

# Indoor Air Quality Meter

## 1008a

Rev. 3x Meters



The Value Leader™

## **Contents**

- 1. Introduction**
- 2. General Overview**
- 3. Familiarization**
  - 3.1 Front View**
  - 3.2 Soft Keys**
  - 3.3 Back View**
- 4. Operation**
  - 4.1 Turning On & Off / Performing a Test / Main Display**
  - 4.2 Selecting Temperature Units**
  - 4.3 Min / Max Mode**
  - 4.4 Activating the Backlight**
  - 4.5 Printing Test Results**
  - 4.6 Setting CO2 Alarm Level**
  - 4.7 Ambient Air CO2 Reset**
- 5. Data Logging**
- 6. Retrieving Logged Data**
- 7. Technical Specifications**
- 8. Maintenance**
  - 8.1 Battery Replacement**
  - 8.2 Service**
- 9. Technical Information**
- 10. Error Codes & Troubleshooting**

# 1. Introduction

Thank you for purchasing TPI brand products. The TPI 1008a Indoor Air Quality (IAQ) Meter is a state of the art, easy to use tester designed to provide you with the necessary measurements to monitor and make adjustments to air handling devices. The instrument is ruggedly constructed and comes with a 3 Year unit and 2 Year sensor Guarantee.

## 2. General Overview

The 1008a IAQ meter uses state of the art sensors to measure carbon dioxide (CO<sub>2</sub>), and temperature. The CO<sub>2</sub> sensor in your meter will need to be replaced periodically and calibration is recommended once every year.

You should keep battery power applied to your sensors at all times.

The following guidelines will help prevent damage to your sensors:

Always store your unit in a place where the temperature does not get down to or below freezing.

Always maintain battery power to the sensors. When the batteries get low replace them as soon as possible.

Never allow foreign objects or material to enter the sensor holes, damage to the sensor may result.

## General Overview (Continued)

This manual will guide you through the functions of the TPI 1008a which will give you many years of reliable service.

Your TPI 1008a Indoor Air Quality meter comes complete with the following standard accessories:

- TPI 1010 Instrument
- Protective Rubber Boot (A800)
- Soft Carrying Case (A921)
- USB Cable & Software (A803)
- Instruction Manual

Your TPI 1008a Indoor Air Quality meter has the following optional accessories available:

- Power adapter / Battery eliminator (A804)
- Infrared Printer (A740)
- Magnetic strap kit to hang meter (A127)
- Boot hook to hang meter (A103)
- Replacement Software only (A802)
- Replacement USB cable only (A801)

( ) Denotes part number

### A804 Battery Eliminator Specifications:

Input: 100 ~ 240VAC @ 47 ~ 63Hz

Output: 5VDC @ 2A

Center pin positive

Fitted with two pin European style plug. Comes with USA pin adapter.

### 3. Familiarization

#### 3.1 Front View

**Sensor Locations:**

Places where the CO and Temperature sensors are located and protected.

**Display :**

Large 2 Parameter Backlit LCD Display.

**Protective Rubber Boot**

Provides protection to meter housing and sensors.

**Keypad**

Selects all available functions

**USB Port**

Location for connection of USB cable for PC communication.

**Power Adapter Socket**

Location to connect power adapter.

## 3.2 Soft Keys



On / Off key - Used to turn the IAQ meter on or off. Press to turn on, press and hold to turn off.



Up Arrow key - Used to select and change parameters.



Down Arrow key - Used to select and change parameters.



Mode key - Used to switch between Celsius and Fahrenheit units of display and to enter CO<sub>2</sub> alarm level input mode. Press to switch between Celsius and Fahrenheit units. Press and hold to enter and exit CO<sub>2</sub> alarm level mode.



Backlight key - Used to turn the display backlight on and off.



Min / Max key - Used to activate and cycle through minimum, maximum, and average display modes. Press to activate Min/Max mode, press repeatedly to cycle through min, max, and avg displays. Press and hold to deactivate Min/Max mode.



Log key - Used activate and deactivate data logging.



RCL Key - Used to recall (display) logged data.

### 3.3 Back View

**Hanger Hole:**

Use to hang instrument for hands free operation. Can be used with A127 magnetic strap kit or A103 hook.

**Tilt Stand:**

Use to stand instrument on a table.

**Batter Cover Screw:**

Loosen this screw and open cover to access batteries.

