AimSafety PM$_{100}$
Personal Single Gas Monitor
Quick Start Guide

AimSafety
PORTABLE GAS DETECTION SOLUTIONS
by Macurco

Please refer to the PM$_{100}$ User's Manual for additional product information and features.

www.aimsafety.com

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AimSafety Contact Information

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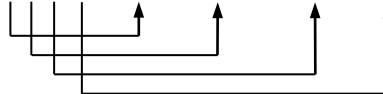Fax: 1-605-951-9616

P/N: 34-2900-0211-0   Rev: B

WARNINGS

⚠ Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightning, or other hazard, voids liability of the manufacturer.

⚠ Activate this product only if sensor, visual, detection, and audible cover are clear from contaminants such as dirt and debris that could block the area where gas is to be detected.

⚠ Do not clean and rub the LCD screen of the products with a dry cloth or hands in hazardous environment to prevent static electricity.

⚠ Perform cleaning and maintenance of the products in fresh air that is free of hazardous gases.

⚠ Test the response of the sensor regularly with a gas concentration exceeding the alarm set point.

⚠ Test LED, audio, and vibration manually.

⚠ Gas concentration measurements by the sensor can vary based on the environment (temperature, pressure and humidity). Therefore, calibration of PM$_{100}$ should be performed in the same (or similar) environment of the device's actual use.

⚠ If the temperature changes sharply during use of the device (e.g., indoors vs outdoors), the value of the measured gas concentration can suddenly change. Please use the PM$_{100}$ after the gas concentration value has stabilized.

⚠ Severe vibration or shock to the device may cause a sudden reading change. Please use PM$_{100}$ after the value of gas concentration has stabilized. Excessive shock to PM$_{100}$ can cause the device and/or sensor to malfunction.

⚠ All alarm values is set based on the alarm standard that is required by international standards. Therefore, alarm values should be changed only under the responsibility and approval of the administration of the work site where the instrument is used.

⚠ Use IR communications in the safety zone which is free of hazardous gases.

⚠ Do not attempt to replace the battery and sensor as PM$_{100}$ is designed to be disposable. Changing the battery and sensor may impair intrinsic safety and the attempt will void warranty.

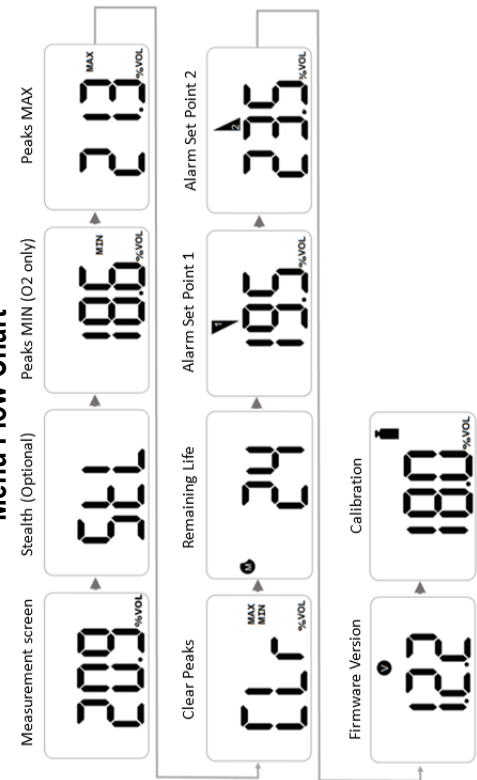## CAUTIONS

⚠ Before operating this device, please read the manual carefully.

⚠ This device is not a measurement device, but a gas detector.

⚠ If calibration and self-test fails continuously, please do not use the device.

⚠ For the O$_2$ detector, perform calibration every 30 days in the fresh air environment.

⚠ Before use, please check the activation date, and if the activation date has past, please do not use the device.

⚠ Clean detectors with a soft cloth and do not use chemical substances for cleaning.

⚠ To maintain a 24-month lifetime, avoid the below activities except in necessary cases to check events(Max/Min), lifetime/concentration, and alarm set points. Otherwise, the frequent use of the button will deplete the battery lifetime less than 24 months.

  1. Push the button frequently without valid reasons.
  2. Frequent alarm operation or alarms are remained for a long time.
    *Normal Alarm Use: 1 time and 2 minutes per day.
  3. Connect with the PM Link frequently except the bump testing.

