SYSTEM SENSOR®

CO1224A
Carbon Monoxide Alarm

6581 Kitimat Rd., Unit #6, Mississauga, Ontario, L5N 3T5

1-800-SENSOR2, FAX: 905-812-0771

www.systemsensor.ca

Specifications

Electrical Specifications

System Voltage

Nominal:	12/24 VDC
Min:	10 VDC
Max:	33 VDC
Avg. Standby Current:	20 mA
Max Alarm Current:	40 mA (75 mA test)
Alarm Contact Ratings:	30 VDC @ 0.5 A
Trouble Contact Ratings:	30 VDC @ 0.5 A
Audible Signal (temp 4 tone):	85 dBA min. in alarm (at 10ft)
Max. Start-up Capacitance:	20 uF

Physical Specifications

|	
Operating Temperature Range:	0° to 40°C (32° to 104°F)
Operating Humidity Range:	22 – 90% %RH
Length:	5.1″
Width:	3.3″
Height:	1.3″
Weight:	7 oz
Wire Gauge Acceptance:	14-22 AWG

NOTICE: This manual shall be left with the owner/user of this equipment.

WARNING: This product is intended for use in ordinary indoor locations of dwelling units, including homes, residential buildings, hotels, schools, dormitories, and day care centers. It is not intended for use in industrial factories or commercial parking garages.

General Description

- Listed to CSA 6.19-01
- Six-wire, system monitored or stand-alone operation
- Local sounder
- Low current draw
- Alarm relay, Form C
- Trouble relay, Form A
- Dual LED's
- Test/Hush button
- SEMS wiring terminals
- Mount to single gang electrical box or surface mount to wall or ceiling
- Optional drywall anchors included

Figure 1. Alarm Location Diagram:
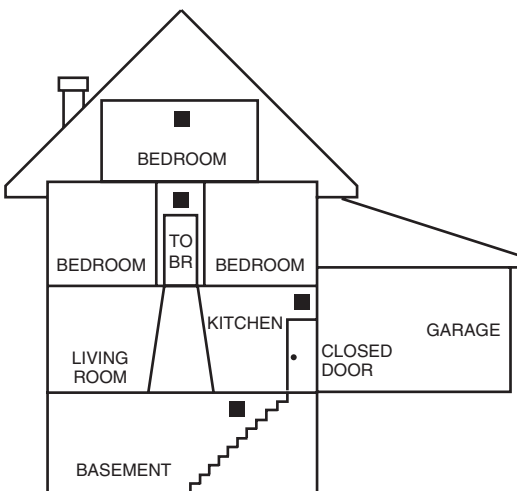
■ – CARBON MONOXIDE ALARM
     LOCATION FOR MULTI-LEVEL RESIDENCE

S0295-00

Table 1. Operation Modes:

OPERATION MODE	GREEN LED	RED LED	SOUNDER
Normal (standby)	Blink 1 per minute	OFF	OFF
Alarm	OFF	Temp 4* pattern	Temp 4* pattern
Alarm Test	OFF	Temp 4 pattern	Temp 4 pattern
RealTest Mode	Blink 1 per second (waiting for gas entry)	OFF (Red after CO is sprayed)	Temp 4 pattern (after CO is sprayed)
CO End of Life	OFF	OFF	Chirp every 30-60 seconds

*Temp 4 pattern is repeated pattern of four short indications followed by a five second pause.

When the unit has been in alarm for 30 minutes the alarm signal will be given once every minute.

If ambient conditions return to normal, the unit will self-restore out of alarm and into Normal (standby) mode.

Hush feature: If required, the audible alarm can be silenced for 5 minutes by pushing the button marked "Test/Hush". The red alarm light will continue to flash in temp-4 pattern. If carbon monoxide is still present after the 5 minute hush period, the audible alarm will sound. The hush facility will not operate at levels above 350 ppm (parts per million) carbon monoxide.

Trouble feature: When the sensor supervision is in a trouble condition (such as a sensor that has been tampered with), the alarm will sound a trouble signal every 30-60 seconds and the trouble contact will open . The alarm must then be replaced.

