

# **Ozone SAM**

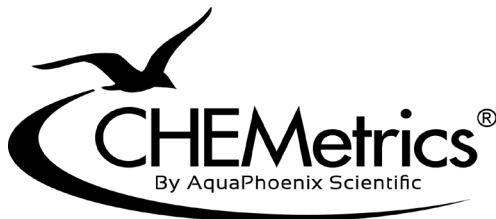
**I-2022 using K-7433 Vacu-vials<sup>®1</sup> Kit**

**0 to 0.75 PPM (mg/Liter)**

**&**

**I-2023 using K-7453 Vacu-vials<sup>®1</sup> Kit**

**0 to 0.25 PPM (mg/Liter)**



## To Set Zero

1. Press the ON/OFF key on the SAM.
2. Press the **Mode** key to scroll to the ozone method of choice.
  - **7433** = use Ozone Vacu-vials Kit, Cat. No. K-7433, Range 0 - 0.75 ppm
  - **7453** = use Ozone Vacu-vials Kit, Cat. No. K-7453, Range 0 - 0.25 ppm
3. Insert the ZERO ampoule (supplied in Vacu-vials kit), flat end first, into the sample cell compartment with enough force to ensure that it is fully seated.
4. Place the light shield over the ZERO ampoule.
5. Press the Zero/Test key. The method symbol selected in Step 2 will flash for approximately 8 seconds, then the display will show "SEt".

## Test Procedure

1. Insert an **unsnapped ozone Vacu-vial ampoule**, flat end first, into the sample cell compartment of the SAM with enough force to ensure that it is fully seated.
2. Place the light shield over the test ampoule.
3. Press the Zero/Test key. The method symbol will flash for approximately 8 seconds, then the display will show "tEST".

**Note:**The instrument has stored a reagent blank value for this ampoule.

4. Fill the sample cup to the 25 mL with the sample to be tested, being careful to minimize turbulence (fig. 1).

**Note:** Ozone loss from sample occurs rapidly. To minimize ozone loss, a snapper that can be used directly in the bottle of water being tested is available for sale (Cat # A-0214). See alternate steps 4 and 5 below.

5. Immediately place the Vacu-vial ampoule used in Step #1, tip first, into the sample cup. Snap the tip. The ampoule will fill leaving a bubble for mixing (fig. 2).
6. Invert the ampoule **continuously for a full 30 seconds**, allowing the bubble to travel from end to end in the ampoule with each inversion.
7. Dry the ampoule and insert it, flat end first, into the sample cell compartment with enough force to ensure that it is fully seated.
8. Place the light shield over the test ampoule.
9. Press the Zero/Test key. The method symbol will flash for approximately 3 seconds, then the sample test result will appear in the display as ppm (mg/Liter).

**Note:** As long as the SAM has not powered off, it is possible to "remix and re-read" a test ampoule at this point. To take a second reading, press and hold the ! key, then press the Zero/Test key. Release the ! key and Zero/Test key simultaneously. "O3" blinks on the display for a few seconds and then a new test result is displayed.

10. To perform the next test (as long as the SAM has not powered off), remove the test ampoule from the sample cell compartment. Press the Zero/Test key. The display will show "SEt". Repeat Test Procedure Steps 1-9.

## Alternate Steps 4 and 5 for Snapper use

4. Place the Vacu-vial ampoule used in Step #1 above, tip first, into the snapper. Open the bottle of water to be tested and place the snapper with ampoule into the bottle (fig. 3).

**Note:** There must be enough water in the container to cover at least the bottom half of the snapper.

5. Immediately apply gentle downward pressure to the bottom of the ampoule to snap the tip. The ampoule will fill leaving a bubble for mixing.

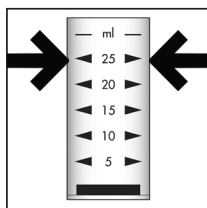


Figure 1

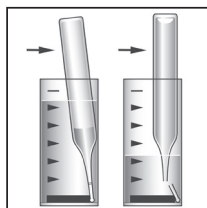


Figure 2

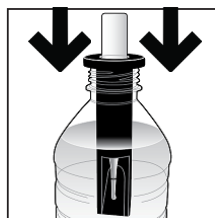


Figure 3

## Operating Tips

- Upon startup, the photometer automatically proceeds to the zeroing process. Every time the photometer powers on, it must be re-zeroed.
- To re-zero the photometer, it must be turned off and back on again.
- A series of readings can be taken without re-zeroing, as long as the photometer stays on during the series.
- Protect photometer from extreme humidity, corrosive fumes and dusty areas. Store in a cool, dry place.
- Remove the batteries when photometer is not in use.
- Press the ! key to turn the display back light on or off.
- When moving the photometer from one temperature extreme to another, wait at least 10 minutes before use to allow photometer to come to temperature equilibrium.
- Contamination of the optics in the sample chamber will result in incorrect measurements. The windows in the sample chamber should be checked at regular intervals and cleaned as necessary. Use a soft moist cloth or cotton swab for cleaning purposes.
- If the sample cell adapter has been removed, it must be replaced with proper orientation, aligning the triangle on the adapter with the triangle on the photometer.
- The SAM calibration is factory set and the LED should not change under normal use conditions. However, it is good quality protocol to routinely verify the performance of any LED photometer. A verification kit (Cat. No I-2022) that can be used to verify the performance of this photometer is sold separately.

