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GAS & SPECIALTY SENSORS

MADE IN USA

Products manufactured in the United States

NEW

Products that are new to the catalog

KCD Series pg. 289

T5007 pg. 298

GDS Series pg. 323

Kele®

www.kele.com

MODEL/SERIES — PAGE

Indicates New Products

CARBON DIOXIDE SENSORS
KCD SERIES

DESCRIPTION

The Kele **KCD Series** was designed to offer an economical, reliable, non-dispersive infrared carbon dioxide sensor. It measures environmental carbon dioxide levels for use in demand-controlled ventilation, air-quality monitoring, and other HVAC applications in accordance with ASHRAE standards. Fully isolated voltage analog outputs and convenient flying leads on the wall mount make installation both simple and trouble-free. The analog output is available in 0-10 VDC or 4-20 mA, over the industry standard 0-2000 ppm CO2 range.

FEATURES

- ***24 VAC/VDC power***
- ***0-10 VDC or 4-20 mA output***
- ***0-2000 ppm CO2 range***
- ***Wall-mount and duct versions***
- ***Reverse polarity protected***
- ***Simple push-button calibration***
- ***Factory calibrated***

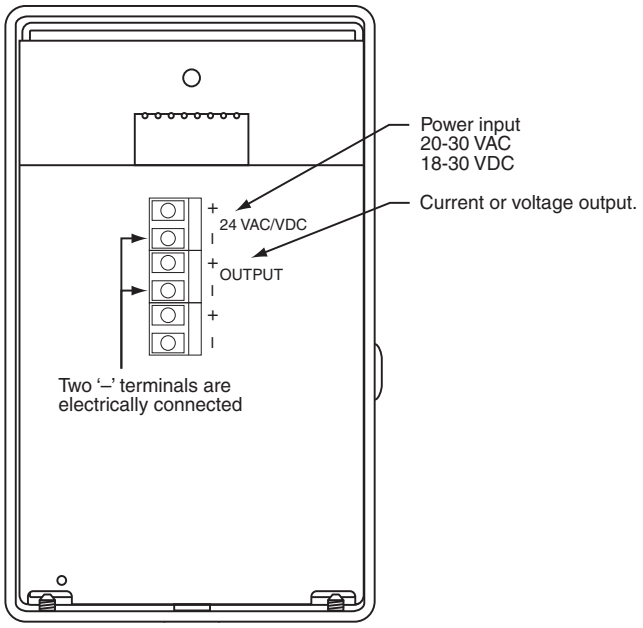
MADE IN USA

SPECIFICATIONS

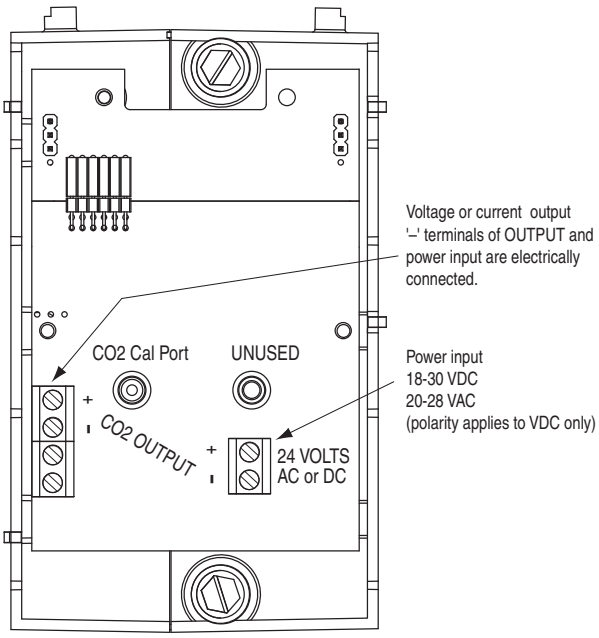
Supply Voltage	20-28 VAC, 50/60 Hz, or 18-30 VDC, 8 VA @ 24 VAC, reverse polarity protection	**Operating Humidity**	0% to 95% RH (noncondensing)
Signal Output	0-10V or 4-20 mA (500Ω max) model dependant	**Operating Temperature**	32° to 122°F (0° to 50°C)
Accuracy	±3% of reading or ±40 ppm	**Enclosure**	White finish, ABS, UL 94V-0
Repeatability	±20 ppm	**Dimensions**	
Measurement Range	0-2000 ppm CO2	**Wall**	4.63"H x 2.88"W x 1.0"D (11.8 x 7.3 x 2.54 cm)
Sensing Technology	Non-dispersive IR (NDIR)	**Duct**	4.63"H x 2.88"W x 1.0"D (11.8 x 7.3 x 2.54 cm)
Calibration	Push button @ 2000 ppm	**Duct probe:**	6" L (15.2 cm), 1.7" (4.3 cm) diameter
Calibration Interval	5 years	**Weight**	
Life Expectancy	10 years typical	**Wall**	4 oz (0.11 kg)
Visual Indication	LED flashes above 1000 ppm of CO2	**Duct**	8 oz (0.23 kg)
Warm Up Time	3 minutes	**Warranty**	18 months
Response Time	<1 minute		

