CTi GAS DETECTION SPECIALISTS

Gas Detection Products

Ammonia & Other Gases

Product Catalog 2024

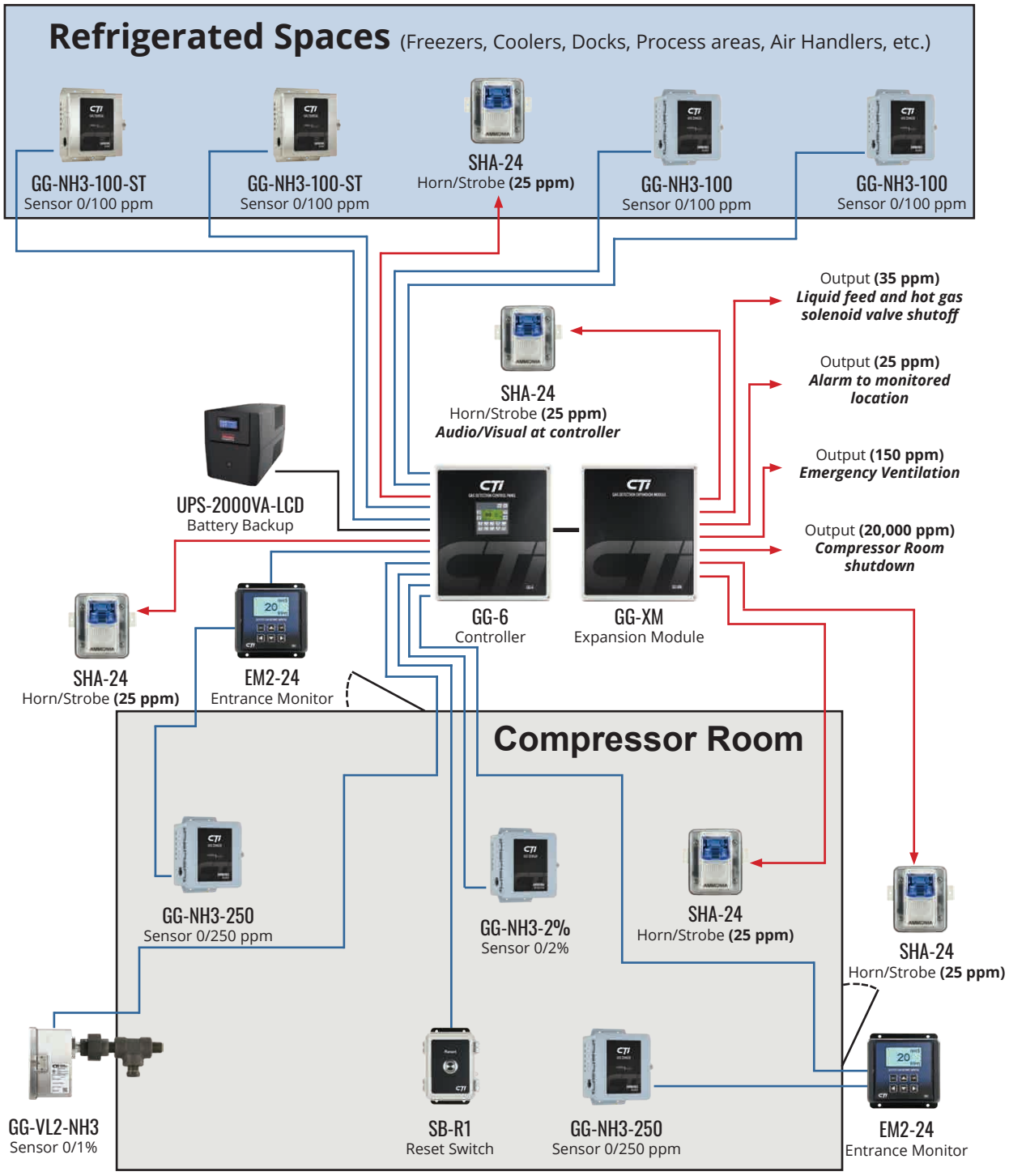
TABLE OF CONTENTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

DESIGNING YOUR SYSTEM

Whether you are designing a new system or retrofitting an old system, installing a CTI gas detection system can be done all at once, or easily expanded in stages to meet your budget requirements. Our application engineers have many years of experience in the food industry, and will be happy to help you custom tailor a system to meet your needs.

The example schematic below complies with IIAR 2 and other regulatory codes.



SINGLE, DUAL AND MULTI-CHANNEL CONTROL PANELS

From single-channel readouts to thirty-channel stand-alone safety systems, the CTI controller line has you covered. 2-year warranty on all controllers.

New

M255 ..... **$4,285**
Gas Detection Controller with RS-485 Modbus for to 255 devices. Includes 8 analog inputs and 8 relay outputs. 10" color touchscreen with intuitive menu navigation for easy setup and navigation. NEMA 1 enclosure for indoor use only or can be mounted outside in NEMA 4 window box. Input requirements: 120vac, 5.5A / 240vac, 3.5A. Factory statup required

M255 Startup **$2,794**
Startup of up to 30 detectors includes factory trained technician on-site for one day providing controller configuration, sensor calibration, alarm output verification, training, and report to satisfy OSHA PSM documentation requirements for the gas detection system. Includes all travel expenses within continental United States. System to be installed by others prior to arrival. Contact CTI for pricing on systems with 31 or more detectors.

Coming Soon

MM420-LR **$150**
4-20mA analog to Modbus converter module. Allows any 4-20mA industry standard analog device to communicate with the M255 controller via RS-485 wiring. Field addressable via dipswitches.

GG-6 ..... **$4,188**
6-Channel Gas Monitor (expandable to 30 channels). Includes graphic LCD display, six 10A relay outputs, time-weighted averaging, event logging, three adjustable setpoints per channel, and 6.5A power supply (does not include sensors). System configuration through user friendly menu-driven LCD operator interface. Weatherproof NEMA 4X fiberglass enclosure safe for outdoors & washdown areas. Can accommodate up to three expansion modules for a total of 30 sensors. Power Requirements: 110 VAC, 2A. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-6 Startup **$2,794**
Startup includes factory trained technician on-site for one day providing controller configuration, sensor calibration, alarm output verification, training, and report to satisfy OSHA PSM documentation requirements for the gas detection system. Includes all travel expenses within continental United States. System to be installed by others prior to arrival.

GG-6-AOB **$416**
Six-channel 4-20 mA Analog Output Board. Provides six individual analog outputs, powered by the GG-6 controller.

GG-6-APS **$312**
Auxiliary 6.5A, 24VDC power supply for the GG-6 controller. Includes mounting bracket and wire leads. Designed to handle the power requirements of multiple Horn/Strobe installations.

GG-6-GE-M **$1,848**
GG-6 Ethernet, Modbus gateway module, with mounting bracket.

GG-6-GE-E **$1848**
GG-6 Ethernet, EtherNet/IP gateway module, with mounting bracket.

GG-6-GE-B **$1848**
GG-6 Ethernet, BACnet gateway module, with mounting bracket.

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

SINGLE, DUAL AND MULTI-CHANNEL CONTROL PANELS

From single-channel readouts to thirty-channel stand-alone safety systems, the CTI controller line has you covered. 2-year warranty on all controllers.

GG-XM **$2,282**
GG-6 Expansion Module. Adds eight channels to the GG-6. Includes expansion module with harness interconnect, eight 10A relay outputs, 6.5A power supply, and weatherproof enclosure (does not include sensors). Simple setup and configuration through menu on GG-6 control panel. Power Requirements: 110 VAC, 2A. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-XM-AOB **$416**
Eight-channel 4-20 mA Analog Output Board. Provides eight individual analog outputs, powered by the GG-XM.

GG-RD1 ..... **$1,647**
GG-6 Remote Display. Adds remote display capability to GG-6 via MODBUS RTU protocol on RS-485. Silenceable onboard buzzer provides audible alarm indication. Can be installed up to 1000ft from GG-6. Mirrors display of GG-6 and powered by 24VDC from GG-6. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-RD2 ..... **$1647**
For applications that require more than one remote display.

GG-2 ..... **$2,090**
2-Channel Gas Monitor (does not include sensors). Includes graphic LCD display, six 10A relay outputs, event logging, dual adjustable setpoints per channel, two analog outputs, and 2.2A power supply. System configuration through user friendly menu-driven LCD operator interface. NEMA 4X fiberglass enclosure safe for outdoors and washdown. Power Requirements: 110 VAC, 2 A. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

EM2-24 ..... **$635**
Entrance Monitor. Single-Channel (does not include sensor).
3" diagonal LCD display with an operating temperature down to -40°F, and a relay output with adjustable setpoint (1% increments). The EM2-24 is for use as a feed-though device or OEM installation using 24vdc. Watertight IP68 enclosure designed for outdoors and washdown areas. For use with any CTI sensor or other 4-20 mA device. Power Requirements: 24 VDC, 350 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

EM2-120 ..... **$760**
The EM2-120 includes all the same features (LCD display/relay output) as the EM2-24, but operates as a standalone controller with included power supply. Provides up to 0.75A for sensor & audio/visual devices. Pair with CTI sensor to accommodate single channel, stand alone applications. Watertight IP68 enclosure designed for outdoors and washdown areas. For use with any CTI sensor or other 4-20 mA device. Power Requirements: 120 VAC, 0.7A. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

AMMONIA SENSORS

Over twenty years of ammonia detection experience is designed into the GG-NH3 sensor line. Built for harsh environments. 2-year warranty on all sensors.

GG-NH3 ..... **$1,349**

Electrochemical ammonia sensor with SAFECELL technology, environmentally adaptive heated enclosure. Ammonia specific electrochemical sensor technology. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Designed to adapt to any harsh environment from -50°F to +122°F. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 350 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-NH3-100 | *0-100 ppm (standard)*
GG-NH3-250 | *0-250 ppm*
GG-NH3-500 | *0-500 ppm*
GG-NH3-1000 | *0-1000 ppm*

GG-NH3 with Stainless Steel Enclosure **$1,609**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-NH3-100-ST
GG-NH3-250-ST

GG-NH3 with Duct Mount **$1,609**

Duct mount hardware and polycarbonate enclosure for ammonia detection in ventilation ducts.
GG-NH3-100-DM

GG-NH3-2% **$1,394**

Catalytic Bead ammonia sensor, 0/2% range. Ammonia selective catalytic bead sensor technology. Designed for installation in ammonia Compressor Rooms where E-stop or electrical shunt trip is desired.. Industry standard linear 4-20 mA output. Power: 24 VDC, 250 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-NH3-2%-EXP **$1,842**

Catalytic Bead ammonia sensor, 0/2% range, with explosion-proof enclosure. Ammonia selective catalytic-bead sensor technology. Circuit board is completely sealed in potting compound. Industry standard linear 4-20 mA output. Power: 24 VDC, 80 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-NH3-EXP **$1,609**

Electrochemical ammonia sensor with explosion-proof enclosure. Ammonia selective catalytic-bead sensor technology. Designed for detection of ammonia gas in hazardous areas. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 50 mA.

GG-NH3-250-EXP | *0-250 ppm (standard)*
GG-NH3-500-EXP | *0-500 ppm*

GG-VL2-NH3 ..... **$1,434**

Catalytic-bead ammonia vent line sensor, range 0-1%, includes mounting kit. Continuous monitoring of refrigeration system relief valves. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. 18 gauge, 316 stainless steel enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 80 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

AMMONIA SENSORS

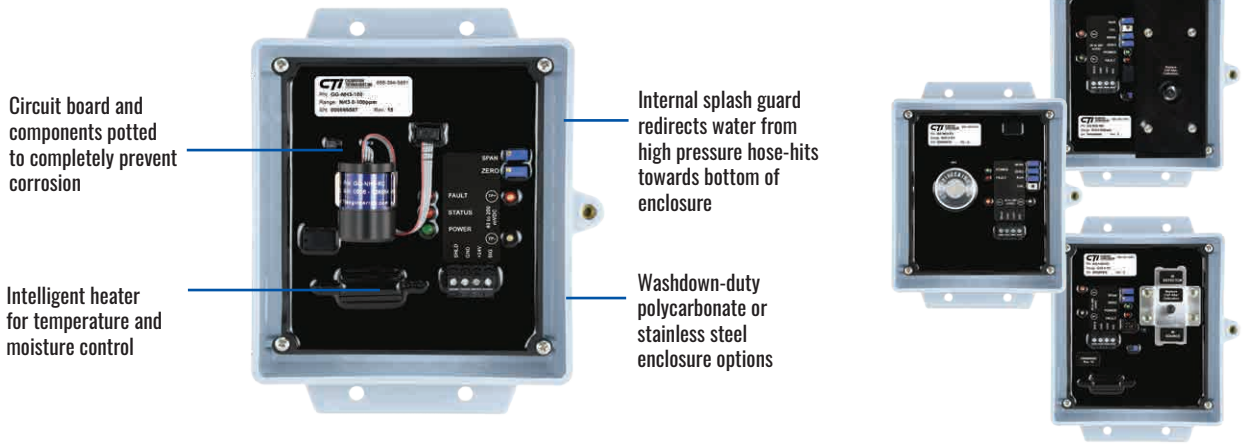
SAFECELL Technology

The GG-NH3 electrochemical ammonia sensor comes equipped with SAFECELL technology which checks the electrical viability of the electrochemical cell every 40 seconds.

SAFECELL Equipped

If it is determined that the cell is failed or missing; the 4-20 mA output will drop to 0.5 mA and the fault LED will stay on solid. This will be interpreted as a sensor fault at the control panel and prompt plant personnel to investigate the ammonia sensor.

High Performance Sensor Design



Our product designs are a culmination of decades of experience dealing with harsh, wet, and cold environments in the food industry. A few key features that come standard on the GG sensor product line are intelligent temperature and moisture control, and potting-encapsulated circuit boards. Stainless steel, duct-mount and explosion proof enclosures are also available if your application requires them.

Sensor Redundancy in Compressor Rooms

With the Compressor Room posing the biggest risk of an ammonia leak, multiple sensors are required to maintain sufficient leak detection. In a typical Compressor Room two low-range sensors (e.g., 0-250 ppm) provide early detection and can compensate for air flow conditions which may draw the gas away from one sensor.

Adding a high-range 0-2% (0-20,000 ppm) sensor doubles as a last line of defense against catastrophic failure, providing automatic E-stop or electrical shunt trip to prevent an explosion. This high-range sensor should duplicate the low-range sensors' alarm functions for added safety and redundancy.

CARBON DIOXIDE SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-CO2 ..... **$1,519**

Carbon Dioxide specific infrared sensor technology. Sensor board is completely sealed in potting compound, protecting electronic components and copper tracing from corrosion. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure suitable for all locations from -60°F to +120°F, including freezer, washdown, and outdoors. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 350 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-CO2-1% | *0-10,000 ppm*
GG-CO2-3% | *0-30,000 ppm (standard)*
GG-CO2-5% | *0-50,000 ppm*
GG-CO2-20% | *0-200,000 ppm*
GG-CO2-100% | *0-1,000,000 ppm*

GG-CO2 with Stainless Steel Enclosure **$1,779**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-CO2-1%-ST
GG-CO2-3%-ST
GG-CO2-5%-ST
GG-CO2-20%-ST
GG-CO2-100%-ST

GG-CO2 with Duct Mount **$1,779**

Includes Duct Mount hardware and polycarbonate enclosure for carbon dioxide detection in ventilation ducts.

GG-CO2-1%-DM
GG-CO2-3%-DM
GG-CO2-5%-DM
GG-CO2-20%-DM
GG-CO2-100%-DM

GG-VL2-CO2 ..... **$1,434**

Infrared carbon dioxide vent line sensor, range 0-5% (0-50,000 ppm), includes mounting kit. Continuous monitoring of refrigeration system relief valves. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. 18 gauge, 316 stainless steel enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 60 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

CARBON MONOXIDE SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-CO **$1,122**

Electrochemical carbon monoxide sensor, 0-200 ppm. Gas specific electrochemical sensor technology. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 350 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-CO-200 | *0-200 ppm (standard)*

GG-CO with Stainless Steel Enclosure **$1,383**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-CO-200-ST

GG-CO with Duct Mount **$1,383**

Includes Duct Mount hardware and polycarbonate enclosure for carbon monoxide detection in ventilation ducts.

GG-CO-200-DM

GG-CO-EXP **$1,383**

Explosion proof enclosure for hazardous areas. Carbon Monoxide specific electrochemical sensor, 0-200 ppm. Electronics potted to eliminate internal corrosion. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 50 mA.

GG-CO-200-EXP | *0-200 ppm (standard)*

CHLORINE SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-CL2-B **$1,122**

Electrochemical chlorine sensor, 0-5 ppm, environmentally adaptive heated polycarbonate enclosure. Gas specific electrochemical sensor technology. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 350 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-CL2-B-5 | *0-5 ppm (standard)*

GG-CL2-B with Stainless Steel Enclosure **$1,383**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-CL2-B-5-ST

GG-CL2-B with Duct Mount **$1,383**

Includes Duct Mount hardware and polycarbonate enclosure for chlorine detection in ventilation ducts.

GG-CL2-B-5-DM

GG-CL2-EXP **$1,383**

Explosion proof enclosure for hazardous areas. Chlorine specific electrochemical sensor, 0-5 ppm. Electronics potted to eliminate internal corrosion. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC 50 mA.

GG-CL2-5-EXP | *0-5 ppm (standard)*

COMBUSTIBLE SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-LEL2 ..... **$1,145**

High-range Catalytic Bead sensor technology, explosion-proof housing for hazardous areas. 0/100% LEL calibrated to target gas. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 100 mA. Other gases also available.

- GG-LEL2-C3H6O (Acetone)
- GG-LEL2-C2H6 (Ethane)
- GG-LEL2-C2H4 (Ethylene)
- GG-LEL2-C2H5OH (Ethanol)
- GG-LEL2-C4H8O2 (Ethyl Acetate)
- GG-LEL2-H2 (Hydrogen)
- GG-LEL2-C3H7OH (Isopropanol)
- GG-LEL2-CH4 (Methane)
- GG-LEL2-CH3OH (Methanol)
- GG-LEL2-C4H10 (N-butane)
- GG-LEL2-C6H14 (N-hexane)
- GG-LEL2-C5H12 (N-pentane)
- GG-LEL2-C7H16 (N-heptane)
- GG-LEL2-C3H8 (Propane)

SYNTHETIC REFRIGERANT SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-R **$1,519**

Infrared refrigerant sensor for HFO, CFC's, HFC's, and HCFC's. Standard factory range 0-500 ppm, rugged temperature controlled polycarbonate enclosure suitable for all locations from -50° to +120°F, including freezer, washdown, and outdoors. Industry standard linear 4-20 mA output. 0-500 ppm and 0-1,000 ppm ranges available. Power Requirements: 24 VDC, 330mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12. Contact CTI for gases not listed.

0-500 ppm	0-1000 ppm
GG-R123-500	GG-R123-1000
GG-R123a-500	GG-R123a-1000
GG-R1234YF-500	GG-R1234YF-1000
GG-R1234ZE-500	GG-R1234ZE-1000
GG-R134a-500	GG-R134a-1000
GG-R22-500	GG-R22-1000
GG-R245FA-500	GG-R245FA-1000
GG-R404A-500	GG-R404A-1000
GG-R407A-500	GG-R407A-1000
GG-R407C-500	GG-R407C-1000
GG-R407F-500	GG-R407F-1000
GG-R410A-500	GG-R410A-1000
GG-R422D-500	GG-R422D-1000
GG-R434A-500	GG-R434A-1000
GG-R438A-500	GG-R438A-1000
GG-R448A-500	GG-R448A-1000
GG-R449A-500	GG-R449A-1000
GG-R450A-500	GG-R450A-1000
GG-R452A-500	GG-R452A-1000
GG-R454A-500	GG-R454A-1000
GG-R455A-500	GG-R455A-1000
GG-R507A-500	GG-R507A-1000
GG-R513A-500	GG-R513A-1000
GG-R514A-500	GG-R514A-1000

GG-R with Stainless Steel Enclosure **$1,779**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw all gases listed above are also offered with the stainless steel enclosure..

0-500 ppm	*0-1,000 ppm*
GG-R22-500-ST	GG-R22-1000-ST
GG-R134a-500-ST	GG-R134a-1000-ST
GG-R404a-500-ST	GG-R404a-1000-ST
GG-R507a-500-ST	GG-R507a-1000-ST

GG-VL2-R **$1,434**

Vent Line, solid-state refrigerant sensor for R22, R134A, R404A, R507A and other CFC / HFC / HCFC gases, range 0-1%, includes mounting kit. Continuous monitoring of refrigeration system relief valves. Circuit board is completely sealed in potting compound, protecting sensitive electronic components from corrosion. Stainless steel enclosure. Innovative sensor housing allows for simple and low cost sensor replacement. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 85 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

HYDROGEN SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-H2-EC **$1,122**

Electrochemical hydrogen sensor for ranges (0-10,000 ppm (0-25% LEL) and 0-2000 ppm H2). Designed for battery rooms and charging stations for ventilation activation. Hydrogen selective electrochemical sensor technology. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 250 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-H2-EC-10,000 | *0-10,000 ppm (standard)*
GG-H2-EC-2,000 | *0-2,000 ppm*

GG-H2-EC with **Stainless Steel Enclosure** **$1,383**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-H2-EC-10,000-ST
GG-H2-EC-2,000-ST

GG-H2-EC with **Duct Mount** **$1,383**

Includes Duct Mount hardware and polycarbonate enclosure for hydrogen detection in ventilation ducts.

GG-H2-EC-10,000-DM
GG-H2-EC-2,000-DM

GG-H2-EC-EXP **$1,383**

Explosion proof enclosure for hazardous areas. Hydrogen specific electrochemical sensor. Electronics potted to eliminate internal corrosion. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 50 mA.

GG-H2-EC-10,000-EXP | *0-10,000 ppm (standard)*
GG-H2-EC-2,000-EXP | *0-2,000 ppm*

HYDROGEN SULFIDE SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-H2S **$1,122**

Electrochemical hydrogen sulfide sensor, 0-50 ppm. Gas specific electrochemical sensor technology. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 350 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-H2S-50 | *0-50 ppm (standard)*

GG-H2S with Stainless Steel Enclosure **$1,383**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-H2S-50-ST

GG-H2S with Duct Mount **$1,383**

Includes Duct Mount hardware and polycarbonate enclosure for hydrogen sulfide detection in ventilation ducts.

GG-H2S-50-DM

GG-H2S-EXP **$1,383**

Explosion proof enclosure for hazardous areas. Hydrogen Sulfide specific electrochemical sensor, 0-50 ppm. Electronics potted to eliminate internal corrosion. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 50 mA.

GG-H2S-50-EXP | *0-50 ppm (standard)*

NITROGEN DIOXIDE SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-NO2-B **$1,122**

Electrochemical nitrogen dioxide sensor, 0-10 ppm, environmentally adaptive heated polycarbonate enclosure. Gas specific electrochemical sensor technology. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 350 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-NO2-B-10 | *0-10 ppm (standard)*

GG-NO2-B with Stainless Steel Enclosure **$1,383**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-NO2-B-10-ST

GG-NO2-B with Duct Mount **$1,383**

Includes Duct Mount hardware and polycarbonate enclosure for nitrogen dioxide detection in ventilation ducts.

GG-NO2-B-10-DM

GG-NO2-EXP **$1,383**

Explosion proof enclosure for hazardous areas. Nitrogen Dioxide specific electrochemical sensor, 0-10 ppm. Electronics potted to eliminate internal corrosion. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 50 mA.

GG-NO2-10-EXP | *0-10 ppm (standard)*

OXYGEN SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-O2-C **$1,122**

Electrochemical oxygen sensor, 0-25% and 15/25% ranges available. Gas specific electrochemical sensor technology. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 250 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-O2-C0 | *0-25%*
GG-O2z-C15 | *15-25% (standard)*

GG-O2-C with Stainless Steel Enclosure **$1,383**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-O2-C0-ST
GG-O2-C15-ST

GG-O2-C with Duct Mount **$1,383**

Includes Duct Mount hardware and polycarbonate enclosure for oxygen detection in ventilation ducts.

GG-O2-C0-DM
GG-O2-C15-DM

GG-O2-EXP **$1,383**

Explosion proof enclosure for hazardous areas. Oxygen specific electrochemical sensor, 0-25% and 15-25% ranges available. Electronics potted to eliminate internal corrosion. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 40 mA.

GG-O2-0/25-EXP | *0-25% (standard)*
GG-O2-15/25-EXP | *15-25%*

SULFUR DIOXIDE SENSORS

Diffusion-style sensors for many applications. 2-year warranty on all sensors.

GG-SO2 ..... **$1,122**

Electrochemical sulfur dioxide sensor, 0-20 ppm, environmentally adaptive heated polycarbonate enclosure. Gas specific electrochemical sensor technology. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 350 mA. SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12.

GG-SO2-20 | *0-20 ppm (standard)*

GG-SO2 with Stainless Steel Enclosure **$1,383**

18 gauge, NEMA 3RX washdown duty 316 stainless enclosure, #3 finish, hinged lid, with captive screw.

GG-SO2-20-ST

GG-SO2 with Duct Mount **$1,383**

Includes Duct Mount hardware and polycarbonate enclosure for sulfur dioxide detection in ventilation ducts.

GG-SO2-20-DM

GG-SO2-EXP **$1,383**

Explosion proof enclosure for hazardous areas. Sulfur Dioxide specific electrochemical sensor, 0-20 ppm. Electronics potted to eliminate internal corrosion. Industry standard linear 4-20 mA output. Power Requirements: 24 VDC, 50 mA.

GG-SO2-20-EXP | *0-20 ppm (standard)*

VEHICLE EMISSIONS

Dual sensor transmitters for parking garages & vehicle depots. 2-year warranty on all products.

MODBUS

New

M255 Modbus Controller **$4,285**
Gas Detection Controller with Modbus inputs for use with the DuoSense-M Modbus sensor. Can handle up to 255 devices. Includes 8 analog inputs and 8 programmable relay outputs. 10" color touchscreen with intuitive menu navigation for easy setup and navigation. Input requirements: 120vac, 3A / 240vac, 2A.

DUOSENSE-M Modbus sensor **$1,205**
The DuoSense-M offers Modbus connectivity with both Carbon Monoxide (0-200 ppm) and Nitrogen Dioxide (0-10 ppm) sensors in one unit. RS-485 Modbus output for use with the M255 Modbus controller. Power Requirements: 24vdc, 10 mA.

DUOSENSE-M with Warehouse Kit
The warehouse kit protects the detector from damage. The warehosue kit includes: Wall plate, safey cage, 36" straps for pillar mounting, and 1/2" LB conduit body.
DUOSENSE-M-W **$1,507**

MVFD **$699**
Ventilation fan control for use with the M255 controller. Used to communicate directly with ventilation fans and operates anywhere on the RS-485 Modbus network. Includes 3 programmable SPDT form C dry contacts. Power Requirements: 24vdc, 135 mA.

4-20 MA

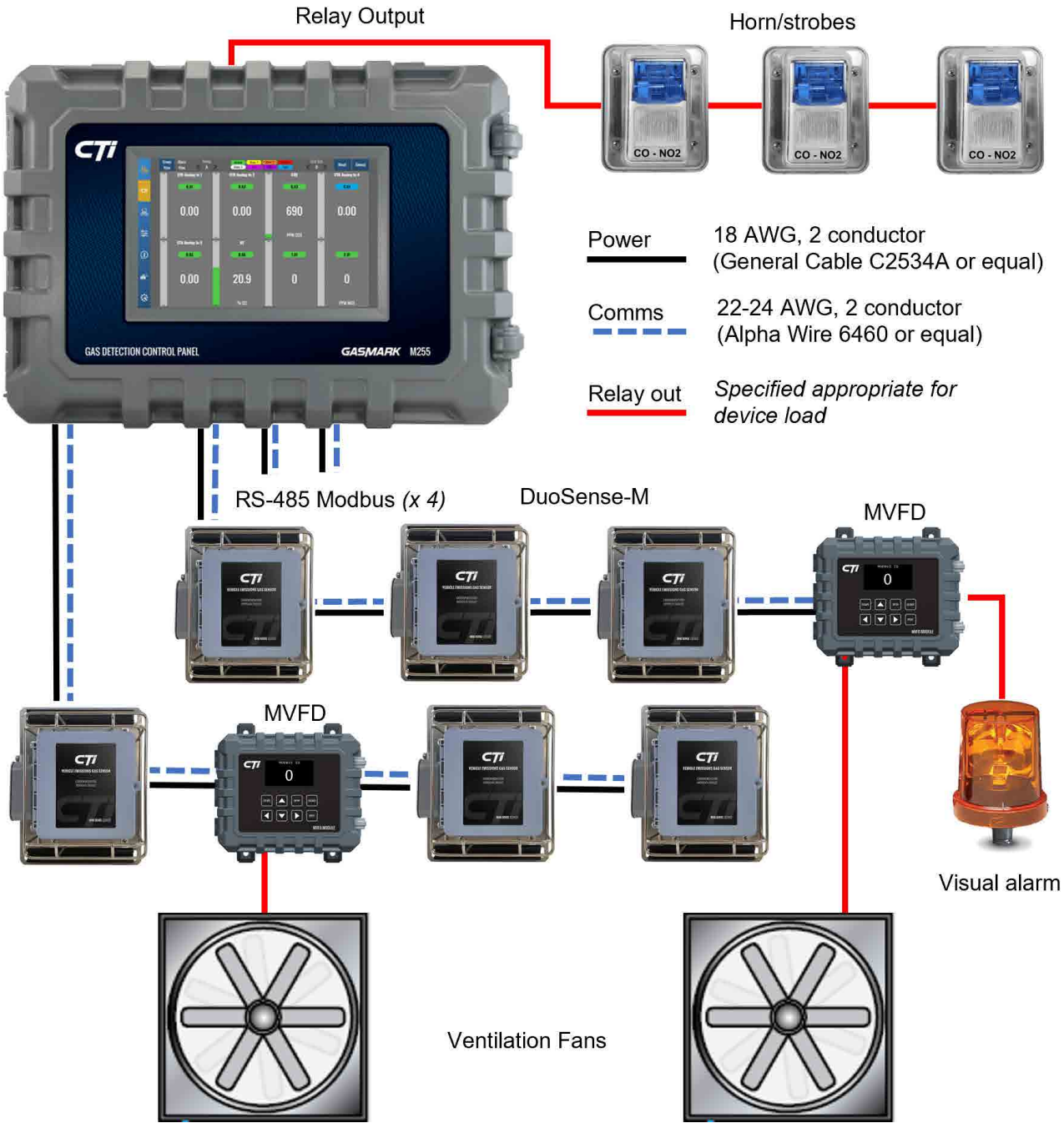
GG-CO-NO2 ..... **$1,242**
The GG-CO-NO2 offers an electrochemical Carbon Monoxide sensor (0-200 ppm), and an electrochemical Nitrogen Dioxide sensor (0-10 ppm) in one detector. Gas specific electrochemical sensor technology. Circuit board is completely sealed in potting compound, protecting sensitive electronic components and copper tracing from corrosion. Weather, corrosion, and chemical resistant polycarbonate sensor enclosure. Industry standard linear 4-20 mA output (1 for each sensor). Power Requirements: 24 VDC, 130 mA.

GG-CO-NO2 with Warehouse Kit
The Warehouse Kit includes: Wall Plate, Safety Cage, 36" straps for pillar mounting, and 1/2" LB conduit body.
GG-CO-NO2-WH **$1,553**

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

VEHICLE EMISSIONS

Modbus system layout example for warehouse vehicle emissions monitoring.



REPLACEMENT CELLS AND SENSOR ELEMENTS

CTI replacement cells and sensor elements. 2-year warranty on all elements.

GG-NH3-RC **$423**
Replacement extended life electrochemical cell for ammonia sensor model GG-NH3; also compatible with ECF2 / ECF9 / ECFX transmitters

GG-NH3-HR-RC **$423**
Replacement extended life high-range (0-1,000 ppm) electrochemical cell for ammonia sensor model GG-NH3; also compatible with ECF2 / ECF9 / ECFX transmitters

GG-O2-C-RC **$423**
Replacement electrochemical cell for oxygen sensor model GG-O2-C (ranges 0-25% and 15-25%)

GG-CO-RC **$423**
Replacement electrochemical cell for carbon monoxide sensor model GG-CO

GG-CL2-B-RC **$423**
Replacement electrochemical cell for chlorine sensor models GG-CL2-B, and GG-CL2

GG-H2S-RC **$423**
Replacement electrochemical cell for hydrogen sulfide sensor model GG-H2S

GG-NO2-B-RC **$423**
Replacement electrochemical cell for nitrogen dioxide sensor model GG-NO2-B, GG-NO2, and EC-F2-NO2

GG-H2-EC-RC **$423**
Replacement electrochemical cell for hydogen sensor model GG-H2-EC (ranges 0-2,000 and 0-10,000 ppm)

GG-SO2-RC **$423**
Replacement electrochemical cell for sulfur dioxide sensor model GG-SO2

GG-NH3-2%-RS **$437**
Replacement catalytic bead sensor for ammonia sensor model GG-NH3-2% and GG-NH3-1%

EC-F2-NH3-RC **$423**
Replacement electrochemical cell for ammonia

SS-NH3-RS **$340**
Replacement solid-state sensor for ammonia

GG-VL-NH3-RS **$340**
Replacement vent line sensor for ammonia sensor model GG-VL-NH3

GG-VL-R134A-RS **$340**
Replacement vent line sensor for refrigerant sensor models GG-VL-R134A

GG-VL-R22-RS **$340**
Replacement vent line sensor for refrigerant sensor models GG-VL-R22

GG-VL-R507A-RS **$340**
Replacement vent line sensor for refrigerant sensor models GG-VL-R507A

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

REPLACEMENT CELLS AND SENSOR ELEMENTS

CTI replacement cells and sensor elements. 2-year warranty on all elements

GG-VL2-NH3-RS **$510**
Replacement catalytic bead vent line sensor for ammonia sensor model GG-VL2-NH3

GG-VL2-CO2-RS **$510**
Replacement infrared vent line sensor for carbon dioxide sensor model GG-VL2-CO2

GG-VL2-R-RS **$510**
Replacement solid state vent line sensor for refrigerant sensor model GG-VL2-R

GG-NH3-2%-RS-EXP **$551**
Replacement explosion-proof catalytic bead sensor for ammonia sensor model GG-NH3-2%-EXP

GG-LEL2-NH3-RS **$551**
Replacement explosion-proof catalytic bead sensor for combustible LEL sensor model GG-LEL2-NH3 (ammonia only)

GG-LEL2-RS **$551**
Replacement explosion-proof catalytic bead sensor for combustible LEL sensor model GG-LEL2 (all gases excluding ammonia)

GG-NH3-RC-EXP **$551**
Replacement explosion-proof electrochemical cell for ammonia sensor model GG-NH3-EXP

GG-CO-RC-EXP **$551**
Replacement explosion-proof electrochemical cell for carbon monoxide sensor model GG-CO-EXP

GG-CL2-RC-EXP **$551**
Replacement explosion-proof electrochemical cell for chlorine sensor model GG-CL2-EXP

GG-H2-EC-RC-EXP **$551**
Replacement explosion-proof electrochemical cell for hydrogen sensor model GG-H2-EC-EXP (ranges 0-2,000 and 0-10,000 ppm)

GG-H2S-RC-EXP **$551**
Replacement explosion-proof electrochemical cell for hydrogen sensor model GG-H2S-EXP

GG-NO2-RC-EXP **$551**
Replacement explosion-proof electrochemical cell for nitrogen dioxide sensor model GG-NO2-EXP

GG-SO2-RC-EXP **$551**
Replacement explosion-proof electrochemical cell for nitrogen dioxide sensor model GG-SO2-EXP

CALIBRATION GAS ACCESSORIES

Calibration kits and gas work with most manufacturers' gas sensors. N.I.S.T traceable. Custom mixes available.

Cal Kit 17L **$319**
Calibration Kit includes 17L Regulator (0.8 lpm), 3ft hose, calibration cups for all CTI sensors, and carrying case that holds two bottles (gas not included).

Cal Kit 34L **$319**
Calibration Kit includes regulator for 34 liter bottles, tubing, calibration cups to fit all CTI sensors, and rugged carrying case that holds two bottles (gas not included).

Cal Kit Combo **$512**
Includes 17L and 34L Regulators (0.8 lpm), 3ft hose (X2), calibration cups for all cti sensors (x2), and carrying case that holds two bottles (gas not included).

Cal Kit DF-17L **$407**
Includes 17L Demand Flow Regulator, 3ft hose, and carrying case that holds two bottles (gas not included).

Cal Kit DF-34L **$407**
Includes 34L Demand Flow Regulator, 3ft hose, and carrying case that holds two bottles (gas not included).

CK-REG-17L **$198**
17L Regulator (0.8 lpm), CGA 600 threads, 300 PSI pressure gauge; Includes 3ft hose & calibration cups

CK-REG-17L-0.3 ..... **$198**
17L Regulator (0.3 lpm), CGA 600 threads, 300 PSI pressure gauge: Includes 3ft hose & calibration cups

CK-REG-17L-0.5 ..... **$198**
17L Regulator (0.5 lpm), CGA 600 threads, 300 PSI pressure gauge: Includes 3ft hose & calibration cups

CK-REG-34L **$198**
34L Regulator (0.8 lpm), C10 threads, 600 PSI pressure gauge: Includes 3ft hose & calibration cups

CK-REG-34L-0.3 ..... **$198**
34L Regulator (0.3 lpm), C10 threads, 600 PSI pressure gauge: Includes 3ft hose & calibration cups

CK-REG-34L-0.5 ..... **$198**
34L Regulator (0.5 lpm), C10 threads, 600 PSI pressure gauge: Includes 3ft hose & calibration cups

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

CALIBRATION GAS ACCESSORIES

29L bottles have been replaced with 34L bottles for all CTI products. All 29L and 34L parts are compatible.

CK-REG-DF17L **$319**
17L Demand Flow Regulator, CGA 600 threads; Includes 3ft hose

CK-REG-DF34L **$319**
34L Demand Flow Regulator, C10 threads; Includes 3ft hose

CK-CUPSET **$61**
Calibration Cups for CTI sensors and other popular sizes.

CK-CUP & HOSE **$37**
3 ft Norprene tubing and two sensor adaptors to fit all CTI sensors.

CK-CASE **$121**
Carrying case only

Calibration Tubing **$1.25/ft**
Calibration hose sold per foot (50ft max)

CERTIFIED CALIBRATION GAS 17L BOTTLES

Calibration kits and gas work with most manufacturers' gas sensors. N.I.S.T traceable. More gases avaiable on our website, and custom mixes are available.

17 Liter Bottle, 250 psi **$135**

17L Bottles, 250 psi, CGA 600 Valve. All bottles are N.I.S.T Traceable and DOT approved. Other gases and ranges available. Contact CTI for availability.