## 4. Operation

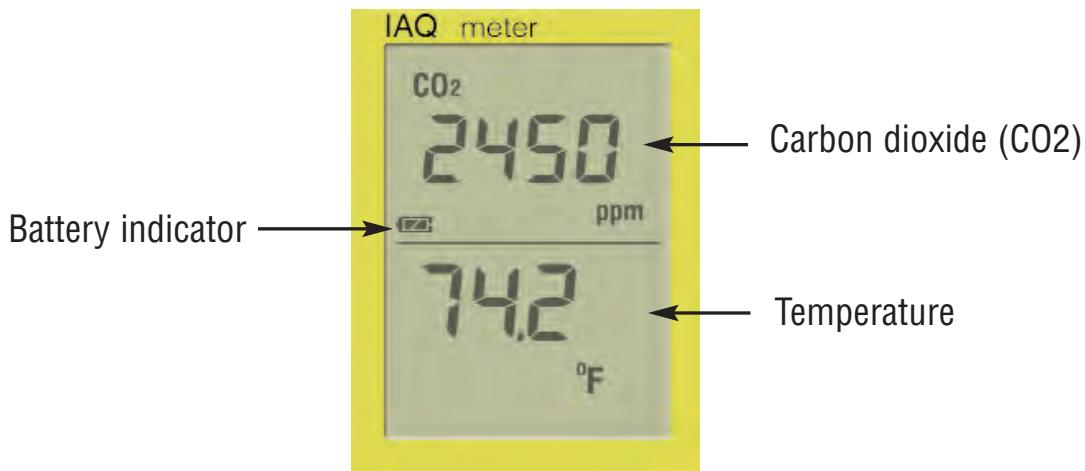
### 4.1 Turning On & Off / Performing a Test / Main Display

Press the  key and the 1008a will begin a 30 second countdown. During this time the 1008a performs a self diagnostic. Once the countdown ends the 1008a will display CO<sub>2</sub> and Temperature.

Enter the area to be tested, the measured values will be displayed.

Carbon dioxide (CO<sub>2</sub>) in parts per million (ppm) is displayed at the top and Temperature in °F or °C (selectable) is displayed at the bottom of the main display.

The battery indicator is located at the left center of the display. When the batteries become low they must be replaced to maintain proper operation.



***The 1008a has a CO<sub>2</sub> alarm. If the CO<sub>2</sub> level measured is at or above the set alarm level the 1008a will beep and the display will flash red as a warning. This alarm point is adjustable. Additional functions can be activated during testing. Please see next sections.***

To turn the 1008a off, press and hold the  key down until the 1008a turns off.

## 4.2 Selecting Temperature Units

Pressing the  key switches the temperature display between °F and °C.

## 4.3 Min / Max Mode

Pressing the  key activates Min/Max mode and “Max Min” will be displayed.

In this mode the 1008a will keep track of the minimum, maximum, and average CO2 and Temperature being measured. When “Min Max” is displayed the 1008a will display the real time reading.

Pressing the  key will cause the 1008a to display “MAX”. This indicates the Maximum CO2 and Temperature measured is displayed.

Press the  key again and the 1008a will display “MIN”. This indicates the Minimum CO2 and Temperature measured is displayed.

Press the  key again and the 1008a will display “AVG”. This indicates the Average CO2 and Temperature measured is displayed.

Pressing the  key will cause the 1008a to display “MAX MIN”. This indicates the real time reading is displayed and the Min/Max mode is still active. The steps above can be repeated to cycle through the Min, Max, and Avg displays.

To deactivate Min/Max mode and return to normal operation, Press and hold the  key until the 1008a beeps.

## 4.4 Activating the Backlight

Pressing the  key turns the display backlight on and off. Power consumption is much higher when the backlight is activated. The backlight will automatically turn off 30 seconds after it is activated. To conserve battery life the backlight should only be used when necessary.

## 4.5 Printing Measurements (Requires A740 Printer)

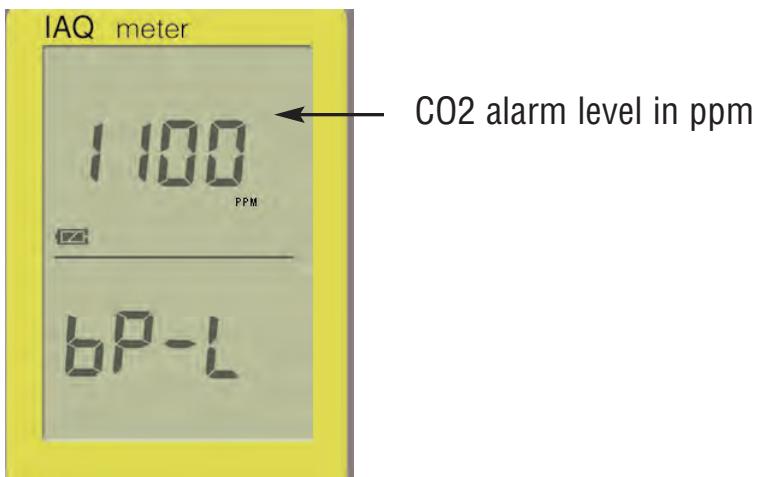
Align the infrared window of the A740 printer with the infrared window of the 1008a located on the upper right side of the meter. Keep the printer in clear line of sight approximately 6 to 8 inches away from the 1008a. Press and hold the  key for approximately 2 to 3 seconds and the 1008a will send test data to the printer.