CARBON DIOXIDE SENSORS
KCD SERIES

WIRING



Wall Mount



Duct Mount

ORDERING INFORMATION

MODEL	DESCRIPTION
KCD	CO_2 sensor
	MOUNTING
W	Wall mount
D	Duct mount
	ANALOG OUTPUT
V	0-10 VDC
A	4-20 mA

KCD – **W** – **V**

Example: **KCD-W-V** Wall-mount CO_2 sensor with 0-10 VDC output

DESCRIPTION

The **KCO2 Series Carbon Dioxide Sensors** measure environmental CO2 levels for use in demand-controlled ventilation, air-quality monitoring, and other HVAC applications. The sensor provides visual indication and analog output of CO2 levels. The units are equipped with push-button calibration and an easily accessible calibration port for field maintenance. Optional audible alarm indication, LCD display, or relay output is available.

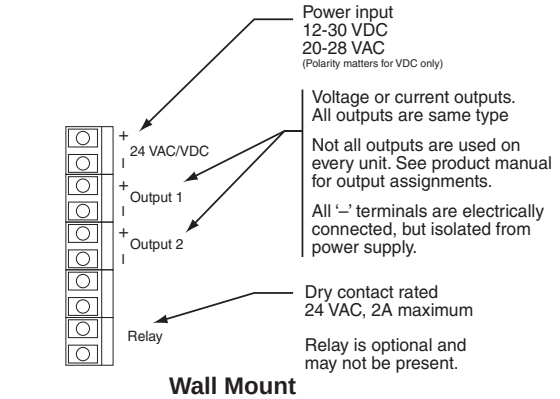
FEATURES

- ***24 VAC/VDC power***
- ***0-10V or 4-20 mA option***
- ***Optional RH transmitter***
- ***Push-button calibration***
- ***Calibration port***
- ***Visual LED alarm***
- ***Optional relay, audible alarm and LCD display***
- ***LCD displays either parameter***

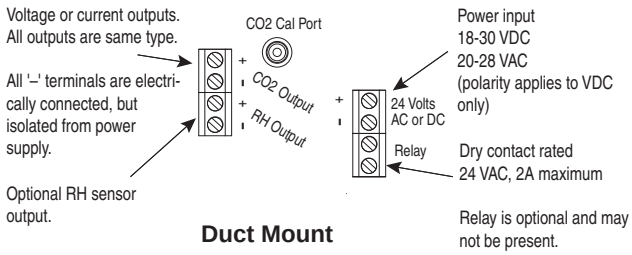
SPECIFICATIONS

Supply Voltage	20-28 VAC, 50/60 Hz, or 12-30 VDC, 5 VA @ 24 VAC, polarity protected
Signal Output	4-20 mA, 0-10V
Maximum Output Impedance	500Ω max
Relay Output (Optional)	SPST 2A @ 24 VAC/VDC (Normally Open)
Relay Setpoint	1000 ppm CO2
Alarm Auditory Levels (Optional)	65 dB, set at 1000 ppm of CO2
Accuracy	
CO2	±3% of reading or ±40 ppm
Humidity	5% of reading 20% to 80% RH
Measurement Range	
CO2	0-2000 ppm
Humidity	0% to 100%
Sensing Technology	
CO2	Non-dispersive IR (NDIR)
Humidity	Capacitive
Visual Indication	LED Flashes above 1000 ppm of CO2 Display Optional, four-digit LCD
Warm Up Time	<3 minutes
Operating Humidity	0% to 99% RH (noncondensing)
Operating Temperature	32° to 122°F (0° to 50°C)
Enclosure	White ABS, UL94V-0
Dimensions	
Wall	4.63"H x 2.88"W x 1.0"D (11.8 x 7.3 x 2.54 cm)
Duct Probe	6" L (15.2 cm), 1.7" (4.3 cm) diameter
Weight	
Wall	4 oz (0.11 kg)
Duct	8 oz (0.23 kg)
Warranty	18 months

WIRING



Wall Mount



Duct Mount

ORDERING INFORMATION

MODEL	DESCRIPTION
KCO2	CO2 sensor with LED indication
	OPTIONAL ADDITIONAL SENSOR
RH	Relative humidity sensor
	MOUNTING
W	Wall mount
D	Duct mount
	ANALOG OUTPUT
A	4-20 mA output
V	0-10V output
	OPTIONS (Can be combined)
A	Audible alarm
LCD	Four-digit LCD display
R	SPST relay output

