Personal Carbon Monoxide Safety Monitor User Manual

SAN-30

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SENSOR SPECIALISTS

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INTRODUCTION

Congratulations on your purchase of this CO2Meter SAN-30 Personal Safety CO Monitor. CO2Meter SAN-30 is a personal safety CO monitor designed to monitor ambient concentrations of carbon monoxide (CO) in real time. CO gas poisoning is the most common type of fatal poisoning in the world. SAN-30 is shipped fully tested and factory calibrated and, with proper use, will provide years of reliable service.

FEATURES

- Electrochemical sensor, no consumable parts.
- Calibration methods: 0 ppm and 50 ppm
- Automatic atmospheric pressure compensation for CO concentrations
- Audible, visual strobe and vibrating alarms
- Large LCD display
- Rugged design with protective rubber enclosure
- Heavy duty metal clip
- Front facing sensor unit
- Rechargeable Battery 4.2v, 1500mAh
- Micro USB cable and wall USB charger
- Rechargeable Li-Ion battery – 10+ days per charge
- Man down alarm - leveraging accelerometer technology

APPLICATIONS

- **Heating and Ventilation.**CO is produced by oxygen-starved combustion in improperly ventilated fuel-burning appliances such as oil and gas furnaces, gas water heaters, gas ovens, gas or kerosene space heaters, fire places and wood stoves.
- **Internal Combustion Indoors.**CO is produced by all internal combustion engines. This makes the SAN-100 useful in garages, car parks, venues, repair facilities or job sites where cars, trucks or machinery is run indoors.
- **Fire Fighters.**CO is produced naturally in trace amounts by the partial oxidation of methane in the atmosphere, volcanoes and forest fires.

Please take a moment to read these instructions before use. They will provide you with all the necessary information for the correct use of your oxygen monitor.

THEORY OF OPERATION

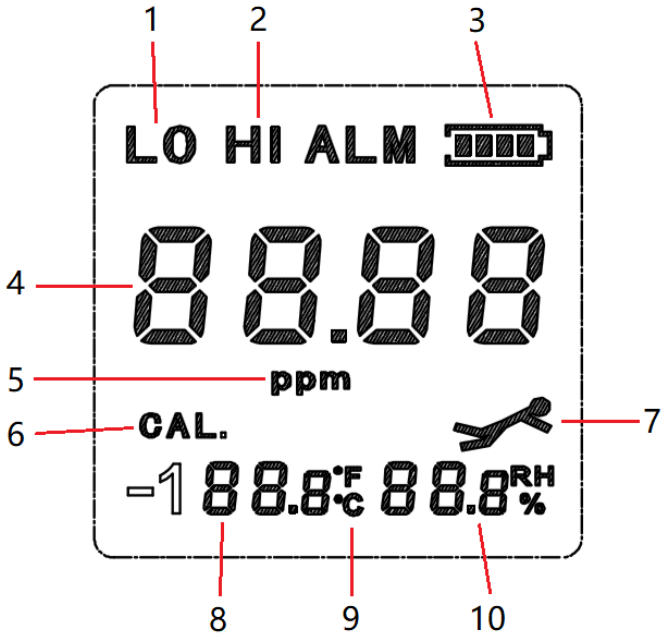
The SAN-30 Personal Safety CO Monitor uses an electrochemical sensor to determine the concentration of carbon monoxide in air samples. Air reaches the sensor by diffusing through the openings on the back of the unit. Normal air movement is enough to carry the sample to the sensor.

MONITOR

1. Visual alarm/strobe
2. Front facing sensor
3. Charging indicator
4. LCD display
5. Power button
6. Temperature units switching button
7. USB charging inlet (bottom side)
8. Heavy duty metal clip
9. Factory reset button

LCD DISPLAY

1. Low CO alarm indicator
2. High CO alarm indicator
3. Battery indicator
4. CO concentration
5. CO concentration units (ppm)
6. Calibration icon
7. Man down alarm
8. Air Temperature
9. Temperature unit (Fahrenheit or centigrade degrees)
10. % Relative Humidity



OPERATION

1. Power button

1) When the Monitor is turned off, press to turn on the unit.

2) When the Monitor is turned on, press for 3 seconds to turn off the unit.

When the unit is first turned on, it performs 5 seconds countdown for Monitor warm up, then enters normal display with current CO, temperature, and humidity readings displayed. The monitor starts taking measurements when power on and updates readings every 2 seconds.

2. Temperature Units Switching Button

2.1 Temperature Unit

Press shortly to switch two temperature units: °F and °C.

2.2 Menu Status

By pressing the temperature unit switching button for **5** seconds, the unit enters into **Menu status**. There are three menu items by pressing the temperature unit switching button shortly to loop switching between 0, 50, A ON/AOFF and E (exit). The menu items are described in the following table.

Menu Items	Functional Description
0	"0" means 0 ppm Calibration. User presses the power button to implement **0 ppm Calibration**
50	"50" means 50 ppm Calibration. User presses the power button to implement **50 ppm Calibration**
A ON/ AOFF	Setting **Man down alarm** function on/off. User presses the power button to switch "A ON" (allowing Man down alarm) or "AOFF" (prohibiting Man down alarm).
E	User presses the power button to exit the menu status.

3. Alarm Threshold

The SAN-30 is equipped with audible, visual and vibration alarms to alert you when the ambient oxygen concentration exceeds either of the two factory preset alarm levels:

- **Low CO Alarm:** 35 ppm - LED will flash and audible alarm will sound 3x / sec.
- **High CO Alarm:** 200 ppm - LED will flash and audible alarm will sound 2x / sec.