## 4.6 Setting CO2 Alarm Level

The 1008a is equipped with an audible and visual alarm for carbon dioxide. The alarm level is factory set to off. When CO2 above the alarm level is measured, the 1008a will beep and the display will flash red.

The alarm level is adjustable and can be set from 1100ppm to 5000ppm in 100ppm increments.

- 1) With the 1008a turned on, press and hold down the **MODE** key until the CO2 alarm screen is displayed.



Using the Arrow keys set the alarm point to the desired level. The **▲** **▼** keys adjust the alarm level from "Off" to 5000ppm in 100ppm increments. Once the desired alarm point is set, press and hold the **MODE** key to return to normal operation.

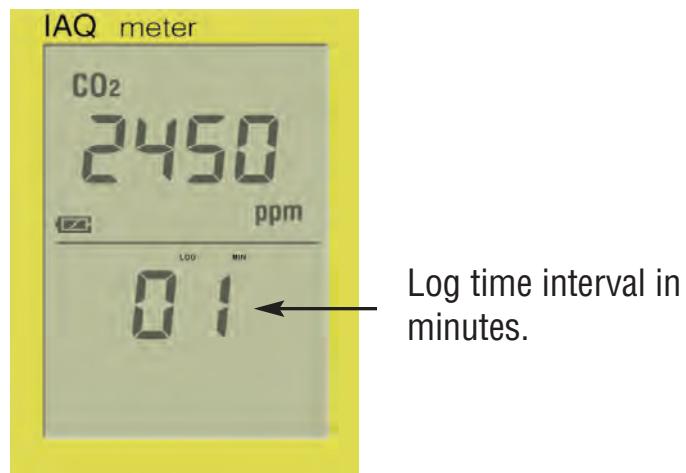
## 4.7 Ambient Air CO2 Reset

The CO2 sensor can be reset at ambient level as needed. This can be performed if the CO2 reading seems to be too high or low or just to ensure your 1008A is operating properly. Note: This does not take the place of a full factory calibration which is recommended once per year.

1. Take the 1008A outside in ambient air. Allow the CO2 reading to stabilize. Make sure you are not breathing into the sensor area.
2. Press and hold the **RCL** key until the 1008A beeps and the display resets to 400ppm CO2 (+/- 75ppm). **IMPORTANT: DO NOT PERFORM THIS PROCEDURE INDOORS. IF THIS HAPPENS BY ACCIDENT, PERFORM THE PROCEDURE AS INSTRUCTED ABOVE TO RESET THE CO2 READING.**

## 5. Data Logging

To activate data logging press the **LOG** key until the logging time setup screen is displayed. Once the logging function is activated all previously logged data is written over.



- 1) The log time interval is displayed in minutes at the bottom of the display. The logging interval tells the 1008a how often to sample. For example, a logging interval of 1 minute (01) means the 1008a will log a reading every minute. A logging interval of 10 minutes (10) means the 1008a will log a reading every 10 minutes. The log interval time is adjustable from 1 minute to 60 minutes in the following increments: 1, 2, 3, 5, 10, 20, 30, 40, 50, 60 minutes. A maximum of 50 readings can be logged.
- 2) Use the **▲** **▼** keys to increase or decrease the log interval time.
- 3) Once the logging interval is set press the **LOG** key and the 1008a will return to the main display and “LOG” will flash indicating the logging function is active. The 1008a will beep each time a reading has been logged.
- 4) To deactivate data logging press the **LOG** key and “LOG” will no longer flash.

For data retrieval please see the next section on how to retrieve logged data.

## 6. Retrieving Logged Data

Logged data can be displayed on the 1008a display or sent to a PC by using the USB cable and software included. The PC software also provides the capability of real time monitoring from a PC.

### Recalling and Displaying Logged Data

- 1) Press the  key, “LOG 01” and the logged CO2 and temperature reading will alternately flash. Press the   to cycle through all of the logged data.
- 2) To deactivate recall mode and return to normal operation, press the  key.

### Retrieving Logged Data via PC

To retrieve logged data the USB cable and PC software (both supplied) must be used.

Install the PC software on your PC and open it.