KCO2 – RH – W – A – LCD

Example: **KCO2-RH-W-A-LCD** Wall mount CO2/RH transmitter with 4-20 mA output, and LCD display

CARBON DIOXIDE SENSORS

CD-A SERIES

DESCRIPTION

The Kele **Model CD-A** represents a new level of economy in reliable non-dispersive infrared carbon dioxide sensors. It measures environmental carbon dioxide levels for use in demand-controlled ventilation, air-quality monitoring, and other HVAC applications in accordance with ASHRAE standards.Fully isolated analog outputs and a convenient center wiring terminal make installation both simple and trouble-free. The analog output is jumper-selectable, 4-20 mA or 0-10 VDC, over the industry standard 0-2000 ppm CO2 range. Models are also available with an optional LCD display and/or control relay with adjustable setpoint.

CD-AW-LCD

CD-AW-LCD

FEATURES

- ***24 VAC/VDC power***
- ***0-10 VDC or 4-20 mA analog output, jumper selectable***
- ***0-2000 ppm CO2 range***
- ***Wall-mount and duct-sampling versions***
- ***Isolation of output and power***
- ***Compact, attractive enclosure***
- ***Optional control relay with adjustable setpoint***
- ***Simple single-point calibration***
- ***Optional LCD display***
- ***Factory calibrated***

CD-AD
Duct Probe Assembly
(included)

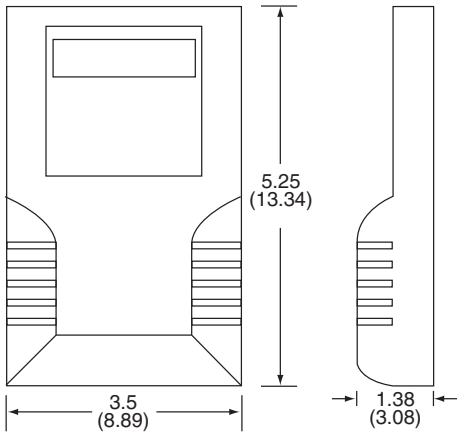
SPECIFICATIONS

Supply Voltage	20-30 VAC, 18-30 VDC
Supply Watts	Less than 2.5W @ 24 VAC
Signal Output	0-10 VDC (factory setting) 4-20 mA (field selectable), 500Ω max
Alarm Relay Output	N.O. (N.C. field selectable), 2A @ 24 VAC
Alarm Relay Setpoint	1000 ppm (field adjustable 700-1300 ppm, with appropriate gas concentration)
Deadband	50 ppm (alarm)
Measurement Range	0-2000 ppm CO2
Accuracy	±5% of reading or ±75 ppm, whichever is greater Max drift (per year) ±75 ppm Repeatability ±20 ppm

Sensing Technology	Non-dispersive infrared (NDIR)
Calibration Interval	Three years, Span only (automatic electronic zero adjustment)
Life Expectancy	10 years typical
Visual Indication	0.35" LCD (0.88 cm), 4 digit
Warm Up Time	3 minutes
Response Time	Less than 1 min
Operating Humidity	0% to 90% RH noncondensing
Operating Temperature	32° to 122°F (0° to 50°C)
Storage Temperature	-22° to 140°F (-30° to 60°C)
Weight	12 oz (0.35 kg)
Warranty	18 months

DIMENSIONS

in
(cm)



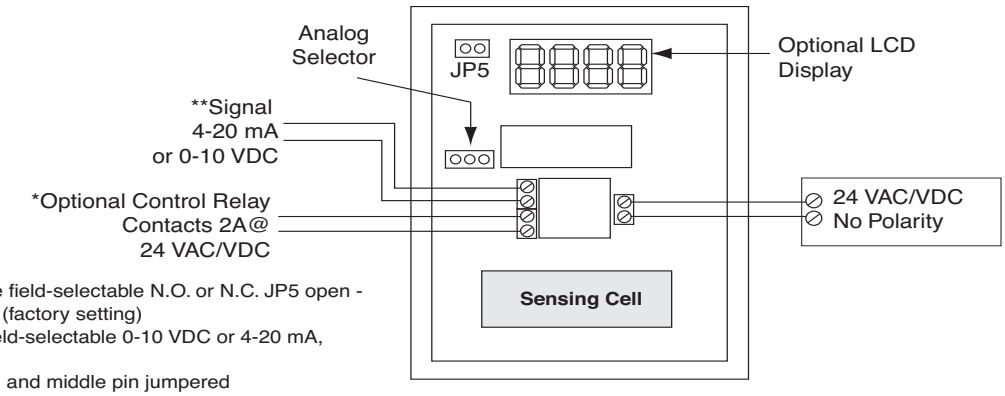
Dimensions (5.25" H x 4.87" W x 3.37" D)

INSTALLATION

The wall-mounted **CD-AW** must be placed in an area that is representative of the entire conditioned space. Recommended mounting height is 4' to 6' (1.22 to 1.83m) above the floor. Avoid drafts for locations where occupants may routinely breathe toward the sensor.