End of Life Timer feature: When the alarm has reached the end of its life, the trouble signal will sound every 30-60 seconds and the trouble contact will open. This indicates that the CO sensor inside the alarm has passed the end of its life and must be replaced. This alarm's lifespan is approximately ten years from the date of manufacture. Refer to Alarm Replacement on page 3.

Refer to Figure 4 for wiring of the alarm and trouble relays.

Installation Guidelines

In a wall location, the alarm should be at least as high as a light switch, and at least six inches from the ceiling. In a ceiling location, the alarm should be at least 12 inches from any wall.

Where to install, ideally:

- Within 10 feet of all sleeping areas
- Inside the bedroom if it contains a fuel burning appliance
- On every floor of the building
- Ideally, install in any room that contains a fuel burning appliance
- If the appliance in the room is not normally used, such as the boiler room, the alarm should be placed just outside the room so the alarm can be heard more easily

Where **NOT** to install, ideally:

- Alarms operate best if not installed within 10 feet of any cooking appliance
- Directly above a sink, cooker, stove or oven
- Next to a door or window that would be affected by drafts i.e. extractor fan or air vent
- Outside
- Do not install in any environment that does not comply with the alarm's environmental specifications
- In or below a cupboard
- Where air flow would be obstructed by curtains or furniture
- Where dirt or dust could collect and block the sensor
- Where it could be knocked, damaged, or inadvertently removed

Mounting

The CO1224A can be wall- or ceiling-mounted:

1. To a single gang box, or
2. Direct mount to wall or to ceiling using drywall fasteners.

Figure 2. Mounting of Alarm:

S0296-00

S0301-00
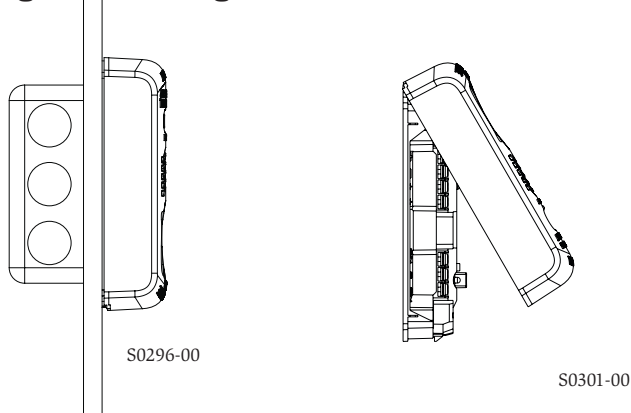
Wiring Installation Guidelines

All wiring must be installed in compliance with the Canadian Electrical Code, applicable local codes, and any special requirements of the local Authority Having Jurisdiction (AHJ).

Proper wire gauges should be used. The conductors used to connect carbon monoxide alarms to the alarm control panel and accessory devices should be color-coded to reduce the likelihood of wiring errors. Improper connections can prevent a system from responding properly in the event of a CO.

The screw terminals in the mounting base will accept 14-22 gauge wire. Wire connections are made by stripping approximately $1/4''$ of insulation from the end of the feed wire, inserting it into the proper base terminal, and tightening the screw to secure the wire

in place. Do not put wires more than 2 gauge apart under the same clamping plate.

WARNING: Gas detectors on a zone that is bypassed may not signal a trouble condition. Do not bypass zones used for gas detectors.

Wiring diagrams locatsed on page 4, Figure 4.

Installation

⚠WARNING

Remove power from alarm control unit or initiating device circuits before installing detectors.

1. Using a small, flat head screw driver, push in the small tab located on the underside of the alarm. Once the snap is loosened, lift the bottom end of the cover up and unhinge the top to remove the cover.
2. Wire the alarm base screw terminals per **Figure 4**.
3. Screw the base of the alarm onto a single gang electrical box, or to the surface of the wall or ceiling. Use the hardware included in the packaging.
4. Hinge the top portion of the cover onto the base; with the cover at a 45 degree angle, fit the hinges into the slots of the base.
5. Push the unhinged bottom portion of the cover down until it snaps into place.
6. After all alarms have been installed, apply power to the alarm control unit.
7. Test each alarm as described in Testing.
8. Notify the proper authorities that the system is in operation.