Gas	Part Number	Description
Ammonia (NH3)	RB17L-NH3/10	10 ppm NH3 / balance air
	RB17L-NH3/25	25 ppm NH3 / balance air
	RB17L-NH3/35	35 ppm NH3 / balance air
	RB17L-NH3/50	50 ppm NH3 / balance air
	RB17L-NH3/100	100 ppm NH3 / balance air
	RB17L-NH3/150	150 ppm NH3 / balance air
	RB17L-NH3/250	250 ppmNH3 / balance air
	RB17L-NH3/300	300 ppm NH3 / balance air
	RB17L-NH3/500	500 ppm NH3 / balance air
	RB17L-NH3/1000	1,000 ppm NH3 / balance air
	RB17L-NH3/1%	1.0% NH3 / balance air
	RB17L-NH3/2%	2.0% NH3 / balance air
Carbon Dioxide (CO2)	RB17L-CO2/500	500 ppm CO2 / balance N2
	RB17L-CO2/2000	2,500 ppm CO2 / balance N2
	RB17L-CO2/1%	1.0% CO2 / balance N2
	RB17L-CO2/3%	3.0% CO2 / balance N2
	RB17L-CO2/5%	5.0% CO2 / balance N2
Carbon Monoxide (CO)	RB17L-CO/50	50 ppm CO / balance air
	RB17L-CO/200	200 ppm CO / balance air
Hydrogen (H2)	RB17L-H2/500	500 ppm H2 / balance air
	RB17L-H2/1000	1,000 ppm H2 / balance air
	RB17L-H2/2000	2,000 ppm H2 / balance air
	RB17L-H2/1%	1.0% H2 (25%LEL) / balance air
Isobutylene (C4H8)	RB17L-ISOB/100	100 ppm C4H8 / balance air
Methane (CH4)	RB17L-CH4/1.0%	1.0% CH4 (20%LEL) / balance air
	RB17L-CH4/2.5%	2.5% CH4 (50%LEL) / balance air
Nitrogen (N2)	RB17L-N2	100% N2
Oxygen (O2)	RB17L-O2/15%	15% O2 / balance N2
	RB17L-O2/20.9%	20.9% O2 / balance N2
	RB17L-O2/25%	25% O2 / balance N2
R123A	RB17L-R123a/100	100 ppm R123a / balance air
	RB17L-R123a/500	500 ppm R123a / balance air
	RB17L-R123a/3000	3,000 ppm R123a / balance air
R134A	RB17L-R134a/500	500 ppm R134a / balance air
	RB17L-R134a/1000	1,000 ppm R134a / balance air
	RB17L-R134a/3000	3,000 ppm R134a / balance air
R22	RB17L-R22/500	500 ppm R22 / balance air
	RB17L-R22/1000	1,000 ppm R22 / balance air
	RB17L-R22/3000	3,000 ppm R22 / balance air
R404A	RB17L-R404a/500	500 ppm R404a / balance air
	RB17L-R404a/1000	1,000 ppm R404a / balance air
	RB17L-R404a/3000	3,000 ppm R404a / balance air
R407A	RB17L-R407a/500	500 ppm R407a / balance air
	RB17L-R407a/1000	1,000 ppm R407a / balance air
R410A	RB17L-R410a/500	500 ppm R410a / balance air
	RB17L-R410a/3000	3,000 ppm R410a / balance air
R448A	RB17L-R448a/500	500 ppm R448a / balance air
	RB17L-R448a/1000	1,000 ppm R448a / balance air
R449A	RB17L-R449a/500	500 ppm R449a / balance air
	RB17L-R449a/3000	3,000 ppm R449a / balance air
R507A	RB17L-R507a/250	250 ppm R507a / balance air
	RB17L-R507a/500	500 ppm R507a / balance air
	RB17L-R507a/1000	1,000 ppm R507a / balance air
	RB17L-R507a/3000	3,000 ppm R507a / balance air
	RB1L-R507a/1%	1% R507a / balance air
R514A	RB17L-R514a/1000	1,000 ppm R514a / balance air
Zero Air	RB17L-ZA	Zero air - 20.9% O2 / balance N2

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

CERTIFIED CALIBRATION GAS 34L BOTTLES

29L bottles have been replaced with 34L bottles for all CTI products. All 29L and 34L parts are compatible.

34 Liter Bottle, 500 psi **$250**

34L Bottles, 500 psi, C10 Valve. All bottles are N.I.S.T Traceable and DOT approved. Other gases and ranges available. Contact CTI for availability.

Gas	Part Number	Description
Ammonia (NH3)	RB34L-NH3/10	10 ppm NH3 / balance air
	RB34L-NH3/25	25 ppm NH3 (air balance)
	RB34L-NH3/35	35 ppm NH3 / balance air
	RB34L-NH3/50	50 ppm NH3 (air balance)
	RB34L-NH3/75	75 ppm NH3 / balance air
	RB34L-NH3/100	100 ppm NH3 (air balance)
	RB34L-NH3/125	125 ppm NH3 / balance air
	RB34L-NH3/150	150 ppm NH3 / balance air
	RB34L-NH3/200	200 ppm NH3 / balance air
	RB34L-NH3/250	250 ppm NH3 / balance air
	RB34L-NH3/300	300 ppm NH3 / balance air
	RB34L-NH3/500	500 ppm NH3 / balance air
	RB34L-NH3/1000	1000 ppm NH3 / balance air
	RB34L-NH3/1%	1% NH3 / balance air
	RB34L-NH3/2%	2% NH3 / balance air
Carbon Dioxide (CO2)	RB34L-CO2/500	500 ppm CO2 / balance N2
	RB34L-CO2/2000	2,000 ppm CO2 / balance N2
	RB34L-CO2/1%	1% CO2 / balance N2
	RB34L-CO2/2%	2% CO2 / balance N2
	RB34L-CO2/2.5%	2.5% CO2 / balance N2
	RB34L-CO2/3%	3% CO2 / balance N2
	RB34L-CO2/4%	4% CO2 / balance N2
	RB34L-CO2/5%	5% CO2 / balance N2
	RB34L-CO2/100%	100% CO2 / balance N2
Carbon Monoxide (CO)	RB34L-CO/50	50 ppm CO / balance air
	RB34L-CO/60	60 ppm CO / balance air
	RB34L-CO/100	100 ppm CO / balance air
	RB34L-CO/200	200 ppm CO / balance air
Hydrogen (H2)	RB34L-H2/2000	2000 ppm H2 / balance air
	RB34L-H2/1%	1% H2 / balance air
	RB34L-H2/2%	2% H2 / balance air
Hydrogen Sulfide (H2S)	RB34L-H2S/25	25 ppm H2S / balance N2
	RB34L-H2S/50	50 ppm H2S / balance N2
Methane (CH4)	RB34L-CH4/0.5%	0.5% CH4 / balance air
	RB34L-CH4/1%	1% CH4 / balance air
	RB34L-CH4/2.5%	2.5% CH4 / balance air
Multi Gas Mixes	RB34L-3GAS-A	100 ppm CO, 2.5% CH4, 18% O2 / balance N2
	RB34L-4GAS-A	50 ppm CO, 2.5% CH4, 25 ppm H2S, 18% O2 / balance N2
	RB34L-4GAS-B	100 ppm CO, 25 ppm H2S, 2.5% CH4, 18% O2 / balance N2
	RB34L-4GAS-C	60 ppm CO, 20 ppm H2S, 1.45% CH4, 15% O2 / balance N2
	RB34L-4GAS-D	100 ppm CO, C5H12 25% LEL, 25 ppm H2S, 18% O2 / balance N2
	RB34L-4GAS-F	10 ppm CO, 10 ppm H2S, 1.45% CH4, 15% O2 / balance N2
	RB34L-4GAS-K	100 ppm CO, 25 ppm H2S, 0.35% Pentane, 19% O2 / balance N2
Nitrogen (N2)	RB34L-N2	100% N2
Nitrogen Dioxide (NO2)	RB34L-NO2/5	5 ppm NO2 / balance air
	RB34L-NO2/10	10 ppm NO2 / balance air
Oxygen (O2)	RB34L-O2/15%	15% O2 / balance N2
	RB34L-O2/20.9%	20.9% O2 / balance N2
R123A	RB34L-R123A/500	500 ppm R123a / balance air
R134A	RB34L-R134A/100	100 ppm R134a / balance air
	RB34L-R134A/250	250 ppm R134a / balance air
	RB34L-R134a/500	500 ppm R134a / balance air
	RB34L-R134a/1000	1000 ppm R134a / balance air
	RB34L-R134a/3000	3000 ppm R134a / balance air
R22	RB34L-R22/500	500 ppm R22 / balance air
	RB34L-R22/1000	1000 ppm R22 / balance air
	RB34L-R22/3000	3000 ppm R22 / balance air
R404A	RB34L-R404a/500	500 ppm R404a / balance air
	RB34L-R404a/1000	1000 ppm R404a / balance air
	RB34L-R404a/3000	3000 ppm R404a / balance air
R407A	RB34L-R407A/500	500 ppm R407a / balance air
	RB34L-R407A/1000	1,000 ppm R407a / balance air
R422D	RB34L-R422D/500	500 ppm R422d / balance air
R438A	RB34L-R438A/500	500 ppm R438a / balance air
	RB34L-R438A/1000	1,000 ppm R438a / balance air
	RB34L-R438A/3000	3,000 ppm R438a / balance air
R448A	RB34L-R448A/500	500 ppm R448a / balance air
	RB34L-R448A/1000	1,000 ppm R448a / balance air
	RB34L-R448A/3000	3,000 ppm R448a / balance air
R449A	RB34L-R449A/500	500 ppm R449a / balance air
	RB34L-R449A/1000	1,000 ppm R449a / balance air
	RB34L-R449A/3000	3,000 ppm R449a / balance air
R507A	RB34L-R507a/500	500 ppm R507a / balance air
	RB34L-R507a/1000	1000 ppm R507a / balance air
	RB34L-R507a/3000	3000 ppm R507a / balance air
Sulfur Dioxide	RB34L-SO2/10	10 ppm SO2 / balance N2
Zero Air	RB34L-ZA	Zero air (20.9% O2) / balance N2

CALIBRATION GAS SELECTION

Use the information below to select the proper calibration gas.

Getting Started

The first step in sensor calibration is obtaining a calibration kit. The calibration kit includes the regulator for attaching to the bottle, the tubing needed to transfer the gas, and the calibration cups. The calibration cups connect to the sensors and are necessary to provide an exact known concentration to the sensor, without dilution from outside air. There are two kit sizes to choose from (17L & 34L), and each kit has connections for their respective size.

Choosing a Bottle Size

The 17L bottle holds 17 liters of gas at around 240 PSI. For sensor calibration, **one 17L bottle will calibrate 7-10 sensors**. The primary use for 17L bottles is for systems using only a few sensors at specific ranges, where the excess gas that a 34L bottle provides is unnecessary.

The 34L bottle holds 34 liters of gas at around 500 PSI. For sensor calibration, **one 34L bottle will calibrate 15-20 sensors**. The primary use for 34L bottles is for systems that have a large amount of sensors with the same range. For example, a detection system using 12 NH3 detectors with a range of 0-100 ppm can be calibrated with one 34L bottle, rather than two 17L bottles.

Selecting the proper calibration gas and concentration

CTI offers a variety of detectors for different target gases. In order to choose the correct calibration gas it is necessary to know the target gas, and the range of the detector being calibrated. For example, the GG-NH3 with a range of 0-100 ppm (GG-NH3-100) will have a target gas of NH3, and a range of 0-100 ppm. For calibration purposes, choose the gas that matches the upper range of the detector. In this instance it would be 100 ppm NH3 (RB17L-NH3/100 or RB34L-NH3/100) with a span calibration target of 200 mVdc.

Calibration gas can also be used to calibrate at less than the full-scale of the detector, but it is usually not recommended to calibrate at less than half-scale. For example, if there is only 100 ppm NH3 on hand, but a 0-200 ppm NH3 sensor needs calibration, the sensor can be calibrated to half-scale with a span calibration target of 120 mVdc. However, 100 ppm NH3 should not be used to calibrate a sensor with a range of 0-500 ppm.

Zero Calibration

CTI gas detectors have various target gases and resting signals in clean air. Some gases are found in clean air, such as Carbon Dioxide, in which case you will need to calibrate the zero signal. Other gases such as Hydrogen, do not have a scent, so zero gas is necessary to ensure there is not already gas present. Gases such as NH3 are not found in clean air but do have an odor even at very low levels, so zero gas is unnecessary. If a background target gas is detected, then zero air gas may be needed to calibrate the zero signal.

Span Calibration

For span calibration of CTI detectors, please reference the manuals included with the sensors at purchase, or available online at the specific product pages, or downloads page. A quick reference guide has been provided on the following page. For any remaining questions, please contact CTI.

CALIBRATION GAS SELECTION

Use the table below to select the proper calibration gas for CTI detectors.

Sensor Model	Sensor Part #	Sensor Range	Zero Gas used (part #)	Zero target (mVdc)	Span gas used (part #)	Span target (mVdc)
GG-NH3	GG-NH3-100	0-100 ppm	*Clean air	40	RB17L-NH3/100	200
GG-NH3	GG-NH3-200	0-200 ppm	*Clean air	40	RB17L-NH3/200	200
GG-NH3	GG-NH3-250	0-250 ppm	*Clean air	40	RB17L-NH3/250	200
GG-NH3	GG-NH3-300	0-300 ppm	*Clean air	40	RB17L-NH3/300	200
GG-NH3	GG-NH3-500	0-500 ppm	*Clean air	40	RB17L-NH3/500	200
GG-NH3	GG-NH3-1000	0-1000 ppm	*Clean air	40	RB17L-NH3/1000	200
GG-NH3-1%	GG-NH3-1%	0-1%	*Clean air	40	RB17L-NH3/1%	200
GG-NH3-2%	GG-NH3-2%	0-2%	*Clean air	40	RB17L-NH3/2%	200
GG-VL-NH3	GG-VL-NH3	0-1%	*Clean air	40	Response check	N/A
GG-VL2-NH3	GG-VL2-NH3	0-1%	*Clean air	40	RB17L-NH3/1%	200
GG-CO2	GG-CO2-1%	0-1%	RB17L-CO2/500	48	RB17L-CO2/1%	200
GG-CO2	GG-CO2-3%	0-3%	RB17L-CO2/500	42.7	RB17L-CO2/3%	200
GG-CO2	GG-CO2-5%	0-5%	RB17L-CO2/500	41.6	RB17L-CO2/5%	200
GG-CO	GG-CO-200	0-200 ppm	RB17L/ZA	40	RB17L-CO/200	200
GG-O2-C	GG-O2-C0	0-25%	RB17L/N2	40	RB17L-O2/20.9%	173.7
GG-O2-C	GG-O2-C15	15-25%	RB17L-O2/15%	40	RB17L-O2/20.9%	134.4
GG-O2-SP1	GG-O2-SP1	0-25%	RB17L/N2	40	RB17L-O2/20.9%	173.7
GG-H2-EC	GG-H2-EC-10000	0-10,000 ppm	RB17L/ZA	40	RB17L-H2/1%	200
GG-H2-EC	GG-H2-EC-2000	0-2,000 ppm	RB17L/ZA	40	RB17L-H2/2000	200
GG-H2-1%	GG-H2-1%	0-10,000 ppm	RB17L/ZA	40	RB17L-H2/1%	200
GG-H2S	GG-H2S-50	0-50 ppm	RB17L/ZA	40	*RB34L-H2S/50	200
GG-NO2-B	GG-NO2-B-10	0-10 ppm	RB17L/ZA	40	*RB34L-NO2/10	200
GG-CL2-B	GG-CL2-B-5	0-5 ppm	RB17L/ZA	40	Chlorine Generator	200
GG-SO2	GG-SO2-20	0-20 ppm	RB17L/ZA	40	RB29L-SO2/20	200
GG-R	GG-R22-500	0-500 ppm	RB17L/ZA	40	RB17L-R22/500	200
GG-R	GG-R22-3000	0-3000 ppm	RB17L/ZA	40	RB17L-R22/3000	200
GG-R	GG-R134a-500	0-500 ppm	RB17L/ZA	40	RB17L-R134a/500	200
GG-R	GG-R134a-3000	0-3000 ppm	RB17L/ZA	40	RB17L-R134a/3000	200
GG-R	GG-R507a-500	0-500 ppm	RB17L/ZA	40	RB17L-R507a/500	200
GG-R	GG-R507a-3000	0-3000 ppm	RB17L/ZA	40	RB17L-R507a/3000	200
GG-R	GG-R404a-500	0-500 ppm	RB17L/ZA	40	RB17L-R404a/500	200
GG-R	GG-R404a-3000	0-3000 ppm	RB17L/ZA	40	RB17L-R404a/3000	200
GG-VL-R	GG-VL-R22	0-1%	RB17L/ZA	40	Response Check	N/A
GG-VL-R	GG-VL-R134a	0-1%	RB17L/ZA	40	Response Check	N/A
GG-VL-R	GG-VL-R507a	0-1%	RB17L/ZA	40	Response Check	N/A
GG-VL-R	GG-VL-R404a	0-1%	RB17L/ZA	40	Response Check	N/A
GG-LEL	GG-LEL-CH4	0-100% LEL	RB17L/ZA	40	RB17L-CH4/1%	72
GG-LEL	GG-LEL-H2	0-100% LEL	RB17L/ZA	40	RB17L-CH4/1%	82
GG-LEL2	GG-LEL2-C2H6	0-100% LEL	RB17L/ZA	40	RB17L-CH4/2.5%	139
GG-LEL2	GG-LEL2-C2H4	0-100% LEL	RB17L/ZA	40	RB17L-CH4/2.5%	168
GG-LEL2	GG-LEL2-H2	0-100% LEL	RB17L/ZA	40	RB17L-CH4/2.5%	111
GG-LEL2	GG-LEL2-CH4	0-100% LEL	RB17L/ZA	40	RB17L-CH4/2.5%	120

**Clean air for ammonia sensors refers to the absence of ammonia odor in the area of the sensor.*
34L bottles are the same as the old 29L bottles. 34L bottles use the same regulator as 29L bottles.

AUDIO/VISUAL SIGNALING DEVICES

Horn/Strobes for use with gas detection systems.

SHA-24 ..... **$233**

Horn/Strobe, 24 VDC. Weatherproof enclosure for washdown and outdoors. Separate horn and strobe circuits allow for multiple wiring configurations. High intensity flash with field selectable buzzer tones. All units labeled “Ammonia” unless specified. Our best selling wet-weather Horn/Strobe.

SHA-24-Blue
SHA-24-Red
SHA-24-Green
SHA-24-Amber
SHA-24-Clear

SHA-PY-120 ..... **$340**

Horn/Strobe, 120 VAC. Weatherproof housing and backplate for outdoors. Separate horn and strobe circuits allow for multiple wiring configurations. High intensity flash and field selectable buzzer tones. All units labeled “Ammonia” unless specified.

SHA-PY-120-Blue
SHA-PY-120-Red
SHA-PY-120-Yellow
SHA-PY-120-Amber
SHA-PY-120-Green
SHA-PY-120-Clear

SHA-120 ..... **$261**

Horn/Strobe, 120 VAC. Weatherproof housing and backplate for outdoors. Horn and strobe trigger simultaneously. High intensity flash and field selectable buzzer tones. All units labeled “Ammonia” unless specified.

SHA-120-Blue
SHA-120-Red
SHA-120-Clear
SHA-120-Amber
SHA-120-Green

SHA-PAX-110dB **$696**

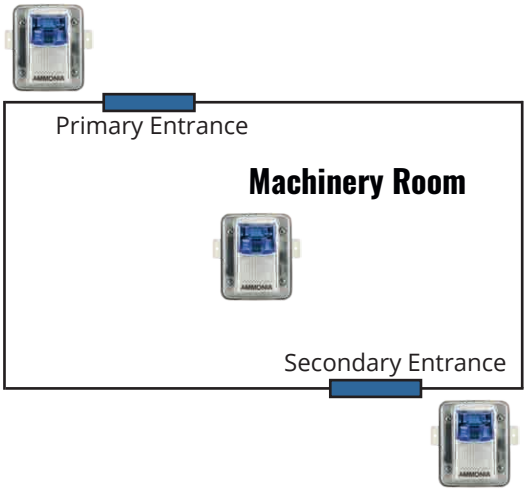
Horn/Strobe, 110dB, 120 VAC or 24 VDC. Weatherproof housing for washdown and outdoor locations. Horn and strobe trigger simultaneously or independently. 110dB horn and 80 field selectable tones. All units labeled “Ammonia” unless otherwise specified.

24Vdc	120Vac
SHA-PAX-110-24-Blue	SHA-PAX-110-120-Blue
SHA-PAX-110-24-Amber	SHA-PAX-110-120-Amber
SHA-PAX-110-24-Red	SHA-PAX-110-120-Red

Codes and Recommendations

The purpose of audible and visual alarm devices for leak detection is to notify plant personnel of an elevated target gas, or a depletion of, in the facility. Actions by plant personnel will be based on the facility’s safety protocol.

Other uses for horn/strobes could be weather, fire, or operation/equipment-based notifications.



920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

AUDIO/VISUAL SIGNALING DEVICES

Stacklights for use with gas detection systems.

StackLight 3

Stackable light tree offered in 24vdc or 120vac. IP66 protection for harsh environments. Stack up to 6 lights and buzzer on base module. 105 dB buzzer with 7 selectable tone patterns. Green light module is steady, all other colors are flashing. 1/2" NPT base standard. Order individual components to assemble on site, or order pre-configured models as shown below.

24vdc, red light, buzzer **SL3-24-R-B**	$460
24vdc, amber & red lights, buzzer **SL3-24-AR-B**	$698
24vdc, green, amber, & red lights, buzzer **SL3-24-GAR-B**	$936
24vdc green, blue, yellow, & red lights, buzzer **SL3-24-GBYR-B**	$1,174
24vdc, green, blue, amber, red, & white lights, buzzer **SL3-24-GBARW-B**	$1,412
120vac, amber light, buzzer **SL3-120-A-B**	$539
120vac, amber & red lights, buzzer **SL3-120-AR-B**	$771
120vac, amber, red, & white lights, buzzer **SL3-120-ARW-B**	$1009
120vac, green, blue, amber, & red lights, buzzer **SL3-120-GBAR-B**	$1,247
120vac, green, yellow, amber, red, & white lights, buzzer **SL3-120-GYARW-B**	$1,485

120vac base module **SL3-120-M**	$148
24v ac/dc base module **SL3-24-M**	$75
Amber light module **SL3-A-M**	$238
Blue light module **SL3-B-M**	$238
Green light module **SL3-G-M**	$238
Red light module **SL3-R-M**	$238
White light module **SL3-W-M**	$238
Yellow light module **SL3-Y-M**	$238
105 dB buzzer **SL3-BUZZ-M**	$148
90 degree mount **SL3-MNT-90**	$52

Required

In machinery rooms, audible and visual alarm devices (horn/strobes) shall be provided inside the room to warn that, when the alarm has activated, access to the room is restricted to authorized personnel and emergency responders. Additional horn/strobes shall be located outside of each entrance to the machinery room. The audible alarms shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level and 5 dBA above the maximum sound level of the area in which it is installed. Ammonia leak detection alarms shall be identified by signage adjacent to the horn/strobes.

Recommended

In refrigerated spaces and areas other than machinery rooms, horn/strobes should be mounted in a location in which luminosity is visible and horn(s) are audible to all personnel occupying any given space in a room. These same units could have an increased effectiveness if they are visible to personnel at entry ways to the affected area. Plant personnel should determine what locations and lens colors are most effective for their facility. As a general guideline, a single Horn/Strobe with a candela intensity of 60cd should effectively provide enough notification (unobstructed) to a 1600 ft^2 area – room or corridor. In non-square room configurations, subdivide any offsets and treat them as a separate area in need of audible and visual alarms. Locate horn/strobes no greater than 150 horizontal feet apart on a single wall in a single room. Considerations for physical mounting locations: 80 to 96 inches above the floor where ceiling heights allow or close to the ceiling as to provide a reflective surface to further increase the effective visual noticeability. If ceiling heights are greater than 30ft, then mounting of Horn/Strobes can be around 30ft from the finished floor if deemed effective. Signage should be used to identify the horn/strobe.

Sources:

- ANSI / IIAR 2-2021: Chapter 17 Ammonia Detection and Alarms
- NFPA 72-2016: 18.5.5 Appliance Location

ACCESSORIES

Emergency and operation/equipment switches for use with gas detection systems.

SB-ES3 ..... **$306**
Emergency Stop tamper-proof push-button switch, 10A, 24VDC or 120VAC NC contacts, mounting plate. IP66/NEMA 4 polycarbonate enclosure safe for outdoors and washdown areas. Additional contactors available.

SB-EV2 ..... **$306**
Emergency Ventilation tamper-proof push-button switch, 10A, 24VDC or 120VAC NC and NO contacts, mounting plate. IP66/NEMA 4 polycarbonate enclosure safe for outdoors and washdown areas. Additional contactors available.

SB-EPCS1 ..... **$306**
Emergency Pressure Control tamper-proof push-button switch, 1.5A 24 VDC/120 VAC NC and NO contacts, mounting plate. IP66/NEMA 4 polycarbonate enclosure safe for outdoors and washdown areas. Additional contactors available.

SB-VS1 ..... **$306**
Emergency Ventilation ON/AUTO Tamper-Proof selector switch, 10A dry contacts 24 VDC/120 VAC, mounting plate. IP66/NEMA 4 polycarbonate enclosure safe for outdoors and washdown areas. Additional contactors available.

SB-SR1 ..... **$306**
Silence & Reset switches, 1.5A NO contacts, LED rings, mounting plate, 24 VDC. IP66/NEMA 4 polycarbonate enclosure safe for outdoors and washdown areas. For use with GG-6 remote silence/reset function.

SB-R1 ..... **$306**
Reset switch, 1.5A NO contacts, LED ring, mounting plate, 24 VDC. IP66/NEMA 4 polycarbonate enclosure safe for outdoors and washdown areas. For use with GG-6 controller remote reset function.

SB-S1 ..... **$306**
Silence switch, 1.5A NO contacts, LED ring, mounting plate, 24 VDC. IP66/NEMA 4 polycarbonate enclosure safe for outdoors and washdown areas. For use with GG-6 controller remote silence function.

SB-VS1-NC **$29**
Normally closed contactor, 10A.
For use with SB-ES3, SB-EV2, SB-EPCS, and SB-VS1.

SB-VS1-NO **$29**
Normally open contactor, 10A.
For use with SB-ES3, SB-EV2, SB-EPCS, and SB-VS1.

ACCESSORIES

Accessorize your gas detection system with these popular items.

Coming Soon

MM420-LR **$150**
Modbus Module, 4-20mA analog to Modbus converter module. Allows any industry standard 4-20mA analog device to communicate with the M255 controller via RS-485 wiring. Field addressable via dipswitches. LR rigid conduit body allows for outdoor or washdown installation.

RM420-LR **$199**
Relay Module, 4-20 mA feed-through design maintains signal output function while providing relay output with dry contacts. Connects to GG sensor enclosures. LR rigid conduit body allows for outdoor or washdown installation.

GG-6-APS **$312**
Auxiliary 6.5A, 24 VDC power supply for the GG-6 controller. Includes mounting bracket and wire leads. Designed to handle the power requirements of multiple horn/strobe installations.

PS-24-3200 ..... **$284**
Power Supply, 24 VDC, 3.2 Amp, NEMA 4X polycarbonate enclosure. 7" x 5" x 2.2" deep. 110 VAC - 220 VAC input.

PS-24-6500 ..... **$442**
Power Supply, 24 VDC, 6.5 Amp, NEMA 12 powder coated steel enclosure. 12" x 6" x 4" deep. 110 VAC input.

UPS-1000VA-LCD **$272**
1000VA, 600W uninterruptible power supply with status and diagnostics LCD. Maintains power to gas detection system during power fluctuations and brief outages.

UPS-2000VA-LCD **$556**
2000VA, 1200W uninterruptible power supply with status and diagnostics LCD. Maintains power to gas detection system during power fluctuations and brief outages.

ACCESSORIES

Accessorize your gas detection system with these popular items.

AD SENTINEL Autodialer

Autodialer for network or with cellular plans for Verizon or AT&T. Sends out emails, text messages, & phone calls. Monitor up to 12 sensors or groups. Annual subscription required for datalogging, text and phone alerts.

AD-SENTINEL-PRO **$1,779**
Sentinel Pro Ethernet autodialer with text and email. NEMA 4X enclosure, battery backup. $100 annual subscription for text and phone alerts, plus cloud-based datalogging.

AD-SENTINEL-VERIZON **$1,870**
Sentinel autodialer with 4G Verizon cellular modem. NEMA 4X enclosure, battery backup. $300 annual subscription for text and phone alerts, plus cloud-based datalogging.

AD-SENTINEL-ATT **$1,870**
Sentinel autodialer with 4G AT&T cellular modem. NEMA 4X enclosure, battery backup. $300 annual subscription for text and phone alerts, plus cloud-based datalogging.

AD-400 ..... **$788**
Auto phone dialer with 4 contact closure inputs, 1 relay output, temperature sensor, AC power monitor. Dials up to 4 phone numbers.

Temp Sensor TS2 ..... **$369**
Temperature sensor for ranges -60°F to +160°F (-51°C to +71°C). 2-wire transmitter with RTD probe easily adapts to CTI controllers. Watertight enclosure designed for washdown areas and outdoors. Industry standard linear 4-20 mA output. Power requirements: 24 VDC, 25 mA.

ACCESSORIES

Proper detector cable recommendations here.

Analog Instrumentation Cable

3-conductor, shielded, stranded cable, 300 Vrms, PVC jacket, with copper drain wire. 100, 500, and 1,000 ft lengths only. Maximum spool size 1000 ft.

Cable-GC-20/3 ..... **$1.13/ft**
20 AWG, General Cable C2525A (Belden 8772 equivalent).

Cable-GC-18/3 ..... **$1.24/ft**
18 AWG, General Cable C2535A (Belden 8770 equivalent).

Cable-BE-20/3 ..... **$3.09/ft**
20 AWG, Belden 8772.

Cable-BE-18/3 ..... **$3.40/ft**
18 AWG, Belden 8770.

RS-485 Modbus Communication Cable

2-conductor, shielded, twisted-pair cable, 300 Vrms, PVC jacket, with copper drain wire. 500, and 1,000 ft lengths only. Maximum spool size 1000 ft.

Cable-AW-6460 ..... **$1.00/ft**
22 AWG, 2-conductor, twisted pair, shielded, stranded, with drain wire. Alpha Wire 6460.

Power Cable 2-Conductor

2-conductor, stranded, 300 Vrms, PVC jacket. 500, and 1,000 ft lengths only. Maximum spool size 1000 ft.

Cable-GC-C2534A..... **$1.00/ft**
18 AWG, shielded, with drain wire. General Cable C2534A.

Cable-GC-C2410A..... **$2.25/ft**
12 AWG, unshielded. General Cable C2410A.

Cable-GC-C2539A..... **$2.75/ft**
12 AWG, shielded, with drain wire. General Cable C2539A

PORTABLE GAS DETECTION

Single and multi-gas portable gas detectors.
Prices for portables subject to change throughout the year, see website for current pricing.


NH3 Responder Ultra **$2,645**
Handheld Ammonia detector used for detecting ammonia for leaks and hazmat response. Detection range: PID sensor 0-1000 ppm; LEL sensor: 4,500-150,000 ppm. Includes carrying case, rechargeable battery and charger, sampling wand and hose (3ft), and stainless steel alligator belt clip.

BW-ULTRA
Portable multi-gas platform can be configured to detect up to five gases. Includes integral motorized pump, AC charger, hose and manual. Popular configurations listed below. See configurator on page 131.

- BW-ULTRA-XWHM00 (confined space) **$2,098**
- BW-ULTRA-XWHMA1 (5-gas NH3) **$2,435**
- BW-ULTRA-XWHMQ1 (5-gas PID) **$3,075**
- BW-ULTRA-XWHMB1 (5-gas CO2) **$3,075**

BW-M5-PROBE **$141**
Sampling wand

BW-ULTRA-CC **$125**
Carrying case, hard shell

Wingman F1-NH3 ..... **$750**
Portable ammonia detector, 0-500 ppm.

BW-SOLO
Portable gas detector for single gas, with 1 year battery life, bluetooth, and datalogger capability (IntelliDox required). Other gases available.

- BW-SOLO-NH3 ..... **$795**
- BW-SOLO-CO **$440**
- BW-SOLO-O2 ..... **$440**
- BW-SOLO-H2S **$440**
- BW-SOLO-CL2 ..... **$537**
- BW-SOLO-CO2 ..... **$616**

BW-MCXL **$792**
GasAlert MicroClip XL portable confined space monitor. Detects Oxygen (O2), Carbon Monoxide (CO), Hydrogen Sulfide (H2S), & Combustibles (LEL).

BW-GAMXTII **$1,148**
Portable 4-Gas monitor for detection of CO, H2S, O2, and LEL. Detection ranges of 0-30% O2, 0-1000 ppm CO, 0-200 ppm H2S, and 0-100% LEL. Compact design with integral motorized pump and internal rechargeable battery, Includes charger, 3 ft of hose, and manual.

BW-ID-ENABL **$332**
IntelliDox enabler kit, required for all IntelliDox units. One enabler kit supports up to five IntelliDox units. Includes AC power supply, tubing and all neccesary hardware.

BW-ID-Ultra **$2,900**
IntelliDox for BW-Ultra. Auto test and calibrate plus datalogger download.

BW-ID-Solo **$2,900**
IntelliDox for BW-Solo. Auto test and calibrate plus datalogger download.

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

REPLACEMENT SENSOR ELEMENTS

Replacement sensor elements for portable gas detectors.
Many more available. Call for price and availability. See website for current pricing.

NH3 Responder Replacement Sensor Element
BW-GA-LEL-RS $292
Replacement LEL sensor 0-100% LEL. BW p/n SR-W04

Wingman F1-NH3 Replacement Sensor Element
SEF-NH3-RC $410
Replacement ammonia cell, 0-500 ppm. 2-year warranty

4-Gas Responder Replacement Sensor Elements
BW-M5-TwinTox-RC $596
Replacement Duo-Tox cell, CO and H2S. BW p/n D4-RHM04

BW-GA-LEL-RS $292
Replacement LEL sensor 0-100% LEL. BW p/n SR-W04

BW-O2-RC $157
Replacement Oxygen cell. BW p/n SR-X2V

GasAlert Extreme Replacement Sensor Element
BW-SRA204-RC $650
Replacement ammonia cell 0-400 ppm. BW p/n SR-A204

GasAlert MicroClip XL and GasAlert Max XT II Replacement Sensor Elements

BW-MCXL-LEL-RC $179
Replacement combustible (%LEL) sensor. BW p/n SR-W-MP75C

BW-O2-RC $157
Replacement Oxygen cell. BW p/n SR-X2V

BW-MCXL-H2S-RC $157
Replacement Hydrogen Sulfide cell. BW p/n SR-H-MC

BW-MCXL-CO-RC $147
Replacement Carbon Monoxide cell. BW p/n SR-M-MC

Ultra Replacement Sensor Elements

BW-SRX-1S-RC $283
Replacement Oxygen cell. BW p/n: SR-X1-1S

BW-SRW-1S-RS $267
Replacement LEL sensor. BW p/n: SR-W1-1S

BW-SRM-1S-RC $353
Replacement Carbon Monoxide cell. BW p/n: SR-M1-1S

BW-SRH-1S-RC $353
Replacement Hydrogen Sulfide cell. BW p/n: SR-H1-1S

BW-SRQ1-4R-RS $1,422
Replacement PID sensor (VOC). BW p/n: SR-Q1-4R

Solo Replacement Sensor Elements

BW-SRA204-RC $650
Replacement Ammonia cell 0-1000 ppm. BW p/n: SR-A204

BW-SRX-1S-RC $283
Replacement Oxygen cell. BW p/n: SR-X1-1S

GasMark M255

MULTI-CHANNEL MODBUS CONTROLLER

Key Features

- Supports up to 255 CTI Modbus addressable devices.
- (4) RS-485 channels for sensor wiring
- Remote relays can be added anywhere along the bus (w/ MVFD's)
- 10" color touchscreen
- 8 analog inputs, 8 relay outputs, and 8 discrete inputs
- 4 alarm setpoints per channel plus TWA, STEL, and fault
- TWA and STEL time-weighted averaging with alarm setpoints
- Large power supply for detectors and external horn/strobes
- USB port for fast field programming, updates, & configuration backup
- Alarm Log records and stores every event
- Modbus and BACnet over RS-485 & Ethernet, for PLC/BAS connectivity

---

Flexible meets Powerful.
The GasMark M255 gas detection control panel.

The M255 can interface to, but operate independently of plant control systems for a reliable stand-alone safety system. The M255 comes standard with four Modbus channels with a capacity of 255 devices, eight analog input channels, and eight onboard relays, user programmable to trigger upon any event for any sensor or group of sensors.

The 10" color touchscreen displays real-time status of gas detector concentrations and alarms, and allows for easier programming via a user-friendly menu system. A USB port allows for easy field software updates and provides a means to backup system programming.

The rugged NEMA 1 polyurethane enclosure is rated for indoors use only, but can be mounted outside in a NEMA 4 window box.

Applications

- Food Processing areas
- Cold Storage
- Compressor Rooms
- Refrigeration Systems
- Parking Garages
- Sea Vessels
- Chemical Plants
- Perimeter Monitoring
- Warehouses

Benefits

- Versatile for any application
- RS-485 sensor cable cuts cable installation cost by up to 50%
- Easy programming from touchscreen

CTI GAS DETECTION SPECIALISTS

c N us

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Out of the box, the M255 is configured with default setpoints loaded in the software. Easily enter the zone location names and adjust alarm setpoints as necessary.

The onboard power supply is large enough to power most connected detectors and external 24 VDC horn/strobes. For larger systems utilizing the RS-485 Modbus wiring, additional power supplies can be installed along the bus when needed.

Eight discrete inputs can be used for a variety of switches such as remote silence, reset, E-stop, and ventilation monitoring and activation.

All wiring is safely enclosed inside and easily accessed from the hinged lids. All human interfacing is performed via the touchscreen on the outside of the M255, for non-intrusive operation.

The feature-packed M255 gas detection controller delivers the ultimate in performance and safety.

Ordering Information

The **M255** is delivered ready to install (detectors not included). Use the model numbers below to order.

Order #:	M255	255-channel Modbus controller includes LCD, operator interface, 8 analog inputs, 8 relay outputs, 8 discrete inputs, and power supply.

Options:

PS-24-6500	Remote 24 VDC power supply, 6.5A
MVFD	Remote relay outputs (3)
M255 Startup	Contact us for details

Coming Soon:

MM420-LR	4-20ma analog to RS-485 Modbus converter

Plus: Remote I/O's, Remote Display, and more!

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power Requirements:
120 VAC, 5.5A, 50/60Hz
240 VAC, 3.5A, 50/60Hz

Output DC Power:
24 VDC, 4A @ 86 °F (30°C)
24 VDC, 2A @ 104 °F (40°C)

Communications:
RS-485 Modbus RTU, 4 channels, compatible with CTI Modbus capable device models only.
Analog Inputs: (8) 4-20 mA, 251 Ohm input imedance.

Capacity:
255 devices.

Cable Recommendation:
Communication: RS-485 communication cable, 22-24 AWG, 2 conductor, twisted pair, shielded, stranded, with drain wire (Alpha Wire 6460 or equivalent). 4,000 ft (1,220 m) per channel max.
Device Power: See detector manual for wiring details (typically 12 AWG, 2 conductor, stranded cable (General Cable C2410A or equivalent).
Analog Inputs: See detector manual for wiring details (typically 3-conductor, shielded, stranded, 18 AWG cable; General Cable C2535A or equivalent, up to 1500 ft).

Relay Outputs:
(8) Programmable relays, SPDT, Form C dry contacts 5A @ 24Vdc or 8A @ 240Vac
(1) Dedicated Fault relay, normally energized, SPDT, Form C dry contacts 5A @ 24 Vdc or 8A @ 240 Vac.