The duct-sampling style **CD-AD** requires a minimum air velocity of 400 fpm (3 m/s). Complete installation and configuration instructions are included with each unit shipped.

WIRING



* Relay contacts are field-selectable N.O. or N.C. JP5 open - N.C. closed - N.O. (factory setting)
** Output signal is field-selectable 0-10 VDC or 4-20 mA, fully isolated.
Voltage - outboard and middle pin jumpered
Current - inboard and middle pin jumpered

ORDERING INFORMATION

MODEL	DESCRIPTION
CD-AW	CO2 wall mount sensor with analog output
CD-AW-LCD	CO2 wall mount sensor with analog output, with LCD display
CD-AW-R	CO2 wall mount sensor with analog output, with relay
CD-AW-R-LCD	CO2 wall mount sensor with analog output, with LCD display and relay
CD-AD	CO2 duct mount sensor with analog output
CD-AD-LCD	CO2 duct mount sensor with analog output, with LCD display
CD-AD-R	CO2 duct mount sensor with analog output, with relay
CD-AD-R-LCD	CO2 duct mount sensor with analog output, with LCD display and relay

RELATED PRODUCTS

UCK-1	Universal calibration kit for non-corrosive gases (N2, CO2, CH4, H2, O2, CO, and refrigerants)
GAS-CO2-1000	1000 ppm carbon dioxide (CO2) in nitrogen (N2), 17L

GAS & SPECIALTY SENSORS

CO2, HUMIDITY & TEMPERATURE TRANSMITTER
8000 SERIES

DESCRIPTION

The Telaire T8000 Series Ventostat CO2/RH/Temperature Transmitter is the next generation CO2 sensors from GE Sensing. Each GE Ventostat comes with a passive 10kΩ Type II thermistor and has simultaneously active voltage and current outputs for CO2 measurement. The T8100 and T8300 features reliable automatic calibration using patented Telaire ABC logic that will ensure accurate and stable calibration for the lifetime of the sensor. The T8200 offers an accurate solution for hospitals and other full time operational 24 hours a day facilities. Both the T8100 and the T8200 are available with optional and selectable analog humidity and temperature outputs. The T8300 offers all of the accuracy of the T8100 but utilizes a pitot tube kit for measuring duct levels of CO2.

Distributor
GE Sensing & Inspection Technologies

T8100-D

RoHS

CE

FEATURES

- ***Simultaneous voltage and current outputs for CO2***
- ***Maintenance free lifetime self-calibration***
- ***Passive temperature output***
- ***Non-dispersive infrared sensor***
- ***Ideal for 24 hours per day facilities (T8200)***
- ***Optional display available***
- ***Optional active temperature and humidity outputs***

SPECIFICATIONS

Supply Voltage	18-30 VAC, 50/60 Hz; 0.7W @ 24 VAC; 18-42 VDC
Signal Output	0-5V, 0-10V, or 4-20 mA selectable for CO2, humidity, or temperature (simultaneous current or voltage output for CO2)
Maximum Output Impedance	500Ω
Accuracy	
CO2	
T8100/8300	400-1250 ppm: 3% or 30 ppm, whichever is greater; 1250-2000 ppm: ±5% +30ppm
T8200	10% or 75 ppm, whichever is greater;
Humidity	±2.5% RH (20 to 80% RH)
Temperature	±0.8% @ 72°F (22°C)
Measurement Range	0 to 2000 ppm, 0 to 99% RH (non condensing), 32° to 122°F (0° to 50°C)