⚠CAUTION

Airborne dust particles can enter the alarm. System Sensor recommends the removal of alarms before beginning construction or any other dust producing activity.

Carbon monoxide alarms are not to be used with detector guards unless the combination has been evaluated and found suitable for that purpose.

Testing

Alarm must be tested after installation.

NOTE: Before testing, notify the proper authorities that maintenance is being performed and the system will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent any unwanted alarms.

Ensure proper wiring and power is applied. After power up, allow 80 seconds for the alarm to stabilize before testing.

Test the CO1224A alarm as follows:

1. A test button is located on the detector housing (See **Figure 3**).
2. Use the tip of your finger to press and hold the test button for 1-4 seconds.
3. If the sounder beeps twice in the Temporal 4 pattern and the LEDs light up, the detector is operational.
4. The detector now enters Realtest speed up test mode indicated by a quickly blinking green LED. See Functional Gas Test section for instructions on testing with canned CO.
Note: The alarm contact has a time delay of approximately 10 second before operation. To test for the alarm contact operation, the test button must be held down for at least 10 seconds.

Figure 3. Test Button Location and Operation:

GAS ENTRY PORTS

TEST/HUSH BUTTON
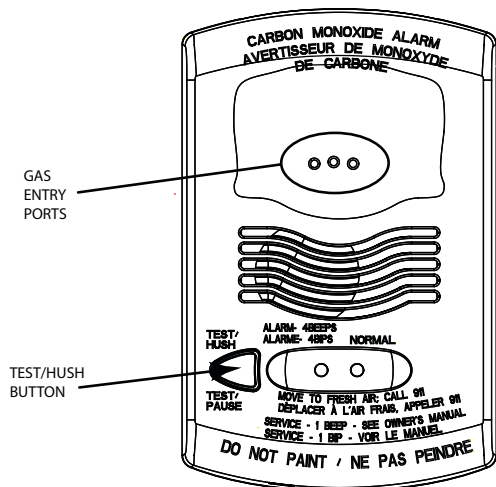
S0298-01E

If an alarm fails the above test method, its wiring should be checked. If the alarm still fails after rewiring, it should be replaced.

Functional Gas Test

NOTE: Check with local codes and the AHJ to determine whether or not a functional gas test is necessary for an installation.

Solo C6 brand canned CO testing agent may be used to verify the alarm's ability to sense CO by utilizing the functional speed-up test feature of the CO1224A as follows:

1. Press the test button as described in Testing above.
2. Once the alarm has entered the speed-up test mode, indicated by a quickly flashing green LED, spray a small mount of CO agent within 1/4" of the alarm's gas entry ports (see Figure 3). The unit will go into alarm if gas entry is successful.
3. The alarm will automatically exit the speed-up test mode 20 seconds after entering speed-up test mode.

Testing the alarm will activate the alarm relay and send a signal to the panel.

CAUTION: This carbon monoxide alarm is designed for indoor use only. Do not expose to rain or moisture. Do not knock or drop the alarm. Do not open or tamper with the alarm as this could cause malfunction. The alarm will not protect against the risk of carbon monoxide poisoning if not properly wired. The alarm will only indicate the presence of carbon monoxide gas at the sensor. Carbon monoxide gas may be present in other areas.

This carbon monoxide alarm is NOT:

- Designed to detect smoke, fire or any gas other than carbon monoxide
- To be seen as a substitute for the proper servicing of fuel-burning appliances or the sweeping of chimneys.
- To be used on an intermittent basis, or as a portable alarm for the spillage of combustion products from fuel-burning appliances or chimneys.

Carbon monoxide gas is a highly poisonous gas which is released when fuels are burnt. It is invisible, has no smell and is therefore impossible to detect with the human senses. Under normal conditions in a room where fuel burning appliances are well maintained and correctly ventilated, the amount of carbon monoxide released into the room by appliances should not be dangerous.