Digital Inputs:
(8) Programmable discrete inputs, contact open/closure only. Do not apply voltage.

Dimensions:
14.5" high x 19.5" wide x 6.2" deep (368mm high x 483mm wide x 158mm deep)

Weight:
15 lbs (6.8kg)

Enclosure:
Polyurethane with neoprene gasket. Continuous stainless-steel hinge pin. Clasp-type latches with captive locking screw in latch. For Indoor non-classified areas. Tighten captive screw on latch to 0.56 N-m (5.0 in-lbs).

Temperature Range:
-4°F to 104°F (-20°C to 40°C)

Humidity Range:
0-95% RH condensing

Terminal Block Plugs (Field Wiring):
26-12 AWG, torque 4.4 in-lbs.

User Interface/Display:
10" (254mm) color, capacitive touch LCD.

Language:
English only

Controller Functions:
Real-Time Status Display: Displays gas concentrations and any current alarm conditions. TWA / STEL trending selectable
Adjustable Alarm 1, Alarm 2, Alarm 3, Alarm 4, TWA and STEL setpoints
Alarm Log: Records and stores 10,000 events for easy recall
Calibration Mode: Locks relay outputs for sensor calibration or maintenance
Relay Test Function: Allows for easy testing of relay output functions
Downscale Alarm Setting for Oxygen Monitoring

Certification:
Nemko listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years

GG-6

MULTI-CHANNEL CONTROLLER

Key Features

- Simultaneously monitor 6 sensors - up to 30 with expansion modules
- Six onboard relays standard – eight more relays per expansion module
- 3 alarm setpoints per channel, in addition to TWA & STEL alarms
- Alarm Log records and stores every event
- Industry standard linear 4-20 mA input
- Simple menu-driven programming through the LCD operator interface
- 6.5A power supply can be used to power many external Horn/Strobes
- Watertight enclosure designed for washdown areas and outdoors
- Horn relay silenceable from front-panel Silence key
- TWA and STEL time-weighted averaging with alarm setpoints

The perfect full-feature controller for medium to large gas detection systems provides a Stand-Alone Safety System for up to 30 sensors.

The GG-6 can interface to, but operate independently of plant control systems for a reliable stand-alone safety system. The GG-6 comes standard with six onboard relays, as well as an onboard buzzer. One relay is a dedicated programmable horn relay, the other five relays are user programmable to trigger upon any event for any sensor or group of sensors.

The GG-XM expansion module accommodates an additional eight sensors for each module, and up to three modules for a total of 30 sensors. Each GG-XM comes equipped with eight 4-20 mA inputs, eight programmable relays, and its own power supply. Analog output boards can be added on to the controller and expansion modules, and can be connected to your plant PLC or other 4-20 mA control panel.

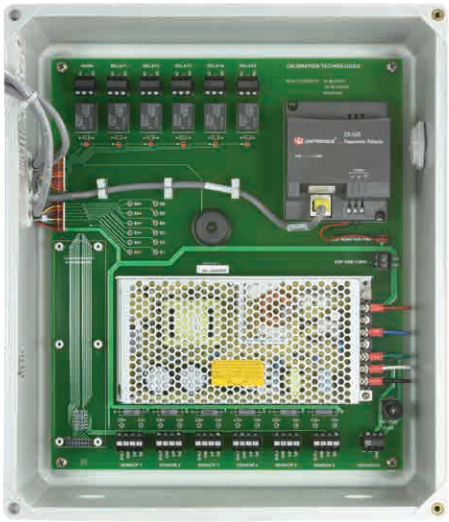
The watertight fiberglass reinforced enclosure will stand up to corrosive washdown, temperature swings, and any other harsh environment encountered in the food industry. The GG-XM's connect to the GG-6 and/or each other via a 24" wire harness. Since the alarm log holds 10,000 events, yesterday's events will not go unnoticed.

Applications

- Engine Rooms
- Tank Rooms
- Mechanical Rooms
- Sea Vessels
- Refrigeration Systems
- Perimeter Monitoring
- Heat Treatment
- Refineries
- Chemical Plants

Benefits

- Full-featured
- Expandable
- Easy configuration



CTi GAS DETECTION SPECIALISTS

SGS C US

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **GG-6** controller utilizes a user-friendly LCD operator interface for all readout information and alarm function control. Out of the box, the controller and expansion modules are configured with default setpoints loaded in the software. Easily enter the zone location names and adjust alarm setpoints as necessary.

The backlit LCD displays real-time status of gas sensor concentrations and allows for custom programming via a user-friendly menu system. The **GG-6** and expansion modules are compatible with all gas sensors with industry standard 4-20 mA inputs. The power supplies are powerful enough to power all connected sensors and external 24 VDC Horn/Strobes.

All wiring is safely enclosed inside and easily accessed from the hinged lids. Each expansion module connects to the **GG-6** in a daisy-chain configuration. Wiring is simply plugging in a wiring harness. All human interfacing is performed via the waterproof membrane keys on the outside of the **GG-6**, for non-intrusive operation.

Ordering Information

The **GG-6** is delivered ready to install. Use either the default setpoints or choose your own. Use the model numbers below to order.

Order #: GG-6 (does not include sensors). Six channel controller includes LCD operator interface, power supply, and 6 relay outputs.

GG-XM (does not include sensors). Eight channel expansion module includes power supply and 8 relay outputs.
The GG-6 can accommodate up to three GG-XM's

Options:

GG-6-AOB (Six channel analog output board)
GG-XM-AOB (Eight channel analog output board)
GG-6-APS (Auxiliary 24 VDC power supply, 6.5A)
GG-6 Startup (Contact us for details)
GG-6-GE-M (Ethernet, Modbus gateway module)
GG-6-GE-E (Ethernet, EtherNet/IP gateway module)
GG-6-GE-B (Ethernet, BACnet, gateway module)

6 channels, 14 channels, 22 channels or 30 channels.
Get what you need now...expand later.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power Requirements:
120/240 VAC, 3 A, 50/60 Hz (GG-6)
120/240 VAC, 3 A, 50/60 Hz (each add-on GG-XM)

Output DC Power:
24 VDC, 4A @ 104 °F (GG-6/GG-XM)
24 VDC, 2A @ 122 °F (GG-6/GG-XM)

Dimensions:
15.8" high x 14" wide x 7" deep (GG-6/GG-XM)

Weight:
14 lbs (GG-6/GG-XM)

Enclosure:
Fiberglass Reinforced Polyester NEMA 4X, IP 65, with neoprene gasket. Continuous stainless steel hinge. Captive screws in lid. For non-classified areas

Temperature Range:
0°F to +122°F (-18°C to +50°C)

Humidity Range:
0-95% RH condensing (100% intermittent), with proper conduit seals

Relay Outputs:
SPDT, Form C dry contacts
8A @ 24 VDC or 10 A @ 120 VAC
Adjustable On/Off delays
Selectable to Latch/Non-Latch
Status LEDs show relay state

GG-6 (Six Relays)
(6) Programmable Relays
Programmable to trigger upon any event for any sensor or group of sensors

GG-XM (Eight Relays)
(8) Programmable Relays
Programmable to trigger upon any event for any sensor or group of sensors

Analog Outputs: (Optional)
(6) Individual 4-20 mA outputs (GG-6)
(8) Individual 4-20 mA outputs (GG-XM)

Horn:
PCB mount Piezo buzzer (GG-6 only)

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Controller Functions:
LCD, backlit, graphics display (GG-6 only)
8 lines x 22 characters, Waterproof membrane switches, alpha-numeric keys, Non-volatile memory

Real-Time Status Display: Displays gas concentrations and any current alarm conditions. TWA / STEL trending selectable

Adjustable Warning, Alarm 1, Alarm 2, TWA and STEL Setpoints

Alarm Log: Records and stores 10,000 events for easy recall

Calibration Mode: Locks relay outputs for sensor calibration or maintenance

Relay Test Function: Allows for easy testing of relay output functions

Downscale Alarm Setting for Oxygen Monitoring

Horn Silence Button Clears Horn Relay

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years

GG-RD

REMOTE DISPLAY

Key Features

- Remote readout displays data sent from GG-6 controller
- Silenceable onboard buzzer provides audible alarm indication
- Continuous real-time sensor readings and alarm indicators
- Mirrors the display on the GG-6 controller
- MODBUS RTU protocol on RS-485
- Daisy-chain several together for multiple locations
- Powered by 24 VDC from GG-6 controller
- Watertight enclosure designed for washdown areas and outdoors
- Can be installed up to 1,000' from GG-6 controller

The remote display solution for your GG-6 gas detection system.

The GG-RD is a remote display slave module designed to accept data from the GG-6 master controller. The GG-RD provides continuous real-time monitoring of each sensor via Modbus RTU protocol on RS-485 mirroring the GG-6 controller display.

The backlit LCD display provides an at-a-glance status of gas concentrations and alarms. An 80 dB buzzer on the front panel provides audible indication of any programmed event. Once the Modbus address is set, there are no user configurable settings on the GG-RD, as all other settings are configured on the GG-6 master controller.

The GG-RD is assembled into a wall mounted enclosure designed for non-classified locations, and can be installed outdoors and in washdown areas. The NEMA 4X fiberglass enclosure will stand up to corrosive washdown, temperature swings, and other harsh environments encountered in the food industry.

Applications

- Guard Shacks
- Maintenance and Refrigeration Offices
- Mechanical Room Entrances
- Anywhere a Remote Display is Needed

Benefits

- Economical

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

When only one GG-RD is installed, the model required is the **GG-RD1**. When two or more are being daisy-chained, one **GG-RD1** is still required, but all other remote displays will need to be model **GG-RD2**. Think of the **GG-RD1** as the end-of-line termination unit, with up to sixty **GG-RD2** remote displays in between it and the GG-6 master controller.

The **GG-RD** series readouts utilize a user-friendly LCD operator interface for all readout and alarm information. The backlit LCD displays real-time status of gas sensor concentrations.

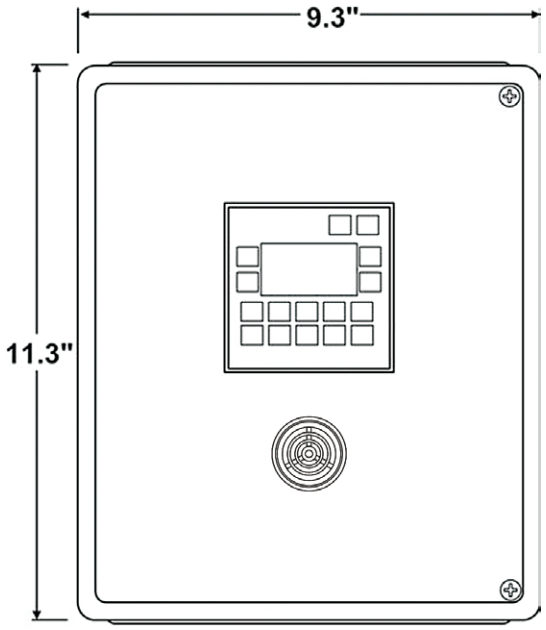
All wiring is safely enclosed inside and easily accessed from the hinged lid. All human interfacing is performed via the waterproof membrane keys on the outside, for non-intrusive operation.

The **GG-RD** is compatible with GG-6 controllers version 4.00 and higher. Older version GG-6 controllers can be field-upgraded. Contact Calibration Technologies for details.

Ordering Information

The **GG-RD** is delivered ready to install. Use the model numbers below to order.

Order #: GG-RD1
GG-RD2 (for applications using more than 1 remote display)



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power Requirements:
24 VDC, 0.25A (21 VDC to 27 VDC)

Dimensions:
11.3" high x 9.3" wide x 7" deep

Weight:
5 lbs

Enclosure:
Fiberglass Reinforced Polyester NEMA 4X, IP 66, with neoprene gasket. Continuous stainless steel hinge. Captive screws in lid. For non-classified areas

Temperature Range:
0°F to +122°F (-18°C to +50°C)

Humidity Range:
0-95% RH condensing (100% intermittent), with proper conduit seals

Buzzer:
80 dB, with volume attenuator shutter. Silenceable from keypad on front panel

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

User Interface:
LCD, backlit, graphics display
8 lines x 22 characters
Sealed membrane switches, alpha-numeric keys
Non-volatile memory

Real-Time Status Display: Displays gas concentrations and any current alarm conditions

Power Wiring: (from GG-6)
Use 18/2 stranded cable for distances up to 1,000'

Communication Wiring: (from GG-6)
Use Cat5 shielded twisted pair (STP) or foiled twisted pair (FTP) low capacitance cable for distances up to 1,000'
Distances up to 4,000' can be achieved using RS-485 compliant cable

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years

GG-2

2-CHANNEL CONTROLLER

Key Features

- Simultaneously monitor two sensor locations
- Six onboard relays standard
- Alarm Log records and stores every event
- Industry standard linear 4/20 mA input
- Simple menu-driven programming through the LCD operator interface
- Power supply can also drive external Horn/Strobes
- Watertight enclosure designed for washdown areas and outdoors
- Configurable for CTI sensor line and any other 4/20 mA gas sensor
- Horn relay silenceable from front-panel Silence key

The perfect controller for small gas detection systems provides a Stand-Alone Safety System for any 2-sensor application.

The GG-2 can interface to, but operate independently of plant control systems for a reliable stand-alone safety system. Multiple digital and analog outputs provided on the GG-2.

The GG-2 has a total of 6 relay outputs, including one warning and one alarm relay per channel, one common fault relay, and one common horn relay. An onboard buzzer works in tandem with the common horn relay. Analog outputs are standard, which can be sent to a plant PLC or other 4/20 mA control panel.

The watertight fiberglass enclosure will stand up to corrosive washdown, temperature swings, and any other harsh environment encountered in the food industry. The alarm log holds 10,000 events, so yesterday's events will not go unnoticed.

Applications

- Engine Rooms
- Tank Rooms
- Mechanical Rooms
- Sea Vessels
- Refrigeration Systems
- Perimeter Monitoring
- Heat Treatment
- Refineries
- Chemical Plants

Benefits

- Low cost solution for small systems
- Simple setup
- Alarm log

CTI GAS DETECTION SPECIALISTS

SGS C US

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **GG-2** controller utilizes a user-friendly LCD operator interface for all readout information and alarm function control. The controller is configured and ready to go out of the box with default setpoints loaded in the software. Simply enter the zone location names and adjust the alarm setpoints if necessary.

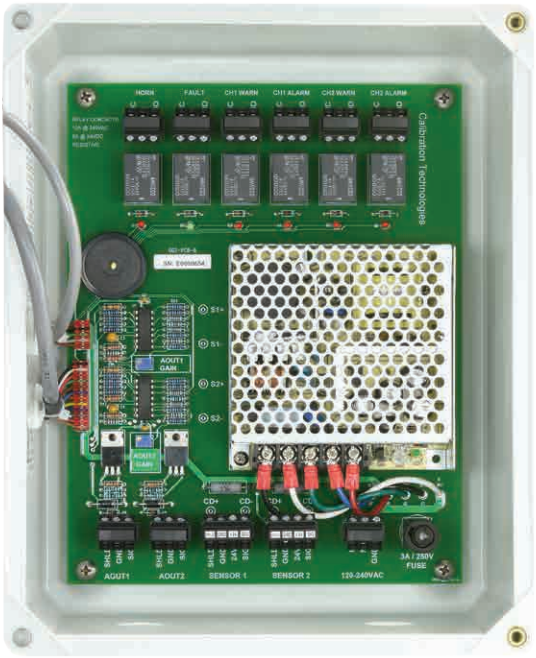
The backlit LCD displays real-time status of gas sensor concentrations and allows for custom programming via the user-friendly menu system. The **GG-2** is compatible with all gas sensors with its industry standard 4/20 mA inputs. The power supply is also powerful enough to power external 24Vdc Horn/Strobes.

All wiring is safely enclosed inside and easily accessed from the hinged lid. All human interfacing is performed via the waterproof membrane keys on the outside, for non-intrusive operation.

Ordering Information

The **GG-2** is delivered ready to install. Use either the default setpoints or choose your own. Use the model number below to order.

Order #: GG-2



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power Requirements:
100-240 VAC, 1.3 A, 50/60 Hz

Output DC Power:
24 VDC, 1.2 A

Dimensions:
11.3" high x 9.3" wide x 7" deep

Weight:
6 lbs

Enclosure:
Fiberglass Reinforced Polyester NEMA 4X, IP 65, with neoprene gasket. Continuous stainless steel hinge. Captive screws in lid. For non-classified areas

Temperature Range:
0°F to +122°F (-18°C to +50°C)

Humidity Range:
0-95% RH condensing (100% intermittent), with proper conduit seals

Relay Outputs: (6)
SPDT, Form C dry contacts
8A @ 24 VDC or 10 A @ 120/240 VAC
Selectable to Latch/Non-Latch
Status LEDs show relay state

(1) Common Horn Relay
Selectable to trigger upon warn or alarm, or both

(1) Common Fault Relay
Normally energized
De-activated upon power loss or 1 mA signal

(2) Individual Warn Relays
Programmable setpoints

(2) Individual Alarm Relays
Programmable setpoints

Analog Outputs:
(2) Individual 4-20 mA outputs

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Controller Functions:
LCD, backlit, graphics display (GG-6 only)
8 lines x 22 characters
Waterproof membrane switches, alpha-numeric keys
Non-volatile memory

Real-Time Status Display: Displays gas concentrations and any current alarm conditions

Alarm Log: Records and stores 10,000 events for easy recall

Calibration Mode: Locks relay outputs for sensor calibration or maintenance

Relay Test Function: Allows for easy testing of relay output functions

Adjustable Warning and Alarm Setpoints

Adjustable Relay Latch/Non-Latch

Downscale Alarm Setting for Oxygen Monitoring

Horn Silence Button Clears Horn Relay

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years

EM2

GAS DETECTION ENTRANCE MONITOR

Key Features

- At-a-glance visual indication of gas concentrations before room entry
- Single channel
- For stand-alone or feed-through applications
- Onboard relay with adjustable alarm setpoint
- Large 3" diagonal LCD display operates down to -40°F (-40°C)
- Electronics are potted to protect against water damage and corrosion
- Industry standard linear 4/20 mA input and output
- Calibration mode allows alarm inhibiting during maintenance or calibration
- Watertight IP68 enclosure designed for washdown areas and outdoors
- Use with CTI sensor line or any other 4/20 mA device
- Sunshield included for outdoor applications

What's lurking behind your doors?
Protect your personnel from entering potentially dangerous areas.

The EM2 provides plant personnel an at-a-glance visual indication before entering potentially dangerous areas. Simple menu-driven programming through the LCD operator interface, and one relay output with adjustable alarm setpoint. Great for engine rooms, air handlers, and stand-alone applications.

The EM2 can be used as a stand-alone monitor or in series with the sensor signal to provide remote display / remote relay operation. As a feed-through device, the sensor signal is re-transmitted back to any industry standard 4/20 mA device such as a PLC or gas detection control panel.

The watertight polycarbonate enclosure will stand up to corrosive washdown, temperature swings, and any other harsh environment encountered in the food industry. The electronics are completely potted to protect against corrosion, allowing for installation in washdown areas and outdoors.

Applications

- Compressor Room Entrances
- Rooftop Air Handling Units
- Confined Spaces
- Oxygen Deficiency Monitoring
- Remote Relay Activation and Readout
- Stand Alone Gas Detection Controller

Benefits

- Low cost solution
- Remote gas concentration display
- Remote relay output

The EM2 entrance monitor is a great solution for providing a visual display at all entrances into Compressor Rooms and other potentially hazardous areas.

The EM2 simply connects in series between the sensor and the control panel, re-transmitting the analog signal back to the control panel. Multiple entrance monitors can be used on a single channel.

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **EM2** is a low cost solution that provides multiple configurations to meet many needs for remote display and alarm applications. Use the **EM2** as a stand-alone device, or a feed-through device to provide remote display and alarm output capability located at or near the sensor.

Since sensors often end up in wet and harsh environments, an onboard relay is not always ideal. The **EM2** provides alarm activation remote of the sensor, in a safe enclosure out of harm's way. The onboard relay is rated at 5A @ 24VDC or 8A @ 120VAC.

The **EM2** provides an at-a-glance indication of dangerous gas concentrations with a large LCD. Alarm indications are displayed by a flashing ALARM status on the LCD. Calibration mode, Test mode and analog In/Out Adjust mode are handy features of the operator interface.

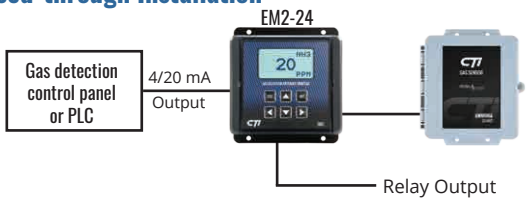
The **EM2** also includes a sunshield which should be installed for UV protection to prolong the life of the LCD display.

Ordering Information

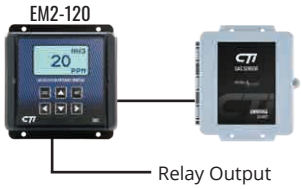
The **EM2-24** is delivered ready to install. Use the model numbers below to order. The **EM2-120** includes a power supply for hard-wired 100-240 VAC power. (both models include a sunshield for optional outdoor mounting)

Order #: EM2-24 (does not include sensor or power supply)
EM2-120 (does not include sensor (includes 1.1A power supply))

Feed-through Installation



Stand-Alone Installation



OEM Installation

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Power Requirements:
EM2-24: 24 VDC, 350 mA max (not including other connected devices).
EM2-120: 100-240 VAC, 0.7A 50/60 Hz
Output 24 VDC Power available for sensors and audio/visual devices:
0.75A @ 40°C (104°F).
0.50A @ 50°C (122°F).

Signal Input:
4-20 mA, 261 Ohm input impendance

Dimensions:
6.1" high x 6.0" wide x 4.0" deep

Weight:
1.5 lbs (EM2-24)
2.5 lbs (EM2-120)

Enclosure:
Polycarbonate IP68, with PU gasket and hinged lid. Powder-coated aluminun mounting plate. For non-classified areas.

Temperature Range:
-40°F to +122°F (-40°C to +50°C)

Humidity Range:
0-100% RH, condensing

Alarm Level Setting:
1% of scale increments.

Relay Output:
(1) SPDT relay, Form C contacts, 5A @ 24 VDC or 8A @120/240 VAC
Adjustable On/Off delays
Adjustable Latching/Non-Latching
Adjustable Normally energized/de-energized

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Wiring Connections:
3 conductor, shielded, stranded, 18 AWG cable (General Cable C2535A or equivalent) up to 1000 ft (total length between sensor and power supply)

Analog Output:
4/20 mA (max input impedance: 700 Ohms)

Display:
Monochrome LCD, 2.7" x 1.5" viewing area

Monitor Functions:
Calibration Mode: Locks relay outputs for sensor calibration or maintenance.
Relay Test Function: Allows for easy testing of relay output function.
Adjustable Alarm Setpoint.
Downscale Alarm Setting: for Oxygen Monitoring.
Latching relay (programmable)
Failsafe relay (programmable)
Relay set/reset delays (programmable)
Deadband (programmable)
Analog in/out adjust allow fine tuning of the signal to match transmitter to EM2 to PLC
Force output mode provides adjustable analog output signal to test connected analog input device.
Real-Time Status Display: Displays gas concentrations and any current alarm conditions.
Analog input and output offset adjustment to fine-tune the signal and display readings.

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years

GG-NH_3 AMMONIA SENSOR

Key Features

- 2-year warranty, including replacement sensor element
- SAFECELL technology checks electrical viability of the electrochemical cell
- Electronics are potted to completely eliminate corrosion in wet environments
- Ammonia specific electrochemical sensor technology. No false alarms
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant polycarbonate sensor enclosure
- Intelligent-design temperature controlled enclosure for improved cell life
- Sensor designed to adapt to any harsh environment from -50°F to +122°F
- Accurately monitor OSHA's PEL, STEL, and IDLH setpoints
- Real-time continuous monitoring for early leak detection
- Any sensor can be field calibrated to any range listed

Finally, one sensor designed to perform in all environments.
The intelligently adaptive GG-NH_3 goes anywhere.

The GG-NH3 utilizes proven electrochemical sensor technology for fast and accurate leak detection. The standard detection range of the GG-NH3 provides real-time continuous monitoring of ammonia concentrations accurately down to 5 ppm, with no false alarms.

Every GG-NH3 sensor comes equipped with an intelligent internal temperature control designed to perform in the harshest areas. The controlled environment provides optimum moisture control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-NH3 provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature variations such as washdowns, defrost cycles, etc. SAFECELL checks the electrical viability of the electrochemical cell and drops signal to 0.5 mA when the cell is failed or missing.

Applications

- Food Processing areas
- Cold Storage
- Compressor Rooms
- Tank Rooms
- Ventilation Ducts
- Sea Vessels
- Refrigeration Systems
- Perimeter Monitoring
- Pulp and Paper
- Heat Treatment
- Breweries
- Chemical Plants

Benefits

- Versatile for any application
- Easy to order
- Low cost
- Simple operation
- Rugged and reliable

Curious about how the latest ammonia gas detection codes apply to your application? Click on this hyperlink for up-to-date requirements:
NH3 detection codes and design specs

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

One sensor for any environment (low cost & easy ordering)

The standard **GG-NH3** sensor is designed to work anywhere, and at a lower base-model price than most competing models. With only one electrochemical sensor for any application; designing, ordering, and maintaining your ammonia detection system is easy. We typically recommend a 0/100 ppm range for all personnel and product protection areas. Higher ranges (0/250, 0/500, 0/1000) are an option to suit higher alarm setpoint areas such as engine rooms.

Designed "Food Industry" tough

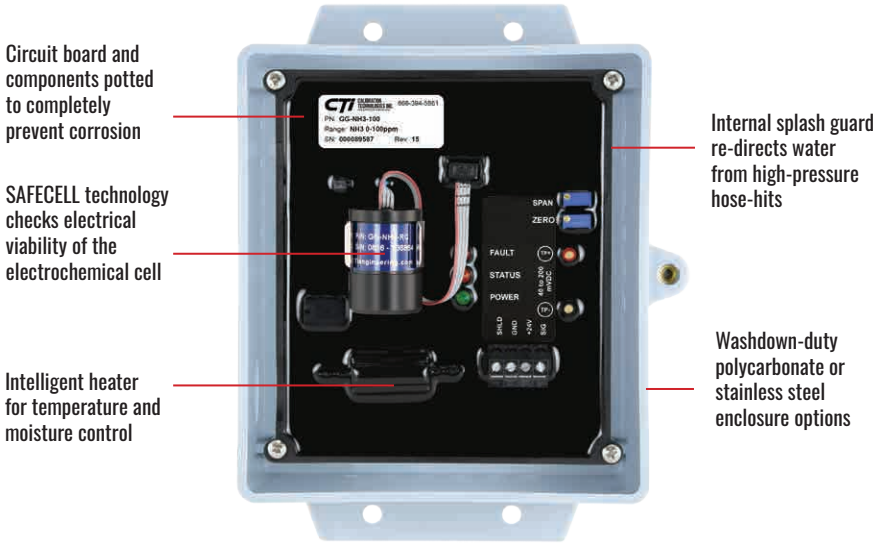
From blast cells to engine rooms, to chemical washdowns of processing areas, the **GG-NH3** is prepared to survive in just about any harsh industrial condition. Every circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and even direct hose-hits from clean-up crews. Stainless steel enclosures are available for applications which require them.

Ordering Information

The **GG-NH3** is delivered calibrated and ready to install. Use the model numbers below to specify your factory calibrated range. Keep in mind, each sensor can be field calibrated to any range listed below.

Order #: GG-NH3-100 (standard)
GG-NH3-250
GG-NH3-500
GG-NH3-1000
GG-NH3-xxx-ST (stainless enclosure)
GG-NH3-xxx-DM (duct mount)
GG-NH3-RC (replacement cell)

Stainless steel enclosure option



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Ammonia (NH3)

Ranges:
0/100 ppm (standard)
0/250 ppm
0/500 ppm
0/1000 ppm
Custom ranges available. Call for more information

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 60 seconds

Accuracy:
+/- 5% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 3% per month

Temperature Range:
-50°F to +122°F (-46°C to +50°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-NH_3-2%

HIGH-RANGE AMMONIA SENSOR

Key Features

- Ammonia selective catalytic bead sensor technology
- Useful for activation of electrical shunt-trip or E-stop up to 20,000 ppm
- Low cost compared to infrared type ammonia sensors
- Industry standard linear 4-20 mA output
- Absolutely no zero drift compared to other catalytic bead type sensors
- Sensing element designed for long life in harsh industrial environments
- Designed to perform in temperatures of -40°F to +120°F
- Accurately monitor explosive NH3 levels for emergency response situations
- Real-time continuous monitoring
- 2-year warranty, including replacement sensor element

Ammonia Compressor Room explosion prevention.
High-range sensor at a low-range price.

The GG-NH3-2% is designed to detect and monitor potentially explosive levels of ammonia vapors in the event of a catastrophic failure. Codes specify to de-energize compressors, pumps, and nc valves at a level not higher than 25% LEL to remove potential ignition sources in the event of a serious ammonia leak. The GG-NH3-2% allows for an earlier trip level of 12.5% LEL.

The GG-NH3-2% utilizes an ammonia selective catalytic bead sensor technology with a matched pair of detector elements. When ammonia vapors enter the sensor, the passive bead remains un-changed while the active detector bead catalyzes the oxidation of gas, generating heat and changing its resistance. The resulting change in resistance is accurately measured across the bridge circuit.

The GG-NH3-2% provides an industry standard linear 4-20 mA output signal proportional to 0-2% (0-20,000 ppm) ammonia. The potted transmitter is compatible with most gas detection systems and PLCs. Long sensor life with minimal span adjustment can be expected in most mechanical room applications. The sensor element is designed for simple calibration and is field replaceable.

Applications

- Compressor Rooms
- Electrical Shutdown
- Heat Treatment
- Tank Rooms
- Sea Vessels
- Refrigeration System
- Cold Storage
- Pulp and Paper
- Breweries
- Refineries
- Chemical Plants

Benefits

- Low cost explosion protection
- Long sensor life (5+ years typical)
- Simple operation & calibration

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Since low-range sensors can't detect high enough and high-range sensors can't detect accurately at low levels, the use of the **GG-NH3-2%** sensor in conjunction with low-range GG-NH3 sensors ensures a second-stage line of defense in the event of a serious ammonia leak. Intended for electrical shutdown, the **GG-NH3-2%** provides protection against potentially explosive situations.

From hot mechanical rooms, to acid washdowns of processing areas, the **GG-NH3-2%** is prepared to survive in just about any harsh industrial condition. Every circuit board is sealed forever in potting compound, protecting sensitive electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews.

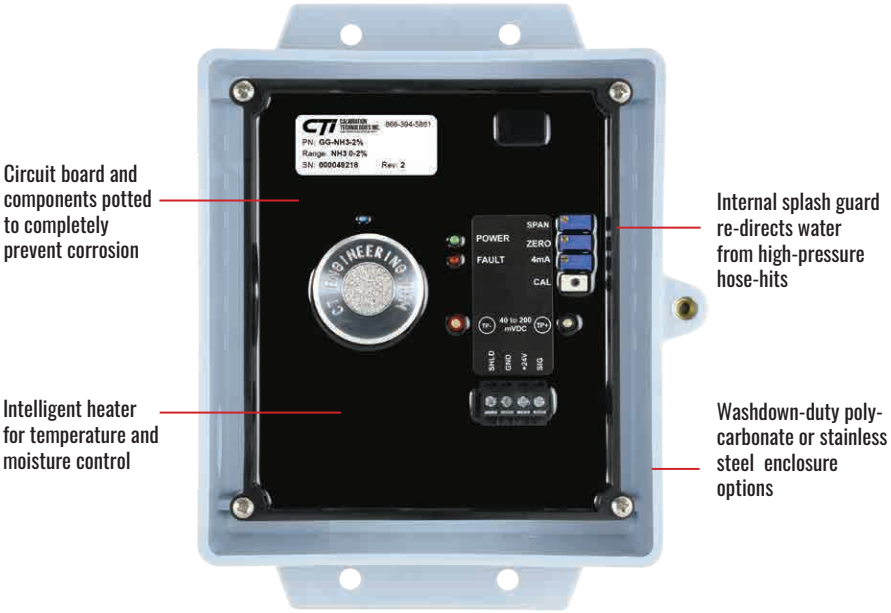
Typical sensor life is 5-7 years, with minimal to no cross-sensitivity to most other gases. Field replaceable sensor element keeps long term maintenance simple and low cost.

Ordering Information

The **GG-NH3-2%** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside the hinged polycarbonate enclosure. Use the model numbers below to order.

Order #: GG-NH3-2%
GG-NH3-2%-ST (stainless enclosure)
GG-NH3-2%-RS (replacement sensor)


replacement sensor element



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 250 mA

Detection Principle:
Catalytic Bead

Detection Method:
Diffusion

Gases:
Ammonia (NH3)

Ranges:
0-2% (20,000 ppm)
0-1% (10,000 ppm)

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 60 seconds

Accuracy:
+/- 5% of value, but dependent on calibration gas accuracy

Zero Drift:
Less than 0.01% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 3% per month

Temperature Range:
-40°F to +120°F (-40°C to +49°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-NH_3-EXP

EXPLOSION-PROOF LOW-RANGE AMMONIA SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- Ammonia specific electrochemical sensor technology
- 0-100 ppm up to 0-1,000 ppm ranges available
- Electronics potted to eliminate internal corrosion
- Industry standard 24 VDC, linear 4-20 mA output
- Operating temperature from 0°F to +140°F
- Accurately monitor NH3 levels for important action levels
- No false alarms from interference gases
- Real-time continuous monitoring for early leak detection

Low-range ammonia detection.
Explosion-proof design.

The GG-NH3-EXP is designed for early leak detection of ammonia vapors in hazardous areas. Most codes specify audio visual alarms at 25 ppm and emergency ventilation at 150 ppm in the event of an ammonia leak. The GG-NH3-250-EXP provides great accuracy at both of these levels.

The GG-NH3-EXP utilizes a proven ammonia specific electrochemical sensor, designed and manufactured in Columbia, MO. Tight quality control and years of testing ensure no false alarms due to cross-sensitivities from other gases, or false alarms from temperature and humidity fluctuations.

The GG-NH3-EXP provides an industry standard linear 4-20 mA output signal proportional to ppm concentration of ammonia. Long sensor life with minimal span adjustment can be expected in most mechanical room applications. The sensor is designed for simple calibration and the sensor head is easily field replaceable.

Applications

- Compressor Rooms
- Refrigeration System
- Heat Treatment
- Tank Rooms
- Sea Vessels
- Chemical Plants
- Cold Storage
- Pulp and Paper
- Breweries

Benefits

- Low cost explosion protection
- No false alarms from interference gases
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Since low-range sensors can not detect high enough and high-range sensors can't detect accurately at low levels, the use of **GG-NH3-EXP** sensors in conjunction with the high-range GG-NH3-2%-EXP sensor ensures a second line of defense in the event of a serious ammonia leak.

The **GG-NH3-EXP** is intended for Horn/Strobe and emergency ventilation activation, and is also useful for alarm outputs such as phone dialers, solenoid valves and other alarm functions.

Typical sensor element life is 3 years, with no cross-sensitivity to other gases. Field replaceable sensor elements keeps long term maintenance simple and low cost. Every circuit board is potted to completely eliminate corrosion to the electronic components and copper tracing on the circuit board. An explosion-proof aluminum enclosure houses the transmitter.

Ordering Information

The **GG-NH3-EXP** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside an explosion-proof enclosure. Use the model numbers below to order.

Order #: GG-NH3-100-EXP
GG-NH3-250-EXP (standard)
GG-NH3-300-EXP
GG-NH3-500-EXP
GG-NH3-1000-EXP
GG-NH3-RC-EXP (replacement sensor)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 50 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Ammonia (NH3)

Ranges:
0-100 ppm
0-250 ppm (standard)
0-300 ppm
0-500 ppm
0-1,000 ppm

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 10 seconds
T90 = less than 30 seconds

Accuracy:
+/- 5% of full-scale

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 2% per month

Temperature Range:
0°F to +140°F (-18°C to +60°C)

Humidity Range:
5% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4 lbs-in

Weight:
3.75 lbs

Dimensions:
6.75" high x 5.25" wide x 4.5" deep

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Warranty:
2-years (including sensor element)

GG-NH_3-2%-EXP

EXPLOSION-PROOF HIGH-RANGE AMMONIA SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- 0/2% (20,000 ppm) range
- No zero signal drift
- Electronics potted to eliminate internal corrosion
- Ammonia selective catalytic bead sensor technology
- Industry standard 24 VDC, linear 4-20 mA output
- Operating temperature from -40°F to +120°F
- Accurately monitor explosive NH3 levels for emergency response situations
- Real-time continuous monitoring for early leak detection
- Sensor element designed for long life in harsh industrial environments

High-range ammonia detection.
Explosion-proof design.

The GG-NH3-2%-EXP is designed to detect and monitor potentially explosive levels of ammonia vapors in the event of a catastrophic failure. Codes specify to de-energize compressors, pumps, and nc valves at a level not higher than 25% LEL to remove potential ignition sources in the event of a serious ammonia leak. The GG-NH3-2%-EXP allows for an earlier trip level of 12.5% LEL.

The GG-NH3-2%-EXP utilizes an ammonia selective catalytic bead sensor technology with a matched pair of detector elements. When ammonia vapors enter the sensor, the passive bead remains unchanged while the active detector bead catalyzes the oxidation of gas, generating heat and changing its resistance. The resulting change in resistance is accurately measured across the bridge circuit.

The GG-NH3-2%-EXP provides an industry standard linear 4-20 mA output signal proportional to 0-2% (20,000 ppm) of ammonia. Long sensor life with minimal span adjustment can be expected in most mechanical room applications. The sensor is designed for simple calibration and the sensor head is easily field replaceable.

Applications

- Compressor Rooms
- Emergency Stop
- Heat Treatment
- Tank Rooms
- Sea Vessels
- Refrigeration System
- Cold Storage
- Pulp and Paper
- Breweries
- Refineries
- Chemical Plants

Benefits

- Low cost explosion protection
- Long sensor life (5-7 years typical)
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Since low-range sensors can't detect high enough and high-range sensors can't detect accurately at low levels, the use of the **GG-NH3-2%-EXP** sensor in conjunction with low-range GG-NH3 sensors ensures a second-stage line of defense in the event of a serious ammonia leak. Intended for emergency stop of all compressors, pumps and normally closed valves, the **GG-NH3-2%-EXP** provides protection against potentially explosive situations.

Typical sensor element life is 5-7 years, with minimal to no cross-sensitivity to most other gases. Field replaceable sensor elements keeps long term maintenance simple and low cost. Every circuit board is potted to completely eliminate corrosion to the electronic components and copper tracing on the circuit board. An explosion-proof aluminum enclosure houses the transmitter.

Ordering Information

The **GG-NH3-2%-EXP** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside an explosion-proof enclosure. Use the model numbers below to order.