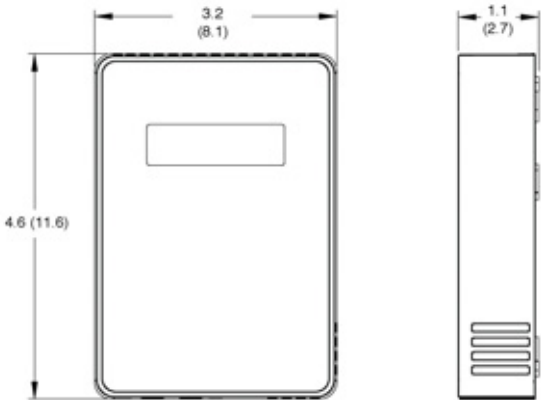
Sensing Technology	
CO2	Non-dispersive infrared (NDIR)
Humidity	Capacitive polymer
Temperature	Passive: 10kΩ Type II thermistor
Display	Scrolling LCD
Response Time	5 seconds
Operating Humidity	0% to 100% RH
Operating Temperature	32° to 122°F (0° to 50°C)
Enclosure Rating	UL94-5VA
Approvals	ROHS, CE
Weight	0.44 lb (0.20 kg)
Warranty	1 year (lifetime on calibration)
Enclosure	White or black plastic

GAS & SPECIALTY SENSORS

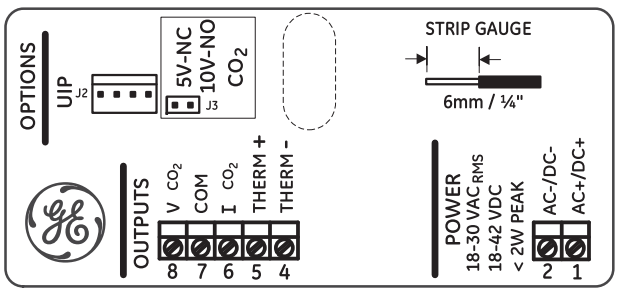
CO2, HUMIDITY & TEMPERATURE TRANSMITTER
8000 SERIES

DIMENSIONS

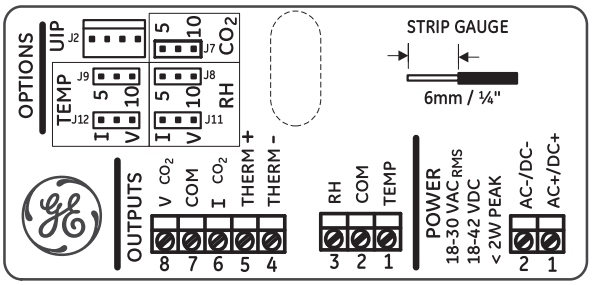
in
(cm)



WIRING



Non-Display Wiring



Display Wiring

ORDERING INFORMATION

MODEL	DESCRIPTION
T8100	Wall-mount CO2 sensor, white
T8100-B	Wall-mount CO2 sensor, black
T8100-D	Wall-mount CO2 sensor, LCD display, white
T8100-DB	Wall-mount CO2 sensor, LCD display, black
T8100-H	Wall-mount CO2, RH, and active temperature
T8100-HD	Wall-mount CO2, RH, and active temperature, LCD display
T8100-HDB	Wall-mount CO2, RH, and active temperature, LCD display, black
T8200	Wall-mount CO2 sensor, no display, white
T8200-B	Wall-mount CO2 sensor, no display, black
T8200-D	Wall-mount CO2 sensor, LCD display, white
T8200-DB	Wall-mount CO2 sensor, LCD display, black
T8300-B	Duct mount, pitot tube kit CO2 sensor, black
T8300-DB	Duct mount, pitot tube kit CO2 sensor LCD display, black

RELATED PRODUCTS		PAGE
Calibration Gases	CO, CO2, NO2, O2, CH4, NH3, N2, H2S, H2, and Refrigerants (See calibration page)	
T1508	Duct-mount accessory enclosure	**481**
T1552	OSA-mount accessory enclosure	**481**
T2075	Calibration Kit for T8100, T8200 and T8300 transmitters	
T2076	Calibration kit for T8100, T8200 and T8300 transmitter with calibration flow meter	
T2090	UIP software configuration software for the T8100, T8200 and T8300 transmitters	

CARBON DIOXIDE SENSORS

5001, 8041, 8042

DESCRIPTION

The **Model 5001** and **Models 8041, 8042** Carbon Dioxide sensors are designed to monitor the CO2 levels to provide an indication of occupancy for use in demand-controlled ventilation according to ASHRAE Standard 62. **Model 5001** wall-mount carbon dioxide sensors are designed to monitor the CO2 concentration in a room. The **Models 8041 and 8042** have a probe to monitor the carbon dioxide inside a duct air stream. All units output a 0-10VDC signal representing a 0-2000 ppm concentration of CO2.

