



Environmental
Instruments
Canada Inc.

Micromanometer

User's Manual

Models ES008-M
(or CT008 Manometer)

Version 1.1 and below

January 2020

1. Device Overview

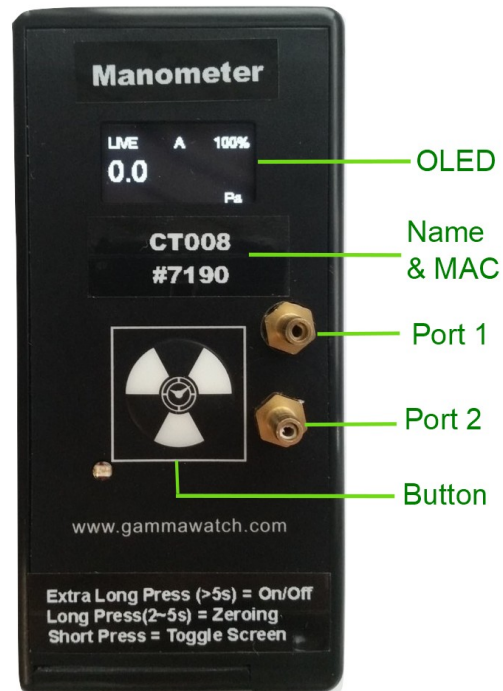


Figure 1.1

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

- **OLED screen** – display live or 10 seconds average pressure readings in unit of Pascal, and device information;
- **Name & 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.

2. Basic Operation

Basic operation of 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*. You can release the button once the OLED shows “Measuring..”. After displaying “Measuring” for 3 seconds, it shows live pressure reading in Pascal. Live readings are average readings of 1 seconds.
- 2) By short pressing button (for less than 2 seconds) toggles screens. There are three screen display and they are in the order of:
 - (a) Live readings (1 second average)
 - (b) Average readings (average of 10 seconds)
 - (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 at least 2 seconds, the OLED starts displaying some button instructions. You can follow the instructions on the OLED. By pressing the button for between 2 to 5 seconds, the OLED shows “*Release to Zero*” which means if you release the button now, the manometer will zeros the current readings. If you keep hold the button for more than 5 seconds, the OLED toggles from displaying “*Release to Zero*” to display “*Release to Shut Down*”. There are no further button options after “*Release to Shut Down*”. At this time, once you release the button, the device will shut down and the OLED will be off after shutting down.
- 4) To turn on the device again, follow Step 1) above.

*Note that 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.

3. OLED Screen Overview

The OLED display not only pressure readings but also some useful information. For example, the screen displaying the average of 10 seconds is shown in Figure 3.1. The screen display includes:

- ◆ **Screen Name:** “LIVE” for 1 second average reading screen, “AVG” for average of 10 seconds reading;
- ◆ **Sensor Status:** “A” means active readings and “V” means void values.



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 as hardware reset, or shutting down the device following by waking it up again by button press.

- ◆ **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 should be the average of 1 second. The reading at smaller font in the bottom row is the live reading in this example. There is no such reading in the “LIVE” screen.

- ◆ **Unit:** the readings are all in the unit of Pascal by default.

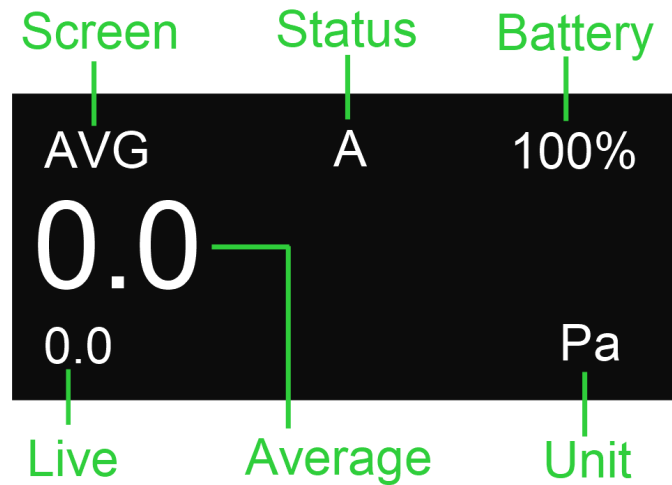


Figure 3.1

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 so that standard silicone aquarium tubing slides easily on and off. If you want to lock the tubing in place more securely, slide a number 009 O-ring over the tubing. Roll back the O-ring before pulling off the tubing so that you don't put too much stress on the manometer ports.

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”. (I has to say “Beta”. The regular GammaGuard app only connects to our hand-held radiation detectors. See <http://www.gammawatch.com>.)

Also, with older Android phones, the app doesn't discover the manometer until you swipe the screen or go into the settings menu and back. Please be patient while we build and document the app and get the kinks worked out. (The manometer also works just fine without an app.)

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!