Symptoms of carbon monoxide poisoning: Carbon monoxide bonds to the hemoglobin in the blood and reduces the amount of oxygen being circulated in the body. The following symptoms are related to carbon monoxide poisoning and should be discussed with all members of the household:

- Mild exposure: Slight headache, nausea, vomiting, fatigue (often described as "flu-like" symptoms).

- Medium exposure: Sever throbbing headache, drowsiness, confusion, fast heart rate.
- Extreme exposure: Unconsciousness, convulsions, cardio respiratory failure, death.

Concentration (ppm CO)	Symptoms
200	Mild headache after 2-3 hours of exposure
400	Headache and nausea after 1-2 hours of exposure
800	headache, nausea, and dizziness after 45 minutes of exposure; collapse and unconsciousness after 2 hours of exposure

Many causes of reported carbon monoxide poisoning indicate that while victims are aware that they are not well, they become so disoriented that they are unable to save themselves by either exiting the building or calling for assistance. Also young children and pets may be the first to be affected.

Per CSA 6.19-01 the CO1224A has been tested to the following sensitivity limits.

Parts Per Million	Detector response time, min.
30 ± 3ppm	No alarm within 30 days
70 ± 5ppm	60-240
150 ± 5ppm	10-50
400 ± 10ppm	4-15

What to do if the carbon monoxide alarm goes into alarm:

Immediately move to a spot where fresh air is available, preferably outdoors. Find a phone in an area where the air is safe and call your security service provider. Tell your provider the alarm status, and that you require professional assistance in ridding your home of the carbon monoxide.

IMPORTANT: This alarm should be tested and maintained regularly following National Fire Protection Association (NFPA) 720 requirements.

Maintenance

Occasionally clean the outside casing with a cloth. Ensure that the holes on the front of the alarm are not blocked with dirt and dust.

Do not paint, and do not use cleaning agents, bleach, or polish on the alarm.

Alarm Replacement

This alarm is manufactured with a long-life carbon monoxide sensor. Over time the sensor will lose sensitivity, and will need to be replaced with a new System Sensor carbon monoxide alarm. This alarm's lifespan is approximately ten years from the date of manufacture.
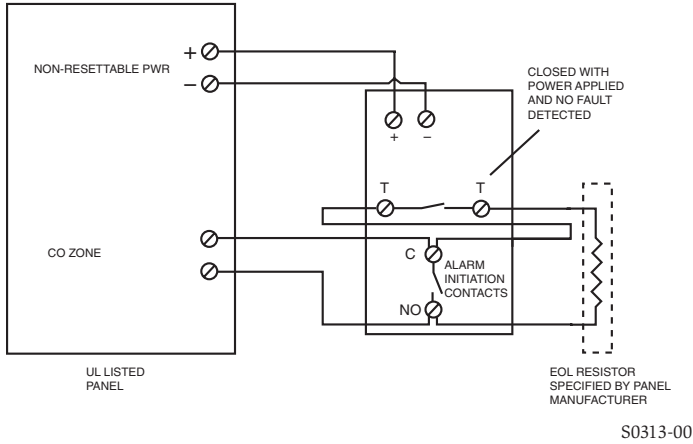
Periodically check the alarm's replacement date. Remove the alarm cover and refer to the sticker placed on the inside of the alarm. The sticker will indicate the date that the alarm should be replaced.

This alarm is also equipped with a feature that will sound a trouble signal every 30-60 seconds and open the trouble relay once it has reached the end of its useful life. If this occurs, it is time to replace the alarm.

NOTE: Before replacing the alarm, notify the proper authorities that maintenance is being performed and the system will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent any unwanted alarms. Dispose of alarm in accordance with any local regulations.