Distributor
GE Sensing & Inspection Technologies

5001

8041

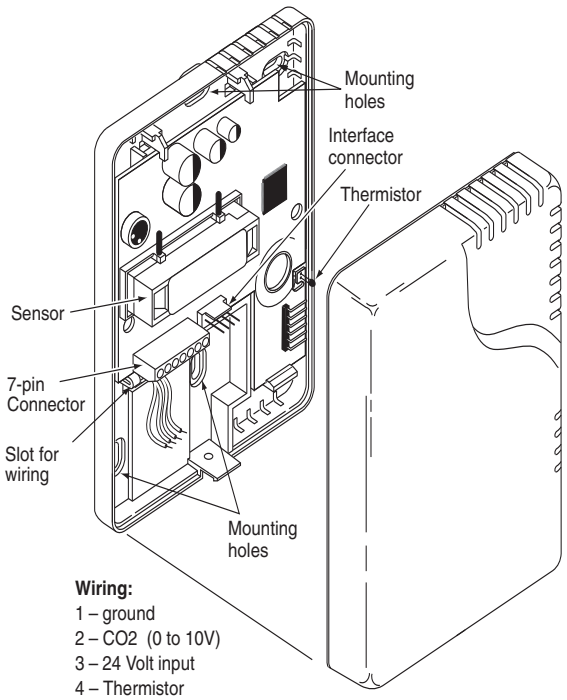
FEATURES

- ***Analog output, 0-10 VDC***
- ***ABC Logic(tm) automated calibration***
- ***Non-dispersive infrared technology***
- ***Models 8041, 8042 senses in duct air stream***

SPECIFICATIONS

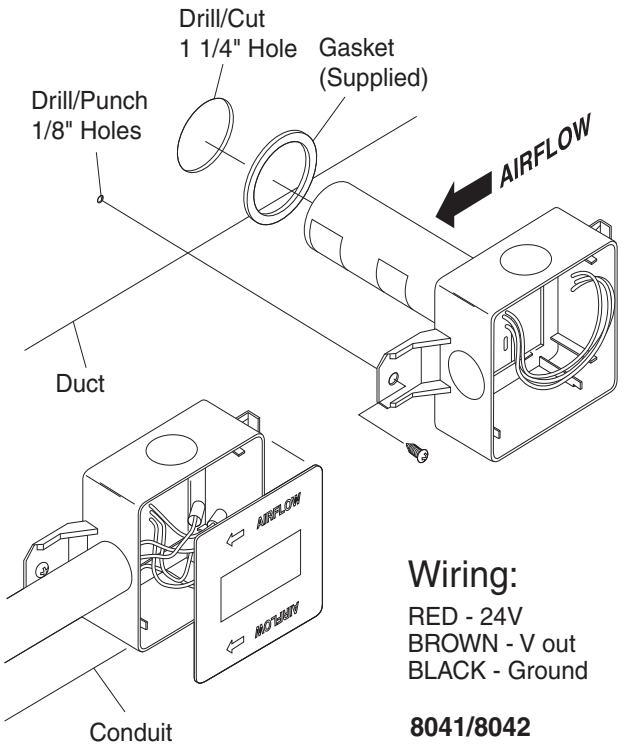
Supply Voltage	18-30 VAC RMS, 50/60 Hz or 18-42 VDC, polarity protected
Supply VA (5001)	1.75 VA average, 3.25 VA peak
Supply Watts (8041/8042)	0.65 watts average, 1.65 watts peak
Signal Output	0-10 VDC
Minimum Output Impedance	1000Ω
Accuracy	
5001	±100 ppm @ 72°F (22°C)
8041/42	±40 ppm + 3% reading
Linearity	<1% of FS
Stability	<2% FS over life of sensor
Temperature Dependence	0.1% FS per °F (0.2% FS per °C)
Pressure	0.13% of reading per 0.54" W.C. (1 mm Hg)
Measurement Range	0-2000 ppm (factory setting)
Calibration Interval	None, uses ABC Logic (Automatic Background Calibration)
Warm Up Time	<2 minutes operational, 10 minutes to maximum accuracy
Response Time	3-5 minutes for 90% step change
Operating Humidity	0% to 95% RH, noncondensing
Operating Temperature	32° to 122°F (0° to 50°C)
Enclosure Rating	Flammability UL 94V-5
Wiring Terminations	Screw terminals for 18-28 AWG
Dimensions	
5001	4.75"H x 3.25"W x 1.00"D (12.1 x 8.3 x 2.5 cm)
8041/42	Enclosure: 3.05"H x 3.05"W x 1.58"D (7.46 x 7.46 x 4.02 cm)
8041 Probe	4.09"L x 1.24"Ø (10.5 x 3.14 cm)
8042 Probe	8.07"L x 1.24"Ø (10.5 x 3.14 cm)
Approvals	FCC Part 15 Class B, CE, RoHS
Weight	
5001	4 oz (0.11 kg)
8041	8 oz (0.23 kg)
8042	9 oz (0.23 kg)
Warranty	2 years

WIRING



Wiring:
1 – ground
2 – CO2 (0 to 10V)
3 – 24 Volt input
4 – Thermistor
5 – Not Used
6 – Not Used
7 – Not Used

5001



Wiring:
RED - 24V
BROWN - V out
BLACK - Ground

8041/8042

1. Before installing sensor, note the direction of the airflow. Ensure all mounting holes are sealed tightly.
2. Drill/Cut one 1-1/2" hole / Punch/Drill one 1/8" hole.
3. Slide sensor into 1-1/2" hole and secure with screws.
4. Connect conduit and make necessary wire connections.
5. Install lid, ensure it snaps into place.