Order #: GG-NH3-2%-EXP
GG-NH3-2%-RS-EXP (replacement sensor)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 80 mA

Detection Principle:
Catalytic Bead

Detection Method:
Diffusion

Gases:
Ammonia (NH3)

Ranges:
0-2% (20,000 ppm) (1,000 ppm deadband)

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 60 seconds

Accuracy:
+/- 5% of value

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 2% per month

Temperature Range:
-10°F to +140°F (-23°C to +60°C)

Humidity Range:
5% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4 lbs-in

Dimensions:
6.75" high x 5.25" wide x 4.5" deep

Weight:
3.75 lbs

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Sensor Head:
Stainless steel flameproof enclosure constructed ith an integral stainless steel sinter filter for the safe entry of the atmosphere being detected. ATEX Certificate CESI 01 ATEX 066 U

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-VL2-NH_3

VENT LINE AMMONIA SENSOR

Key Features

- New ammonia-selective cat-bead sensor technology prevents false alarms
- Continuous monitoring of refrigeration system relief valves
- Rugged, long life, and low power catalytic-bead sensor
- Designed for harsh environments (-40°F to +140°F)
- Sensor and preamp in one assembly
- 0-1% NH3 (0-10,000 ppm) detection range
- Ability to detect "weeping valves" to prevent refrigerant loss over time
- Sensor housing allows for easy sensor replacement and calibration
- 316 stainless steel 18 gauge enclosure
- Industry standard 24 VDC, linear 4-20 mA output

From unlikely high-pressure releases to the inevitable "weepers", the CTI Vent Line sensor will notify you ... before your neighbors do.

The GG VL2 utilizes a rugged ammonia-selective catalytic bead sensor technology for fast leak detection and long life. The standard 0-1% NH3 detection range of the GG-VL2-NH3 provides real-time continuous monitoring of ammonia concentrations in your high-pressure relief vent header.

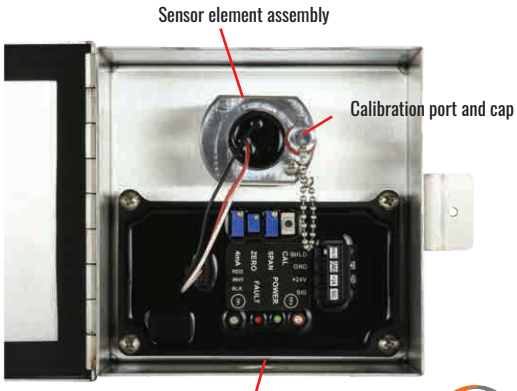
High concentrations of ammonia gases in your vent line are usually indications of a leaking valve or system overpressure. This could mean costly repairs or plant downtime, not to mention loss of refrigerant and regulatory fines. Early detection can save money while also protecting equipment, product, and personnel.

The GG-VL2-NH3 provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. Expect long sensor life and no zero-signal drift over time.

Applications

- Ammonia Refrigeration System Vent Lines

The new design allows for easy and safe calibration, plus component replacement from inside the enclosure. Gone are the days of breaking apart the piping!



Benefits

- Low cost
- Rugged and reliable
- Simple sensor replacement
- Typical sensor life 5 to 7 years

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **GG-VL2-NH3** is designed for outdoor mounting. We recommend that the sensor be mounted 3' to 5' above the roof line on the relief discharge to atmosphere. The 1/2" pipe nipple of the supplied mounting kit should be welded or threaded into the relief discharge. The new enclosure design allows for an easier and safer way to calibrate the sensor and replace the sensor element or transmitter in the future.

Reliable & robust

The stainless steel enclosure provides ultimate protection against weather and will stay corrosion free. Every transmitter circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion.

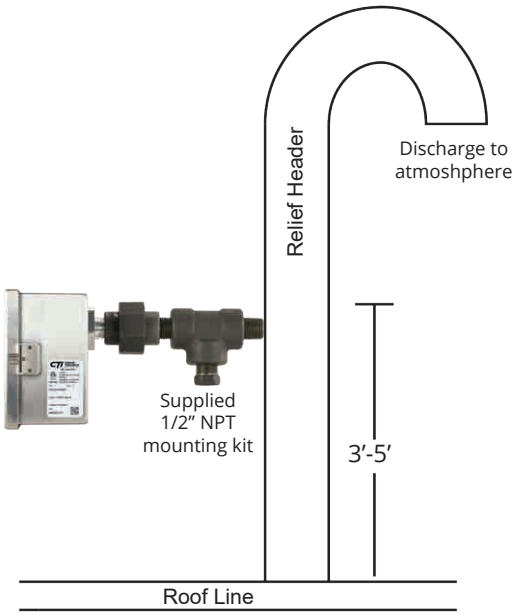
Since the catalytic-bead sensor is designed to endure the coldest of winters and hottest of summers, the output signal is not affected by extreme temperature variations. The life of the sensor is also not affected by the occasional exposure to high concentrations of ammonia gas.

Ordering Information

The **GG-VL2-NH3** sensor kit is delivered calibrated and ready to install. The kit includes the transmitter/sensor/enclosure assembly and mounting kit. Use the model numbers below to order.

Order #: GG-VL2-NH3
GG-VL2-NH3-RS (replacement sensor)

replacement sensor element



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 80 mA

Detection Principle:
Catalytic Bead (NH3 selective)

Detection Method:
Diffusion

Gases:
Ammonia (NH3)

Ranges:
0/1% (0 - 10,000 ppm) with 0.25% NH3 deadband

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 2% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T90 = less than 30 seconds

Accuracy:
+/- 2% of full-scale, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 1% of full-scale per month, non-cumulative

Temperature Range:
-40°F to +140°F (-40°C to +60°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 4X 316 stainless steel (316) gasketed housing. Captive screw in hinged lid. For non-classified areas

Dimensions:
4.8" high x 4.72" wide x 3.35" deep

Weight:
5 lbs (includes mounting kit)

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-CO_2 CARBON DIOXIDE SENSOR

Key Features

- CO2 specific infrared sensor technology
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant sensor enclosures
- Sensor designed to adapt to any harsh environment from -60°F to +120°F
- Accurately monitor OSHA's PEL and STEL setpoints for personnel protection
- Real-time continuous monitoring
- 0-3% range (30,000 ppm) allows setpoints at both critical levels (0.5% & 3.0%)
- 2-year warranty

Industrial strength CO2 monitoring for any harsh environment

The GG-CO2 utilizes proven infrared sensor technology for fast and accurate leak detection. With no moving parts and no cells to replace, the GG-CO2 provides real-time continuous monitoring and inexpensive long term operating costs.

The GG-CO2 is carbon dioxide specific, so false alarms from floor cleaners and food off-gassing is non-existent. The output signal is also not affected by moisture or drastic temperature variations such as washdowns, defrost cycles, etc.

The GG-CO2 provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The high-quality polycarbonate or optional stainless steel enclosures offer excellent chemical corrosion protection and high impact resistance.

Applications

- Wineries
- Food Processing areas
- Indoor Air Quality
- Bottling Plants
- Breweries
- Refrigeration Systems
- Perimeter Monitoring
- Chemical Plants
- Livestock/Poultry stunning

Benefits

- Versatile for any application
- Low cost
- Simple operation
- Rugged and reliable

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The standard **GG-CO2** sensor comes equipped with a corrosion proof enclosure and adaptive temperature control designed to work anywhere. With only one sensor for any application; designing, ordering, and maintaining your CO2 monitoring system is easy. The 0/3% range (0/30,000 ppm) is broad enough to handle OSHA's recommended alarm levels (0.5% and 3.0%), providing plenty of upper range detection for high output systems.

Designed "Food Industry" tough

The **GG-CO2** is prepared to survive in just about any harsh industrial condition. Every circuit board is sealed forever in potting compound, which protects electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews. An 18 ga stainless steel sensor enclosure is also available for applications that require it.

Ordering Information

The **GG-CO2** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #:
GG-CO2-1%
GG-CO2-3% (standard)
GG-CO2-5%
GG-CO2-20%
GG-CO2-100%
GG-CO2-xxx-ST (stainless enclosure)
GG-CO2-xxx-DM (duct mount)

Standard polycarbonate enclosure

Mounting flanges for easy installation

Splashguard redirects water from hose-hits

Single-screw door latch for easy access

Completely potted circuit board for corrosion protection

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
(NDIR) Non-Dispersive Infrared

Detection Method:
Diffusion

Gas:
Carbon Dioxide (CO2)

Range:
0/1%
0/3% (standard)
0/5%
0/20%
0/100%

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 60 seconds

Accuracy:
+/- 2% of value, but dependent on calibration gas accuracy

Zero Drift:
Less than 0.5% of full-scale per month, non-cumulative

Span Drift:
Less than 1% of full-scale per month, non-cumulative

Temperature Range:
-60°F to +120°F (-51°C to +49°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.35 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years

GG-VL2-CO_2

VENT LINE CARBON DIOXIDE SENSOR

Key Features

- Carbon dioxide-selective infrared sensor technology prevents false alarms
- Continuous monitoring of refrigeration system relief valves
- Rugged, long life, and low power catalytic-bead sensor
- Designed for harsh environments (-40°F to +140°F)
- Sensor and preamp in one assembly
- 0-5% CO2 (0-50,000 ppm) detection range
- Ability to detect "weeping valves" to prevent refrigerant loss over time
- Sensor housing allows for easy sensor replacement and calibration
- 316 stainless steel 18 gauge enclosure
- Industry standard 24 VDC, linear 4-20 mA output

From unlikely high-pressure releases to the inevitable "weepers", the CTI Vent Line sensor will notify you ... before your neighbors do.

The GG VL2 utilizes a rugged infrared sensor technology for fast leak detection and long life. The standard 0-5% CO2 detection range of the GG-VL2-CO2 provides real-time continuous monitoring of carbon dioxide concentrations in your high-pressure relief vent header.

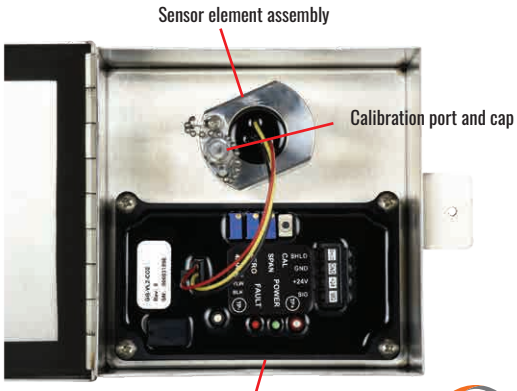
High concentrations of carbon dioxide gases in your vent line are usually indications of a leaking valve or system overpressure. This could mean costly repairs or plant downtime, not to mention loss of refrigerant and regulatory fines. Early detection can save money while also protecting equipment, product, and personnel.

The GG-VL2-CO2 provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. Expect long sensor life and no zero-signal drift over time.

Applications

- Refrigeration System Vent Lines
- CO2 process systems

Easy and safer calibration and sensor replacement with all access within sensor enclosure



Benefits

- Low cost
- Rugged and reliable
- Simple sensor replacement
- Typical sensor life 5 to 7 years

CTi GAS DETECTION SPECIALISTS

SGS C US

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **GG-VL2-CO2** is designed for indoor or outdoor mounting. It is recommended that the sensor be mounted 3′ to 5′ above the roof line on the relief discharge to atmosphere. However, the sensor can be installed indoors as long as the 1/2″ plug remains installed. The further the sensor is from a fresh leak source, the longer the CO2 gas will linger which can result in a long recovery time from a CO2 discharge or weeping valve.

The 1/2″ pipe nipple of the supplied mounting kit should be welded or threaded to the relief discharge. The sensor is accessible from inside the enclosure, so replacement is easy.

Reliable & robust

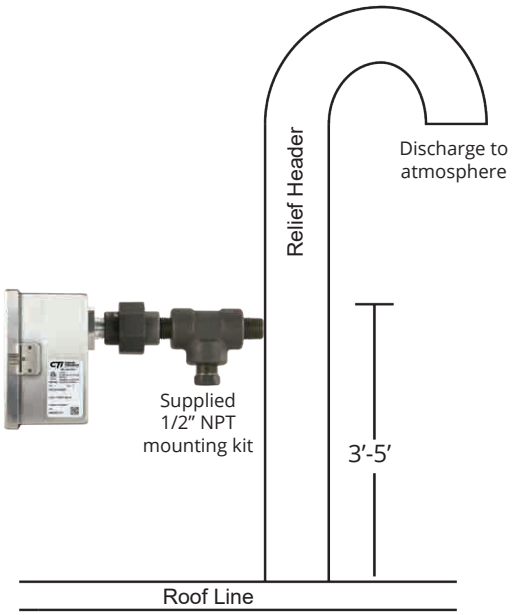
Every transmitter circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. The life of the sensor is not affected by exposure to refrigerant gases or extreme temperature variations.

Ordering Information

The **GG-VL2-CO2** sensor kit is delivered calibrated and ready to install. The kit includes the transmitter/sensor/enclosure assembly and mounting kit. Use the model numbers below to order.

Order #: GG-VL2-CO2
GG-VL2-CO2-RS (replacement sensor)

replacement sensor element



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 60 mA

Detection Principle:
Infrared (NDIR dual beam)

Detection Method:
Diffusion

Gases:
Carbon Dioxide (CO2)

Ranges:
0/5% (0 - 50,000 ppm)

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 3% of full-scale

Repeatability:
+/- 2% of full-scale

Response Time:
T90 = less than 30 seconds

Accuracy:
+/- 2% of full-scale, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 2% of full-scale per month, non-cumulative

Temperature Range:
-40°F to +140°F (-40°C to +60°C)

Humidity Range:
0% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 4X 316 stainless steel (316) gasketed housing. Captive screw in hinged lid. For non-classified areas

Dimensions:
4.8″ high x 4.72″ wide x 3.35″ deep

Weight:
4 lbs (includes mounting kit)

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-CO

CARBON MONOXIDE SENSOR

Key Features

- CO specific electrochemical sensor technology. No false alarms
- 5-year cell life average in most applications
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant polycarbonate sensor enclosure
- Intelligent-design enclosure temperature control for improved cell life
- Sensor designed to adapt to any harsh environment from -40°F to +120°F
- Accurately monitor OSHA's PEL, STEL, and IDLH setpoints
- Real-time continuous monitoring for early warning.
- Detection range of 0-200 ppm Carbon Monoxide

Long cell life. Simple operation.
Rugged enough to survive the harshest industrial environments.

The GG-CO utilizes proven electro-chemical sensor technology for fast and accurate leak detection. The standard detection range of the GG-CO provides real-time continuous monitoring of carbon monoxide concentrations accurately down to 10 ppm, with no false alarms.

Each GG-CO sensor comes equipped with an intelligent internal temperature control designed to perform in the harshest of areas. The controlled environment provides optimum moisture control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-CO provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature variations such as washdowns, defrost cycles, etc. Expect an average of 5-years of cell life for most applications.

Applications

- Food Processing areas
- Warehouses
- Air Quality Monitoring
- Tank Rooms
- Ventilation Ducts
- Breweries
- Parking Garages
- Modified Atmosphere Packaging
- Bottling Plants
- Chemical Manufacturing

Benefits

- Low cost
- Simple operation
- Rugged and reliable

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Easy ordering

The standard **GG-CO** sensor is designed to work anywhere, and at a lower base-model price than most competing models. With only one sensor for any application; designing, ordering, and maintaining your carbon monoxide monitoring system is simple.

Designed "Food Industry" tough

Developed for chemical washdowns of processing areas, the **GG-CO** is prepared to survive in just about any harsh industrial condition. Each circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and even direct hose-hits from clean-up crews.

Ordering Information

The **GG-CO** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #:
GG-CO-200 (standard)
GG-CO-200-ST (stainless enclosure)
GG-CO-RC (replacement cell)
GG-CO-200-DM (duct mount)
GG-CO-H-200 (H2 resistant)


Stainless steel enclosure option

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Carbon Monoxide (CO)

Ranges:
0/200 ppm (standard)
Custom ranges available. Call for more information

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- .5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 60 seconds

Accuracy:
+/- 5% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 2% per month

Temperature Range:
-40°F to +122°F (-40°C to +50°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4.4 in-lbs

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-CO-EXP

EXPLOSION-PROOF CARBON MONOXIDE SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- Carbon Monoxide specific electrochemical sensor technology
- 0-200 ppm factory range
- Electronics potted to eliminate internal corrosion
- Industry standard 24 VDC, linear 4-20 mA output
- Operating temperature from -40°F to +122°F
- Accurately monitor CO levels for important action levels
- No false alarms from interference gases
- Real-time continuous monitoring for early CO detection

Carbon monoxide gas detection.
Explosion-proof design.

The GG-CO-EXP is designed for detection of carbon monoxide vapors in hazardous areas. The standard detection range of 0-200 ppm provides real-time continuous monitoring of concentrations accurately down to 20 ppm with no false alarms.

The GG-CO-EXP utilizes a proven arbon monoxide specific electrochemical sensor for detecting poisonous CO gas concentrations. No false alarms due to cross-sensitivities from other gases, and no false alarms from temperature or humidity fluctuations.

The GG-CO-EXP provides an industry standard linear 4-20 mA output signal proportional to ppm concentration of carbon monoxide. Long sensor life with minimal span adjustment can be expected in most applications. The sensor is designed for simple calibration and the sensor head is easily field replaceable.

Applications

- Food Processing areas
- Warehouses
- Air Quality Monitoring
- Tank Rooms
- Ventilation Ducts
- Breweries
- Parking Garages
- Modified Atmosphere Packaging
- Bottling Plants
- Chemical Manufacturing

Benefits

- Low cost explosion protection
- No false alarms from interference gases
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Carbon monoxide gas is approximately the same weight as air and will mix evenly with the air in all spaces. For personnel protection, mount the sensor at a height in the breathing zone of the employees. It would typically be 4 to 5 feet off the ground, which also allows easy access. As a general rule of thumb, try to mount sensors within 30 feet of potential CO sources.

The **GG-CO-EXP** is intended for Horn/Strobe and ventilation activation, and is also useful for alarm outputs such as phone dialers and other alarm functions.

Typical sensor element life is 5+ years, with only a 20:1 cross-sensitivity to hydrogen. Field replaceable sensor element keeps long term maintenance simple and low cost. Every circuit board is potted to completely eliminate corrosion to the electronic components and copper tracing on the circuit board. An explosion-proof aluminum enclosure houses the transmitter.

Ordering Information

The **GG-CO-EXP** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside an explosion-proof enclosure. Use the model numbers below to order.

Order #: GG-CO-200-EXP
GG-CO-RC-EXP (replacement sensor)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 50 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Carbon Monoxide (CO)

Ranges:
0-200 ppm

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 10 seconds
T90 = less than 20 seconds

Accuracy:
+/- 5% of full-scale

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 2% per month

Temperature Range:
-40°F to +122°F (-40°C to +50°C)

Humidity Range:
5% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4.4 in-lbs

Weight:
3.75 lbs

Dimensions:
6.75" high x 5.25" wide x 4.5" deep

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Warranty:
2-years (including sensor element)

GG-CL_2-B

CHLORINE SENSOR

Key Features

- Chlorine specific electrochemical sensor technology
- Electronics completely potted to prevent corrosion in harsh environments
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant polycarbonate sensor enclosure
- Intelligent-design enclosure temperature control for improved cell life
- Sensor designed to adapt to any harsh environment from -50°F to +122°F
- Real-time continuous monitoring for early detection of toxic concentrations
- Accurately monitor OSHA's PEL, STEL, and IDLH setpoints
- Detection range of 0-5 ppm Cl2

Toxic chlorine gas detection designed 'food industry' tough.

The GG-CL2-B utilizes proven electrochemical sensor technology for fast and accurate detection. The standard detection range of the GG-CL2-B provides real-time continuous monitoring of chlorine concentrations accurately down to 0.5 ppm, with no false alarms.

The intelligent internal temperature control of the GG-CL2-B provides optimum temperature control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-CL2-B provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature variations or other atmospheric conditions.

Applications

- Process Areas
- Tank Storage
- Injection Systems
- Indoor Pools
- Sanitizing Systems
- Air Monitoring

Benefits

- Low cost
- Simple operation
- Rugged and reliable

CTi GAS DETECTION SPECIALISTS

SGS C US

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The standard **GG-CL2-B** sensor is designed to work anywhere, and at a lower base-model price than most competing models. With only one electrochemical sensor for any application; designing, ordering, and maintaining your chlorine detection system is simple.

Designed "Food Industry" tough

The **GG-CL2-B** is prepared to survive in just about any harsh industrial condition, including acid washdown of processing areas. Every circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews.

Ordering Information

The **GG-CL2-B** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #: GG-CL2-B-5 (standard)
GG-CL2-B-5-ST (stainless enclosure)
GG-CL2-B-RC (replacement cell)
GG-CL2-B-5-DM (duct mount)

Stainless steel enclosure option

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Chlorine (CL2)

Ranges:
0-5 ppm

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 60 seconds
T90 = less than 90 seconds

Accuracy:
+/- 5% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 3% per month

Temperature Range:
-50°F to +122°F (-45.6°C to +50°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including replacement cell)

GG-CL_2-EXP

EXPLOSION-PROOF CHLORINE SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- Chlorine selective electrochemical sensor technology
- 0-5 ppm factory range
- Electronics potted to eliminate internal corrosion
- Industry standard 24 VDC, linear 4-20 mA output
- Operating temperature from -4°F to +122°F
- Accurately monitor OSHA's TWA & STEL levels for personnel protection
- No false alarms from interference gases
- Real-time continuous monitoring for early leak detection

Toxic chlorine detection.
Explosion-proof design.

The GG-CL2-EXP is designed for detection of chlorine gas in hazardous areas. The standard detection range of 0-5 ppm provides real-time continuous monitoring of concentrations accurately down to 0.5 ppm with no false alarms.

The GG-CL2-EXP utilizes a proven chlorine specifc electrochemical sensor for detecting toxic chlorine gas concentrations. These toxic fumes can be from storage tanks, sanitizing or other sources. No false alarms due to cross-sensitivities from other gases, and no false alarms from temperature or humidity fluctuations.

The GG-CL2-EXP provides an industry standard linear 4-20 mA output signal proportional to ppm concentration of chlorine. Long sensor life with minimal span adjustment can be expected in most applications. The sensor is designed for simple calibration and the sensor head is easily field replaceable.

Applications

- Compressor Rooms
- Refrigeration System
- Heat Treatment
- Tank Rooms
- Sea Vessels
- Chemical Plants
- Cold Storage
- Pulp and Paper
- Breweries

Benefits

- Low cost explosion protection
- No false alarms from interference gases
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Chlorine gas is more than twice as heavy as air and will tend to accumulate in low-lying areas in poorly ventilated rooms. For optimum personnel protection (representative concentration reading that an employee would be exposed to), mount the sensor at a height in the breathing zone of the employees. It would typically be no higher than 4 to 5 feet off the ground, which also allows easy access. As a general rule of thumb, try to mount sensors within 30 feet of potential CL2 leak sources.

The **GG-CL2-EXP** is intended for Horn/Strobe and ventilation activation, and is also useful for alarm outputs such as phone dialers and other alarm functions.

Typical sensor element life is 3 years, with minimal cross-sensitivity to other gases. Field replaceable sensor element keeps long term maintenance simple and low cost. Every circuit board is potted to completely eliminate corrosion to the electronic components and copper tracing on the circuit board. An explosion-proof aluminum enclosure houses the transmitter.

Ordering Information

The **GG-CL2-EXP** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside an explosion-proof enclosure. Use the model numbers below to order.

Order #: GG-CL2-5-EXP
GG-CL2-RC-EXP (replacement sensor)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 50 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Chlorine (CL2)

Ranges:
0-5 ppm (standard)

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 60 seconds

Accuracy:
+/- 5% of full-scale

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 3% per month

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
5% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4 lbs-in

Weight:
3.75 lbs

Dimensions:
6.75" high x 5.25" wide x 4.5" deep

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Warranty:
2-years (including sensor element)

GG-LEL2

COMBUSTIBLE GAS SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- Useful for activation of electrical shunt-trip, ventilation, or fuel supply shutoff
- Industry standard linear 4-20 mA output
- Calibrated for desired combustible gas 0-100% LEL (specify target gas)
- Sensing element designed for long life in harsh industrial environments
- Designed to perform in temperatures of -40°F to +140°F
- Real-time continuous monitoring

Explosion prevention.
The GG-LEL2 is the last line of defense against catastrophic failure.

The GG-LEL2 utilizes catalytic-bead sensor technology with a matched pair of detector elements. When combustible vapors enter the sensor, the passive bead remains unchanged while the active detector bead catalyzes the oxidation of gas, generating heat and changing its resistance. The resulting change in resistance is accurately measured across the bridge circuit.

The GG-LEL2 sensor provides an industry standard linear 4-20 mA output signal proportional to 0-100% LEL of the target gas. The transmitter is compatible with most gas detection systems and PLCs.

Long sensor life with minimal span adjustment can be expected in most applications. The sensor is designed for simple calibration and is field replaceable.

Applications

- Mechanical Rooms
- Boiler Rooms
- Heat Treatment
- Tank Rooms
- Refrigeration Systems
- Cold Storage
- Pulp and Paper
- Chemical Plants
- Breweries
- Refineries
- Maintenance Garages
- Process Areas

Benefits

- Low cost explosion protection
- Long sensor life (5-7 yrs typical)
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **GG-LEL2** is designed to detect and monitor potentially explosive levels of combustible gas vapors in air within the range of 0-100% LEL.

A ¾" NPT threaded conduit entrance is provided on the top of the transmitter housing. Mounting tabs are provided for support of the **GG-LEL2**. Long sensor life can be expected in most mechanical room applications with a typical sensor life of 5-8 years. Field replaceable sensor element keeps long term maintenance simple and low cost.

Measurable gases	Order # suffix
Ethane	C2H6
Ethylene	C2H4
Hydrogen	H2
Methane	CH4
N-butane	C4H10
N-hexane	C6H14
N-pentane	C5H12
Propane	C3H8
Ethanol	C2H5OH
Methanol	CH3OH
Acetone	C3H6O
Isopropanol	C3H8O
Ethyl Acetate	C4H8O2

other gases not listed

Ordering Information

The **GG-LEL2** is delivered calibrated 0-100% LEL for your target gas and ready to install. The assembly includes sensor and transmitter mounted inside the explosion proof housing. Use the model numbers below to order.

Order #: GG-LEL2-xxx (specify target gas)
GG-LEL2-NH3-RS (replacement sensor for ammonia)
GG-LEL2-RS (replacement sensor for all other gases)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 80 mA

Detection Principle:
Catalytic-Bead

Detection Method:
Diffusion

Gases:
Combustible gases listed above

Range:
0/100% LEL

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 20 seconds
T90 = less than 45 seconds

Accuracy:
+/- 5% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.3% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 1% per month

Temperature Range:
-40°F to +140°F (-40°C to +60°C)

Humidity Range:
0% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Weight:
3.5 lbs

Warranty:
2-years (including replacement sensor head)

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas.

Sensor Head:
Stainless steel flameproof enclosure constructed with an integral stainless steel sinter filter for the safe entry of the atmosphere being detected. ATEX Certificate CESI 01 ATEX 066 U

Warranty:
2-years (including sensor element)

GG-R

SYNTHETIC REFRIGERANT SENSOR

Key Features

- R22, R134a, R404a, R507a, R448a and other refrigerant gases detected
- Gas-specific infrared sensor technology
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant sensor enclosure
- Sensor designed to adapt to any harsh environment from -50°F to +120°F
- Real-time continuous monitoring
- 0-500 ppm and 0-1,000 ppm ranges available
- Self-diagnostics of sensor elements for fail-safe operation
- Meets California Air Resources Board specifications with 0-500 ppm range

HFO's, HFC's, CFC's and HCFC's.
Industrial strength refrigerant leak detection.

The GG-R utilizes proven infrared sensor technology for fast and accurate leak detection. With no moving parts and no cells to replace, the GG-R provides real-time continuous monitoring and inexpensive long-term operating costs.

The GG-R is refrigerant gas specific, so false alarms from floor cleaners and food off-gassing is nonexistent. The output signal is not affected by EMI/RFI, or moisture. R11, R22, R134, R507, R404, R407, R410, R448, R422D are a few common refrigerants the GG-R sensor can detect.

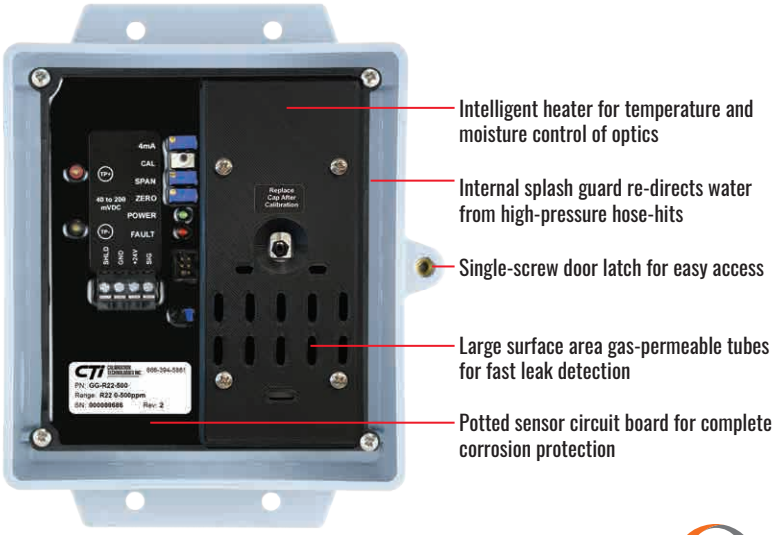
The GG-R provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The high-quality polycarbonate enclosure offer excellent chemical corrosion protection and high impact resistance.

Applications

- Refrigeration Systems
- Food Processing areas
- Perimeter Monitoring
- Pharmaceuticals
- Sea Vessels
- Bottling Plants
- Breweries
- Ice Rinks
- Supermarkets
- Compressor Rooms

Benefits

- Extremely long life
- Low cost of ownership
- Simple operation
- Rugged and reliable



CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The standard **GG-R** sensor comes equipped with a corrosion proof enclosure. With only one sensor for any application; designing, ordering, and maintaining your refrigerant monitoring system is simple. The 0-500 ppm model provides the highest accuracy and lowest leak detection ability starting at 10 ppm, to meet the California Air Resources Board specifications.

The adaptive temperature control system allows the **GG-R** to automatically adjust to temperature fluctuations. Each circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews.

Ordering Information

The **GG-R** is delivered calibrated and ready to install. Use the model numbers below to order. Add "-ST" for stainless steel enclosure.

Order #:	*0-500 ppm	0-1000 ppm
	GG-R123-500	GG-R123-1000
	GG-R123a-500	GG-R123a-1000
	GG-R1234YF-500	GG-R1234YF-1000
	GG-R1234ZE-500	GG-R1234ZE-1000
	GG-R134a-500	GG-R134a-1000
	GG-R22-500	GG-R22-1000
	GG-R245FA-500	GG-R245FA-1000
	GG-R404A-500	GG-R404A-1000
	GG-R407A-500	GG-R407A-1000
	GG-R407C-500	GG-R407C-1000
	GG-R407F-500	GG-R407F-1000
	GG-R410A-500	GG-R410A-1000
	GG-R422D-500	GG-R422D-1000
	GG-R434A-500	GG-R434A-1000
	GG-R438A-500	GG-R438A-1000
	GG-R448A-500	GG-R448A-1000
	GG-R449A-500	GG-R449A-1000
	GG-R450A-500	GG-R450A-1000
	GG-R452A-500	GG-R452A-1000
	GG-R454A-500	GG-R454A-1000
	GG-R455A-500	GG-R455A-1000
	GG-R507A-500	GG-R507A-1000
	GG-R513A-500	GG-R513A-1000
	GG-R514A-500	GG-R514A-1000

Stainless steel enclosure option

*Meets CARB specifications.

Other gases available. Contact us if your target gas is not listed.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 330mA

Detection Principle:
NDIR (Non-Dispersive Infrared)

Detection Method:
Diffusion

Gases:
R11, R22, R123, R134a, R245FA, R407, R404, R410, R422D, R434, R438, R448, R449, R452, R454, R507, R123ZD, R1234ZE, R1234YF
Contact us for more HFO/HFC/CFC/HCFC gases

Ranges:
0-500 ppm
0-1,000 ppm

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 3% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 90 seconds
T90 = less than 180 seconds

Accuracy:
+/- 2% of full-scale

Zero Drift:
Less than 1% of full-scale per month, non-cumulative

Span Drift:
Less than 1% of full-scale per month, non-cumulative

Temperature Range:
-50°F to +120°F (-45°C to +49°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas.

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4.5 lbs-in

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.6 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years

GG-VL2-R

VENT LINE
SYNTHETIC REFRIGERANT SENSOR

Key Features

- Detects R22, R134a, R404A, R507A, and other CFC / HFC / HCFC gases
- Continuous monitoring of refrigeration system relief valves
- Industry standard 4-20 mA output
- Durable and long life solid-state sensor
- Corrosion, weather, and chemical resistant transmitter enclosure
- Temperature compensation for harsh environments from -46°F to +140°F
- Sensor and preamp in one assembly - only one cable required
- 0-1% (0-10,000 ppm) with a 50% (5000 ppm) deadband
- Innovative sensor housing allows for simple & low cost sensor replacement
- New design allows for easy calibration from inside the enclosure

---

Detection of expensive refrigerant loss.
The new GG-VL2-R keeps a close eye on your SRV's.

The GG-VL2-R utilizes a rugged solid-state sensor technology for fast leak detection and long life. The standard detection range of the GG-VL2-R provides real-time continuous monitoring of refrigerant leaks in your high-pressure relief vent header.

High concentrations of refrigerant gases in your vent line are usually indications of a leaking valve or system overpressure. This could mean costly repairs or plant downtime, not to mention loss of refrigerant. Early detection can save money and protect equipment and personnel.

The GG-VL2-R sensor provides an industry standard 4-20 mA output signal compatible with most gas detection systems and PLCs. Expect long sensor life and no zero-signal drift over time. Minimum maintenance requirements include only a calibration twice per year.

Applications

- Refrigeration System Vent Lines (outdoor installations only)

Easy and safer calibration and sensor replacement with all access within sensor enclosure

Benefits

- Low cost
- Rugged and reliable
- Easy to calibrate
- Simple sensor replacement
- Typical sensor life 5 years

CTi GAS DETECTION SPECIALISTS

SGS C US

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **GG-VL2-R** sensor is designed for outdoor mounting at 3' to 5' above the roof line on the relief discharge to atmosphere. The ½" pipe nipple of the supplied mounting kit should be welded or threaded to the relief discharge.

The 304 stainless steel enclosure provides excellent corrosion protection against any type of weather. Every transmitter circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. Built-in temperature compensation helps prevent false alarms during the coldest of winters and hottest of summers. The life of the sensor is minimally affected by exposure to refrigerant gases.

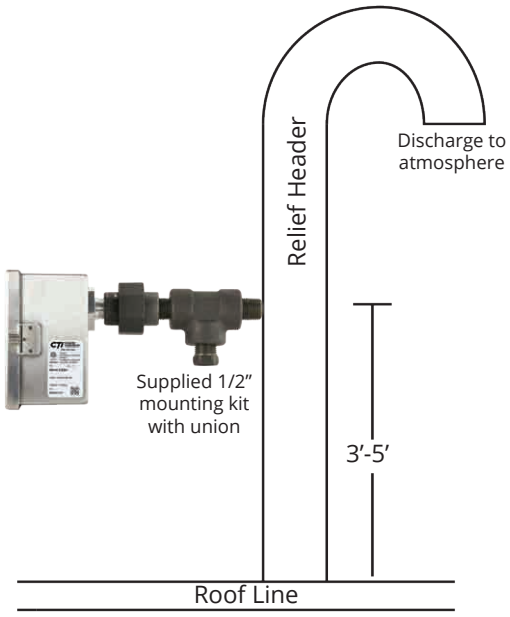
The **GG-VL2-R** is intended to be a "leak detector" and not an instrument for calculating refrigerant loss due to the non-linear characteristics of the solid-state sensor technology.

R507A 1% is one of the few halo carbons that is easily obtainable. Since the **GG-VL2-R** sensor element has similar sensitivities to most halo carbons, we recommend using R507A 1% as calibration gas.

Ordering Information

The GG-VL2-R is factory calibrated 0-1% full-scale with R507A calibration gas and has a similar sensitivity to most other halocarbons. If necessary, it can be field calibrated with the target gas (at 1% concentrations).

Order #: GG-VL2-R
GG-VL2-R-RS (replacement sensor)



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 85 mA

Detection Principle:
Solid-state

Detection Method:
Diffusion

Gases:
R22, R134a, R404A, R507A, R407C, R410A, R449A, R422D, R401A, R402, R245fa
Many other halo carbon gases available - call for more information

Ranges:
0/1% (10,000 ppm) with a 50% deadband

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Repeatability:
+/- 10% of full-scale

Response Time:
T90 = less than 30 seconds

Accuracy:
+/- 25% at full-scale

Zero Drift:
Less than 1% of full-scale per year, non-cumulative

Span Drift:
Less than 25% of full-scale per year, non-cumulative

Temperature Range:
-46°F to +140°F (-43°C to +60°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 4X 316 stainless steel gasketed housing. Captive screw in hinged lid. For non-classified areas

Dimensions:
5.48" high x 4.9" wide x 2.93" deep

Weight:
5 lbs (includes mounting kit)

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-H_2-EC

HYDROGEN SENSOR

Key Features

- Hydrogen specific electrochemical sensor technology. Absolutely no false alarms
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant polycarbonate sensor enclosure
- Intelligent-design enclosure temperature control for improved cell life
- Sensor designed to adapt to any harsh environment from -20°F to +120°F
- Real-time continuous monitoring for early detection of explosive concentrations
- Detection ranges of 0-10,000 ppm (25% LEL) and 0-2,000 ppm (5% LEL) H2
- 2-year warranty

Energy savings plus prevention of explosive hydrogen gas build-up.
The perfect solution for battery room ventilation.

The GG-H2-EC utilizes proven electrochemical sensor technology for fast and accurate detection. The standard detection range provides real-time continuous monitoring of hydrogen concentrations accurately down to 200 ppm (0-2,000 ppm range), with no false alarms.

The intelligent internal temperature control of the GG-H2-EC provides optimum temperature control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-H2-EC provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature variations or other atmospheric conditions.

Applications

- Battery Charging Rooms
- Steel Industry
- Refineries
- Perimeter Monitoring
- Heat Treatment
- Sea Vessels

Benefits

- Simple operation
- Energy savings
- Rugged and reliable

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The International Fire Code section 608.6.1 states "*the ventilation system shall be designed to limit the maximum concentration of hydrogen to 1%* (25%LEL) *of the total volume of the room*" or "*continuous ventilation shall be provided at a rate of not less than 1 cfm per square foot of floor area in the room*".

When using the **GG-H2-EC** in combination with the CTI controller line (or any other 4/20 mA input device), exhaust fan activation will prevent dangerous accumulation of explosive hydrogen gas concentrations. Since continuous ventilation can add up to huge costs, activating exhaust fans only when necessary can amount to thousands of dollars a year in energy savings for your company.

Every circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews.