## Displays and Troubleshooting

**E01:** Light absorption too great (dirty optics)

**E020 or E021:** Too much light reaching detector

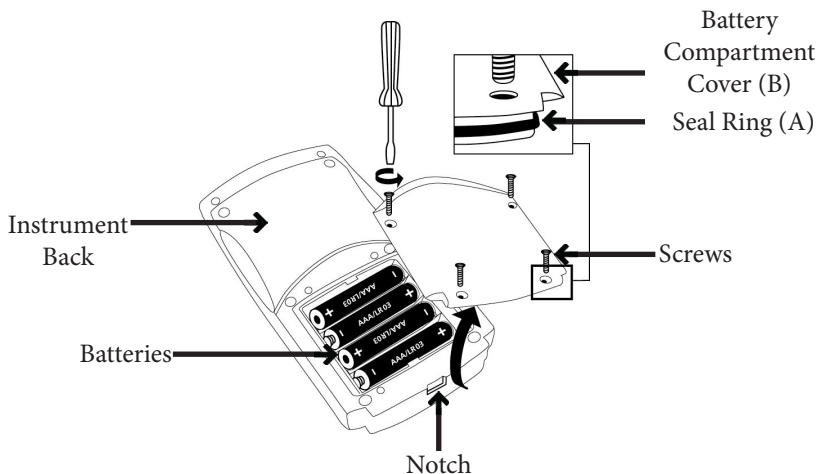
**E022 or Battery Icon:** Battery should be replaced

**E027, E028 or E029 :** Instrument zeroed incorrectly, misaligned adapter, vial not fully seated, dirty optics or failing light source.

**Hi or E03:** Measuring range exceeded or excessive turbidity

**Lo:** Test result has a negative value (less than 0 ppm) or vial not fully seated.

## Battery Installation



*To ensure that the instrument is waterproof:*

- seal ring (A) must be in position
- battery compartment cover (B) must be fixed with the four screws

## Specifications

**Auto Shutoff:** After 1 hour of non-use

**Optics:** 610 nm LED/interference filter & photosensor in transparent sample chamber

**Operating Temp.:** 5 to 40°C (41 to 104°F)

**Battery:** 4 AAA batteries (approx. 5,000 tests or 17 hours)

**Waterproof:** Floating, IP68 (1 hour at 0.1 meter)

**Wavelength Accuracy:** ± 1 nm

**Photometric Accuracy:** 3% full scale (T = 20 - 25° C / 68 - 77° F)

**Photometric Resolution:** 0.01 A

**Ambient Conditions:** Temperature 5 - 40° C / 41 - 104°F

Rel. humidity 30 - 90% (non-condensing)

**CE:** Certificate of Declaration of CE-Conformity available upon request.

## Menu Selection

### Setting Date and Time

Upon initial start-up, the SAM will display “Set”, “dAtE”, and “YYYY”, then a 4 digit number. Proceed to Step 4 in the procedure below to set the date and time, or power the instrument off and on again to bypass this process. At any time that the time and/or data need to be reset, follow steps 1-6 of the procedure below.

1. Press the Mode key and hold. Turn the instrument on by pressing and releasing the ON/OFF key. Once three decimal points appear in the display, release the Mode key. The display will show “di 5”.
2. Press and release the **!** key until the display shows arrows in the upper right and lower left corners of the display, pointing to “Time” and “Date”.
3. Press the Mode key. “Set”, “dAtE” will briefly appear in the display.
4. Date and time settings are displayed in the following order: Year (“YYYY”), Month (“MM”), Day (“dd”), Hour (“hh”), Minutes (“mm”). Increase the displayed value for each setting by pressing the Mode key or decrease the value by pressing the Zero/Test key until the desired value is displayed.
5. Press the **!** key to save the displayed value and to proceed to the next setting.
6. After setting the minutes, press the **!** key. The display will flash “iS” “SEt” and then will return to the measurement mode.

### Recall of Stored Data

The SAM photometer automatically stores the last 15 data sets. To recall stored data:

1. Press the Mode key and hold. Turn the instrument on by pressing and releasing the ON/OFF key. Once three decimal points appear in the display, release the Mode key. The display will show “di 5”.

**Note:** If the instrument is already on, press and hold the **!** key for at least 4 seconds and release to access the stored data.

2. Press the Mode key. The photometer will display the stored data sets in the following format:
  - a. Sample Number: nXX (e.g. n15, n14, ... n1)
  - b. Year: XXXX (e.g. 2017)
  - c. Date: mm.dd (e.g. 03.15)
  - d. Time: hh.mm (e.g. 12:05)
  - e. Analyte
  - f. Result
3. Press the Zero/Test key to repeat the current data set.
4. Press the Mode key to proceed to the next data set.
5. Press the **!** key to return to the measurement mode.