ORDERING INFORMATION

MODEL	DESCRIPTION
5001	Wall-mount carbon dioxide sensor, 0-10 VDC analog output
8041	Duct-mount carbon dioxide sensor, 0-10 VDC analog output, 4" probe
8042	Duct-mount carbon dioxide sensor, 0-10 VDC analog output. 8" probev

CO2 TRANSMITTER AND TEMPERATURE SENSOR

T5007

DESCRIPTION

The wall mounted **Model T5007** CO2/Temperature Sensor provides local visual indication of CO2 levels in enclosed spaces such as schools, offices, malls, and theaters. The unit is pre-calibrated with factory default settings of 1000 ppm and 1500 ppm CO2 levels. The bright LED indicator transitions between green, yellow, and red as the CO2 threshold is exceeded. Concentrations of acceptable limits are indicated by a green LED. A yellow LED indicates CO2 levels have exceeded 1000 ppm and levels above 1500 ppm are indicated by a red LED. The **Model T5007** provides a proportional 0-10 V output signal to maintain air quality and a passive 20K thermistor output.

Distributor
GE Sensing & Inspection Technologies

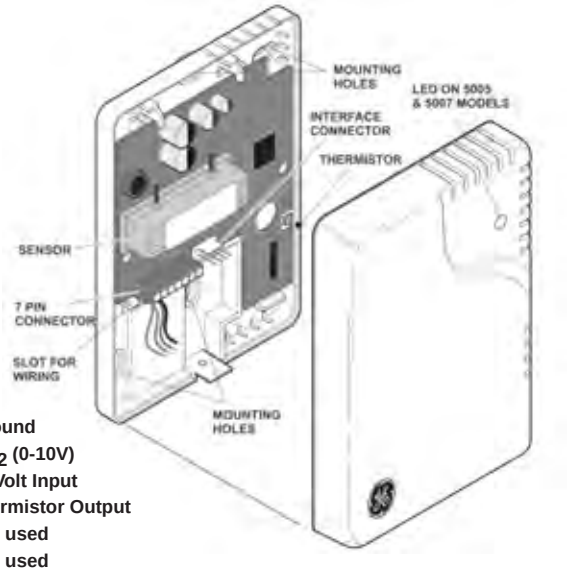
FEATURES

- ***Intuitive LED status indication***
- ***Pre-calibrated to 1000 ppm and 1500 ppm CO2 levels***
- ***Maintenance free using self-calibration technique***
- ***Voltage and temperature outputs***
- ***Non-dispersive infrared sensor***

SPECIFICATIONS

Supply Voltage	18-30 VAC, 50/60 Hz, or 18-42 VDC, polarity protected
Signal Output	0-10 V (100Ω output impedance) and NTC 20k thermistor
Accuracy	±75 ppm @ 72°F (22°C)
Stability	<2% FS over life of sensor (typically 15 years)
Non-linearity	<1% FS
Temperature Dependence	0.2% FS per °F
Pressure Dependance	0.13% of reading per mm Hg
Measurement Range	0-2000 ppm
Sensing Technology	Non-dispersive infrared
Visual Indication	
Green	CO2 level <1000 ppm
Yellow	CO2 level is between 1000 ppm and 1500 ppm
Red	CO2 level >1500 ppm
Warm Up Time	<2 minutes (operational), 10 minutes (maximum accuracy
Response Time	3-5 minutes for 90% step change
Operating Humidity	0% to 95% RH (noncondensing)
Operating Temperature	-4° to 158°F (-20° to 70°C)
Dimensions	7.5"L x 4.25"W x 2.12"D (19.1 x 10.8 x 5.8 cm)
Weight	8 oz (0.23 kg)
Warranty	18 months

WIRING



1- Ground
2- CO_2 (0-10V)
3- 24 Volt Input
4- Thermistor Output
5- Not used
6- Not used
7- Not used

ORDERING INFORMATION

MODEL	DESCRIPTION
T5007	Wall-mount CO2/temperature sensor

CARBON DIOXIDE SENSOR
C7232 SERIES

DESCRIPTION

Used with HVAC control systems to control building ventilation, the Honeywell **Model C7232 Carbon Dioxide Sensor** measures CO2 concentration in a ventilated space or duct. These easy-to-install sensors provide long term CO2 monitoring at a low cost, and they are compact in size with selectable ranges. They have an analog and relay output, use non-dispersive infrared (NDIR) technology, and feature a unique corrosion-free sensing chamber for accurate, stable CO2 sensing. Models are available for wall and duct-mount applications, with or without an LCD display, and with or without the Honeywell logo.