Ordering Information

The **GG-H2-EC** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #: GG-H2-EC-10000 (standard)
GG-H2-EC-2000
GG-H2-EC-xxxx-ST (stainless enclosure)
GG-H2-EC-xxxx-DM (duct mount)
GG-H2-EC-RC (replacement cell)

Stainless steel enclosure option

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Hydrogen (H2)

Ranges:
0/2,000 ppm (0.2% Vol (5% LEL))
0/10,000 ppm (1.0% Vol (25% LEL))

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 10 seconds
T90 = less than 30 seconds

Accuracy:
+/- 5% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 3% per month

Temperature Range:
-20°F to +120°F (-28.9°C to +49°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

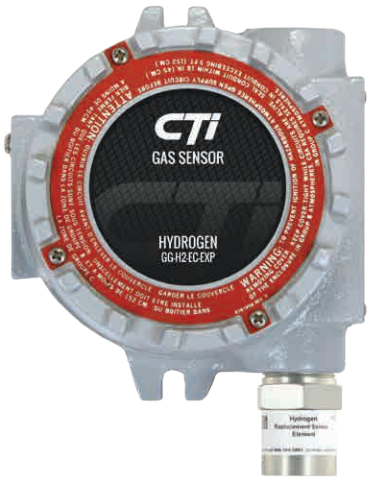
Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-H_2-EC-EXP

EXPLOSION-PROOF HYDROGEN SENSOR



Key Features

- Explosion-proof enclosure for classified areas
- Hydrogen specific electrochemical sensor technology
- Electrochemical Sensor unharmed from sulfur off-gasing
- 0-2,000 ppm and 0-10,000 ppm ranges
- Electronics potted to eliminate internal corrosion
- Industry standard 24 VDC, linear 4-20 mA output
- Operating temperature from -4°F to +122°F
- Accurately monitor H2 levels for personnel protection
- No false alarms from interference gases
- Real-time continuous monitoring for early leak detection

Avoid potentially explosive hydrogen gas buildup.
Poison-proof, explosion-proof design.

The GG-H2-EC-EXP is designed for detection of potentially explosive hydrogen gas in hazardous areas. The standard detection range of 0-10,000 ppm provides accurate concentrations and the ability to react before the levels reach the LEL. An alternate range of 0-2,000 ppm is also available for other applications.

The GG-H2-EC-EXP utilizes a proven hydrogen specific electrochemical sensor for detecting hydrogen gas concentrations. No false alarms due to cross-sensitivities from other gases, and no false alarms from temperature or humidity fluctuations.

The GG-H2-EC-EXP provides an industry standard linear 4-20 mA output signal proportional to ppm concentration of hydrogen. Long sensor life with minimal span adjustment can be expected in most battery room applications. The sensor is designed for simple calibration and the sensor head is easily field replaceable.

Applications

- Battery Charging Rooms
- Steel Industry
- Refineries
- Perimeter Monitoring
- Heat Treatment
- Sea Vessels

Benefits

- Low cost explosion protection
- No false alarms from interference gases
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The International Fire Code section 608.6.1 states "*the ventilation system shall be designed to limit the maximum concentration of hydrogen to 1%* (25%LEL) *of the total volume of the room*" or "*continuous ventilation shall be provided at a rate of not less than 1 cfm per square foot of floor area in the room*".

Hydrogen gas is much lighter than air and will tend to accumulate in areas by the ceiling. For optimum detection, mount the sensor at a height not lower than a few feet from the highest point in the room, keeping accessibility in mind. As a general rule of thumb, try to mount sensors within 30 feet of potential H2 sources.

The **GG-H2-EC-EXP** is useful for ventilation activation, and also for alarm outputs such as Horn/Strobes, phone dialers and other alarm functions.

Typical sensor element life is 3 years, with minimal cross-sensitivity to other gases. Field replaceable sensor element keeps long term maintenance simple and low cost. Every circuit board is potted to completely eliminate corrosion to the electronic components and copper tracing.

Ordering Information

The **GG-H2-EC-EXP** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside an explosion-proof enclosure. Use the model numbers below to order.

Order #: GG-H2-EC-2000-EXP
GG-H2-EC-10000-EXP
GG-H2-EC-RC-EXP (replacement sensor)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 50 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Hydrogen (H2)

Ranges:
0-2,000 ppm
0-10,000 ppm (standard) (1% Vol (25%LEL))

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 10 seconds
T90 = less than 20 seconds

Accuracy:
+/- 5% of full-scale

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 3% per month

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
5% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4 lbs-in

Weight:
3.75 lbs

Dimensions:
6.75" high x 5.25" wide x 4.5" deep

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Warranty:
2-years (including sensor element)

GG-H_2S HYDROGEN SULFIDE SENSOR

Key Features

- H2S specific electrochemical sensor technology. Absolutely no false alarms
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant polycarbonate sensor enclosure
- Intelligent-design enclosure temperature control for improved cell life
- Temperature compensated
- Sensor designed to adapt to any harsh environment from 0°F to +120°F
- Accurately monitor OSHA's PEL and STEL setpoints for personnel protection
- Real-time continuous monitoring for early warning
- Detection range of 0-50 ppm H2S

Long cell life. Simple operation.
Rugged enough to survive the harshest industrial environments.

The GG-H2S utilizes proven electro-chemical sensor technology for fast and accurate leak detection. The standard detection range of the GG-H2S provides real-time continuous monitoring of concentrations accurately down to 5 ppm, with no false alarms.

Every GG-H2S sensor comes equipped with an intelligent internal temperature control designed to perform in the harshest of areas. The controlled environment provides optimum moisture control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-H2S provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature and humidity variations during wash-down. Expect an average of 4-years of cell life for most applications.

Applications

- Sewer Gas Monitoring
- Paper Mills
- Petroleum Refineries
- Tanneries

Benefits

- Low cost
- Simple operation
- Rugged and reliable

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Easy ordering

The standard **GG-H2S** sensor is designed to work anywhere, and at a lower price than most competing models. With only one sensor for any application; designing, ordering, and maintaining your hydrogen sulfide monitoring system is simple.

Developed for corrosive environments, the **GG-H2S** is prepared to survive in almost any harsh industrial condition. Every circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews.

Ordering Information

The **GG-H2S** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #: GG-H2S-50 (standard)
GG-H2S-50-ST (stainless enclosure)
GG-H2S-50-DM (duct mount)
GG-H2S-RC (replacement cell)

Stainless steel enclosure option

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Hydrogen Sulfide (H2S)

Ranges:
0-50 ppm
Other ranges available

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 10 seconds
T90 = less than 30 seconds

Accuracy:
+/- 5% of value, but dependant on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependant, but generally less than 3% per month

Temperature Range:
0°F to +120°F (-17.8°C to +49°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-H_2S-EXP

EXPLOSION-PROOF HYDROGEN SULFIDE SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- Hydrogen sulfide specific electrochemical sensor technology
- 0-50 ppm factory range
- Electronics potted to eliminate internal corrosion
- Industry standard 24 VDC, linear 4-20 mA output
- Operating temperature from -4°F to +122°F
- Accurately monitor OSHA/NIOSH levels for personnel protection
- No false alarms from interference gases
- Real-time continuous monitoring for early leak detection

Poisonous hydrogen sulfide gas detection.
Explosion-proof design.

The GG-H2S-EXP is designed for detection of hydrogen sulfide vapors in hazardous areas. The standard detection range of 0-50 ppm provides real-time continuous monitoring of concentrations accurately down to 5 ppm with no false alarms.

The GG-H2S-EXP utilizes a proven hydrogen sulfide specific electrochemical sensor for detecting poisonous H2S gas concentrations. No false alarms due to cross-sensitivities from other gases, and no false alarms from temperature or humidity fluctuations.

The GG-H2S-EXP provides an industry standard linear 4-20 mA output signal proportional to ppm concentration of hydrogen sulfide. Long sensor life with minimal span adjustment can be expected in most applications. The sensor is designed for simple calibration and the sensor head is easily field replaceable.

Applications

- Sewer Gas Monitoring
- Paper Mills
- Petroleum Refineries
- Tanneries

Benefits

- Low cost explosion protection
- No false alarms from interference gases
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Hydrogen sulfide gas is slightly heavier than air and will tend to accumulate in low-lying areas in poorly ventilated spaces. For optimum personnel protection (representative concentration reading that an employee would be exposed to), mount the sensor at a height in the breathing zone of the employees. It would typically be no higher than 4 to 5 feet off the ground, which also allows easy access. As a general rule of thumb, try to mount sensors within 30 feet of potential H2S sources.

The **GG-H2S-EXP** is intended for Horn/Strobe and ventilation activation, and is also useful for alarm outputs such as phone dialers and other alarm functions.

Typical sensor element life is 3 years, with minimal cross-sensitivity to other gases. Field replaceable sensor element keeps long term maintenance simple and low cost. Every circuit board is potted to completely eliminate corrosion to the electronic components and copper tracing on the circuit board. An explosion-proof aluminum enclosure houses the transmitter.

Ordering Information

The **GG-H2S-EXP** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside an explosion-proof enclosure. Use the model numbers below to order.

Order #: GG-H2S-50-EXP
GG-H2S-RC-EXP (replacement sensor)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 50 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Hydrogen Sulfide (H2S)

Ranges:
0-50 ppm

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 120 seconds

Accuracy:
+/- 5% of full-scale

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 3% per month

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
5% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4 lbs-in

Weight:
3.75 lbs

Dimensions:
6.75" high x 5.25" wide x 4.5" deep

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Warranty:
2-years (including sensor element)

GG-NO_2-B

NITROGEN DIOXIDE SENSOR

Key Features

- Nitrogen Dioxide specific electrochemical sensor technology
- Electronics completely potted to prevent corrosion in harsh environments
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant polycarbonate sensor enclosure
- Intelligent-design enclosure temperature control for improved cell life
- Sensor designed to adapt to any harsh environment from -4°F to +122°F
- Real-time continuous monitoring for early detection of toxic concentrations
- Accurately monitor OSHA's PEL, STEL, and IDLH setpoints
- Detection range of 0-10 ppm NO2

Long-life toxic Nitrogen Dioxide monitoring useful for ventilation control.

The GG-NO2-B utilizes proven electrochemical sensor technology for fast and accurate detection. The standard detection range of the GG-NO2-B provides real-time continuous monitoring of concentrations accurately down to 1 ppm, with no false alarms.

The intelligent internal temperature control of the GG-NO2-B provides optimum temperature control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-NO2-B provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature variations or other atmospheric conditions.

Applications

- Truck docks
- Loading bays
- Tunnels
- Maintenance garages
- Diesel Engine Test Benches
- Air Monitoring

Benefits

- Low cost
- Simple operation
- Rugged and reliable

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The standard **GG-NO2-B** sensor is designed to work anywhere, and at a lower base-model price than most competing models. With only one electrochemical sensor for any application; designing, ordering, and maintaining your nitrogen dioxide detection system is simple.

Designed "Food Industry" tough

The **GG-NO2-B** is prepared to survive in just about any harsh industrial condition, including acid washdown of processing areas. Every circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews.

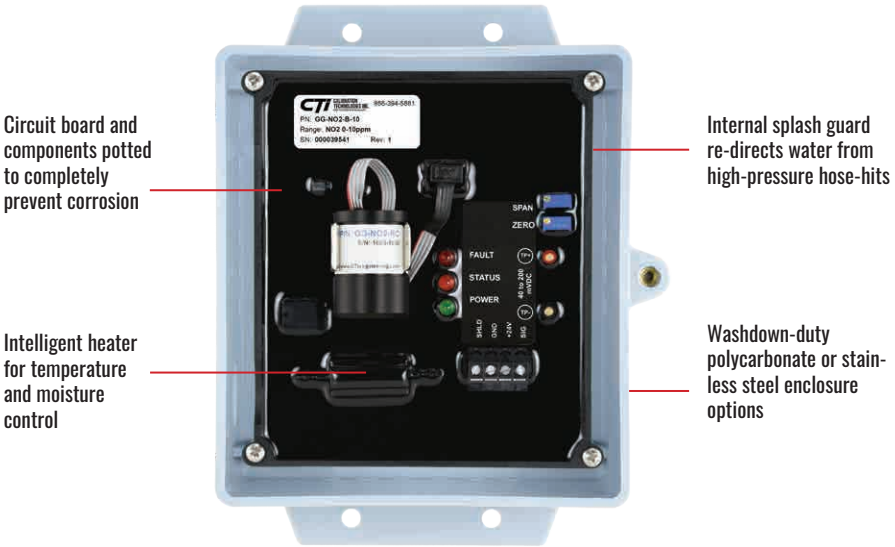
Rule of thumb for personnel protection: mount sensor no higher than breathing zone (5ft off of floor) since NO2 is heavier than air and tends to sink to low-lying areas. One sensor covers approximately 4000 square feet.

Ordering Information

The **GG-NO2-B** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #: GG-NO2-B (standard)
GG-NO2-B-ST (stainless enclosure)
GG-NO2-B-DM (duct mount)
GG-NO2-B-RC (replacement cell)

Stainless steel enclosure option



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Nitrogen Dioxide (NO2)

Ranges:
0-10 ppm

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 60 seconds
T90 = less than 120 seconds

Accuracy:
+/- 5% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 3% per month

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas.

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-NO_2-EXP

EXPLOSION-PROOF NITROGEN DIOXIDE SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- Nitrogen dioxide selective electrochemical sensor technology
- 0-10 ppm factory range
- Electronics potted to eliminate internal corrosion
- Industry standard 24 VDC, linear 4-20 mA output
- Operating temperature from -4°F to +122°F
- Accurately monitor NO2 levels for important action levels
- No false alarms from interference gases
- Real-time continuous monitoring for early leak detection

Low-range nitrogen dioxide detection.
Explosion-proof design.

The GG-NO2-EXP is designed for detection of nitrogen dioxide vapors in hazardous areas. The standard detection range of 0-10 ppm provides real-time continuous monitoring of concentrations accurately down to 1 ppm with no false alarms.

The GG-NO2-EXP utilizes a proven nitrogen dioxide specific electrochemical sensor for monitoring toxic levels produced by diesel-powered heavy engines and other sources. No false alarms due to cross-sensitivities from other gases, and no false alarms from temperature or humidity fluctuations.

The GG-N02-EXP provides an industry standard linear 4-20 mA output signal proportional to ppm concentration of nitrogen dioxide. Long sensor life with minimal span adjustment can be expected in most applications. The sensor is designed for simple calibration and the sensor head is easily field replaceable.

Applications

- Truck docks
- Loading bays
- Tunnels
- Maintenance garages
- Diesel Engine Test Benches
- Air Monitoring

Benefits

- Low cost explosion protection
- No false alarms from interference gases
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Nitrogen dioxide is heavier than air and will tend to accumulate in low-lying areas in poorly ventilated rooms. For optimum personnel protection (representative concentration reading that an employee would be exposed to), mount the sensor at a height in the breathing zone of the employees. It would typically be about 4 to 5 feet off the ground, which also allows easy access. As a general rule of thumb, try to mount sensors within 30 feet of potential NO2 sources.

The **GG-NO2-EXP** is intended for Horn/Strobe and ventilation activation, and is also useful for alarm outputs such as phone dialers, bay doors and other alarm functions.

Typical sensor element life is 3 years, with minimal cross-sensitivity to other gases. Field replaceable sensor element keeps long term maintenance simple and low cost. Every circuit board is potted to completely eliminate corrosion to the electronic components and copper tracing on the circuit board. An explosion-proof aluminum enclosure houses the transmitter.

Ordering Information

The **GG-NO2-EXP** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside an explosion-proof enclosure. Use the model numbers below to order.

Order #: GG-NO2-10-EXP
GG-NO2-RC-EXP (replacement sensor)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 50 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Nitrogen Dioxide (NO2)

Ranges:
0-10 ppm (standard)

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 45 seconds
T90 = less than 90 seconds

Accuracy:
+/- 5% of full-scale

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 3% per month

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
5% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4 lbs-in

Weight:
3.75 lbs

Dimensions:
6.75" high x 5.25" wide x 4.5" deep

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Warranty:
2-years (including sensor element)

GG-O_2-C

OXYGEN SENSOR

Key Features

- Oxygen specific electrochemical sensor technology
- 3-year cell life typical
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant polycarbonate sensor enclosure
- Temperature and moisture control for improved cell life
- Temperature compensated
- Sensor designed to adapt to any harsh environment from -10°F to +125°F
- Accurately monitor oxygen deficiency or enrichment levels
- Real-time continuous monitoring for early leak detection
- Detection ranges of 0-25% or 15-25% O2 (volume)

Industrial oxygen level monitoring.
Designed “food industry tough” with a 3-year sensor.

The GG-O2-C utilizes a proven oxygen sensor with a typical life-span of 3 years. With a large capacity electrolyte reservoir for exceptional cell life, the GG-O2-C electrochemical cell is designed with excellent chemical durability and is not affected by pressure changes or interference gases such as carbon dioxide.

Every GG-O2-C sensor comes equipped with an internal temperature control designed to perform in the harshest of areas. The controlled environment provides temperature and moisture control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-O2-C provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature variations such as washdown and defrost cycles, and is minimally affected by barometric pressure changes.

Applications

- Air Quality Monitoring
- Refrigeration Systems
- Confined Space
- Tank Rooms
- Food Processing
- Breweries

Benefits

- Low cost of ownership
- Simple operation
- Rugged and reliable

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Durability and long life

The standard **GG-O2-C** sensor is designed to work anywhere, and at a lower base-model price than most competing models. With the rugged extended life cell, the **GG-O2-C** sensor will give you years of trouble-free operation resulting in an extremely low cost of ownership. Typical alarm setpoints include a 19.5% alarm setpoint for oxygen deficiency monitoring for personnel protection, and 23.5% for oxygen enrichment situations.

Designed "Food Industry" tough

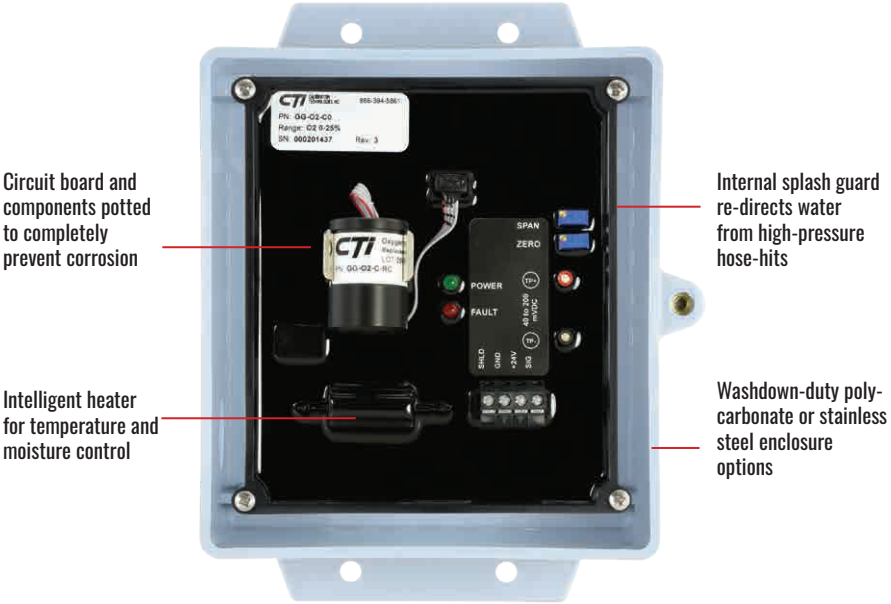
From hot mechanical rooms, to acid washdowns of processing areas, the **GG-O2-C** is prepared to survive in just about any harsh industrial condition. Every circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews. A stainless steel enclosure is also available for applications that require it.

Ordering Information

The **GG-O2-C** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #: GG-O2-C0 (0/25%) (standard)
GG-O2-C15 (15/25%)
GG-O2-Cxx-ST (stainless steel enclosure)
GG-O2-Cxx-DM (duct mount)
GG-O2-C-RC (replacement cell)

Stainless steel enclosure option



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Oxygen (O2)

Ranges:
0/25% (volume)
15/25% (volume)

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Pressure Limits:
0.5 to 1.5 Atmosphere

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 60 seconds

Accuracy:
+/- 2% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.5% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 0.5% full scale per month

Temperature Range:
-10°F to +125°F (-23.3°C to +52°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-O_2-EXP

EXPLOSION-PROOF OXYGEN SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- Oxygen specific electrochemical sensor technology
- Industry standard linear 4-20 mA output
- Electronics potted to eliminate internal corrosion
- Temperature and moisture control for improved cell life
- Sensor designed to adapt to any harsh environment from -4°F to +122°F
- Accurately monitor oxygen deficiency or enrichment levels
- Real-time continuous monitoring
- Detection ranges of 0-25% or 15-25% O2 (volume)

Industrial oxygen level monitoring.
Designed “food industry tough” with a 3-year sensor.

The GG-O2-EXP utilizes a proven electrochemical oxygen sensor with a typical life-span of 3 years. With a large capacity electrolyte reservoir for exceptional cell life, the GG-O2-RC-EXP electrochemical cell is designed with excellent chemical durability and is not affected by pressure changes or interference gases such as carbon dioxide.

Every GG-O2-EXP sensor comes equipped with an internal temperature control designed to perform in the harshest of areas. The controlled environment provides temperature and moisture control for extended cell life.

The GG-O2-EXP provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature variations such as washdown and defrost cycles, and is minimally affected by barometric pressure changes.

Applications

- Air Quality Monitoring
- Refrigeration Systems
- Confined Space
- Tank Rooms
- Food Processing
- Breweries

Benefits

- Low cost of ownership
- Simple operation
- Rugged and reliable

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Durability and long life

The standard **GG-O2-EXP** sensor is designed to work anywhere, and at a lower base-model price than most competing models. With the rugged extended life cell, the **GG-O2-EXP** sensor will give you years of trouble-free operation resulting in an extremely low cost of ownership. Typical alarm set-points include a 19.5% alarm set-point for oxygen deficiency monitoring for personnel protection, and 23.5% for oxygen enrichment situations.

Designed "Food Industry" tough

From hot mechanical rooms, to acid washdowns of processing areas, the **GG-O2-EXP** is prepared to survive in just about any harsh industrial condition. Every circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. An explosion proof aluminum enclosure houses the transmitter.

Ordering Information

The **GG-O2-EXP** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #: GG-O2-0/25-EXP (standard)
GG-O2-15/25-EXP

GG-O2-RC-EXP (replacement cell)

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 40 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Oxygen (O2)

Ranges:
0/25% (volume)
15/25% (volume)

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Pressure Limits:
0.5 to 1.5 Atmosphere

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 60 seconds

Accuracy:
+/- 2% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.5% of full-scale per month, non-cumulative

Span Drift:
Less than 0.5% per month

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
5% to 100% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Dimensions:
6.75" high x 5.25" wide x 4.55" deep

Weight:
3.75 lbs

Warranty:
2-years (including sensor element)

GG-SO_2

SULFUR DIOXIDE SENSOR

Key Features

- Sulfur Dioxide specific electrochemical sensor technology
- Electronics completely potted to prevent corrosion in harsh environments
- Industry standard linear 4-20 mA output
- Corrosion, weather, and chemical resistant polycarbonate sensor enclosure
- Intelligent-design enclosure temperature control for improved cell life
- Sensor designed to adapt to any harsh environment from -40°F to +122°F
- Real-time continuous monitoring for early detection of toxic concentrations
- Accurately provide TWA, STEL and IDLH alarms for personnel protection
- Detection range of 0-20 ppm SO2

Toxic Sulfur Dioxide detection for industrial applications.

The GG-SO2 utilizes proven electro-chemical sensor technology for fast and accurate detection. The standard detection range of the GG-SO2 provides real-time continuous monitoring of concentrations accurately down to1 ppm, with no false alarms.

The intelligent internal temperature control of the GG-SO2 provides optimum temperature control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-SO2 provides an industry standard linear 4-20 mA output signal compatible with most gas detection systems and PLCs. The output signal is not affected by drastic temperature variations or other atmospheric conditions.

Applications

- Wineries
- Wastewater
- Refrigeration systems
- Perimeter Monitoring
- Heat Treatment
- Air quality
- Refineries
- Process manufacturing
- Textiles

Benefits

- Low cost
- Simple operation
- Rugged and reliable

CTi GAS DETECTION SPECIALISTS

SGS C US

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The standard **GG-SO2** sensor is designed to work anywhere, and at a lower base-model price than most competing models. With only one electrochemical sensor for any application; designing, ordering, and maintaining your sulfur dioxide detection system is simple.

The **GG-SO2** is prepared to survive in just about any harsh industrial condition, including acid washdown of processing areas. Every circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented chemical-resistant polycarbonate enclosure protects the sensor from accidental damage, weather, and direct hose-hits from clean-up crews.

Rule of thumb for personnel protection: mount sensor no higher than breathing zone (5ft off of floor) since SO2 is heavier than air and tends to sink to low-lying areas in poorly ventilated areas. One sensor covers approximately 4000 square feet.

Ordering Information

The **GG-SO2** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #: GG-SO2-20
GG-SO2-20-ST (stainless enclosure)
GG-SO2-20-DM (duct mount)
GG-SO2-RC (replacement cell)

Stainless steel enclosure option

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 350 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Sulfur Dioxide (SO2)

Ranges:
0-20 ppm

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 30 seconds
T90 = less than 90 seconds

Accuracy:
+/- 5% of value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 3% per month

Temperature Range:
-40°F to +122°F (-40°C to +50°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX Injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas.

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
2.15 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
2-years (including sensor element)

GG-SO_2-EXP

EXPLOSION-PROOF SULFUR DIOXIDE SENSOR

Key Features

- Explosion-proof enclosure for classified areas
- Sulfur dioxide specific electrochemical sensor technology
- 0-20 ppm detection range
- Electronics potted to eliminate internal corrosion
- Industry standard 24 VDC, linear 4-20 mA output
- Operating temperature from -4°F to +122°F
- Accurately monitor SO2 concentrations for important action levels
- No false alarms from interference gases
- Real-time continuous monitoring for early leak detection

Avoid potentially explosive hydrogen gas buildup.
Poison-proof, explosion-proof design.

The GG-SO2-EXP is designed for detection of sulfur dioxide gas in hazardous areas. The standard detection range of 0-20 ppm provides real-time continuous monitoring of concentrations accurately down to 1 ppm with no false alarms.

The GG-SO2-EXP utilizes a proven sulfur dioxide specific electrochemical sensor for detecting toxic SO2 gas concentrations. No false alarms due to cross-sensitivities from other gases, and no false alarms from temperature or humidity fluctuations.

The GG-SO2-EXP provides an industry standard linear 4-20 mA output signal proportional to ppm concentration of sulfur dioxide. Long sensor life with minimal span adjustment can be expected in most applications. The sensor is designed for simple calibration and the sensor head is easily field replaceable.

Applications

- Wineries
- Wastewater
- Refrigeration systems
- Perimeter Monitoring
- Heat Treatment
- Air quality
- Refineries
- Process manufacturing
- Textiles

Benefits

- Low cost explosion protection
- No false alarms from interference gases
- Simple operation & calibration

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Sulfur dioxide gas is twice as heavy as air and will tend to accumulate in low-lying areas in poorly ventilated rooms. For optimum personnel protection (representative concentration reading that an employee would be exposed to), mount the sensor at a height in the breathing zone of the employees. It would typically be no higher than 4 to 5 feet off the ground, which also allows easy access. As a general rule of thumb, try to mount sensors within 30 feet of potential SO2 sources.

The **GG-SO2-EXP** is useful for Horn/Strobe and ventilation activation, and is also useful for alarm outputs such as phone dialers and other alarm functions.

Typical sensor element life is 3 years, with minimal cross-sensitivity to other gases. Field replaceable sensor element keeps long term maintenance simple and low cost. Every circuit board is potted to completely eliminate corrosion to the electronic components and copper tracing on the circuit board. An explosion-proof aluminum enclosure houses the transmitter.

Ordering Information

The **GG-SO2-EXP** is delivered calibrated and ready to install. The assembly includes sensor and potted transmitter mounted inside an explosion-proof enclosure. Use the model numbers below to order.

Order #: GG-SO2-20-EXP
GG-SO2-RC-EXP (replacement sensor)

replacement sensor element

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 50 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Sulfur dioxide (SO2)

Ranges:
0-20 ppm

Output Signal:
Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.5% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 20 seconds
T90 = less than 45 seconds

Accuracy:
+/- 5% of full-scale

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Application dependent, but generally less than 3% per month

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
5% to 95% non-condensing

Wiring Connections:
3 conductor, shielded, stranded, 20 AWG cable (General Cable C2525A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
26-12 AWG, torque 4 lbs-in

Weight:
3.75 lbs

Dimensions:
6.75" high x 5.25" wide x 4.5" deep

Enclosure:
Copper-free aluminum body, epoxy powder coat finish, neoprene gasket, for hazardous areas

Warranty:
2-years (including sensor element)

DUOSENSE Modbus

VEHICLE EMMISIONS GAS DETECTOR

Key Features

- CO/NO2 specific sensor technology. No false alarms
- Uses two electrochemical sensors
- 5-8 year CO, 2-3 year NO2 cell life average in most applications
- RS-485 Modbus RTU communications
- Polycarbonate enclosure with steel safety cage
- For wall mount or pillar mount installations
- Accurately monitor OSHA/NIOSH/ACGIH exposure limits
- Real-time continuous monitoring for early warning
- Detection range of 0-200 ppm CO, 0-10 ppm NO2
- LCD screen and pushbuttons for intuitive setup and operation

Carbon Monoxide and Nitrogen Dioxide detector combo.
Perfect solution for vehicle emmisions ventilation control applications.

The DuoSense-M CO/NO2 sensor is equipped with both carbon monoxide and nitrogen dioxide sensing elements to provide accurate readings of toxic levels, with no false alarms. Useful for ventilation activation, alarm notification and audio/visual signaling devices.

The DuoSense-M communicates via Modbus RTU compatible with the M255 Modbus control panel. 4,000 feet per Modbus channel on four channels provides installation flexibility and large detector capacity.

The CO and NO2 gas sensors are not affected by drastic temperature or humidity variations. Expect an average cell life of 5+years for CO and 2-3 years for NO2 in most applications.

Applications

- Warehouses
- Parking garages
- Loading Docks
- Air Quality Monitoring
- Vehicle Maintenance Buildings
- Ventilation Ducts
- Tunnels
- Underground Storage

Benefits

- Low cost
- Simple operation
- Rugged and reliable

Warehouse Mounting Kit

Makes mounting easy and protects the sensor from damage. Also included are an aluminum mounting plate, safety cage, 1/2” LB conduit body and 36” straps for pillar mounting.

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

One unit for both toxic gases

Designed for warehouses, parking garages, and other spaces where toxic combustion engine exhaust poses a risk to personnel. The DuoSense-M CO/NO2 sensor detects gas in the concentration ranges for OSHA/NIOSH/ACGIH compliance.

The standard DuoSense-M sensor is designed to work anywhere, and at a lower base-model price than most competing models. Each circuit board is sealed in conformal coating, protecting electronic components and copper tracing from corrosion. A specially vented polycarbonate enclosure inside a steel safety cage protects the sensor from accidental damage.

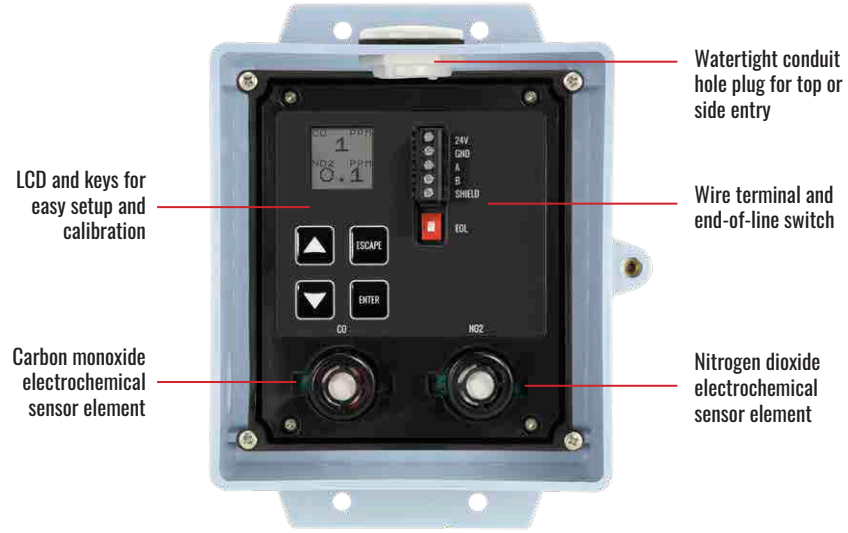
Each DuoSense-M detector monitors a 50' radius (7,500 square ft).

Refer to Uniform Mechanical Code, Uniform Building Code and other authorities having jurisdiction for ventilation requirements, along with audio/visual and other alarm notification requirements.

Ordering Information

The **DUOSENSE-M** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #:
DUOSENSE-M-W (detector and warehouse kit) (standard)
DUOSENSE-M (detector without warehouse kit)
SENS-CO-EC (carbon monoxide replacement cell)
SENS-NO2-EC (nitrogen dioxide replacement cell)



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 10 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Carbon Monoxide (CO)
Nitrogen Dioxide (NO2)

Ranges:
0/200 ppm (CO)
0/10 ppm (NO2)

Communications:
Modbus RTU, 9600 baud rate

Linearity:
+/- 1% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 60 seconds
T90 = less than 120 seconds

Accuracy:
+/- 5% of full-scale value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Generally less than 2% per month (CO)
Generally less than 5% per month (NO2)

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
15% to 90% RH

Wiring Connections:
RS-485 communication cable, 22 AWG, 2-conductor twisted pair, shielded, stranded, with drain wire (Alpha Wire 6460 or equivalent). up to 4000 ft. Power cable, 18 AWG, 2-conductor, shielded, stranded with drain wire (General Cable C2534A or equivalent). See manual for power cable length recommendations.

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Chrome-plated steel safety cage. Aluminum mounting plate.

Dimensions:
11.25" high x 8.65" wide x 4.4" deep

Weight:
5 lbs

Certification:
SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

Warranty:
3-years (including sensor elements)

MVFD

MODBUS VENTILATION FAN CONTROLLER

Key Features

- Three programmable relay outputs for fan speed operation
- 4-20 mA analog output for fan speed control
- Communicates on RS-485 Modbus network
- Can be located up to 4,000 feet from M255 controller
- Just set the Modbus ID and let the M255 panel control the fans
- 2-year warranty

Easily located on the Modbus network near fan controls

The MVFD controller allows the vehicle emmisions gas detection system to control the exhaust fans. Since the MVFD can be located anywhere on the Modbus network, it simplifies installation and eliminates the need for additional control wiring runs.

The MVFD has three relay outputs for ventilation system control. At a predetermined low alarm setpoint, the M255 control panel instructs the MVFD to activate ventilation at medium speed. If the high alarm setpoint is reached, the MVFD activates high speed ventilation. The 4-20 mA analog output can be used to control the speed of the fan.

Once installed, the OLED display and pushbuttons allow the user to set the unique Modbus address. All other functions are handled by the M255 control panel. Setting up the MVFD involves simply setting the Modbus address.

Applications

- Warehouses
- Parking Garages
- Air Quality Monitoring
- Underground Storage
- Ventilation Ducts
- Vehicle Maint Buildings

Benefits

- Simple Operation
- Control-wiring savings

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Eliminate long control wiring cable runs. Easily install anywhere on the M255's Modbus RS-485 network and control exhaust fan with analog or relay outputs.

Ordering Information

The **MVFD** is delivered ready to install. Use the model numbers below to order.

Order #: MVFD (VFD fan controller)

Related equipment

M255 Modbus controller
255 device capacity

DuoSense CO/NO2 detector

DuoSense CO/NO2 detector with safety cage and support column mount plate

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power Requirements:
24 VDC, 135 mA

Output Signal:
Linear 4-20 mA (max input impedance: 350 Ohms)

Communications:
RS-485 Modbus RTU, 9600 baud rate

Dimensions:
7.4" high x 8.5" wide x 4.3" deep

Weight:
3 lbs

Enclosure:
Polycarbonate NEMA X, IP 65, with neoprene gasket. Hinged lid with screw-lock hinges. For non-classified areas

Temperature Range:
-40°F to +122°F (-40°C to +50°C)

Humidity Range:
0-95% RH condensing (100% intermittent), with proper conduit seals

Relay Outputs:
SPDT, Form C dry contacts
8A @ 24 VDC or 10 A @ 120 VAC

(3) Programmable Relays
Programmable to trigger upon any event for any group of sensors

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4.4 in-lbs

Warranty:
2 years

GG-CO-NO2

VEHICLE EXHAUST GAS SENSOR

Key Features

- CO/NO2 specific sensor technology. No false alarms
- Uses two electrochemical sensors
- 5+year CO, 2-3 year NO2 cell life average in most applications
- Industry standard linear 4-20 mA outputs
- Polycarbonate or stainless steel sensor enclosure
- Intelligent-design enclosure temperature control for improved cell life
- Sensor designed for any harsh environment from -4°F to +120°F
- Accurately monitor OSHA/NIOSH/ACGIH exposure limits
- Real-time continuous monitoring for early warning
- Detection range of 0-200 ppm CO, 0-10 ppm NO2

Carbon Monoxide and Nitrogen Dioxide detector combo.
Perfect solution for vehicle emmisions ventilation control applications.

The Duo-Sense CO/NO2 sensor is equipped with both carbon monoxide and nitrogen dioxide sensing elements to provide accurate readings of toxic levels, with no false alarms. Useful for ventilation activation and other audio/visual signaling devices.

Each GG-CO-NO2 sensor comes equipped with an intelligent internal temperature control designed to perform in the harshest of areas. The controlled environment provides optimum moisture control for extended cell life. The high-quality injection-molded polycarbonate enclosure offers excellent chemical corrosion protection and high impact resistance.

The GG-CO-NO2 provides two industry standard linear 4-20 mA output signals compatible with most gas detection systems and PLCs. The output signals are not affected by drastic temperature or humidity variations. Expect an average cell life of 5+years for CO and 2-3 years for NO2 in most applications.

Applications

- Parking garages
- Loading Docks
- Air Quality Monitoring
- Underground Storage
- Vehicle Maintenance Buildings
- Ventilation Ducts
- Tunnels
- Car Dealerships

Benefits

- Low cost
- Simple operation
- Rugged and reliable

Optional Equipment - Warehouse Mounting Kit

Make mounting easy and protect the sensor from damage with the Wall Plate and Safety Cage Kit. Kit also includes 1/2” LB conduit body and 36” straps for pillar mounting.

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

One unit for both toxic gases

Designed for parking garages, vehicle maintenance buildings, and other spaces where toxic combustion engine exhaust poses a risk to personnel. The Duo-Sense CO/NO2 sensor detects gas in the concentration ranges for OSHA/NIOSH/ACGIH compliance.

The standard **GG-CO-NO2** sensor is designed to work anywhere, and at a lower base-model price than most competing models. Each circuit board is sealed forever in potting compound, protecting electronic components and copper tracing from corrosion. A specially vented polycarbonate (or stainless steel) enclosure protects the sensor from accidental damage.

Each GG-CO-NO2 detector monitors a 50' radius (7,500 square ft).

Refer to Uniform Mechanical Code, Uniform Building Code and other authorities having jurisdiction for ventilation requirements, along with audio/visual and other alarm notification requirements.