⚠ View a serial number on the label at the back side of the device. (ex, 20170101)

  1. The serial number indicates below.

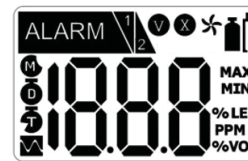ex) SI 01 01 001   2018(Year) 01(Months) 01(Day) 001(Manufacture Order)

Menu Flow Chart

Product Overview

Display

Monitor

IR Port, Alarm LED's, LCD Display, Function Key, Gas Inlet, Gas Type, Audible Alarm Port

Display symbols

Symbol	Description	Symbol	Description
ALARM	Alarm condition	Ⓜ	Remaining Month(s)
◥	Low Alarm	Ⓓ	Remaining Day
◢	High Alarm	🕐	Remaining Hour(s)
Ⓥ	Stabilization Success Or Firmware Version	MAX	Max Peak Value
Ⓧ	Stabilization Failure	MIN	Min Peak Value
✳	Fresh Air Calibration Icon	PPM %VOL	Measurement Unit
🔋	Span Calibration Icon	🔋	Lifetime less than 30 days Or Low Battery
188.8	Real-Time Gas Readings Or Numerical Values Or Abbreviated Text		

Activation

Activating the Monitor

To activate the monitor, press and hold the [Function key] for 3 seconds. While the key is depressed, a 3-second count-up timer will be displayed. Once the counter reaches three (3), release the [Function key].

The monitor will perform the following startup sequence.

The unit will display the gas type, firmware version, display/alarm test, followed by a 10-second stabilization countdown. Once the countdown is complete, the monitor defaults to Measure- ment mode, displaying the current gas readings and the icon.

Sensor readings may drift during shipping. All newly purchased monitors should be bump tested to a known concentration of gas before use.

User Interface

Display Modes

Measuring Mode is the default mode. Once the monitor is activated the meter will continually display measured gas concentrations in real-time.

Basic Mode is an optional mode where the remaining sensor life will be displayed if the detected gas levels are below the alarm threshold. The monitor will display the active gas reading only after an alarm threshold has been exceeded. Basic mode can only be enabled using the PM Link and software, or the Bump Test-Calibration Station.

Menu Screens

From the Display mode screen, pressing the [Function key] will step to the next screen. **Note:** If you do not press the [Function key] within 10 seconds, the display reverts to the main screen.

Stealth Mode - Press the [Function key] to advance to Stealth Mode (if enabled). Stealth is an optional setting that disables all audible, vibrating alarms and alarm LEDs. When Stealth is enabled, an "StL" screen is added to the menu to indicate that the audible, visual, and vibrating alarms are silenced.

User Interface Continued

Peak MIN - Press the [Function key] to advance to Peak MIN indicated by the MIN icon on the display (O_2 only), with the numerical value displayed. The Peak MIN is the lowest concentration of oxygen that the sensor has detected since the peaks were last cleared.

Peak MAX - Press the [Function key] to advance to Peak MAX indicated by the MAX icon on the display, with the peak max concentration displayed. The Peak MAX is the highest concentration of gas that the sensor has detected since the peaks were last cleared.

Clear Peaks - Press the [Function key] to advance to Clear Peaks indicated by "CLr" on the display. To clear the peaks, press and hold the [Function key] for three seconds. The unit will beep once, and the MIN/MAX icon will turn off.

Remaining Life - Press the [Function key] to advance to Remaining Life indicated by one of three icons on the display. Remaining life is the amount of time left on the monitor before End-of-Life. The remaining life is displayed in months, days, or hours as indicated by the display icons.

Alarm 1 - Press the [Function key] to advance to Alarm Set Point 1 indicated by the 1 flag on the display. This is the first (low for O_2) set point that activates the monitors alarms. The unit will store this alarm data in event logging.

Alarm 2 - Press the [Function key] to advance to Alarm Set Point 2 indicated by the 2 flag on the display. This is the second (high for O_2) set point that activates the monitors alarms. The unit will store this alarm data in event logging.

Firmware - Press the [Function key] to advance to Firmware Version indicated by the V icon on the display. This is the current firmware version that is loaded into the monitor.

Calibration - Press the [Function key] to advance to Calibration indicated by the calibration cylinder bottle icon on the display. The calibration gas concentration will be displayed. See Calibration for more information on monitor calibration.
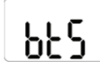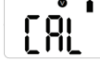
Bump Test
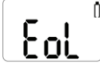
⚠ **A bump test should be conducted before each day's use.**

⚠ **Ensure that you are in a clean environment before performing a Bump Test. The monitor must be calibrated if it fails a Bump Test.**