To alert users in noise environment, an inner vibrator will vibrate at 1Hz in both CO Alarm.

ATTENTION! - If a Warning or Danger alarm is triggered while using the instrument as a safety monitor, leave the area and seek fresh air immediately. Remaining on site under such circumstances can cause serious impairment or even lead to death.

4. Automatic Atmospheric Pressure Compensation

The CO measurement is affected by atmospheric pressure or altitude changing. When users are at high altitude, compensation should be made to assure maximum monitor accuracy.
This device has automatic atmospheric pressure compensation for CO concentrations by means of a built-in barometric pressure sensor.

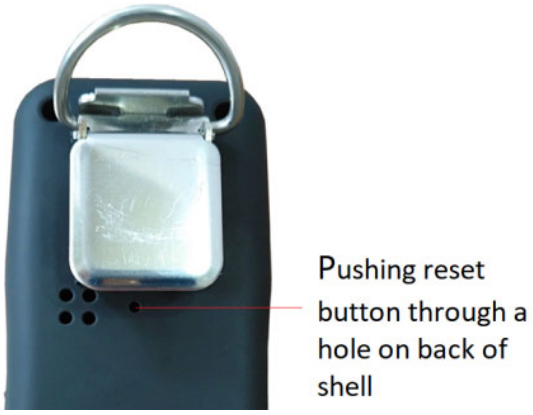
5. Man down alarm

Falling by breathing dangerous gases can cause serious injury and even fatality to workers. If the Man down alarm function in SAN-30 is set on, SAN-30 can detect falls and send a man down alert which will activate the audible and visual alarms and alert other people in the area.

The man-down detection uses a three-axis accelerometer to automatically monitor the user's movements in order to identify a sudden fall/impact and a lack of movement for a period of 6 seconds.
Once alert, people can turn off the current man-down alarm by pressing any one of the two buttons.

6. Reset Button

Users can reset the unit by pushing a reset button through a hole on back of shell.



CO SENSOR CROSS-SENSITIVITY

Electrochemical sensors are cross-sensitive to specific gases other than the target gas of interest. While cross-sensitivities are limited as much as possible by sensor design, some interactions still exist. The table below shows the most common cross-sensitivities.

Gas	Gas Concentration	Sensitivity % of SAN-30
H2	900ppm	<2%
Cl2	10ppm	<0.5%
SO2	20ppm	<0.5%
NO2	10ppm	<0.5%
NO	50ppm	<3%
C2H4	400ppm	<35%
NH3	20ppm	<0.1%

If the meter is exposed to one of the above gases, it will clear itself if you expose it to normal outdoor air for 30 minutes. Do not expose the device to the fumes of inorganic solvents (e.g., paint fumes) or organic solvents.

MAINTENANCE

Calibration

The SAN-30 comes pre-calibrated from the factory. However, the CO sensor should be calibrated at least once a year, or as described in your company's safety procedures. You can perform the calibration yourself, or you can return it to CO2Meter for factory calibration at a nominal fee.

The temperature and humidity sensors do not require calibration and should remain accurate for the life of your unit.

Cleaning and Storage

Apply sparingly with a soft cloth and allow drying completely before using. Do not use soap or Alcohol cleaning. Do not use aromatic hydrocarbons or chlorinated solvents for cleaning.

SPECIFICATIONS

Device Specifications

Operating Environment	32°F~122°F (0°C~50°C), <95% RH non-condensing
Storage	14°F~140°F (-10°C~60°C), <99% RH non-condensing
Power Supply	Li-ion battery (4.2V,1500mAh),Micro USB cable w. Wall USB charger
Dimensions	3.9x2.0x1.7 Inch (98x50x42mm)
Weight	4.58 oz. (130 grams)

CO Sensor Specifications

Measurement Range	0~1,000ppm
Resolution	1ppm
Response time	< 25s (t90 (s) from zero to 400ppm CO)
Zero drift	< 0.2ppm (ppm equivalent change/year in lab air)
Operating life time	>24 months (months until 80% original signal)

Temperature Sensor Specifications

Temperature Range	14~140°F (-10.0~60.0°C) display
Display Resolution	0.1°F (0.1°C)
Display Options	°F/°C switchable
Accuracy	±0.9°F (±0.5°C)
Response Time	5~30 seconds (device must equilibrate with environment)

Relative Humidity Sensor Specifications

Measurement Range	0.0~99.9%RH
Display Resolution	1%RH
Accuracy	±4.5%RH
Response Time	<8 seconds for 63% of step change

TROUBLESHOOTING

Symptom / Issue	Possible Cause / Resolution
Cannot power on	Press the Power Button for more than 5 seconds
	Check that the Li-ion battery is charged
	If monitor is charged but will not turn on, contact support
Reading does not change	In fresh air, you will rarely see oxygen levels change. This is normal.

CO RECOMMENDED LEVELS

- < 1ppm Average CO level in fresh air
- 9ppm Maximum recommended indoor CO level (OSHA)
- 25ppm Maximum TWA Exposure for 8 hour workday (ACGIH)
- 50ppm OSHA long-term workplace exposure limit
- 50-100ppm Symptoms of mild CO poisoning include headaches and dizziness
- 700ppm Life-threatening CO levels

SUPPORT

Warranty

The monitor comes with a one (1) year warranty starting from the date the monitor was shipped to the buyer. For more information visit our website: https://GasLab.com/pages/terms-conditions

Contact Us

We are here to help! For information or technical support, please contact us.

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