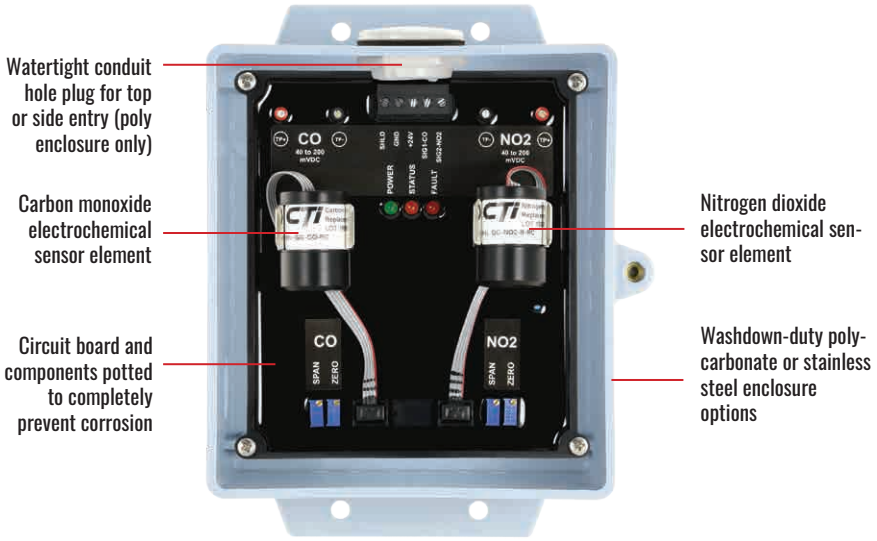
Ordering Information

The **GG-CO-NO2** is delivered calibrated and ready to install. Use the model numbers below to order.

Order #: GG-CO-NO2 (standard polycarbonate enclosure)
GG-CO-NO2-WH (warehouse kit + sensor)

GG-CO-RC (carbon monoxide replacement cell)
GG-NO2-B-RC (nitrogen dioxide replacement cell)


Warehouse kit option



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 130 mA

Detection Principle:
Electrochemical

Detection Method:
Diffusion

Gases:
Carbon Monoxide (CO)
Nitrogen Dioxide (NO2)

Ranges:
0/200 ppm (CO)
0/10 ppm (NO2)

Output Signal:
(2) Linear 4-20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 1% of full-scale

Repeatability:
+/- 1% of full-scale

Response Time:
T50 = less than 10 seconds
T90 = less than 20 seconds

Accuracy:
+/- 5% of full-scale value, but dependent on calibration gas accuracy and time since last calibration

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Generally less than 2% per month (CO)
Generally less than 5% per month (NO2)

Temperature Range:
-4°F to +122°F (-20°C to +50°C)

Humidity Range:
5% to 100% condensing

Wiring Connections:
4 conductor, shielded, stranded, 18 AWG cable (General Cable C2543A or equivalent) up to 1500 ft

Terminal Block Plugs: (Field Wiring)
12-26 AWG, torque 4 lbs-in

Enclosure:
NEMA 3RX injection-molded, washdown-duty polycarbonate sensor housing with hinged lid and captive screw. For non-classified areas. Optional 316 18 GA, NEMA 3RX washdown-duty stainless steel housing with hinged lid and captive screw. For non-classified areas

Dimensions:
7.5" high x 6.5" wide x 3.75" deep

Weight:
3 lbs

Warranty:
2-years (including sensor elements)

CALIBRATION KIT

Key Features

- All 34L and 29L parts are compatible
- One year shelf life for most certified gases
- Large stock of most popular concentrations
- Custom mixes available
- Replacement regulators and cylinders available
- Pressure gauge on all regulators
- Sensor calibration manuals included
- Custom flow rate regulators available

Calibration kit and calibration gas bottles for use with most makes and models of gas detectors.

Calibration Technologies gas sensor calibration kits and replacement cylinders allow for field calibration of most fixed and portable gas detectors. The disposable certified gas cylinders are N.I.S.T. traceable. After initial purchase, replacement cylinders can be ordered at any time.

Standard cylinder sizes include either 17 or 34 liters.
The 17L cal kit will include a regulator (female fitting) for use with the CGA600 outlet fitting (male fitting) of the 17L cylinder.
The 34L cal kit will include a regulator (male fitting) for use with the C-10 outlet fitting (female fitting) of the 34L cylinder.

Each regulator is preset for 0.8 liters per minute with an easy on/off valve and includes a cylinder pressure gauge. The Calibration Kit also includes 3' of Norprene tubing and flexible calibration cups designed to fit all GG sensors, and most standard size gas cells and sensors. All kit accessories are enclosed in a durable hard carrying case with foam inserts.

Applications

- Periodic sensor calibration requirements
- OSHA PSM compliance
- Regulatory and insurance requirements
- Safety system verification

Accessories Included

- Hard carrying case (holds two cylinders)
- 0.8 LPM regulator with pressure gauge
- Case holds (2) calibration gas bottles
- Norprene tubing and calibration cups
- Calibration manual for CTI sensors

CTI GAS DETECTION SPECIALISTS

Cal Kit Combo also available, which includes both 17L and 34L regulators. See website for details.

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Ordering Information

17L Calibration Kit

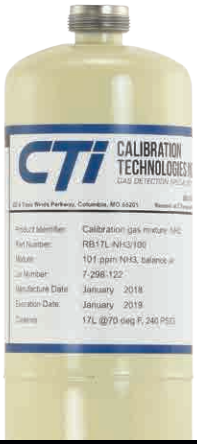
Part number	Description
Cal Kit 17L	Calibration Kit with regulator for 17 liter bottles, calibration cups for all CTI sensors, and rugged carrying case that holds two bottles (gas not included)

17L Calibration Gas Bottles

Many other gases and ranges available. Contact CTI for availability.

Part number	Description
RB17L-NH3/25	25 ppm ammonia
RB17L-NH3/50	50 ppm ammonia
RB17L-NH3/100	100 ppm ammonia
RB17L-NH3/250	250 ppm ammonia
RB17L-NH3/500	500 ppm ammonia
RB17L-NH3/1000	1000 ppm ammonia
RB17L-NH3/1%	1.0% ppm ammonia
RB17L-NH3/2%	2.0% ppm ammonia
RB17L-ZA	Zero air (20.9% O2)
RB17L-CO2/500	500 ppm carbon dioxide
RB17L-CO2/1%	1.0% carbon dioxide
RB17L-CO2/3%	3.0% carbon dioxide
RB17L-CO2/5%	5.0% carbon dioxide
RB17L-O2/15%	15% oxygen
RB17L-N2	100% nitrogen
RB17L-CO/200	200 ppm carbon monoxide
RB17L-CH4/1.0%	1.0% methane
RB17L-CH4/2.5%	2.5% methane
RB17L-H2/2000	2000 ppm hydrogen
RB17L-H2/1%	1.0% hydrogen (25% LEL)
RB17L-R22/500	500 ppm R22
RB17L-R22/1000	1000 ppm R22
RB17L-R22/3000	3000 ppm R22
RB17L-R134a/500	500 ppm R134a
RB17L-R134a/1000	1000 ppm R134a
RB17L-R134a/3000	3000 ppm R134a
RB17L-R404a/500	500 ppm R404a
RB17L-R404a/1000	1000 ppm R404a
RB17L-R404a/3000	3000 ppm R404a
RB17L-R507a/500	500 ppm R507a
RB17L-R507a/1000	1000 ppm R507a
RB17L-R507a/3000	3000 ppm R507a
RB17L-ISOB/100	100 ppm Isobutylene

17 liter regulator



34L Calibration Kit

Part number	Description
Cal Kit 34L	Calibration Kit with regulator for 34 liter bottles, calibration cups for all CTI sensors, and rugged carrying case that holds two bottles (gas not included)

34L Calibration Gas Bottles

Many other gases and ranges available. Contact CTI for availability.

Part number	Description
RB34L-NH3/25	25 ppm ammonia
RB34L-NH3/50	50 ppm ammonia
RB34L-NH3/100	100 ppm ammonia
RB34L-NH3/250	250 ppm ammonia
RB34L-NH3/500	500 ppm ammonia
RB34L-NH3/1000	1000 ppm ammonia
RB34L-NH3/1%	1.0% ppm ammonia
RB34L-NH3/2%	2.0% ppm ammonia
RB34L-ZA	Zero air (20.9% O2)
RB34L-CO2/500	500 ppm carbon dioxide
RB34L-CO2/1%	1.0% carbon dioxide
RB34L-CO2/3%	3.0% carbon dioxide
RB34L-CO2/5%	5.0% carbon dioxide
RB34L-O2/15%	15% oxygen
RB34L-N2	100% nitrogen
RB34L-CO/200	200 ppm carbon monoxide
RB34L-CH4/1.0%	1.0% methane
RB34L-CH4/50%	2.5% methane
RB34L-H2/2000	2000 ppm hydrogen
RB34L-H2/1%	1.0% hydrogen (25% LEL)
RB34L-R22/500	500 ppm R22
RB34L-R22/1000	1000 ppm R22
RB34L-R22/3000	3000 ppm R22
RB34L-R134a/500	500 ppm R134a
RB34L-R134a/1000	1000 ppm R134a
RB34L-R134a/3000	3000 ppm R134a
RB34L-R404a/500	500 ppm R404a
RB34L-R404a/1000	1000 ppm R404a
RB34L-R404a/3000	3000 ppm R404a
RB34L-R507a/500	500 ppm R507a
RB34L-R507a/1000	1000 ppm R507a
RB34L-R507a/3000	3000 ppm R507a
RB34L-4GAS-B	O2, CH4, CO, H2S (18%, 50%LEL, 100 ppm, 25 ppm)

34 liter regulator

SHA-24

HORN / STROBE

Key Features

- Weatherproof design for outdoor or washdown installations
- 24 VDC operation (16-33V range)
- Separate horn and strobe circuits allow for multiple wiring configurations
- High intensity intermittent strobe flash
- Blue, amber, red, green, or clear strobe lenses available
- Field selectable horn tone – continuous, temporal, or chime pattern
- Corrosion, weather, and chemical resistant enclosure for washdown areas
- Labeled for ammonia, but sticker can be removed for use with other gases

High visibility in a weather-proof package.
The perfect addition to your gas detection system.

The SHA series Horn/Strobe is designed to provide audible/visual signal for life safety and property protection. The SHA-24 meets or exceeds NFPA/ANSI standards and UL464/UL1638.

The horn provides either a continuous tone or a temporal pattern tone. The horn and strobe can be connected independently or in unison. The horn can be silenced while the strobe remains flashing.

The SHA series Horn/Strobe is housed in a durable poly enclosure, able to withstand weather and washdown environments. A weatherproof mounting backbox is included.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

STROBE INTENSITY: 65 Candela

SOUND OUTPUT: 99 dB @ 10 ft

FLASH RATE: 1 flash per second

SUPPLY VOLTAGE: +24 VDC (16-33V) @ 150 mA using default settings

OPERATING TEMPERATURE: -40°F to +150°F

DIMENSIONS: 6" X 7" X 5" (H x W x D)

ENCLOSURE RATING: IP65 / NEMA 4X

APPROVALS: UL1638
Designed to meet or exceed ANSI/NFPA

Configurations

All units labeled "Ammonia" unless otherwise specified.

Order #: SHA-24-Blue
SHA-24-Amber
SHA-24-Red
SHA-24-Clear
SHA-24-Green

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Wiring Diagram

The SHA-24 can be wired to operate the horn and strobe together or as two individual circuits.

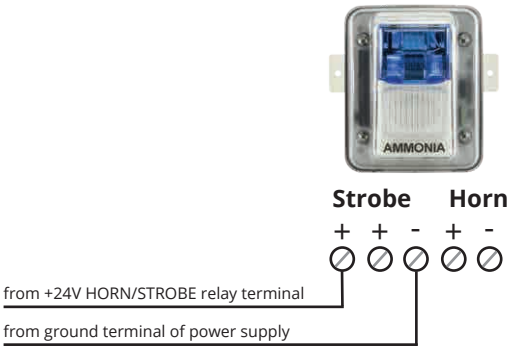


Figure 1
Strobe and Horn to operate together
(with dipswitches 1 and 2 ON)

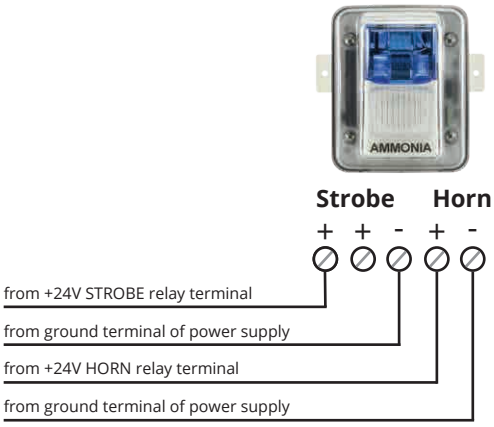


Figure 2
Strobe and Horn to operate independently
(with dipswitches 1 and 2 OFF)

Dipswitch Settings

The SHA-24 is shipped with default settings for 4-wire operation and optimal horn settings. The following describes the dipswitch settings.

Horn/Strobe operation:
1 and 2 ON = Horn/Strobe on 2 wires
1 and 2 OFF = Horn and Strobe on 4 wires

Volume:
6 ON = High
6 OFF = Low

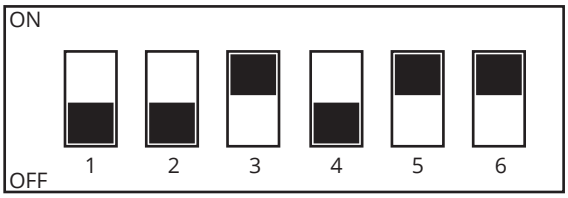


Figure 3
default settings

Tone Settings

	Switch Position		
Tone	3	4	5
Mechanical Temporal 3	ON	ON	ON
Mechanical Continuous	OFF	ON	ON
2400 Hz - Temporal 3	ON	OFF	ON
2400 Hz 0 Continuous	OFF	OFF	ON
Chime - Temporal 3	ON	ON	OFF
Chime - Continuous	OFF	ON	OFF
Whoop	ON	OFF	OFF
Whoop	OFF	OFF	OFF

*100 dB based on anechoic rating using default switch settings as shown. Anechoic dBA is measured on axis in a non-reflective (free field) test room using fast meter peak response. Reverberant dBA is a minimum UL rating based on sound power measurements in a reverberant test room.

SHA-120

HORN / STROBE

Key Features

- 120 VAC, two-wire connection
- Horn and strobe activate together
- Blue, amber, red, green, or clear strobe lens covers available
- Field selectable horn tone – continuous or temporal pattern
- Field selectable candela settings – low to high intensity flash
- Corrosion, weather, and chemical resistant enclosure for washdown areas
- Weatherproof backbox included for outdoor installation
- -40°F to 150°F, NEMA 4X
- Labeled for ammonia, but sticker can be removed for use with other gases

High visibility in a weather-proof package.
The perfect addition to your toxic gas alert system.

The SHA-120 series Horn/Strobe is designed to provide audible/visual signal for life safety and property protection. The SHA-120 meets or exceeds NFPA/ANSI standards and UL464/UL1638.

The horn provides either a continuous tone or a temporal pattern tone, with a 3-position volume switch. A slide switch allows for several candela settings from low to high intensity.

The SHA-120 series Horn/Strobe is housed in a durable poly enclosure, able to withstand weather and wash-down environments. A 120 VAC adaptor plate and weather-proof mounting backbox is included.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

STROBE INTENSITY: 15 to 185 Candela

SOUND OUTPUT: 99 dB @ 10 ft

FLASH RATE: 1 flash per second

SUPPLY VOLTAGE: 120 VAC, 150 mA max

OPERATING TEMPERATURE: -40°F to +150°F

DIMENSIONS: 6" X 7" X 5" (H x W x D)

APPROVALS: UL listed
Designed to meet or exceed ANSI/NFPA standards and ADA accessibility guideline

Configurations

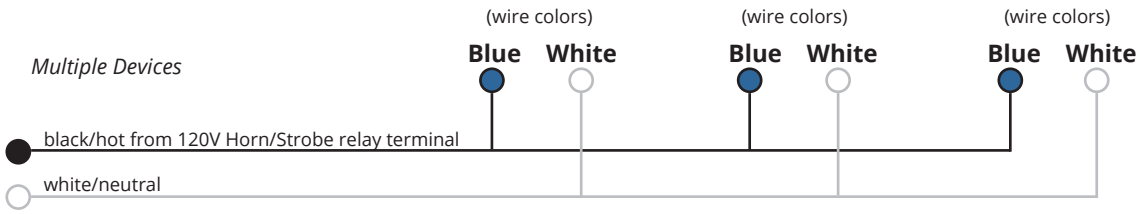
All units labeled "Ammonia" unless otherwise specified.

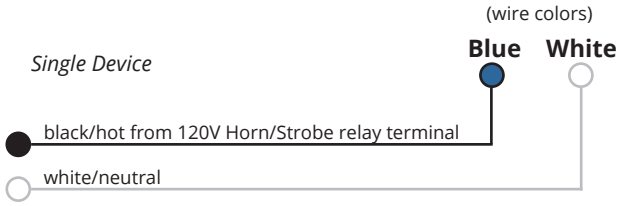
Order #: SHA-120-Blue
SHA-120-Amber
SHA-120-Red
SHA-120-Green
SHA-120-Clear

CTI GAS DETECTION SPECIALISTS

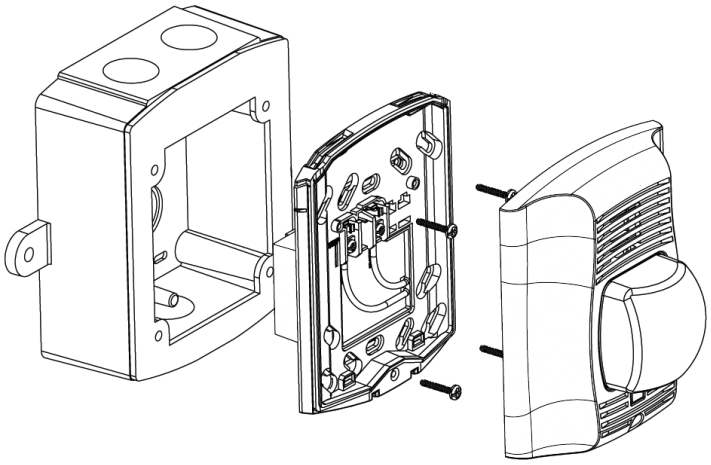
920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Wiring Diagram

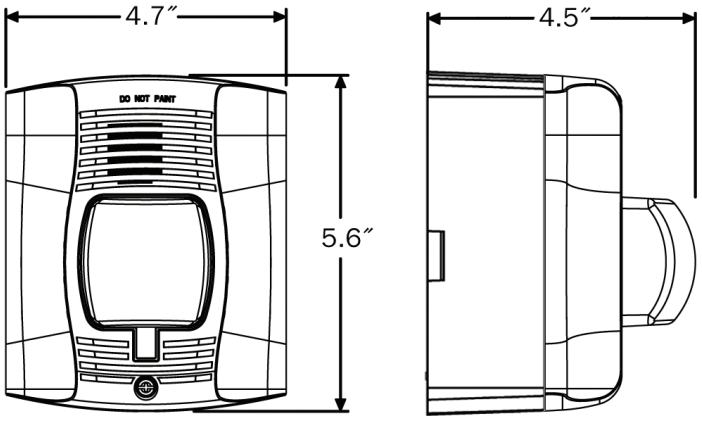




Components / Assembly



Dimensions



Horn Tones

*indicates default settings

Switch	Sound Pattern	dB Level
*1	Temporal	High
2	Temporal	Medium
3	Temporal	Low
4	Non-Temporal	High
5	Non-Temporal	Medium
6	Non-Temporal	Low
7	N/A	
8	N/A	
9	N/A	

Candela Rating

*indicates default settings

Strobe Output (cd)
*15
15/75
30
75
95
110
115
135
150
177
185

SHA-PY-120

HORN / STROBE

Key Features

- 120 VAC, two or three wire connection
- Horn and strobe can be wired to operate together or independently
- Blue, amber, red, green, yellow, or clear strobe lens covers available
- 8 selectable horn tones
- High intensity Xenon flash, 5 Joules
- Corrosion, weather, and chemical resistant enclosure for washdown areas
- -40°F to 150°F, NEMA 4X
- Wall or ceiling mount
- Labeled for ammonia, but can be custom labeled upon request

High visibility in a weather-proof package.
The perfect addition to your toxic gas alert system.

The SHA-PY-120 series Horn/Strobe is designed to provide audible/visual signal for life safety and property protection. The SHA-PY-120 meets or exceeds NFPA/ANSI standards and UL464/ UL1638.

The horn includes eight selectable tone patterns via a 3-position DIP. Volume can be adjusted via a potentiometer. The high-intensity Xenon bulb is rated for 10 years or 8,000,000 flashes.

The SHA-PY-120 series Horn/Strobe is housed in a durable polycarbonate/ ABS blend enclosure, able to withstand weather and washdown environments. It can be wall or ceiling mounted to provide optimum coverage.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

STROBE INTENSITY: 56 Candela

SOUND OUTPUT: 100 dB @ 10 ft

FLASH RATE: 1 flash per second (1 Hz)

SUPPLY VOLTAGE: 120 VAC, 140 mA max

OPERATING TEMPERATURE: -40°F to +131°F

DIMENSIONS: 6.8" X 4.5" X 5" (H x W x D)

APPROVALS: UL listed
Designed to meet or exceed ANSI/NFPA standards and ADA accessibility guideline

Configurations

All units labeled "Ammonia" unless otherwise specified.

Order #:
SHA-PY-120-Blue
SHA-PY-120-Amber
SHA-PY-120-Red
SHA-PY-120-Green
SHA-PY-120-Yellow
SHA-PY-120-Clear

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Wiring Diagram

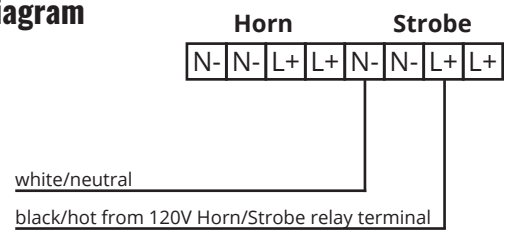
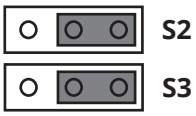


Figure 1
Strobe and Horn operate together
(position jumpers as shown below)



(default setting)

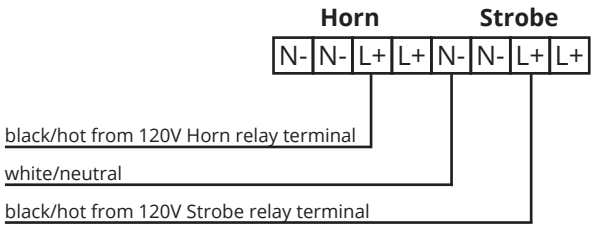
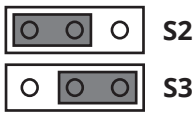
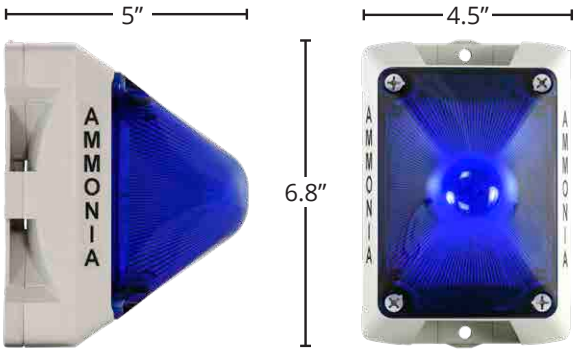
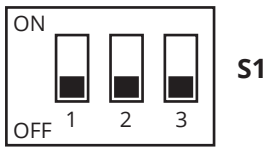


Figure 2
Strobe and Horn operate independently
(position jumpers as shown below)



Dimensions





Horn Tones

*indicates default settings

	Switch Position		
Tone	1	2	3
Sawtooth*	OFF	OFF	OFF
Slow Whoop 1200 Hz	OFF	ON	OFF
Alternating tone	ON	ON	ON
Continuous tone 110 Hz	ON	ON	OFF
Continuous tone 3 kHz	ON	OFF	ON
Interrupted tone slow	ON	OFF	OFF
Interrupted tone fast	OFF	ON	ON
Slow Whoop 2800 Hz	OFF	OFF	ON

SHA-PAX

High Output Horn/Strobe

Key Features

- IP66 Weatherproof design for outdoor or washdown installations
- Available for 120 VAC or 24 VDC
- 110 dB horn
- Separate horn and strobe circuits allow for multiple wiring configurations
- High intensity intermittent Xenon strobe flash
- Blue, amber, and red strobe lenses available
- 80 Field selectable tones - with 4 inputs to control 4 different tones
- 360˚ visible field for strobe
- Labeled for ammonia, custom labels available upon request
- 2-year warranty

High output horn with strobe in a weatherproof package.

The SHA-PAX Horn/Strobe is designed to provide audible/visual signal for life safety and property protection. The SHA-PAX is available in both 120 VAC and 24 VDC versions, and is listed with UL, cUL, and CE.

The SHA-PAX features a 110dB horn, and can be wired with the horn and strobe operating simultaneously, or independently of each other. There are 80 field selectable tones for the horn, and the strobe is visible from 360˚.

The SHA-PAX is housed in a UV resistant Polycarbonate/ABS enclosure, able to withstand weather and washdown environments from -40°F to 130°F.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

OPERATING TEMPERATURE: -40°F to +130°F

SOUND OUTPUT: 110 dB

FLASH RATE: 1 flash per second (1 Hz)

FLASH ENERGY: 10 Joules

POWER: 24 VDC or 120 VAC (specify)

MATERIAL: UV resistant Polycarbonate/ABS

PROTECTION DEGREE: IP 66

CURRENT DRAW: 1040 mA @ 24 VDC / 450 mA @120 VAC

DIMENSIONS: 10.6” x 8.4” x 6.1”

LISTING: UL, cUL, CE

Configurations

All units labeled “Ammonia” unless otherwise specified.

Order #:

SHA-PAX-110-120-Blue	(110dB | 120 VAC | Blue)
SHA-PAX-110-120-Red	(110dB | 120 VAC | Red)
SHA-PAX-110-120-Amber	(110dB | 120 VAC | Amber)
SHA-PAX-110-24-Blue	(110dB | 24 VDC | Blue)
SHA-PAX-110-24-Red	(110dB | 24 VDC | Red)
SHA-PAX-110-24-Amber	(110dB | 24 VDC | Amber)

CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Terminal for operating voltage - Horn/Strobe combination:

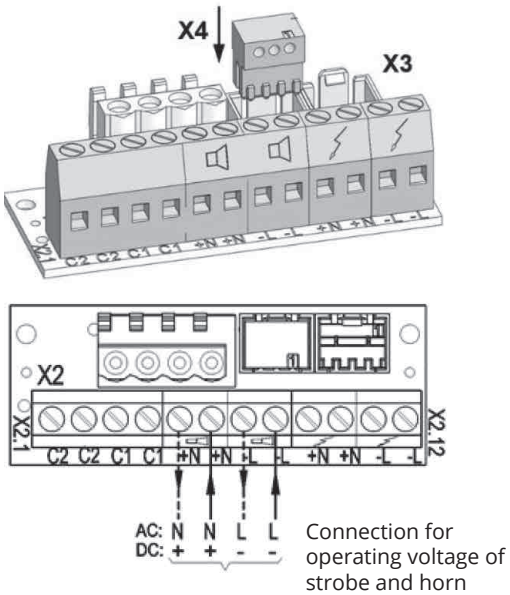


Figure 1
Strobe and horn operate together (default setting)

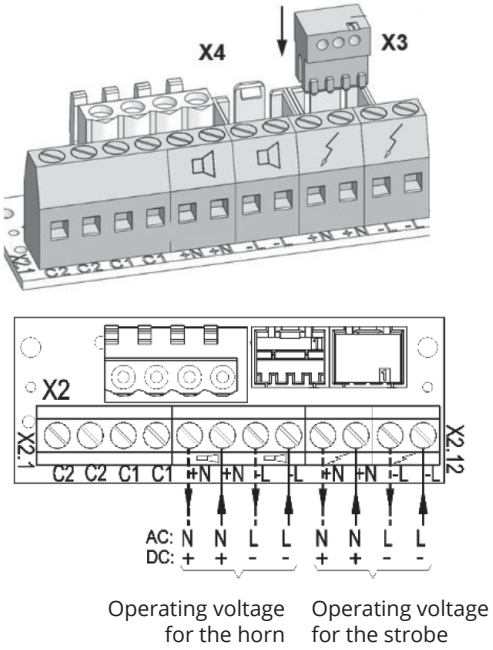
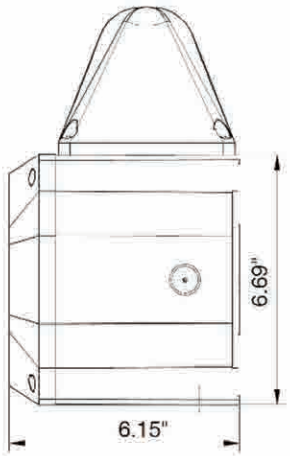
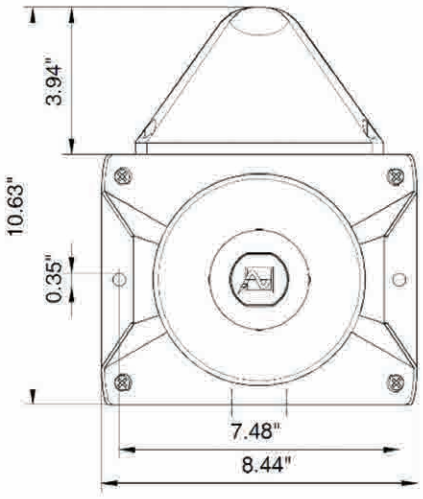
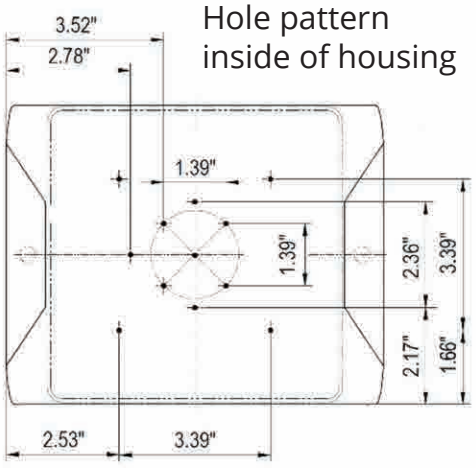


Figure 2
Strobe and horn operate independently







STACKLIGHT 3

Key Features

- 24v ac/dc or 120vac base modules
- LEDs provide 50,000 hours working life for zero maintenance
- Flashing colored light modules display at-a-glance alarm status
- Super-bright LEDs allow for easy viewing even in sunlight
- 105 dB buzzer with 7 selectable tone patterns
- Separate horn and light circuits allow for multiple wiring configurations
- Corrosion, weather, and washdown area safe
- Pre-built configurations available
- Green light module steady (non-flashing)
- 1/2" NPT base standard, with 90° mount optional

105 dB buzzer, super-bright LEDs, and IP66 protection? Yes indeed. A must-have for any gas detection system.

The omni-directional LED lights and horn provide vital life-safety information to protect your personnel. The differentiated colors also provide crucial indications as to the severity of the leak situation.

Housed in durable polycarbonate modules, the bright LEDs provide over 50,000 work hours of maintenance free life. The 105 dB buzzer comes standard and has 7 selectable tone pattern settings.

The stacklight has a sealant rating of IP66 (dust tight and protection from powerful jets of waters). The base comes standard for 1/2" NPT pipe mount. A 90° mount is also available.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

OPERATING TEMPERATURE: -22°F to +158°F

SOUND OUTPUT: 105 dB @ 3.3 ft

SOUND FREQUENCY: 2800 temporal (default)

FLASH TYPE: Flashing (84 fpm) (Green LED module is non-flashing)

POWER: ***+24 VDC***, 50 mA max (30 mA AVG flashing) each LED module; 35 mA buzzer

POWER: ***+120 VAC***, (30 mA max each LED module; 25 mA buzzer)

MATERIAL: polycarbonate

PROTECTION DEGREE: IP66 / NEMA 4X

UL LISTED C/US

Configurations

Custom configurations available.
All Configurations include buzzer (-B)

Order #:

- SL3-24-R-B 24v, red light, buzzer
- SL3-24-AR-B 24v, amber and red lights, buzzer
- SL3-24-GAR-B 24v, green, amber, red lights, buzzer
- SL3-24-BARW-B 24v, blue, amber, red, white lights, buzzer
- SL3-24-GYAR-B 24v, green, yellow, amber, red lights, buzzer
- SL3-120-B-B 120v, blue light, buzzer
- SL3-120-YR-B 120v, yellow and red lights, buzzer
- SL3-120-GAR-B 120v, green, amber, red lights, buzzer

Components

- SL3-24-M 24v ac/dc base module
- SL3-120-M 120vac base module
- SL3-G-M Green light module
- SL3-B-M Blue light module
- SL3-Y-M Yellow light module
- SL3-A-M Amber light module
- SL3-R-M Red light module
- SL3-W-M White light module

- SL3-BUZZ 105dB buzzer module

- SL3-MNT-90 Base 90° mount

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

To order:
1. Choose voltage type (24Vdc or 120Vac)
2. Choose light modules
3. Choose optional 90° mount

Up to 7 modules can be combined into one stackLight assembly.

	Switch Position		
Tone	1	2	3
Continuous 2800 Hz	ON	ON	ON
Continuous 1450 Hz	OFF	ON	ON
Intermittent 2800 Hz	ON	OFF	ON
Intermittent 1450 Hz	ON	ON	OFF
DIN 33404-3 1200-500 Hz*	OFF	ON	OFF
NEN 2575:2000 500-1200 Hz	OFF	ON	OFF
Charging 800-1000 Hz	ON	OFF	OFF
Triangle 500-1500 Hz	OFF	OFF	OFF

* default factory setting

24v ac/dc base module

120vac base module

Base Module Wiring

"0" terminal is Common to all connected modules. Numbers 1 through 7 refer to the modules, from the base to the top.

0 = Common (power supply ground or neutral)
1 = V+ for first module
2 = V+ for second module
3 = V+ for third module
4 = V+ for fourth module
5 = V+ for fifth module
6 = V+ for sixth module
7 = V+ for seventh module

Buzzer Module

105 dB alarm audio signaling buzzer temporal or steady

LED Module

High alarm visual indicator, red Flashing

LED Module

Low alarm visual indicator, amber Flashing

LED Module

System normal visual indicator, green Steady

Base Module

Contains wire terminals, wiring and 1/2" NPTF

90° mount optional

Available Colors

SB-ES3

EMERGENCY STOP SWITCH

Key Features

- 40 mm push/pull latching mushroom pushbutton switch
- Tamper-proof clear switch cover
- IP66/NEMA 4 weatherproof design for outdoors or washdown environments
- 120 VAC or 24 VDC
- Mounting flanges for wall mounting
- Solution for compressor room E-stop applications
- Red actuator with yellow background
- 2-year warranty

Weatherproof Emergency-Stop pushbutton switch.

Emergency pushbutton switches are an important part of any control system. They are ideal for protecting personnel and property, allowing the user to press the buttons for emergency stop control, in addition to triggering the relays through the gas detection system.

The Emergency-Stop switch can be used with 24 VDC or 120 VAC, and are shipped with one set of normally closed contacts. Additional NC or NO contactors can be added in the field. The Tamper-proof flip-cover meets most new codes, including IIAR 2-2021.

The switches are housed in a durable NEMA 4 polycarbonate enclosure, able to withstand weather and washdown environments for indoor or outdoor mounting applications. Mounting flanges are also included for easy installation.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

CONTACTS RATING: 10A, 120VAC or 24VDC

ENCLOSURE: Polycarbonate, IP66/NEMA 4

OPERATING TEMPERATURE: -40°F to +150°F

MOUNTING PLATE: Powder coated aluminum

ACTUATOR: Pull to release, mushroom 40 mm

MECHANICAL DURABILITY: 500,000 cycles

ILLUMINATION: Non-illuminated

DIMENSIONS: 6.35” high x 4.42” wide x 5.22” deep

LISTING: Switch, contactors and enclosure are UL listed

Configurations

All pushbutton switches are pre-installed in their enclosures with tamper-proof cover.

Order #: SB-ES3 Emergency Stop pushbutton switchbox, tamper-proof flip-cover, NEMA 4 enclosure. 1 set of NC contacts

SB-VS1-NC Normally Closed contactor, 10A

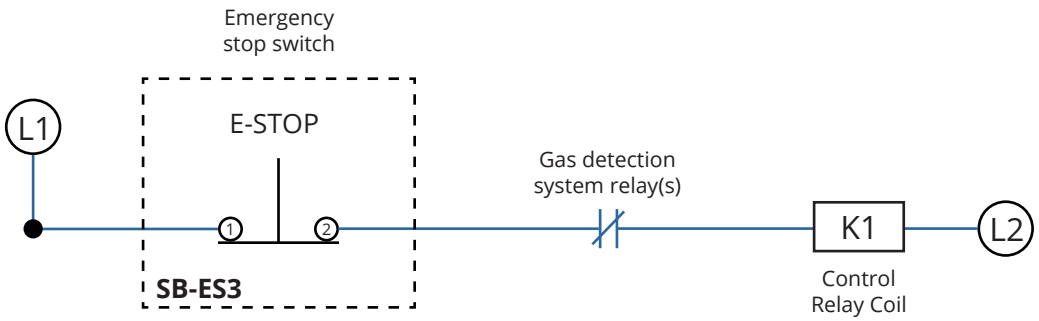
SB-VS1-NO Normally Open contactor, 10A

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

ANSI / IIAR 2-2014:
6.12 Emergency Control Switches
6.12.1 Emergency Stop Switch. A clearly identified emergency shut-off switch shall be located outside and adjacent to the designated principal machinery room door. The switch shall provide off-only control of refrigerant compressors, refrigerant pumps, and normally closed automatic refrigerant valves that are not part of an emergency control system, located in the machinery room. The function of the switch shall be clearly marked by signage near the controls. The switch shall be readily operable and protected from inadvertent operation and require manual reset.

Example Wiring Diagram (Normal state is the Closed position)



SB-EV2

EMERGENCY VENTILATION SWITCH

Key Features

- 40 mm push/pull latching mushroom pushbutton switch
- Tamper-proof clear switch cover
- IP66/NEMA 4 weatherproof design for outdoors or washdown environments
- 120 VAC or 24 VDC
- Mounting flanges for wall mounting
- Solution for compressor room emergency ventilation applications
- Add up to (6) contact blocks
- 2-year warranty

Weatherproof Emergency Ventilation pushbutton switch.

Emergency pushbutton switches are an important part of any control system. They are ideal for protecting personnel and property, allowing the user to press the buttons for emergency ventilation control, in addition to triggering the relays through the gas detection system.

The Emergency Ventilation switches can be used with 24 VDC or 120 VAC, and are shipped with two sets of contacts. Additional NC or NO contactors can be added in the field. The Tamper-proof flip-cover meets most new codes, including IIAR 2-2021.

The switches are housed in a durable NEMA 4 polycarbonate enclosure, able to withstand weather and washdown environments for indoor or outdoor mounting applications. Mounting flanges are also included for easy installation.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

CONTACTS RATING: 10A, 120 VAC or 24 VDC

ENCLOSURE: Polycarbonate, IP66/NEMA 4

OPERATING TEMPERATURE: -40°F to +150°F

MOUNTING PLATE: Powder coated aluminum

ACTUATOR: Pull to release, mushroom 40 mm

MECHANICAL DURABILITY: 500,000 cycles

ILLUMINATION: Non-illuminated

DIMENSIONS: 6.35” high x 4.42” wide x 4” deep

LISTING: Switch, contactors and enclosure are UL listed

Configurations

All pushbutton switches are pre-installed in their enclosures with tamper-proof cover.

Order #: SB-EV2

Emergency Ventilation pushbutton switchbox, tamper-proof flip-cover, NEMA 4 enclosure. 1 set of NC contacts, 1 set of NO contacts.

