Environmental
Instruments
Canada Inc.

Micromanometer

User's Manual

Models ES008-M and ES008-MXS

(Version 1.3 and above)

January 2020

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1. Device Overview

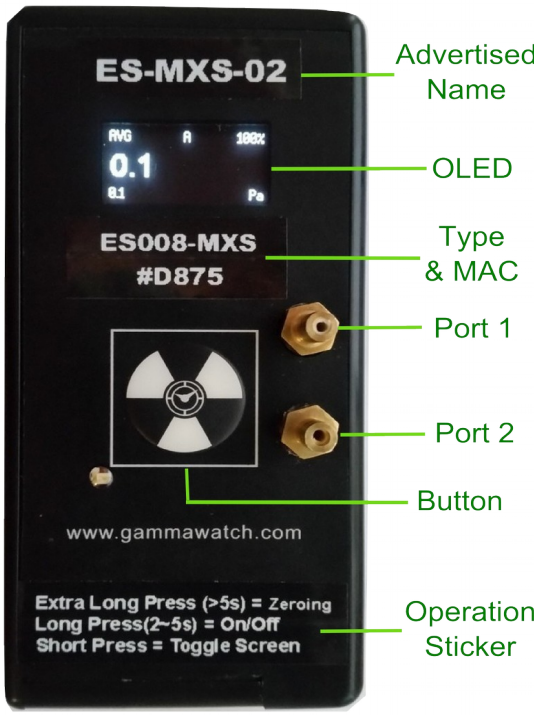

Figure 1.1

An overview of the front face of the EIC micromanometer is given in Figure 1.1. The front face includes:

- **Advertising Name** – it shows up in the scan list;
- **OLED screen** – display screens: live or an average of 10 seconds pressure readings in unit of Pascal or inH2O, and device information;
- **Detector Type & Mac address** — if you need to connect to our app for remote monitoring, find and choose the device with this name and address;

- **Port 1 & 2** – the manometer measures the pressure differences between these two ports;
- **Button** – control device to turn on and off, to toggle OLED screens and to manually set zeros;
- **Operation Sticker** – indicates button operations.

2. Basic Operation

Basic operation of the EIC manometer is outlined in the following steps:

1) There should 2 new AA batteries in the device when you receive the manometer. The manometer should be in sleep mode. To start the manometer, press and hold the button (for more than 3 seconds) until OLED starts displaying[Note(i)]. You can release the button once the OLED shows "*Measuring..*". After displaying "*Measuring*" for 3 seconds, it shows "LIVE" screen. "LIVE" screen readings are the average readings of 1 seconds. See Section 3 "OLED Screen Overview" for screen interpretation.

2) Short pressing the button (for less than 2 seconds) toggles screens. There are three screen displays and they are in the order of:

   (a) Live readings (average of 1 second)

   (b) Average readings (average of 10 seconds by default. This can be modified through the app)

   (c) Device information (Name, Mac address, battery percentage and temperature)

   The screen toggles from (a) to (c) and then back to (a) again. The OLED screens updates every second.

3) When you press and hold the button for more than 2 seconds, the OLED starts displaying instructions. You

can follow the instructions on the OLED. ES008-M and ES008-MXS have different button operations:

Button Press Time:	**ES008-M**	**ES008-MXS**
Short (<2s)	Toggle Screens	
Long (2~5s)	"Release to Zero"	"Release to Shunt Down"
Extra Long (>5s)	"Release to Shunt Down"	"Release to Zero"

When the OLED shows "*Release to Zero*", it means if you release the button now, the manometer will display "*Zeroing*" and it stores[Note(ii)] the pressure reading at that point as the new "zero point"/offset. It will then go back to the display screen before this button operation.

When the OLED displays "*Release to Shut Down*" and you release the button then, the device will display "*Shunting Down*" and it starts the shunt down process. The OLED will be off after 3 seconds and then the manometer will enter sleep mode.

