wine deposits. If the probe is stained or discolored, use wine stains cleaning solution. Immerse the pH electrode for 5 to 15 minutes. Make sure there is enough solution to cover the junction. Rinse the pH electrode with DI water.
- Fill the pH electrode storage cap half way with storage solution and replace the storage cap on the electrode. Make sure there is enough storage solution in the cap to cover the junction of the pH electrode.
- Before storing the titrator it is important to clean the tubing, syringe, and valve.
- Remove tubing from titrant bottle and place in 100 ml beaker filled with DI water.
- Remove dosing tip with tubing from probe holder and place in waste container.
- Press **Prime** virtual key and then **Start** virtual key. The dosing pump will cycle three times, rinsing the titrant from the tubing.
- Purge water from tubing.
- Remove tubing from 100 ml beaker containing DI water.
- Press **Prime** virtual key and then **Start**. The dosing pump will cycle three times, purging the water from the tubing.
- Lastly, make sure titrant bottle cap is tightened on titrant bottle.