Connect the 1008a to the PC using the USB cable.

Run the software and select 1008a when prompted. Click on the connect to PC button in the software window.

The software can be used to retrieve logged data and for real time monitoring.

COM port setting is:

Baud rate: 19200

Parity: None

Data Bits: 8

Stop Bit: 1

## 7. Technical Specifications

Function	Range	Accuracy
CO2	0 to 5000ppm	50°F~104°F: $\pm(5\% \text{ of rdg} + 75\text{ppm})$ <50°F, >104°F: $\pm(10\% \text{ of rdg} + 75\text{ppm})$
Temperature	-5°F to 140°F -20°C to 60°C	$\pm 2^\circ\text{F}$ $\pm 1^\circ\text{C}$

**Data Logging:** Up to 50 samples 1 minute to 60 minutes in 1, 2, 3, 5, 10, 20, 30, 40, 50, 60 minute intervals

**Display Type:** 2 line with annunciators and backlight

**CO2 Alarm:** Audible and visual, selectable level (factory default off)

### **Operating Temperature & Humidity**

CO and CO2: 14°F to 122°F (-10°C to 50°C)

All Other Function: -4°F to 140°F (-20°C to 60°C)

Humidity 15 ~ 95% non-condensing

**Storage Temperature:** -4°F to 140°F (-20°C to 60°C)

### **Power supply**

3 AA battery( 4.5V)

AC/DC adapter 5Vout (Center positive)

Battery Life: 40 hours typical without backlight

**Output:** Serial output via USB connection

## **8. Maintenance**

It is recommended that the instrument be calibrated every 12 months. Please consult Test Products International for further details.

### **8.1 Battery Replacement**

When the batteries become low they will require replacement.

1. Turn the meter over so the back is facing you.
2. Loosen the screw holding down the battery cover located under the tilt stand.
3. Lift the tilt stand up and remove the battery cover.
4. Replace the batteries (3 x AA Alkaline) and install the cover and tighten the screw.

### **8.2 Service**

To obtain warranty and non-warranty performance or maintenance on your analyzer: - Include with the product your name, address, phone number, written description of the problem and proof of purchase date. Carefully package and return.

## 9. Technical Information

### Recommended Levels by Agency

Parameter	IDPH <sup>1</sup>	ASHRAE <sup>2</sup>	OSHA PEL <sup>3</sup>	ACGIH TLV <sup>4</sup>
Humidity	20% - 60%	30% - 60%	N/A	N/A
Temperature	68 - 75 (winter) 73 - 79 (summer)	68 - 75 (winter) 73 - 79 (summer)	N/A	N/A
Carbon Dioxide	1,000ppm (<800ppm preferred)	1,000ppm	5,000ppm	5,000ppm
Carbon Monoxide	9ppm	9ppm	50ppm	25ppm

N/A-Not Applicable or Not Established

<sup>1</sup> Illinois Department of Public Health (2009)

<sup>2</sup> American Society of Heating, Refrigerating and Air Conditioning Engineers

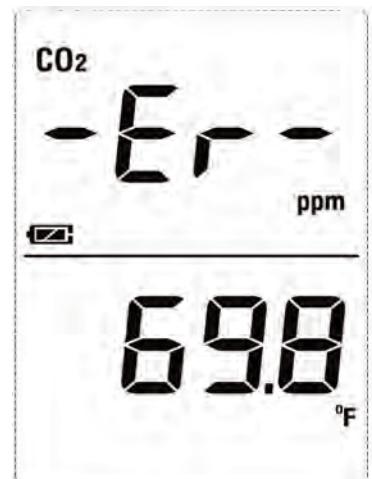
<sup>3</sup> Occupational Safety and Health Administration Permissible Exposure Limit -- this level is a time-weighted average and is an enforceable standard that must not be exceeded during any eight-hour work shift of a 40-hour work week.

<sup>4</sup> American Conference of Governmental Industrial Hygienist Threshold Limit Value -- this level is a recommended time-weighted average upper limit exposure concentration for a normal eight to 10-hour workday and a 40-hour work week.

## 10. Error Codes & Troubleshooting

### CO<sub>2</sub> Sensor Error

If the CO<sub>2</sub> sensor fails to initialize or is faulty the 1008a will display an error code. Try turning the 1008a off and on again. If it displays the error code again the 1008a is in need of service. Please return your instrument to TPI. See section 9.2 for instructions on returning your meter.



### Temperature Sensor Error

If the temperature sensor fails to initialize or is faulty the 1008a will display an error code. Try turning the 1008a off and on again. If it displays the error code again the 1008a is in need of service. Please return your instrument to TPI. See section 9.2 for instructions on returning your meter.