SB-VS1-NC Normally closed contactor, 10A

SB-VS1-NO Normally Open contactor, 10A

CTI GAS DETECTION SPECIALISTS

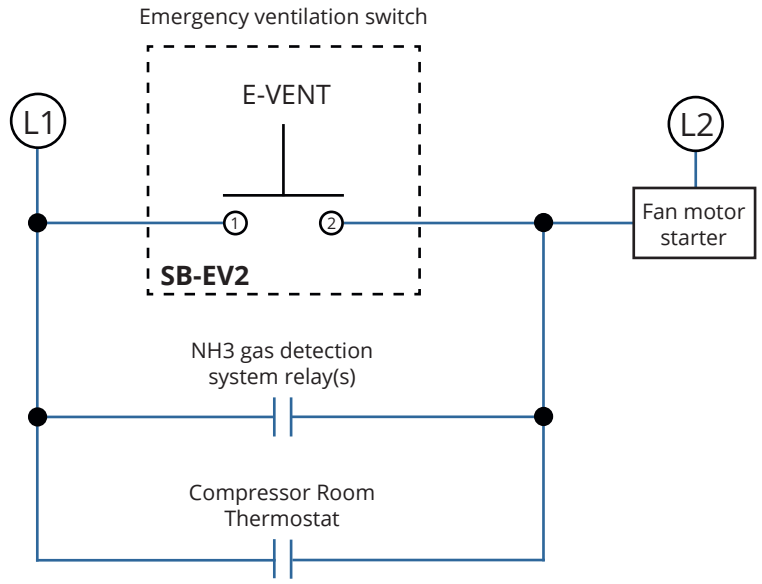
920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

ANSI / IIAR 2-2021:
6.12 Emergency Control Switches

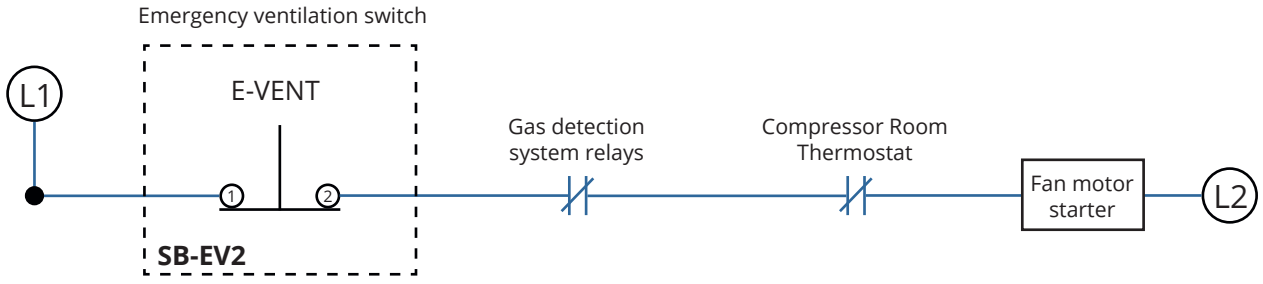
6.12.2 Emergency Ventilation Control Switch. A clearly identified control switch for emergency ventilation that is not operated continuously shall be located outside the machinery room and adjacent to the designated principal machinery room door. The switch shall provide "ON/ AUTO" override capability for emergency ventilation. The function of the switch shall be clearly marked by signage near the controls. The switch shall be readily operable.

Example Wiring Diagrams

(Normal state is the Open position)



(Normal state is the Closed position)



SB-EPCS2

EMERGENCY PRESSURE CONTROL SYSTEM SWITCH

Key Features

- 40 mm push/pull latching mushroom pushbutton switch
- Tamper-proof clear switch cover
- IP66/NEMA 4 weatherproof design for outdoors or washdown environments
- 120 VAC or 24 VDC
- Mounting flanges for wall mounting
- Solution for compressor room EPCS applications
- • Add up to (6) contact blocks
- 2-year warranty

Emergency Pressure Control System pushbutton switch.

Emergency pushbutton switches are an important part of any control system. They are ideal for protecting personnel and property, allowing the user to press the button for emergency pressure control during an overpressurization event.

The Emergency Pressure Control switches can be used with 24 VDC or 120 VAC, and are shipped with two sets of contacts. Additional NC or NO contactors can be added in the field. The Tamperproof flip-cover meets most new codes, including IIAR 2-2021.

The switches are housed in a durable NEMA 4 polycarbonate enclosure, able to withstand weather and washdown environments for indoor or outdoor mounting applications. Mounting flanges are also included for easy installation.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

CONTACTS RATING: 10A, 120 VAC or 24 VDC

ENCLOSURE: Polycarbonate, IP66/NEMA 4

OPERATING TEMPERATURE: -40°F to +150°F

MOUNTING PLATE: Powder coated aluminum

ACTUATOR: Pull to release, mushroom 40 mm

MECHANICAL DURABILITY: 500,000 cycles

ILLUMINATION: Non-illuminated

DIMENSIONS: 6.35” high x 4.42” wide x 4” deep

LISTING: Switch, contactors and enclosure are UL listed

Configurations

All pushbutton switches are pre-installed in their enclosures with tamper-proof cover.

Order #: SB-EPCS2

Emergency Pressure Control Switch pushbutton switch box, tamper-proof flip-cover, NEMA 4 enclosure.
1 set of NC contacts, 1 set of NO contacts.

SB-VS1-NC Normally closed contactor, 10A

SB-VS1-NO Normally Open contactor, 10A

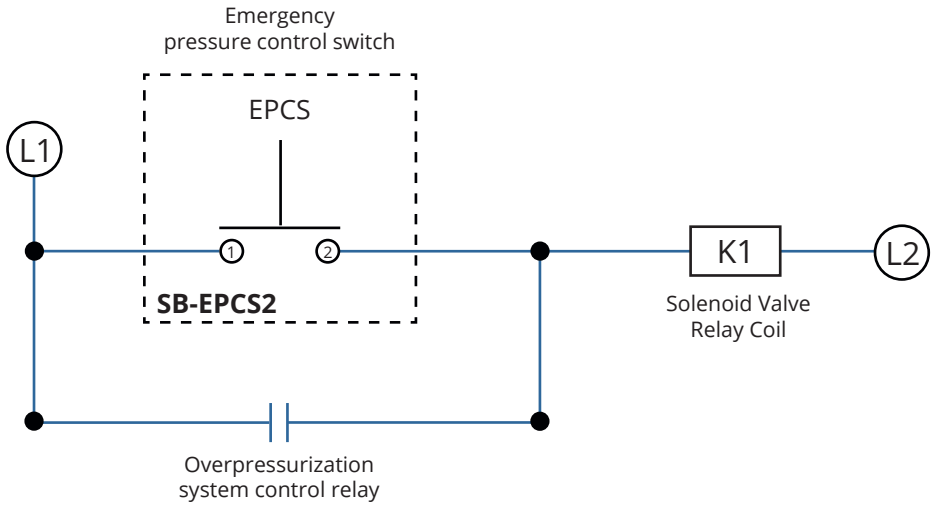
CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

ANSI / IIAR 2-2014:
Appendix I.4.5.2 Where required by the fire department, the EPCS should be provided with a remote switch for manual activation.

EPCS is required by most states. Refer to local state fire codes.

Example Wiring Diagram (Normal state is the Open position)



EMERGENCY VENTILATION SWITCH

Key Features

- On/Auto 2 position ventilation selector switch
- Tamper-proof clear switch cover
- IP66/NEMA 4 weatherproof design for outdoors or washdown environments
- 120 VAC or 24 VDC
- 10 Amp dry contacts
- Circuit board with terminal block for wire landings
- Mounting flanges for wall mounting
- 2-year warranty
- Normal state is the “ON” position

Indoor/outdoor Emergency Ventilation switch.

The use of an Emergency Ventilation switch provides On or Auto circuit selection for proper engine room operation. They are ideal for protecting personnel and property, allowing operators full override control as necessary.

The emergency ventilation switch can be used with 24 VDC or 120 VAC, and has two sets of 10 Amp dry contacts that are open in the "Auto" position, and closed in the "On" position. The Tamper-proof flip-cover meets most new codes including IIAR-2 2014.

The switches are housed in a durable NEMA 4 polycarbonate enclosure, able to withstand weather and washdown environments for indoor or outdoor mounting applications. Mounting flanges are also included for easy installation.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

CONTACTS RATING: 10A, 120VAC or 24VDC

ENCLOSURE: Polycarbonate, IP66/NEMA 4

OPERATING TEMPERATURE: -40°F to +150°F

MOUNTING PLATE: Anodized aluminum

CONTACTS: 2 sets of dry contacts

MECHANICAL DURABILITY: 500,000 cycles

ILLUMINATION: Non-illuminated

DIMENSIONS: 6.35” high x 4.42” wide x 4” deep

LISTING: Switch, contactors and enclosure are UL listed

Configurations

All switches are pre-installed in their enclosures

Order #: SB-VS1

Emergency Ventilation selector switchbox, tamper-proof flip-cover, NEMA 4 enclosure, 1 set of NC contacts, 1 set of NO contacts.

SB-VS1-NC Normally closed contactor, 10A

SB-VS1-NO Normally Open contactor, 10A

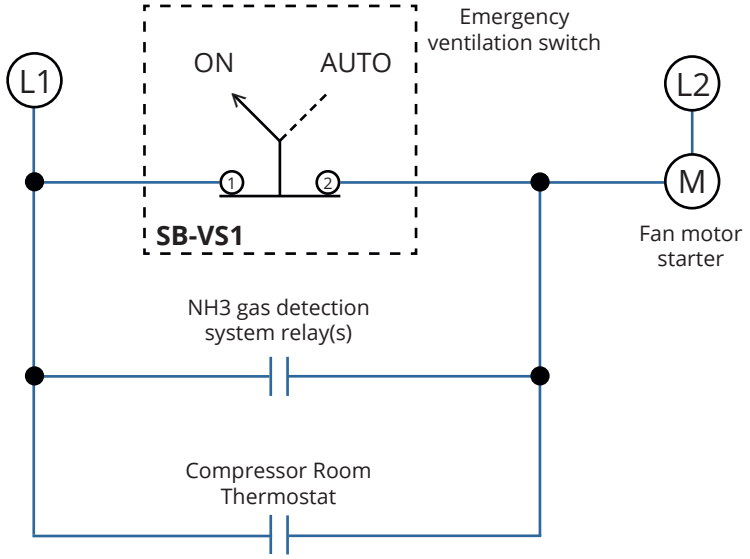
CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

ANSI / IIAR 2-2014:
6.12 Emergency Control Switches

6.12.2 Emergency Ventilation Control Switch. A clearly identified control switch for emergency ventilation that is not operated continuously shall be located outside the machinery room and adjacent to the designated principal machinery room door. The switch shall provide "ON/ AUTO" override capability for emergency ventilation. The function of the switch shall be clearly marked by signage near the controls. The switch shall be readily operable.

Example Wiring Diagram (Normal state is the "ON" position)



RESET-SILENCE SWITCH BOXES

Key Features

- Stainless steel 22 mm momentary pushbutton switch
- LED ring backlit for high visibility
- IP66/NEMA 4 weatherproof design for outdoors or washdown environments
- 24 VDC rated (provided by GG-6 control panel)
- 1.5 Amp normally open contacts
- Circuit board with terminal block for wire landings
- Mounting flanges for wall mounting
- Solution for Compressor Room ventilation remote reset application
- Silence switch allows operators to silence horns if desired
- 2-year warranty

High-visibility remote Reset and Silence switches for gas detection systems.

The S1, R1, and SR1 switches allow the GG-6 control panel to be located outside of the compressor room with the Reset and Silence switches located inside the compressor room for easy access. A Silence switch can also be located outside of the compressor room.

The switches are connected to the GG-6 controller via three wires for the reset switch and four wires for the silence/reset, and has wire terminals on the circuit board for optional switch lighting. These switches can be used in other controller applications such as PLCs and interlock panels.

The switches are housed in a durable polycarbonate enclosure able to withstand weather and washdown environments for indoor or outdoor mounting applications. A terminal block for wire landings, and mounting flanges are also included for easy installation.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

ENCLOSURE: Polycarbonate, IP66/NEMA 4

OPERATING TEMPERATURE: -40°F to +150°F

MOUNTING PLATE: Anodized aluminum

CONTACTS: (2) NO

ACTUATOR: Momentary

MECHANICAL DURABILITY: 300,000 cycles

ILLUMINATION: LED ring, white

CURRENT RATING: 1.5A (24 VDC)

DIMENSIONS: 6.35” high x 4.42” wide x 3.2” deep

Configurations

All pushbutton switches are pre-installed and wired in their enclosures

Order #:		
	SB-R1	GG-6 Reset pushbutton switchbox, LED, momentary, NEMA 4 enclosure
	SB-S1	GG-6 Silence pushbutton switchbox, LED, momentary, NEMA 4 enclosure
	SB-SR1	GG-6 Silence and Reset pushbutton switchbox, LED, momentary, NEMA 4 enclosure

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

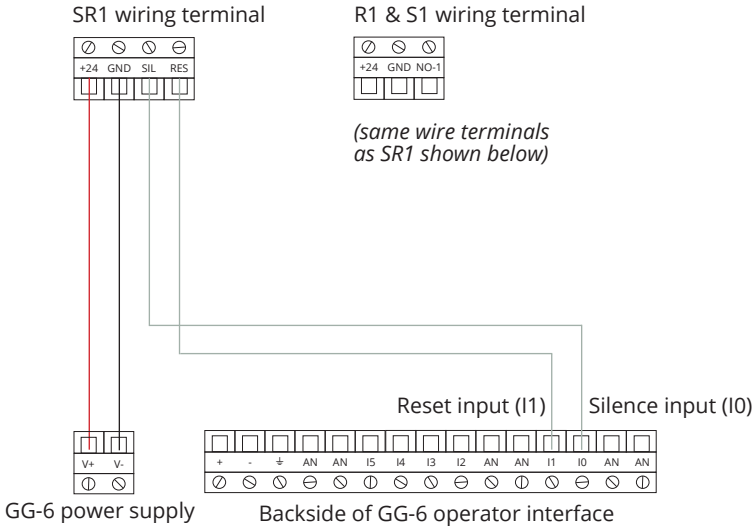
ANSI / IIAR 2-2014:
6.13 Ammonia Detection and Alarm
6.13.2.3 Detection of ammonia concentrations equal to or exceeding 150 ppm (1/2 IDLH) shall activate visual indicators and an audible alarm and shall activate emergency ventilation, where required, in accordance with Section 6.14.7. Once activated, emergency ventilation shall continue to operate until manually reset by a switch located in the machinery room.

Wiring Diagram Example

Ground wire required for LED ring backlight.

For the SB-SR1, use 20 AWG 4-conductor cable.

For the SB-S1 and SB-R1 models, only 3 conductors are needed.



SB-R1 and SB-S1

SB-SR1

RM420-LR

RELAY MODULE

Key Features

- 4-20 mA feed-through design maintains signal output function
- Relay output with Form C dry contacts, 5A, 24 VDC, or 8A, 120 VAC
- 24 VDC power requirements with 4-20 mA signal input
- 2-second alarm / 10-second clear, non-latching relay
- Circuit board with terminal block for easy wire landings
- Adjustable alarm setpoints (1-99% of scale), with rotary switches
- Threaded insert allows for 1/2" or 1" conduit and fittings
- LR rigid conduit body allows for outdoor or washdown installation
- Economical alternative to long control-wiring pulls
- 2-year warranty

Easily add a fail-safe relay output to any 24 VDC 4-20 mA device.

The Relay Module is an economical solution to adding a fail-safe relay output to any 4-20 mA device. It can be directly mounted and wired to any GG sensor to provide equipment shutdown such as rooftop AHU's, solenoid valves, etc. The relay module can also be used with a Horn/Strobe to provide audio visual notification at the sensor location.

The 4-20 mA analog signal feeds through the relay module to maintain the existing function of the gas sensor or output device. The alarm setpoint is adjusted via rotary switches in 1% increments for varying alarm setpoints between 1-99% of full scale. The relay will trip once the signal reaches the setpoint on the relay module.

The circuit board of the Relay Module is potted inside the conduit body to completely prevent corrosion due to water or moisture, and is able to withstand harsh weather and washdown environments. This allows the relay module to be used in any environment you place your CTI detector. A 10" 3-wire pigtail is built-in for easy wiring to the gas detector.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

POWER REQUIREMENTS: 24VDC, 20mA (plus 1A max current draw of attached device)

RELAY: (1) SPDT relay, Form C contacts, 5A @ 24 VDC, 8A @ 120 VAC, normally energized, non-latching, Status LED shows relay state

RELAY TIME DELAY: 2 second on, 10 seconds off

FAIL SAFE FUNCTION: Sensor fault (0.5 mA) or loss of power will de-energize the relay

FAULT SETPOINT: 1 mA

ALARM DIRECTION: Upscale only

ENCLOSURE: Powder coated aluminum, LR conduit body

OPERATING TEMPERATURE: -40°F to +122°F

CERTIFICATION: SGS listed to UL 61010-1, and CSA C22.2 No. 61010-1-12

WARRANTY: 2-years

Configurations

Order #: RM420-LR Relay Module 4-20mA, LR Configuration

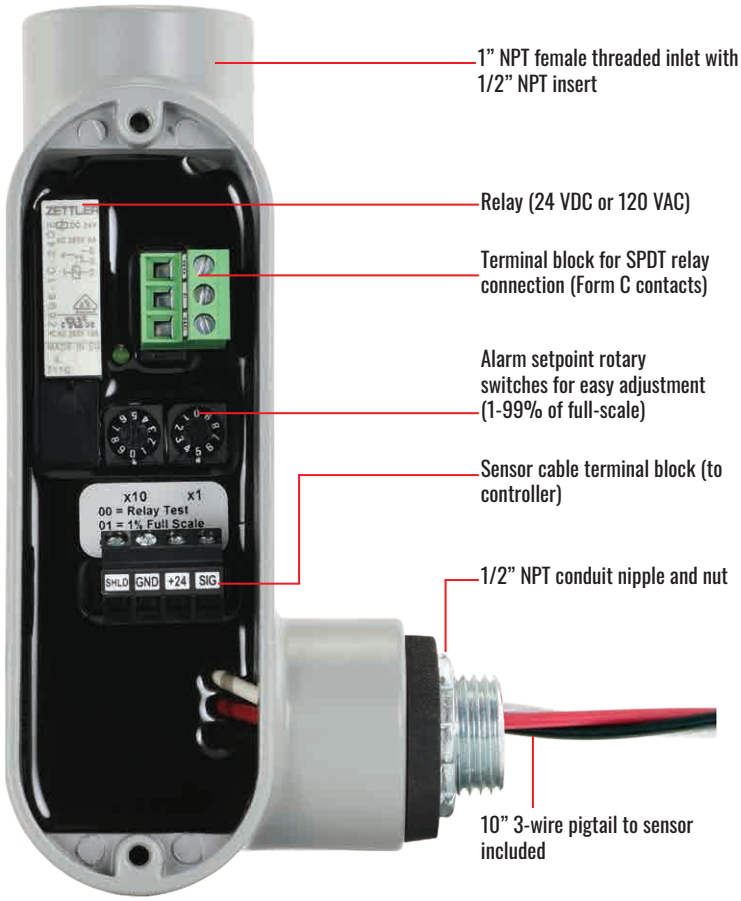
CTi GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The Relay Module can be used as a stand-alone device or feed-through, either terminating the 4-20mA signal, or passing it through to a controller input.

Precise alarm setpoints in 1% of full-scale increments are achieved using the two rotary switches. For example, setting the switches to positions 2 and 5 (from left to right), equates to 25% of full-scale (or 8 mA). The relay will trip once the signal reaches the setpoint. The fail-safe design also de-energizes the relay upon loss of power.

To test the relay, turn both rotary switches to 0. This will instantaneously de-energize the relay and allow verification of the relay output. To clear the relay, adjust the switches back to their intended alarm positions.



Wiring Diagram

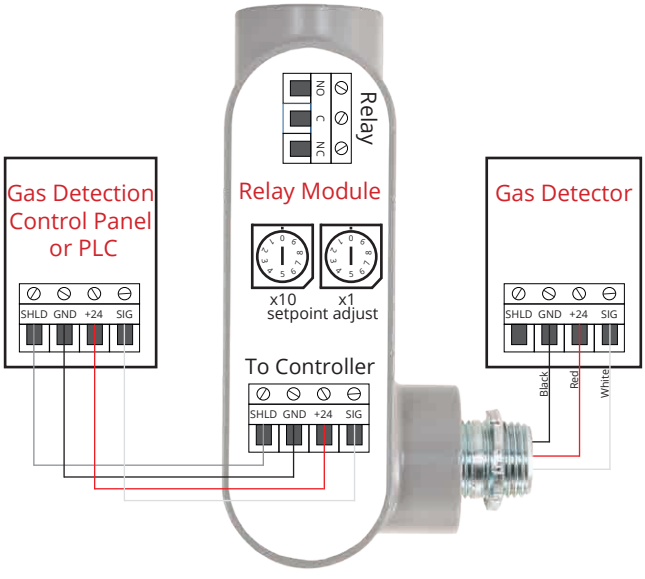


Figure 1
Feed-through configuration

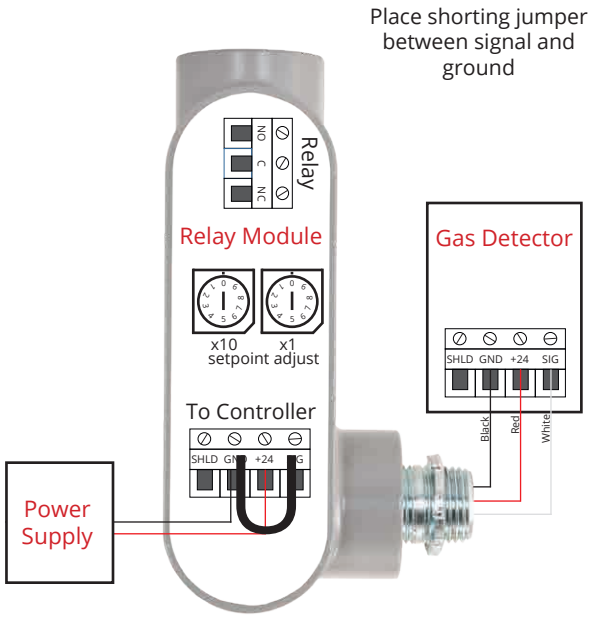


Figure 2
Stand-alone configuration

MM420-LR

MODBUS MODULE

Coming Soon

Key Features

- Converts 4-20 mA output signals to Modbus RS485 outputs
- Backwards compatibility for GG series sensors and the GasMark M255 Control Panel
- Modbus RS-485 allows sensors to be daisy chained together, no need to wire all sensors directly back to controller
- Modbus addressable via 8-position Dip Switch
- Potted components contained within a rigid conduit body enclosure, suitable for wet locations (UL 514A)
- Threaded insert allows for 1/2" or 1" conduit and fittings
- LR rigid conduit body allows for outdoor or washdown installation
- 2-year warranty

Easily monitor existing 4-20 mA sensors with Modbus 485

The Modbus Module is an economical solution to adding the versitility of Modbus communications to your existing system of GG series sensors. It can be mounted adjacent and wired to an existing GG gas detector allowing communication with the GasMark M255 Control Panel via Modbus RS485.

RS-485 Modbus communication allows the sensors to be wired together in a daisy chain, reducing the need for individual sensors to be home run to the controller. Due to voltage drops, 24Vdc power supplies may need to be added along the runs if the supply voltage to the devices drops below spcified voltage requirements.

The circuit board of the Modbus Module is potted inside the conduit body to completely prevent corrosion due to water or moisture, and is able to withstand harsh weather and washdown environments. This allows the modbus module to be used in any environment you place your CTI detector.

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

VOLTAGE: 24VDC, 50mA (plus 2A max current draw of attached device)

DEVICE CURRENT: 25mA @ 24VDC

PASS-THROUGH CURRENT: 2A max @ 24VDC

ANALOG INPUT: 25 mA max

COMMUNICATIONS: 4-20 mA analog in to RS-485 Modbus out

OPERATING TEMPERATURE: -49°F-120°F (-45°C-49°C)

HUMIDITY: 5-100% Condensing

WARRANTY: 2-years

Configurations

Order #: MM420-LR Modbus Module, LR Configuration

CTi GAS DETECTION SPECIALISTS

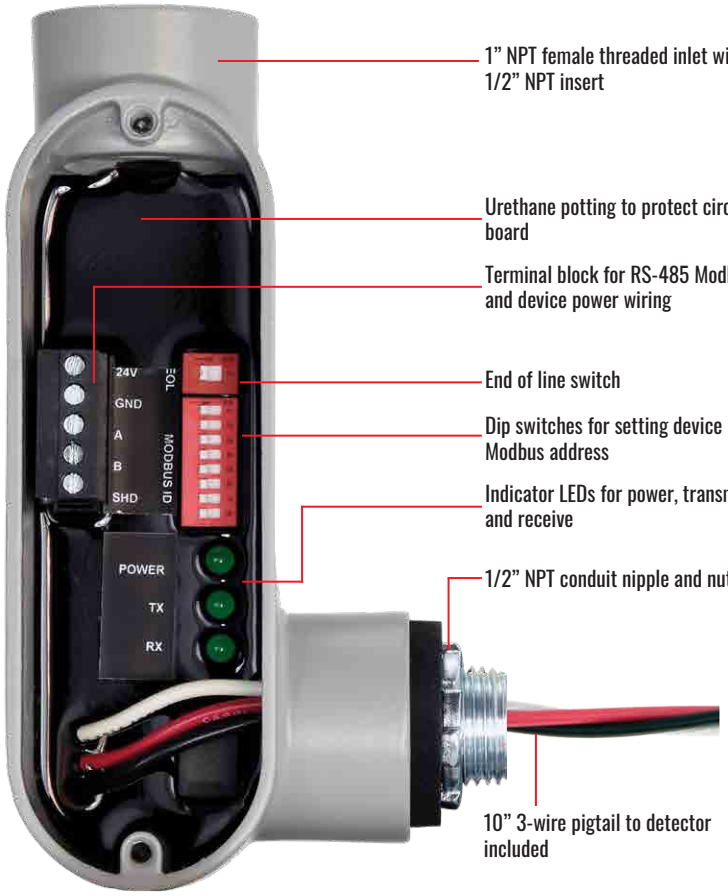
920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Each Modbus Module gas detector has a communication port with three terminals: A, B and SHLD. On these three terminals the communication cable is connected so that all devices that take part in the communication are connected in parallel. All of the 'A' terminals must be connected together and all of the 'B' terminals must be connected together, respectively. These wires can be doubled-up in each terminal.

24V: To 24Vdc terminal of power supply.
GND: To ground terminal (0V or -) of power supply.
A: To RS-485-A terminals of next and previous devices in line.
B: To RS-485-B terminals of next and previous devices in line.
SHD: To case (earth) ground of monitoring equipment.

For "end of line" devices, set the EOL switch position to "ON". For all other devices, verify that the EOL switch is in the "OFF" position (see Figure 1).

For setting the Modbus addresses, use this convenient online tool:
Modbus ID dip switch calculator



Wiring Diagram

Note:
For all "end of line" devices, be sure to set the EOL switch position to "ON".
Use the Modbus ID dip switch calculator to configure Modbus addresses.

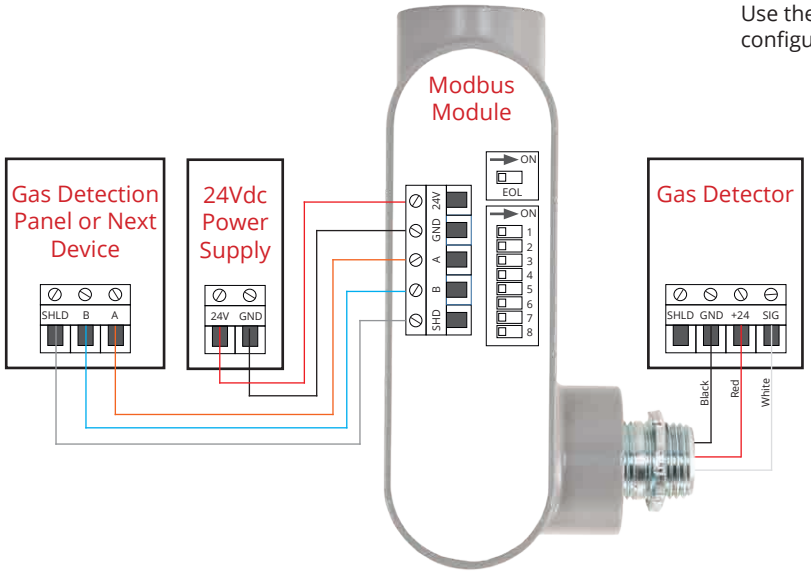


Figure 1

TEMPERATURE SENSOR

4-20mA RTD

Key Features

- -60°F to +160°F range (-51°C to +71°C)
- 2-wire transmitter with RTD probe
- 24 VDC, industry standard linear 4-20 mA output
- Easily adapted to CTI gas detection controllers
- Great for engine room ventilation control and refrigerated areas
- Watertight enclosure designed for washdown areas and outdoors
- Long term accuracy/stability of 0.1% of span/year

Use in conjunction with CTI gas sensors for a complete engine room ventilation system package.

The Temp Sensor TS2 was designed for indoor/outdoor temperature monitoring. The IP65 aluminum enclosure can withstand washdown areas and other harsh environments. A fast-acting RTD reacts quickly to temperature changes and features a very long expected life with no change in accuracy.

This sensor is used for measuring indoor air temperature. Typical applications are mechanical rooms, refrigerated rooms, etc. Installation should be about 6 ft off the floor, and not located near a cooling or heat source, or directly in front of air blowing channels.

The Temp Sensor TS2 connects to any 24 VDC, 4-20mA controller via 2-conductor cable. The weatherproof powder coated enclosure will easily stand up to harsh environments.

Applications

- Engine Rooms
- Refrigerated areas
- Mechanical Rooms
- Sea Vessels
- Chemical Plants
- Heat Treatment

Benefits

- Easy integration
- Long-term reliability

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **Temp Sensor TS2** is an easy solution for ventilation or temperature control and integrates nicely with the CTI gas detection controllers.

This simple 2-wire device mounts almost anywhere and can be installed side-by-side with gas sensors to provide temperature and gas detection monitoring points at each location.

The **Temp Sensor TS2** is shipped with a factory calibration that should not require calibration for 5-10 years. Checking against a calibrated standard is recommended on an annual basis.

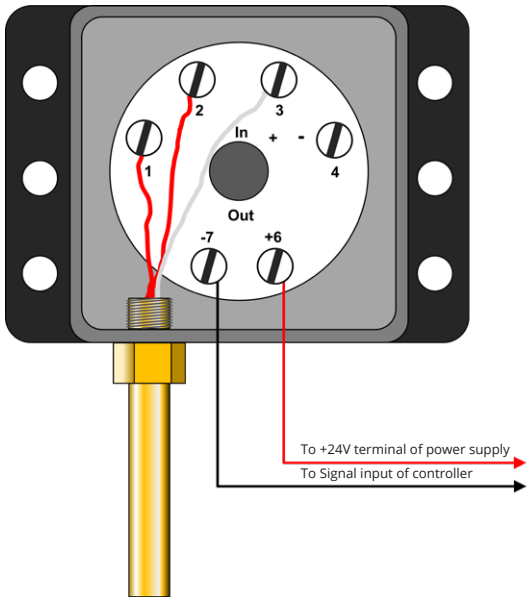
Installation Information

- Use 2 or 3-conductor, insulated, stranded, shielded copper cable.
- Do not pull sensor wiring with AC power cables. This can cause electrical interference.
- Ground the shield at the main control panel. Connect the shield wire to the sensor chassis.
- Should be easily accessible for calibration and maintenance.
- Take air movement and ventilation patterns into account.

Ordering Information

The **Temp Sensor TS2** is delivered ready to install. Use the model number below to order.

Order #: Temp Sensor TS2



SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
+24 VDC, 25 mA

Output Signal:
Linear 4/20 mA (max input impedance: 700 Ohms)

Linearity:
+/- 0.1% of full-scale

Repeatability:
+/- 1% of full-scale

Accuracy:
+/- 1% of full-scale

Zero Drift:
Less than 0.1% of full-scale per month, non-cumulative

Span Drift:
Less than 0.1% of full-scale per year

Temperature Range:
-60°F to +160°F (-51°C to +71°C)

Humidity Range:
0-95% RH condensing (100% intermittent), with proper conduit seals

Wiring Connections:
2-conductor, shielded, stranded, ≥ 20 AWG cable up to 1500 ft

Terminal Block: (Field Wiring)
16-26 AWG, torque 4 lbs-in

Enclosure:
Powder coated aluminum NEMA 4X, Captive screws in lid. For non-classified areas

Dimensions:
4.6" high x 3.4" wide x 1.75" deep

Weight:
1 lb

Warranty:
2-years

SENTINEL AUTO-DIALER

CLOUD-BASED MONITORING SYSTEM

Key Features

- Requires annual subscription plan - see below for details
- Receive text, email or phone call during an alarm condition
- Optional cellular-based coverage from AT&T or Verizon
- Supervised internet connection - always online and monitoring
- Monitor up to 12 zones/detectors through dry contacts or analog inputs
- 8-hour rechargeable battery backup during power outage
- Easily wired to gas detection control panel relay outputs
- Web access for programming, status and reports
- Unlimited number of texts, emails and phone calls
- Great for remote facilities where there is no phone line

Network or cellular auto-dialer with cloud-based monitoring system. Receive user programmable texts, emails, and phone calls.

The Sentinel monitoring system is designed to be an easy, cost–effective, cloud–based monitoring auto-dialer to notify you when equipment or conditions go awry. The internet browser–based programming makes the device easy to use from any computer or tablet.

The system allows multiple users to be notified immediately of any detected problems. Notification can occur via voice call, email or SMS (text message). The internal battery backup system ensures the unit will continue to run if main power fails.

$120 or $300 cellular annual subscription is required for text and phone alerts, paid directly to Sensaphone. SIM card is included. A free annual subscription is also available but does not offer text or phone call alerts. The subscription plan registration form hyperlink is in the Ordering Information section on the next page.

Applications

- Gas Detection Systems
- Remote Locations

Benefits

- Easy integration
- Long-term reliability

Full access through mobile app or PC

Cellular model Includes wired antenna

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Easy as...

1. Connect gas detection control panel relays to the relay input terminals on the Sentinel.
2. Activate the cellular service (for cellular versions).
3. Log in to sensaphone.net and create a free account to access, program and view real-time data from your Sentinel.

Check on your system by using the Sentinel app or logging into your account from any mobile device. Get access to real-time data.

Enhanced data logging capabilities allow users to print, graph or export accurate historical records.

The Sentinel can call, text or email alarms to an unlimited number of contacts. A flexible alarm delivery system allows unlimited customization that includes different users and alarms.

Download the free Sentinel mobile app to check real-time status, acknowledge alarms, and make programming changes.

Ordering Information

The **Sentinel Auto-Dilaer** is delivered ready to install. Use the model number below to order.

Order #: AD-SENTINEL-PRO
AD-SENTINEL-ATT
AD-SENTINEL-VERIZON
AD-SENTINEL-1YR-SERVICE-120 registration (network cloud subscription)
AD-SENTINEL-1YR-SERVICE-300 registration (cellular cloud subscription)

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Input Power:
120 VAC, 0.5 mA
12 VDC, 30W plug-in power supply with 6' cord included.

Input Types:
Contact, 2.8KΩ, 10KΩ

Relay Output:
Rated for 1A 30VAC / 1A 30VDC maximum

Battery Backup:
Rechargeable Battery: Internal 8 Hr NiMH Battery Pack (Part # BAT-0032)
Memory/Clock Battery: Internal 5-10 yr CR2 lithium (Part # BAT-0033)
Cellular Battery: 3AH SLA Battery (BAT-0005)

Alarm Notifications:
Unlimited number of email, text or phone calls

Remote Access:
Website to access status and programming

Local Access:
LEDs for Alarm Status, Power Status, and Cellular link

Temperature Range:
+32°F to +122°F (0°C to +50°C)

Humidity Range:
0-90% RH non-condensing

Antenna: (Cellular only)
2G/3G/4G Frequencies: 698-960/1710-2700MHz
Peak gain: 5dBi
Pattern: Omni-directional
Height: 6.45"
Diameter: 1.90"
IP Rating: IP-66
Operating Temp: -40F to 176F (-40C to 80C)

Terminal Block: (Field Wiring)
16-26 AWG, torque 4 lbs-in

Enclosure:
Polycarbonate IP66, NEMA 4X, with hinged lid. Lid latches and captive screws in lid. For non-classified areas

Dimensions:
14" high x 12" wide x 7.4" deep

Weight:
14 lb

Warranty:
2 years

NH_3 RESPONDER ULTRA

AMMONIA LEAK DETECTOR

BW Technologies by Honeywell

Specially configured Ultra

Key Features

- Water-resistant design in an integral concussion-proof enclosure
- Large LCD allows for easy-to-read monitoring
- Integral motorized pump for remote sampling and fast response
- Rechargeable lithium polymer battery
- 95 dB alarm tone, bright LED alarm bars, & internal vibrating alarm
- Auto backlight activates in low light & when in alarm
- Four alarm levels: instantaneous Low Alarm, High Alarm, TWA, and STEL
- Records TWA, STEL, and max gas exposures (displays readings on command)
- Datalogger with programmable sampling intervals
- Includes carrying case, wand and hose

With full-range detection from 0 ppm to 100% LEL,
it's the only portable ammonia detector you'll ever need.

The NH3 Responder Ultra utilizes two sensor technologies to cover the ranges of interest in an ammonia response operation. The low-level sensor PID sensor detects ammonia concentration readings within the range of 0-1,000 ppm for the 35 ppm PEL and 300 ppm IDLH decision making points.

At concentrations over 4,500 ppm, the PID sensor will display "OL" and the LEL sensor takes over, giving you 3-100% LEL readings for the explosive-levels decision making range. Most response trainers recommend leaving the area at 10% LEL. For added safety, the onboard oxygen sensor will alarm in the event of low O2 levels.

Additionally, the PID sensor has an extremely fast response time and is useful for finding small ammonia leaks. Think of it as an "electronic sulfur stick". Refrigeration technicians will find this a useful tool for locating difficult-to-find leaks by "sniffing" around valve packing, sight glasses, shaft seals, etc.

Applications

- Compressor Rooms
- Tank Rooms
- Vent Lines
- Air Monitoring
- Sea Vessels
- Food Processing
- Chemical Plants
- Refrigeration Systems
- Emergency Response

Optional Accessories

BW-ID-ULTRA (Intellidock)
BW-ID-ENABL (Intellidock Enabler Kit)

The IntelliDoX automatically tests the gas detector and sensors while transferring data to the docking station. The Enabler Kit has all of the power and tubing hardware needed. These two products are necessary for auto-calibration and transfer of the data from the Ultra. Call for more information.

IntelliDox

Enabler Kit

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Equipped with one of the largest LCD's on the market, the **NH3 Responder Ultra** is still smaller than some competitors' models.

The **NH3 Responder Ultra** comes equipped with an integral motorized pump. Audible, visual, and vibrator alarms activate in the event of a low, high, TWA, or STEL alarm condition. Other standard features include automatic calibration, datalogger, full function self-test, user selectable confidence beep, stealth mode, backlight options, selectable ppm resolution, STEL / TWA measurement choice, combustible correction factor options, user-settable calibration gas concentrations, and multi-language support.