To perform a manual Bump Test: (without the Bump Test Reminder active)
- Ensure that the sensor is reading zero (or 20.9% for Oxygen)
- Attach the calibration (cal) cap on top of the sensor inlet
- Connect the hose from the gas regulator of the calibration gas bottle to the cal cap. Ensure the calibration gas and gas concentrations matches the sensor installed in the instrument.
- Access the Calibration menu (see section "Accessing Calibration Menu")
- "CAL" and �֍ the icon are displayed.
- Press the [Function key] once and "CAL" and the ▮ icon will appear.
- Press the [Function key] again "btS" will be displayed.
- Press and hold the [Function key] for 5 seconds and "tSt" will be displayed
- Turn on the gas regulator
- Once gas is detected, "GAS" will be displayed
- After the test is passed, "SUC" and the ⓥ icon will appear on the display followed by the alarm notification and "btS"
- Once the test has passed, remove the calibration cap and turn off the calibration gas. The monitor will default to the main screen after 20 seconds or you can manually exit the calibration menu (see Exiting the Calibration Menu)
- Allow a few minutes for the gas to dissipate
- After the gas has dissipated from the sensor, clear the sensor Peak values

If the sensor fails the bump test, an "FA" message with the ⊗ icon will briefly display

Alarm and Alert indication chart

Alarm	Alarm Standard	LCD Display	Alarm and Vibration Display
Low Alarm	Exceeds 1st Alarm set point	ALARM ◥ Icons & gas concentration	Buzzer, LED Vibration
High Alarm	Exceeds 2nd Alarm set point	ALARM ◢ Icons & gas concentration	Buzzer, LED Vibration
Life remaining	Below 30 days	▯ Icon	End-Of-Life in less than 30 days
End-Of-Life	Past 24 months	EoL	Monitor has reached End-Of-Life. (Replace the unit with a new PM_{100})
Test failure	Sensor test Or calibration failure	⊗ Icon & buzzer	Perform a successful calibration to clear
Battery Low	Low battery power	BAt	Replace the unit with a new PM_{100}
Bump test	Bump test due	btS	Perform a successful bump test to clear
Calibration	Calibration due	CAL	Perform a successful calibration to clear
Calibration Failed	Failed calibration	CAL ▮	Perform a successful calibration to clear

Calibration

To access the calibration menu:
- Press the [Function key] to navigate to the Calibration screen.
- While the Calibration screen is displayed, press and hold down the [Function key] for 5 seconds to access the Calibration mode.

Once the Calibration menu is accessed, "CAL" and ✖ the icon will be displayed. Calibration menu has four options:

- Fresh Air Calibration
- Span Calibration
- Bump Test
- ESC – Exit Calibration Mode

To exit the calibration menu:
- Press the [Function key] until ESC is displayed.
- Press and hold down the [Function] key for 5 seconds to access the Calibration mode.
- Press the [Function] key again to return to the Measurement screen.

Note:
If you don't press the [Function] key within 20 seconds, the display reverts to the main screen.

Fresh Air Calibration

⚠ **Fresh Air Calibration must be performed in a clean environment that is free from other gases (calibration is assumed to be performed in an environment with an Oxygen concentration of 20.9% Vol.). Fresh Air Calibration should not be performed in a confined space.**

**To Perform a Fresh Air calibration**
- Access the Calibration menu
- "CAL" and the ✖ icon will be displayed.
- Press and hold the [Function] key to start the Fresh Air calibration.
- A ten second countdown will appear on the screen.
  Note: press the [Function] key any time during the countdown to abort.
- Once the countdown is complete "CAL", the ⓥ and ✖ icons will be displayed indicating a successful Fresh Air Calibration.
  Note: If you do not press the [Function] key within 20 seconds, the display reverts to the main screen.

If Calibration fails, the ⊗ icon will appear on the display. If this continues, please contact the sales representative or AimSafety Technical Support.

Span Calibration

⚠ **When performing a Span Calibration only use certified calibration gas at the required concentration level. Do not use expired calibration gas.**

To perform a Span calibration
- Access the Calibration menu
- "CAL" and the ✖ icon will be displayed.
- Press the [Function] key once and CAL and the ▮ icon will appear.
- Attach the calibration (cal) cap on top of the sensor inlet.
- Connect the hose from the gas regulator of the calibration gas bottle to the cal cap
- Press and hole the [Function] key for 5 seconds to start the Span calibration.
- When calibration starts, a 90-second countdown displays.
  Note: The countdown is only 60 seconds for 0_2.
- Turn on the calibration gas.
- Once completed, the ⓥ icon and the current gas measurement readings are displayed.
- The device will return to Measuring mode.
- Turn off the calibration gas and remove the calibration cap.
- Clear the peak values for the sensor.

⚠ **All alarms are muted for approximately 10 minutes after a successful Span calibration.**

If the calibration fails, the ⊗ and ▮ icons and CAL will cycle on the display until a successful calibration is performed. If calibration continues to fail, contact the sales representatives or AimSafety Technical support.