There are no further button options upon "Extra Long" button press.

4) To turn on the device again, follow Step 1) above.

Note:

(i) if the manometer does not start when you press and hold the button for more than 3 seconds, you can try to:

- open the battery door and check if there are batteries inside;
- if there are batteries, close the battery door again. At this time, it should automatically start display without any button press.
- If none of the previous try works, try to use 2 new AA batteries. Follow the “Changing Battery” section.

(ii)The “Zeroing” function stores the new offset value into flash memory so it remembers the last offset value the next time the device boots up.

3. OLED Screen Overview

The OLED display not only shows pressure readings but also other useful information. For example, the "AVG" screen indicates that the average of 10 seconds is shown in Figure 3.1. The screen display includes:

- **Screen Name:** There are "LIVE" screen for 1 second average reading screen, and "AVG" screen for average of 10 second reading;
- **Sensor Status:** "A" means active readings and "V" means void readings.

If the sensor status shows "V", you will need to reboot the device to re-initial the sensor. You can do that by either opening the battery door and then closing it up as hardware reset, or shutting down the device and waking it up again by pressing button.

- **Battery Percentage:** if the battery is less than 0%, it will automatically shut down. Insert new batteries if that happens.
- **Readings (Average or Live):** the readings in the middle row is the main reading at the current screen. In the example below, it is the average reading of 10 seconds. If it is "LIVE", it is the average of 1 second. The reading at smaller font in the bottom row is the live reading in this example. Note that there is no such smaller reading in the "LIVE" screen.

- **Unit:** the readings are in the unit of Pascal by default. Users can change the unit to inches of water, through the app.

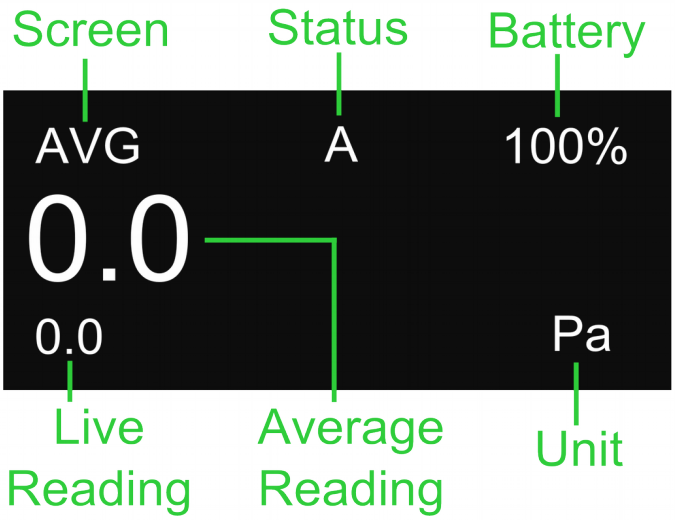

Figure 3.1

4. Changing Batteries

The manometer uses two AA batteries. Follow these steps to replace the batteries:

1) Unscrew the battery door screw;
2) Open the battery door;
3) Replace two AA batteries;
4) Close the battery door. Make sure the hinge catches;
5) Drive the battery door screw back in while holding the door closed with your thumb.

5. Connecting Sampling Tubing

The ports are sized to fit 3 mm ID silicone tubing supplied with the instrument. Push and pull the tubing on and off the port, without twisting.

6. The App

The manometer can be connected to an Android app, which allows you to see the results remotely and to graph the results over time. Other functionality and an iOS version will be added in the future.

The app can be found here: https://play.google.com/store/apps/details?id=com.eic.gammaguard

You can also search Google Play for "GammaGuard Beta". (It has to say "Beta". The regular GammaGuard app only connects to our hand-held radiation detectors. See http://www.gammawatch.com.)

7. Feedback

This is a very new product. (Our first non-radiation product.) Please let us know what you think. Please send comments, suggestions, constructive criticism to admin@eic.nu.

Thank You for your support!