Ordering Information

The **NH3 Responder Ultra** is delivered ready for use with PID, LEL and O2 sensors, integral motorized pump, rechargeable lithium polymer battery and charger, sampling wand and hose (3 ft), stainless steel alligator belt clip, instructions, and a rugged hard-shell carrying case.

Order #: NH3-RESPONDER-ULTRA
BW-ULTRA-BATT (rechargeable battery and screw)
BW-ULTRA-PID-RS (replacement PID sensor)
BW-ULTRA-ES (replacement Electrode Stack)
BW-ULTRA-LEL-RS (replacement LEL sensor)

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Battery:
14 hours @ -4°F

Pump Draw:
Sample up to 75 ft

Sensors:
PID (VOC) 10.6 eV lamp: (0-1,000 ppm NH3)
(LEL): (3-100% LEL (4,500-150,000 ppm NH3))
Oxygen (electrochemical): (0-25% (vol))
Additional options: CO and H2S

Calibration Due Date:
Days remaining until next calibration displayed on start-up

LCD:
Continuous, alphanumeric gas readout and status display advises

Tests:
Full function self-test, sensor integrity, circuitry, battery, and audible/visual alarms on activation

Calibration Schedule:
6-month intervals

Operating Temperature:
-4°F to +131°F / -20°C to +50°C

Humidity: 0 - 95% RH (non-condensing)

Alarm Indicators:
Visual alarms: Two flashing alarm bars visible from all angles. LCD indicates gas present and alarm levels encountered

Audible alarm: Typically 95 dB at 1 ft. / 30 cm variable pulsed audible alarm

Vibrator alarm: Pulses warning in gas alarm conditions, or for any status alarms

Status alarms: Low battery, over range, multiple gas, pump, and failed or missing sensor

Alarm Levels:
Instantaneous Low Alarm; Instantaneous High Alarm; TWA (time-weighted average), and STEL (short-term exposure limit)

Alarm setpoints: Displayed on activation and on demand

Enclosure:
Rugged, composite material; two-shot molded polymer case with integral anti-shock boot. IP66 water resistant and dust proof.

Dimensions: 5.8 x 3.3 x 1.6 in

Weight: 14.5 oz (with clip)

Gas concentration:
Simultaneously and continuously displays gas concentration(s) for all sensors (in ppm or % LEL). Peak (max)/STEL/TWA ppm or %: Records exposures and displays on demand

User field options:
Confidence beep, set STEL period, force calibration on start-up, enable / disable sensor, pass code protection, latching alarms, span level, passed calibration user-lockout option, "SAFE" display function, stealth mode, fast pump, alarm only backlight mode, LCD language option, STEL calculation choice, TWA calculation choice, PID / combustible correction factor options, and user-settable calibration gas level

Certifications:
UL: Class 1, Div 1, Group A, B, C, D
Class 1, Zone 0, Group IIC

ATEX: II 1G Ex ia IIC T4 Ga

IECEx: Ex ia IIC T4 Ga

CE: European Conformity

Warranty:
Instrument: 3-years
Sensor: 3 years (2 years NH3, 1 year PID and CL2)
Battery: 2 years

BW ULTRA

HAND-HELD GAS DETECTOR

Key Features

- Monitor up 5 different gases with one unit
- Water-resistant design in an integral concussion-proof enclosure
- Large LCD allows for easy-to-read monitoring
- Integral motorized pump for remote sampling and fast response
- Rechargeable lithium polymer battery
- 95 dB alarm tone, bright LED alarm bars, & internal vibrating alarm
- Auto backlight activates in low light & when in alarm
- Four alarm levels: instantaneous Low Alarm, High Alarm, TWA, and STEL
- Records TWA, STEL, and max gas exposures (displays readings on command)
- Datalogger with programmable sampling intervals

The new full-featured Ultra 5-gas portable

The BW Ultra utilizes up to 5 sensors for monitoring and detection of a variety of gases. The sensors can be custom selected with a maximum of 5 gases per unit. This allows the ULTRA to be configured for a multitude of applications.

With preset and user adjustable alarm setpoints, dangerous gas levels are instantly made aware by audible and visual alarms, as well as vibration; ensuring that personnel are aware of potential hazards.

A standard configuration for a facility requiring both confined space and ammonia detection would be comprised of the following sensors:

O2 (Oxygen) | 0-25%
% LEL | 0-100% LEL
H2S (Hydrogen Sulfide) | 0-100 ppm
CO (Carbon Monoxide) | 0-2,000 ppm
PID set for NH3 (Ammonia) | 0-1,000 ppm

This would be the 5-Gas PID listed below under Popular Configurations.

Ordering Information

The ULTRA can be configured with up to 5 sensors to accomodate a variety of applications. Use the configurator tables to determine compatibility and configure the correct part number. For assistance and pricing, please contact CTI.

Each BW-Ultra is shipped calibrated with the following accessories: AC charger, 3' sample tubing, filter kit, quick start guide, and certificate of calibration.

Optional Accessories

BW-M5-PROBE (Sample Probe)
BW-ULTRA-CC (Carrying Case, hard shell)
BW-ID-ULTRA (Intellidock)
BW-ID-ENABL (Intellidock Enabler Kit)

Popular Configurations:

BW-ULTRA-XWHM00 (Confined Space)
BW-ULTRA-XWHMQ1 (5-Gas PID)
BW-ULTRA-XWHMA1 (5-Gas NH3)
BW-ULTRA-XWHMB1 (5-Gas CO2)

The IntelliDoX automatically tests the gas detector and sensors while transferring data to the docking station. The Enabler Kit has all of the power and tubing hardware needed. These two products are necessary for auto-calibration and transfer of the data from the Ultra. Call for more information.


IntelliDox


Enabler Kit

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Configurator Tables

Step 1:
Select 1st sensor

Sensor	Range	Code
None	n/a	0
O_2 Oxygen	0-25%	X

Step 2:
Select 2nd sensor

Sensor	Range	Code
None	n/a	0
% LEL, Filtered	0-100% LEL	W

Step 3:
Select 3rd sensor

Sensor	Range	Code
None	n/a	0
H_2S Hydrogen Sulfide	0-100 ppm	H
CO Carbon Monoxide	0-2000 ppm	M

Step 4:
Select 4th sensor

Sensor	Range	Code
None	n/a	0
H_2S Hydrogen Sulfide	0-100 ppm	H
CO Carbon Monoxide	0-2000 ppm	M

Step 5:
Select 5th sensor

Sensor	Range	Code
None	n/a	00
*PID for **NH3**	0-1000 ppm	Q1
IR for **%LEL**	0-5 %	W4
IR for **CO_2** Carbon Dioxide	0-50000 ppm	B1
SO_2 Sulfur Dioxide	0-100 ppm	S1
NH_3 Ammonia	0-100 ppm	A1
H_2 Hydrogen	0-2000 ppm	R1
Cl_2 Chlorine	0-20 ppm	C1
NO_2 Nitrogen Dioxide	0-50 ppm	D1
HCN Hydrogen Cyanide	0-100 ppm	Z1
NO Nitrogen Monoxide	0-200 ppm	N1
CO Carbon Monoxide (H_2 Resistant)	0-1000 ppm	M2

*PID sensor programmed with correction factor for NH3 unless specified otherwise

All CTI Configurations have black housing and the part numbers begins with BW-ULTRA. Sensor selections shall be placed in sequential order using the Configurator tables.

Example order number for a typical Confined Space configuration:

BW-ULTRA-	X	W	H	M	00

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Battery:
18 hours (14 hours with PID or IR sensor) @ -4°F

Pump Draw:
Sample from up to 75 ft

Data Logging:
45 days based on 8 hour shifts every 15 seconds logging

Calibration Due Date:
Days remaining until next calibration displayed on start-up

LCD:
Continuous, alphanumeric gas readout and status display advises

Tests:
Activated Detectors automatically perform one internal diagnositc test every 24 hours

Operating Temperature:
-4 to +131F / -20 to +50C

Humidity: 5 - 95% RH (non-condensing)

Dimensions: 5.8 x 3.3 x 1.6 in

Weight: 14.5 oz (with clip)

Alarm Indicators:
Visual alarms: Flashing alarm bars visible from all angles. LCD indicates gas present and alarm levels encountered

Audible alarm: Typically 95 dB at 1 ft. / 30 cm variable pulsed audible alarm

Vibrator alarm: Pulses warning in gas alarm conditions, or for any status alarms

Status alarms: Low battery, over range, multiple gas, pump, and failed or missing sensor

Alarm Levels:
Instantaneous Low Alarm; Instantaneous High Alarm; TWA (time-weighted average), and STEL (short-term exposure limit)

Alarm setpoints: Displayed on activation and on demand.

Gas concentration:
Simultaneously and continuously displays gas concentration(s) for all sensors (in ppm or % LEL). Peak (max)/STEL/TWA ppm or %: Records exposures and displays on demand.

Enclosure:
Rugged, composite material; two-shot molded polymer case with integral anti-shock boot. IP66/68 water resistant and dust proof.

User field options:
Adjust STEL period (5-16 minutes in 1 minute intervals), Calibration span levels, Calibration interval, Bump test interval, Select combustible gases measurement: 0-100% LEL or Methane gas 0-5%,LEL and PID correction factors, Calibration due date (1 to 365 days, or set to zero for off), Individual sensor enabledisable, Latching alarms, Stealth mode, Languages: English, French, German, Portugese, Spanish, Simplified Chinese and Russian

Certifications:
UL: Class 1, Div 1, Group A, B, C, D
Class 1, Zone 0, Group IIC

ATEX: II 1G Ex ia IIC T4 Ga

IECEx: Ex ia IIC T4 Ga

CE: European Conformity

Warranty:
Instrument: 3 years
Sensors: 3 years (2 years NH3, 1 year PID and Cl2)
Battery: 2 years

WINGMAN F1

SINGLE-GAS AMMONIA PERSONNEL PROTECTOR

Coming Soon

Key Features

- Handheld single gas detector Ammonia, 0-500 ppm
- Small, light and easy to wear
- 4 buttons for easier menu navigation
- Water-resistant design in an integral concussion-proof enclosure
- Real-time readings on LCD
- 1-2 year battery life
- Internal vibrating alarm for high noise areas
- LED visual alarm
- Piezo audio alarm buzzer
- LED front lighting activated by alarm condition or key press
- Four alarm levels: instantaneous Low Alarm, High Alarm, TWA, and STEL
- Accurately monitor OSHA/NIOSH/ACGIH exposure limits

Personnel protection for Ammonia gas.

The Wingman F1 personnel protector utilizes proven electrochemical sensor technology to provide accurate real time readings of ammonia gas concentrations. Facility personnel will find this a useful tool for monitoring ammonia levels independent of the facility's fixed gas detection system.

The Wingman has everything you expect, with a reliable life span, four-button operation and small, lightweight profile. The Wingman provides audio/visual and vibrating alarms at customizable low and high alarm set-points, as well as TWA and STEL alarms.

The Wingman is designed to handle the harsh environments of the food industry and many other applications. The water resistant housing and gas-permeable sensor membrane offer great performance in areas that are wet, hot, or cold.

Applications

- Anywhere ammonia gas may be present

Accessories Included

- Long Life Battery
- Cal Gas Adapter & Hose
- Alligator Belt Clip
- Concussion-proof housing

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **Wingman F1** has a large LCD offering real-time concentrations of toxic gases.

Audible, visual, and vibrator alarms activate in the event of a low, high, TWA, or STEL alarm condition. Other standard features include full function self-test, automatic backlight, event log, field-selectable calibration gas concentrations, and peak reading.

The event log stores up to 100 of the last events with a time and date stamp. When full, wraparound memory replaces oldest data with most recent.

From the home screen, the Up arrow provides a quick view of the Peak (max) concentration encountered along with TWA and STEL values since power up.

Ordering Information

The **Wingman F1** is calibrated before it ships and is delivered ready for use with an electrochemical sensor, long life battery, stainless steel alligator belt clip, quick-start instructions, and calibration adapter and tubing.

Order #: F1-NH3 Ammonia, 0-500 ppm

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Sensor:
Electrochemical (field replaceable).

Gas:	Range:	Resolution:
NH3	0-500 ppm	1 ppm

Sampling Method:
Diffusion.

Tests:
Sensor integrity, circuitry, audible/visual alarms on activation, and battery (continuous).

Alarm Indicators:
Clearly advises alarm conditions with audible, visual, and internal vibrator alarms.

Visual alarms: Two flashing red LEDs visible from all angles. LCD indicates gas present and alarm levels encountered.
Audible alarm: Piezo audible alarm.
Vibrator alarm: Pulses warning in gas alarm conditions.
Status alarms: Low battery, calibration due.

Alarm Levels:
Instantaneous Low Alarm; Instantaneous High Alarm; TWA (8-hour time-weighted average), and STEL (15-minute short-term exposure limit).

Alarm setpoints:
Customizable and displayed in menu.

Calibration Schedule:
6-month intervals.

Calibration Due Date:
Days remaining until next calibration displayed.

Enclosure:
Polycarbonate with thermoplastic elastomer (TPE). Stainless steel hardware. For non-classified areas.

Display:
LCD, HR TFT, 2.7" monochrome. LED front lighting activated by alarm condition or key press.

Gas concentration:
Continuously displays gas concentration.

Event Logging:
Date and time stamp for calibration, alarms (low, high, TWA, and STEL), and setting changes. Peak value held until cleared.

Battery:
Field replaceable 3.6V lithium battery with 1-2 years battery life.

Humidity:
0 - 95% RH (non-condensing).

Temperature:
-4°F to +122°F (-20°C to +50°C) continuous.
-40°F to +122°F (-40°C to +50°C) short-term.

Dimensions:
2.7 x 2.6 x 1.6 in.

Weight:
4.0 oz.

Warranty:
2 years for the unit.
2 years for the sensor element.

SOLO

SINGLE-GAS PERSONNEL PROTECTOR

Key Features

- Handheld single gas detector for CL2, CO, CO2, H2, H2S, NH3, NO2, or O2
- Small, light and easy to wear
- Water-resistant design in an integral concussion-proof enclosure
- Real-time readings on large LCD
- 1 year battery life
- Internal vibrating alarm for high noise areas
- Large, bright visual LED alarm ring
- Auto backlight activates in low light & when in alarm
- Four alarm levels: instantaneous Low Alarm, High Alarm, TWA, and STEL
- Accurately monitor OSHA/NIOSH/ACGIH exposure limits
- Bluetooth connectivity

Personnel protection for a many toxic gas applications.

The Solo personnel protectors utilize proven electrochemical sensor technology to provide accurate real time readings of toxic gas concentrations. Facility personnel will find this a useful tool for monitoring toxic levels independent of the facility's fixed gas detection system.

The Solo has everything you expect, plus additional features to make your compliance easier and more cost-effective than ever. All with a reliable life span, one-button operation and small, lightweight profile. The Solo provides audio/visual alarms at customizeable low and high alarm set-points, as well as TWA and STEL alarms.

The Solo is a single gas detector and each gas has a different range of detection. The ranges are as follows:

Chlorine (CL2): 0-50 ppm
Carbon Monoxide (CO): 0-2,000 ppm
Carbon Dioxide (CO2): 0-5,000 ppm
Hydrogen (H2): 0-1,000 ppm
Hydrogen Sulfide (H2S): 0-200 ppm
Ammonia (NH3): 0-1,000 ppm
Nitrogen Dioxide (NO2): 0-100 ppm
Oxygen (O2): 0-30% Volume

Applications

- Anywhere toxic gases may be present

Accessories Included

- Long Life Battery
- Cal Gas Clip
- Alligator Belt Clip
- Concussion-proof housing

The IntelliDoX automatically tests the gas detector and sensors while transferring data to the docking station. The Enabler Kit has all of the power and tubing hardware needed. These two products are necessary for auto-calibration and transfer of the data from the Solo. Call for more information.

IntelliDox

Enabler Kit

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

The **Solo** has a large LCD offering real-time concentrations of toxic gases.

Audible, visual, and vibrator alarms activate in the event of a low, high, TWA, or STEL alarm condition. Other standard features include full function self-test, stealth mode, confidence beep, backlight options, STEL / TWA measurement choice, user-settable calibration gas concentrations, calibration due lockout, and multi-language support.

Solo detectors come standard with a datalogging feature and include a built-in IR COM port for automatic data transfer to a computer through the optional Intellidock (sold separately). Note: An Intellidock and Enabler Kit are needed for data transfer from the **Solo**.

Up to 8 months of continuous data is automatically stored at 5 second intervals (based on a normal work week). Sampling rate can be adjusted in the user options. When full, wraparound memory feature replaces oldest data with most recent data.

Ordering Information

The **Solo** is calibrated before it ships and is delivered ready for use with an electrochemical sensor, long life battery, stainless steel alligator belt clip, instructions, and calibration adapter.

Order #:

BW-SOLO-CL2 (Chlorine)
BW-SOLO-CO (Carbon Monoxide)
BW-SOLO-H2 (Hydrogen)
BW-SOLO-H2S (Hydrogen Sulfide)
BW-SOLO-CO2 (Carbon Dioxide)
BW-SOLO-NH3 (Ammonia)
BW-SOLO-NO2 (Nitrogen Dioxide)
BW-SOLO-O2 (Oxygen)
BW-SOLO-CO-H (CO, H2 resistant)

BW-ID-SOLO (Intellidock)
BW-ID-ENABL (Intellidock Enabler Kit)

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Battery:
Field replaceable 3v Lithium battery with 1 year battery life

Sensors:
Electrochemical

Gas:	Range:	Resolution:
CL2	0-50 ppm	0.1 ppm
CO	0-2,000 ppm	0.5 ppm
CO2	0-50,000 ppm	100 ppm
CO-H	0-2,000 ppm	0.5 ppm
H2	0-1,000 ppm	2 ppm
H2S	0-200 ppm	0.1 ppm
NH3	0-1,000 ppm	1 ppm
NO2	0-100 ppm	0.1 ppm
O2	O2: 0-30% (vol)	0.1% (vol)

Tests:
Sensor integrity, circuitry, audible/visual alarms on activation, and battery (continuous)

Datalogger:
All readings and events. 5-second interval sampling, adjustable from 1 second to 60 seconds

User field options:
Confidence beep, latching alarms, stealth mode, automatic O2 calibration, automatic backlight, user-settable calibration gas level, calibration past due locked, and 11 language choices

Alarm Indicators:
Clearly advises alarm conditions with audible, visual, and internal vibrator alarms.

Visual alarms: Two flashing alarm bars visible from all angles. LCD indicates gas present and alarm levels encountered
Audible alarm: Typically 95 dB at 1 ft. / 30 cm variable pulsed audible alarm
Vibrator alarm: Pulses warning in gas alarm conditions, or for any status alarms
Status alarms: Low battery, calibration due

Alarm Levels:
Instantaneous Low Alarm; Instantaneous High Alarm; TWA (time-weighted average), and STEL (short-term exposure limit)

Alarm setpoints:
Customizable and displayed on activation

Calibration Schedule:
6-month intervals

Calibration Due Date:
Days remaining until next calibration displayed

Enclosure:
IP66 rugged, composite material. Highly water resistant and dust proof, with built-in concussion-proof boot

LCD:
Continuous, alphanumeric gas readout and status display advises

Humidity:
0 - 95% RH (non-condensing)

Temerature:
-40°F to +140°F (-40°C to +60°F

Dimensions:
2.7 x 2.6 x 1.6 in

Weight:
4.1 oz

Gas concentration:
Continuously displays gas concentration

Warranty:
3 years for the 1-Series detectors and sensor elements (H2S, CO, O2, and CO2).
2 years for the 4-Series detectors and sensor elements.
1 year for NH3, CL2, O3, ETO, CLO2, HCl, and HF sensor elements.

MICROCLIP XL

CONFINED SPACE MONITOR

BW Technologies by Honeywell

Key Features

- Confined Space detection for O2, CO, H2S, and LEL
- Compact, lightweight, and easy to wear
- IntelliFlash™ verifies operation and compliance
- Continuous LCD shows real-time concentrations
- One-button operation reduces training time
- Audible, visual, and vibrating alarms
- Simple automatic calibration procedure
- 10 hr battery life - recharges in less than 4 hours
- Built-in concussion boot and alligator clip

Portable detector for O2, CO, H2S, and LEL.
Compact and easily wearable for use in confined spaces.

The MicroClip XL utilizes 4 sensor technologies for gas monitoring in confined spaces. The LCD displays real-time readings of O2, CO, H2S, and Combustibles (LEL). Simple one-button operation reduces training time and prevents operator error. Audible, visual, and vibrating alarms warn of potentially hazardous conditions.

The MicroClip XL has a light and compact design for wearing comfortably. The case is water resistant, and is surrounded by a concussion-proof rubberized boot with a built-in alligator clip. This monitor provides continuous visual confirmation of detector operation and compliance with the IntelliFlash™ Feature.

Applications

- Confined Space
- Tank Rooms
- Vent Lines
- Air Monitoring
- Sea Vessels
- Food Processing
- Chemical Plants
- Refrigeration Systems
- Emergency Response

Accessories Included

- Rechargeable Battery & Charger
- User Manual
- Calibration Adapter
- Carrying case (optional)
- Calibration gas (optional)
- Regulator and hose (optional)

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Equipped with a continuous LCD offering real time readings of gas concentrations, the **MicroClip XL** is compact and light-weight for wearing in confined spaces. The monitor provides continuous visual confirmation of detector operation and compliance for detection of O2, CO, H2S, and Combustibles (LEL).

User options include: Confidence beep, auto zero on startup, O2 auto calibration, calibration lock option, stealth mode, latching alarms, language options and more.

Ordering Information

The **MicroClip XL** is delivered ready for use with O2, CO, H2S, and LEL sensors, rechargeable battery and charger, stainless steel alligator belt clip, and instruction manual.

Order #: BW-MCXL
BW-MCXL-LEL-RC (replacement LEL sensor)
BW-O2-RC (replacement O2 cell)
BW-MCXL-H2S-RC (replacement H2S cell)
BW-MCXL-CO-RC (replacement CO cell)

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Battery:
Single Lithium polymer. 10-hours runtime; recharge in less than 4 hours

Sensors:
H2S: Electrochemical; 1 ppm resolution
CO: Electrochemical; 1 ppm resolution
O2: Electrochemical; 0.1% resolution
LEL: Catalytic; 1% resolution

Ranges:
H2S: 0-100 ppm
CO: 0-500 ppm
O2: 0-30%
LEL: 0-100%

Calibration Due Date:
Days remaining until next calibration displayed on start-up

LCD:
Continuous, alphanumeric gas readout and status display advises

Tests:
Full function self-test, sensor integrity, circuitry, battery, and audible/visual alarms on activation

Alarm Indicators:
Clearly advises alarm conditions with audible, visual, and internal vibrator alarms

Visual alarms: Two flashing alarm bars visible from all angles. LCD indicates gas present and alarm levels encountered

Audible alarm: Typically 95 dB at 1 ft. / 30 cm variable pulsed audible alarm

Vibrator alarm: Pulses warning in gas alarm conditions, or for any status alarms

Status alarms: Low battery, and failed or missing sensor

Alarm Levels:
Instantaneous Low Alarm; Instantaneous High Alarm; TWA (time-weighted average), and STEL (short-term exposure limit)

Alarm setpoints: Displayed on activation and on demand

Calibration Schedule:
6-month intervals

Enclosure:
Rugged, composite material; two-shot molded polymer case with integral anti-shock boot. Highly water resistant and dust proof

Humidity: 0 - 95% RH (non-condensing)

Dimensions: 4.4 x 2.4 x 1.1 in

Weight: 6 oz

Gas concentration:
Simultaneously and continuously displays gas concentration(s) for all sensors (in ppm or % LEL). Peak (max)/STEL/TWA ppm or %: Records exposures and displays on demand

User field options:
Confidence beep, set STEL interval, enable / disable sensor, latching alarms, passed calibration user-lockout option, stealth mode, LCD language option, force calibration when overdue, Intelliflash interval, low alarm acknowledge, and user-settable calibration gas level

Warranty:
1-year (including sensors)

GASALERT MAX XT II

CONFINED SPACE MONITOR

BW Technologies by Honeywell

Key Features

- Confined Space detection for O2, CO, H2S, and LEL
- Compact, lightweight, and easy to wear
- Integrated sampling pump
- Continuous LCD shows real-time concentrations
- One-button operation reduces training time
- Audible, visual, and vibrating alarms
- Simple automatic calibration procedure
- 10 hr battery life - recharges in 6 hours
- Built-in concussion boot and alligator clip

Portable confined space monitor with sampling pump.
Compact and economical design.

The GasAlert Max XT II utilizes 4 sensor technologies for gas monitoring in confined spaces. The LCD displays real-time readings of O2, CO, H2S, and Combustibles (LEL). Simple one-button operation reduces training time and prevents operator error. Audible, visual, and vibrating alarms warn of potentially hazardous conditions.

The GasAlert Max XT II has a light and compact design for wearing comfortably. The case is water resistant, and is surrounded by a concussion-proof rubberized boot with a built-in alligator clip. This monitor provides continuous visual confirmation of detector operation.

Applications

- Confined Space
- Tank Rooms
- Vent Lines
- Air Monitoring
- Sea Vessels
- Food Processing
- Chemical Plants
- Refrigeration Systems
- Emergency Response

Accessories Included

- AC Charger
- User Manual
- Carrying case (optional)
- calibration gas (optional)
- Regulator and hose (optional)

CTI GAS DETECTION SPECIALISTS

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Equipped with a continuous LCD offering real time readings of gas concentrations, the **GasAlertMax XT II** is compact and light-weight for wearing in confined spaces. The monitor provides continuous visual confirmation of detector operation and compliance for detection of O2, CO, H2S, and Combustibles (LEL).

User options include: Confidence beep, auto zero on startup, O2 auto calibration, calibration lock option, force calibration when due, datalog interval, stealth mode, latching alarms, language options and more.

Ordering Information

The **GasAlertMax XT II** is delivered ready for use with O2, CO, H2S, and LEL sensors, rechargeable battery and charger, stainless steel alligator belt clip, and instruction manual.

Order #: BW-GAMXTII
BW--LEL-RC (replacement LEL sensor)
BW-O2-RC (replacement O2 cell)
BW-MCXL-H2S-RC (replacement H2S cell)
BW-MCXL-CO-RC (replacement CO cell)

SPECIFICATIONS

Due to ongoing research and product improvement, specifications are subject to change

Battery:
Single Lithium polymer. 10-hours runtime; recharges in 6 hours

Sensors:
H2S: Electrochemical; 1 ppm resolution
CO: Electrochemical; 1 ppm resolution
O2: Electrochemical; 0.1% resolution
LEL: Catalytic; 1% resolution

Ranges:
H2S: 0-200 ppm
CO: 0-1000 ppm
O2: 0-30%
LEL: 0-100%

Calibration Due Date:
Days remaining until next calibration displayed on start-up

LCD:
Continuous, alphanumeric gas readout and status display advises

Tests:
Full function self-test, sensor integrity, circuitry, battery, and audible/visual alarms on activation

Alarm Indicators:
Clearly advises alarm conditions with audible, visual, and internal vibrator alarms

Visual alarms: Flashing alarm bars visible from all angles. LCD indicates gas present and alarm levels encountered

Audible alarm: Typically 95 dB at 1 ft. / 30 cm variable pulsed audible alarm

Vibrator alarm: Pulses warning in gas alarm conditions, or for any status alarms

Status alarms: Low battery, and failed or missing sensor

Alarm Levels:
Instantaneous Low Alarm; Instantaneous High Alarm; TWA (time-weighted average), and STEL (short-term exposure limit), OL (over limit), low battery and pump

Alarm setpoints: Displayed on activation and on demand

Calibration Schedule:
6-month intervals

Datalogger:
All readings and events. 5-second interval sampling, adjustable from 1 second to 60 seconds.

Enclosure:
Rugged, composite material; two-shot molded polymer case with integral anti-shock boot. Highly water resistant and dust proof

Humidity: 0 - 95% RH (non-condensing)

Dimensions: 5.1 x 2.8 x 2.0 in

Weight: 11.5 oz

Gas concentration:
Simultaneously and continuously displays gas concentration(s) for all sensors (in ppm or % LEL). Peak (max)/STEL/TWA ppm or %: Records exposures and displays on demand

User field options:
Confidence beep, set STEL interval, enable / disable sensor, latching alarms, passed calibration user-lockout option, stealth mode, LCD language option, force calibration when overdue, Intelliflash interval, low alarm acknowledge, and user-settable calibration gas level

Warranty:
1-year (including sensors)

Summary of Carbon Dioxide Detection Code Requirements

See our CO2 Codes and Design Specifications on our resources webpage for more details

Regulatory concentrations of interest for CO2

OSHA PEL(Occupational Safety and Health Administration - Permissible Exposure Limit)

5,000 ppm (0.5%) TWA (8 Hour Time Weighted Average)

NIOSH REL (National Institute for Occupational Safety and Health - Recommended Exposure Limit)

5,000 ppm (0.5%) TWA
30,000 ppm (3.0%) STEL (Short Term Exposure Limit =15 min time weighted average)
40,000 ppm (4.0%) IDLH (Immediately Dangerous to Life and Health)

ACGIH TLV (American Conference of Governmental Industrial Hygienists - Threshold Limit Value)

5,000 ppm (0.5%) TWA
30,000 ppm (3.0%) STEL

GG-CO2-ST

BW-ULTRA-0000B1

GG-CO2

Mounting your CO2 sensor

When CO2 is used as a refrigerant in a cascade system

The recommended method for mounting CO2 detectors is to mount them in the breathing zone (~5 feet off of the floor). This is representative of what personnel are exposed to in an everyday environment. CO2 vapor is heavier than air, so mounting a CO2 detector lower than the breathing zone is okay. On the contrary, do not mount a CO2 detector above the breathing zone.

When CO2 is used in a process

The recommended method for mounting CO2 detectors in a process leak detection system is to mount them in the breathing zone (~5 feet off of the floor). Mount the sensor wherever people frequent, do not mount close to a leak source unless people are always there. Do not mount the CO2 detector lower than the breathing zone.

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Carbon Dioxide Detection System Design Specifications

When CO2 is used as refrigerant in a cascade system

Choosing Alarm set points and actions

The typical CO2 Gas Detector for refrigerant leak detection should be ranged 0-3% CO2, with warning set points at 0.5% (8 Hour TWA allowable exposure) and alarm set points at 1.0% (10,000 ppm) CO2.

With the above warning and alarm set-points, the recommended actions would be to investigate a potential Carbon Dioxide leak at 0.5%, and shut down valves to the evaporator and evacuate the room at 1.0%. A 1.0% evacuation is recommended rather than the 3.0% STEL, because it is a point measurement and CO2 concentrations can be higher elsewhere in the room.

One issue to keep in mind is that unlike ammonia, CO2 is always present in air, and concentrations can build up to these levels in a facility from sources other than a leak in the CO2 refrigeration system. Common examples of CO2 presence are from dry ice usage, and normal personnel respiration in a non-ventilated room. Field experience indicates that a Carbon Dioxide alarm at 0.5% is high enough that background CO2 levels will not reach that level in most cases; therefore 0.5% CO2 can be reliably used as a leak indicating set-point.

Level of CO2	Action	Method
0.5% (5,000 ppm)	Investigate potential leak	Hand-held CO2 leak detector
1.0% (10,000 ppm)	Shut down valves to evaporator	Set relays with valve shut-offs
1.0% (10,000 ppm)	Evacuate the room	Horn/Strobes and proper training

Selecting CO2 sensor range

If a 0-1% sensor is chosen and found in a leak situation at 1.0% CO2, more information is necessary to make the proper response decision. It is very important to know if the STEL of 3.0% has been exceeded. If a level of 3.0% CO2 has been exceeded, investigation and response must be executed with great caution.

Choosing a 0-5% sensor range does not give the desired resolution at the 0.5% warning level. A 0-5% CO2 sensor can be desirable if paired with a 0-1% sensor, or if you are monitoring for catastrophic leaks only.

Choosing the 0-3% range is best for balancing concerns in industrial CO2 detection. The 0-3% range provides accuracy and resolution at the 0.5% and 1.0% levels, and gives operators the crucial information for calculating the seriousness of the situation. In terms of danger, there is a big difference between 1.0% and 3.0% CO2 and your fixed CO2 gas detector should provide this information accurately and in a timely manner.

When CO2 is used in a process

Choosing Alarm set points and actions

The typical CO2 Gas Detector for process leak detection should be ranged of 0-3% CO2, with a warning set-point at 0.5% (8 Hour TWA allowable exposure) and an alarm set-point at 3.0% (15 minute STEL) CO2.

With the above warning and alarm set-points, the recommended actions would be to initiate ventilation at 0.5%, and set off alarms for evacuation at a level of 3.0% CO2 has been reached.

Level of CO2	Action	Method
0.5% (5000 ppm)	Initiate ventilation	Set relays with fans
3.0% (30,000 ppm)	Alarms for evacuation	Horn/Strobes and proper training

Selecting CO2 sensor range

A 0-1% sensor is out of the question unless directly paired with a higher range sensor. The accuracy on the low end is beneficial, but the inability to detect past the range of 1.0% renders this sensor inadequate for process leak detection.

A 0-5% sensor is not accurate enough on the low end of the scale to trip precisely at 0.5% to initiate ventilation. This sensor will only be beneficial if paired with a low range detector.

The 0-3% range provides accuracy and resolution at the 0.5% and 1.0% levels for ventilation and warning necessary at your plant. It will also trip relays set at 3.0% CO2 for Evacuation. The ability to handle the ventilation and evacuation set-points, and everything in between, make the 0-3% CO2 sensor the best sensor for process leak detection.

Ammonia Detection System Design Specifications

Back in 2012, there were six different U.S. model codes and standards written by different agencies regulating ammonia refrigeration, including ANSI/IIAR 2-2014, ASHRAE 15, NFPA-1, UMC, IFC, and IMC. Gradually, these agencies have started to adopt IIAR-2 standards, rather than continue to write their own. As of 2021, the IIAR-2 standards have become the generally accepted industry standard to which most other organizations now defer.

Summary of Ammonia Detection Code Requirements

ANSI/IIAR 2-2021	ASHRAE 15-2019	NFPA 1-2021	UMC-2021	IFC-2021	IMC-2021
	Comply with IIAR 2	Comply with IIAR 2	Comply with IIAR 2	Comply with IIAR 2	Comply with IIAR 2

IIAR 2-2021 Standards

Location	Description/Details			Detection Level
Machinery Room				Machinery Room Detection
Area containing refrigeration equipment located outside of a machinery room	Less than 100 HP	Potential of 40,000 ppm? Yes		Level 3 Detection
		Potential of 40,000 ppm? No		Level 1 Detection
Equipment Pits				Level 3 Detection
Refrigerated Spaces				Level 1 Detection
Packaged Systems	Indoor	Over 100 HP Inside a machinery room		Machinery Room Detection
		Under 100 HP Outside of machinery room	Potential of 40,000 ppm? Yes	Level 3 Detection
			Potential of 40,000 ppm? No	Level 1 Detection
	Outdoor	Free Aperture*? Yes		No detection needed
		Free Aperture*? No	Under 100 HP	Level 1
			Over 100 HP	Machinery Room Detection

Detection Levels Defined

	IIAR 2-2021 Minimum Standard		CTI Recommendation	
Machinery Room Detection	At least 2 detectors with identical sensing ranges		At least 2 detectors with identical sensing ranges *Plus 1 high range detector*	
	25 ppm	Notify a monitored location Activate audio alarms and visual indicators	25 ppm	Notify a monitored location Activate audio alarms and visual indicators
	150 ppm	Activate emergency ventilation	150 ppm	Activate emergency ventilation
	40,000 ppm	De-energize refrigerant compressors, pumps, and normally closed valves	20,000 ppm	De-energize refrigerant compressors, pumps, and normally closed valves
Level 1 Detection	At least 1 detector		At least 1 detector within 30 feet of potential leak sources	
	25 ppm	Notify a monitored location	25 ppm	Notify a monitored location *Activate audio and visual indicators*
Level 3 Detection	At least 1 detector		At least 1 detector	
	25 ppm	Notify a monitored location Activate Audio alarms and visual indicators Close valves feeding liquid and hot gas De-energize pumps, fans, and motors that are part of the refrigeration system Activate emergency exhaust systems	25 ppm	Notify a monitored location Activate audio alarms and visual indicators Close valves feeding liquid and hot gas De-energize pumps, fans, and motors that are part of the refrigeration system Activate emergency exhaust systems

920 N Tradewinds Pkwy, Columbia, MO 65201 866-394-5861 www.ctigas.com sales@ctigas.com

Ammonia Detection System Detection Overview

Location	Sensor	Actions
Compressor Room (minimum 2 sensors)	GG-NH3-250 (low range detector)	**25 ppm** - Alarm to monitored location **25 ppm** - Horn Strobe outside each entrance and inside engine room **150 ppm** - Emergency Ventilation
Compressor Room (minimum 1 sensor)	GG-NH3-2% (high range detector)	**10,000 ppm** - Redundant Emergency Ventilation* **20,000 ppm** - De-energize pumps, compressors, and normally closed valves
Vent Line*	GG-VL2-NH3	**1%** - Alarm to monitored location*
Refrigerated Areas	GG-NH3-100	**25 ppm** - Alarm to monitored location **25 ppm** - Horn Strobe* **35 ppm** - Close liquid and hot gas solenoid valves*
Packaged Systems		**See table below**
Enclosed Equipment	GG-NH3-2%	**20,000 ppm** - Disable ignition sources
Machinery under 100 HP and equipment Pits (not in machine rooms)	GG-NH3-100	**25 ppm** - Alarm to monitored location **25 ppm** - Close liquid and hot gas solenoid valves **25 ppm** - Horn Strobe inside room **25 ppm** - De-energize pumps, motors, and non-emergency fans **25 ppm** - Emergency Ventilation

**Not required by code but recommended*

Packaged System Detection Overview

Location	Specification 1	Specification 2	Detection Level (See Appendix 3, page 8)
Indoor	Over 100 HP Inside a Compressor Room		Machinery Room Detection Level
	Under 100 HP Outside a Compressor Room	Potential of 40,000ppm? Yes	Level 3 Detection
		Potential of 40,000ppm? No	Level 1 Detection
Outdoor	Free Aperture? Yes	No detection required	
	Free Aperture? No	Under 100 HP	Level 1 Detection
		Over 100 HP	Machinery Room Detection Level

Equipment table

Part Number	Description	Application
GG-6	Six channel controller	Monitor gas detection system
GG-XM	Eight channel expansion module	Additional monitoring capability
GG-RD1	Remote display for GG-6	Remote monitoring of gas detection system
EM2	Entrance monitor	Outside compressor room doorways
UPS-1000VA-LCD	Uninterruptible power supply	Backup Power for GG-6
SHA-24-BLUE	Strobe/Horn assembly 24vdc	Audio Visual
GG-NH3-100	0/100 ppm electrochemical sensor	Refrigerated Area
GG-NH3-250	0/250 ppm electrochemical sensor	Compressor Room
GG-NH3-2%	0/2% catalytic bead sensor	Compressor Room shutdown
GG-VL2-NH3	0/1% vent line sensor	HP relief header, above roofline
GG-CO2-3%	0/3% infrared sensor	CO2 refrigeration systems

www.ctigas.com

866.394.5861 ▪ sales@ctigas.com

Due to ongoing product improvements, specifications are subject to change.
Visit our website for up-to-date brochures, manuals and pricing.

Rev update_20240107