GroStar GS3 EC/ppm Pen Tester Brief Manual

1. Features

- Titanium alloy conductivity sensor, highly accurate and requires minimal maintenance.
- The probe is replaceable, saving money in the long run.
- Intuitive operation, completing calibration within 15 seconds. One-tap switch between EC, 500ppm, and 700ppm.
- Colored backlit LCD screen, white for measurement, green for calibration, red for error messages.
- Durable structure, IP67 waterproof rating, powered by AAA batteries, lasting up to 2000 hours.

2. Instrument Introduction

a. Keypad

	Short Press	Long Press
HOLD	1. Power on 2. In measurement mode, press to manually hold the measurement (**HOLD** displays on screen). Press again to cancel the hold.	Power off: hold the key until OFF displays.
CAL	In measurement mode, press to turn on or off the backlight.	Start calibration: in measurement mode, hold the key until CAL displays
MODE UNITS	Short press to switch measurement mode: EC→500ppm→700ppm	Long press to switch between ˚F and ˚C

b. Probe cap

i. The fill line indicates the level to which you should pour the sample solution.

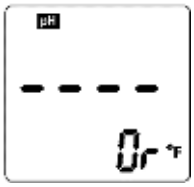
ii. For probe storage, see Section 8

3. **Preparation before first use**
    a. Pull out the battery slip, rinse the probe in clean water and shake dry. Then power on the tester.
    b. Open the seal of the calibration solutions and submerge the probe in the calibration solution. Check the reading of the tester. If it the reading error is less than or equal to 0.1 EC (reading between 2.67 EC and 2.87 EC), then you are good to start the measurement. If the reading error is more than 0.1 EC, please calibrate the tester before measuring (see Section 4).
4. **Calibration**
    a. Power on and remove the probe cap. Rinse the probe with clean water and shake-dry, then submerge it in the 2.77 EC standard buffer; shake the probe in the solution for a few seconds and let it stand.
    b. Hold (CAL ✲) until **CAL** shows up on screen. The tester automatically starts the calibration process. When **Good** shows up, the calibration is successful, and the tester returns to measurement mode.
    c. The **M** icon will show up on the lower left corner indicating the tester is successfully calibrated. **M** will disappear after 90 days, reminding you to re-calibrate the tester. We recommend calibrating the tester at least once every quarter to ensure the accuracy. If you feel like the accuracy is not as good, simply test the standard solution (make sure the standard is fresh and clean). If the discrepancy is greater than 0.1 EC, then it's time to calibrate again.
    d. If the calibration fails, the screen will turn red. For details, see Section 10.
5. **Measurement**
    a. Power on and remove the probe cap.
    b. Rinse the probe with clean water and shake dry.
    c. Submerge the probe into the sample solution, shake for a few seconds to remove potential air bubbles around the sensor. Wait for the reading to stabilize (the smiley face icon stays on the screen), then record the reading.
    d. Short press (MODE UNITS) to switch from EC→500ppm→700ppm

e. Thoroughly rinse off the probe.

6. **Other Functions**
   a. If necessary, you can hold the reading before recording the measurement by short pressing (HOLD). Press it again to cancel the hold.
   b. Long press the UNIT button to switch temperature unit between ˚F and ˚C.
   c. The tester will automatically power off if there is no operation within 10 minutes.
7. **Probe Cleaning**
   a. A clean probe is essential to measurement accuracy. Always thoroughly rinse off the probe before and after each measurement with clean water. Shake-dry and dap off excess water with clean tissue.
   b. For tough contaminants, soak the probe in Apera's cleaning solution for at least 30 minutes. Then rinse it off and recalibrate the tester before using again.
8. **Storage**
   a. In general, storing the probe dry in the probe cap. If you feel like the accuracy is not as good or the response time is slower, soak the probe in the 2.77 EC standard solution overnight, then recalibrate before measuring again.
9. **Notes**
   a. Never use your finger to touch the glass membrane or use other material to wipe it.
   b. Avoid testing in high (>45˚C) or low temperature (<5˚C) solutions as it will cause greater measurement error and cause damage to the probe. Test your samples and perform calibration close to room temperature as much as possible.
   c. Make sure the battery lid must be tightly closed on. O-rings must be properly installed. Otherwise, the waterproof rating will be compromised.

10. Error messages

	**Calibration Errors** 1. Calibration buffer is wrong or problematic. 2. Reading cannot stabilize within 1 minute
	Temperature or EC measurement is out of range

11. Technical Specs

Range	0 to 10.0 EC, 0 to 7000ppm (700ppm), 0 to 5000ppm (500ppm), 0 to 50˚C (32 to 122˚F)
Resolution	0.1EC, 10ppm (700ppm), 10ppm(500ppm), 0.1˚F/0.1˚C
Accuracy	±0.1EC ±50ppm (500ppm) ±70ppm (700ppm) ±1˚C/±1˚F
Temperature compensation	Automatic
Calibration	1 point (2.77EC)
Unit	EC/500ppm/700ppm, ˚F, ˚C
Power supply	4*AAA alkaline batteries
Backlight	White (measurement); Green (calibration); Red (errors)
Reading hold	Manual
Warranty	Two years for the instrument, one year for the probe
EC probe	Titanium alloy
Successful calibration indicators	**M** (2.77 EC)
Low battery reminder	
Waterproof rating	IP67
Reading stabilization icon	
What's in the box	GS3 EC Pen Tester, 2.77 EC standard (50mL), user manual, lanyard.