Figure 4. Wiring Diagram:

SINGLE UNIT, SINGLE ZONE, 4 CONDUCTOR CABLE

NON-RESETTABLE PWR

CO ZONE

UL LISTED PANEL

+ −

CLOSED WITH POWER APPLIED AND NO FAULT DETECTED

T   T

C
ALARM INITIATION CONTACTS
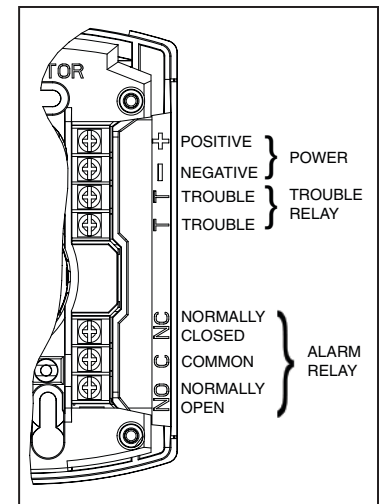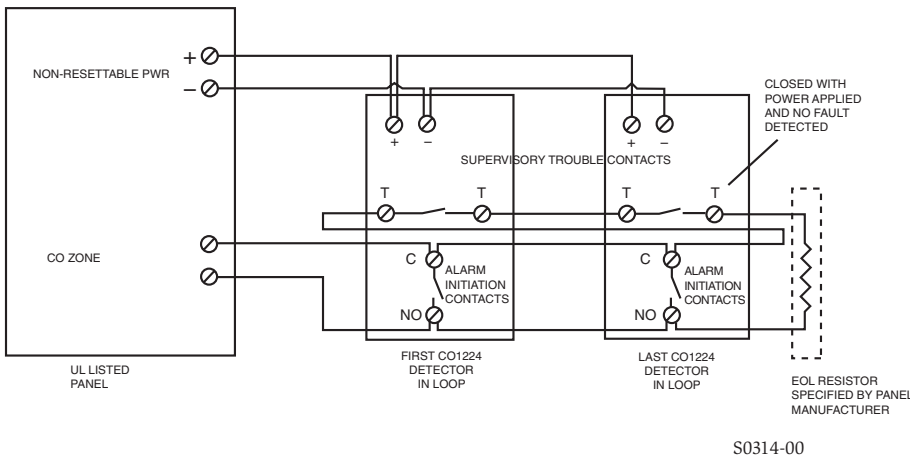
NO

EOL RESISTOR SPECIFIED BY PANEL MANUFACTURER

S0313-00

It should be noted the installation, operation, testing and maintenance of the CO1224A is different than System Sensor conventional 4-wire smoke detectors, such as the i3 Series. Below are specific installation requirements for the CO1224A:

* Connect to a non-resettable power supply
* Connect to a non-fire zone: Per NFPA 720 section 5.3.7.2 the CO1224A shall not be connected to a zone that signals a fire condition
* Per NFPA 720 section 5.3.7, do not connect the CO1224A on a zone with other fire or intrusion initiating devices - i.e. do not connect on the same zone as smoke detectors
* Wiring of the trouble relay will send a trouble signal to the control panel upon an open circuit, a ground fault, sensor removal or sensor end of life
* If wiring one CO1224A per zone: Use 4 conductors
* If wiring multiple CO1224A alarms per zone: Use 4 conductors from panel to first CO1224A, then use 6 conductors from the second CO1224A to other alarms on the zone

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MULTIPLE UNIT, SINGLE ZONE, 6 CONDUCTOR CABLE

NON-RESETTABLE PWR

CO ZONE

UL LISTED PANEL

+ −

SUPERVISORY TROUBLE CONTACTS

CLOSED WITH POWER APPLIED AND NO FAULT DETECTED

T   T   T   T

C
ALARM INITIATION CONTACTS
NO

C
ALARM INITIATION CONTACTS
NO

FIRST CO1224 DETECTOR IN LOOP

LAST CO1224 DETECTOR IN LOOP

EOL RESISTOR SPECIFIED BY PANEL MANUFACTURER

S0314-00

Input powered (12 or 24 VDC) from ULC Listed Fire/Burg Control Panel (Class 2).

POSITIVE } POWER
NEGATIVE

TROUBLE } TROUBLE RELAY
TROUBLE

NORMALLY CLOSED
COMMON } ALARM RELAY
NORMALLY OPEN

S0300-01

Please refer to insert for the limitations of Carbon Monoxide Alarms

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