Honeywell

C7232A

C7232B

FEATURES

- ***Available with LCD to provide sensor readings and status information***
- ***NDIR technology to measure carbon dioxide gas***
- ***Gold-plated sensor for long-term calibration stability***
- ***Analog and relay outputs based on CO2 levels***
- ***Automatic Background Calibration (ABC) algorithm based on long-term evaluation to reduce required maintenance***

SPECIFICATIONS

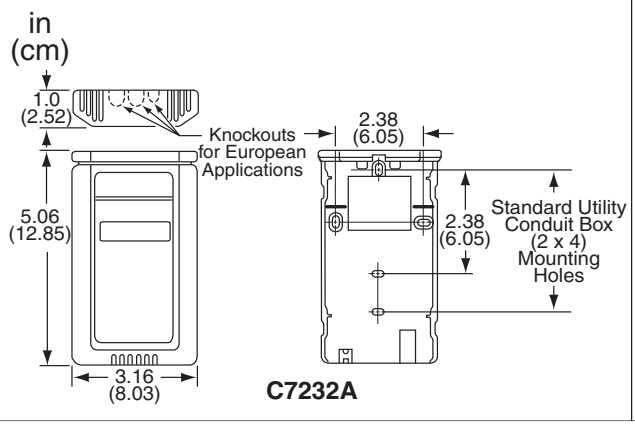
Supply Voltage	24 VAC ±20%, 50/60 Hz (Class 2)
Supply Watts	3W max power consumption
Supply Current	600 mA peak current (at 20 ms)
Signal Output	0-10, 2-10 VDC, 0-20, 4-20 mA, (jumper selectable)
Maximum Output Impedance (mA)	<500Ω
Minimum Output Impedance (VDC)	>5000Ω
Alarm Relay Output	Shipped N.O., close at 800 ppm (selectable) Contact rating: 1A @ 50 VAC/24 VDC Minimum load: 1mA @ 5 VDC
Accuracy	Annual drift 20 ppm (nominal)
Pressure	1.4% change in reading per 0.15 psig (1.0 kPa) deviation from 14.5 psig (1000 kPa)

Measurement Range	0-2000 ppm ±5% and ±50 ppm
Calibration Interval	Five years
Response Time	2 minutes
Operating Humidity	0% to 95% RH noncondensing
Operating Temperature	32° to 122°F (0° to 50°C)
Storage Temperature	-4° to 158°F (-20° to 70°C)
Enclosure Rating	
C7232A	NEMA 1
C7232B	NEMA 3 Flammability rating UL95-5V
Wiring Terminations	
C7232A	20 AWG, 8" cable
C7232B	20 AWG, 6" cable
Approvals	UL listed, File # E4436 C7232B, CE
Weight	1.6 lb (0.72 kg)
Warranty	1 year

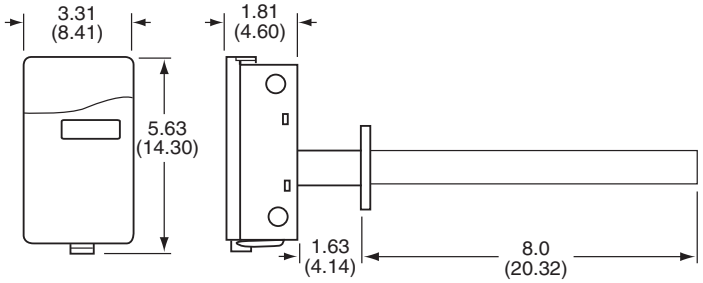
CARBON DIOXIDE SENSOR

C7232

DIMENSIONS

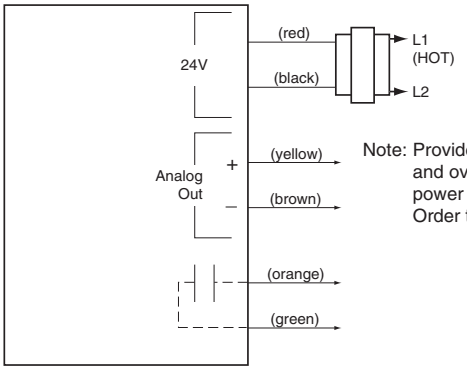


C7232A



C7232B

WIRING



C7232

Note: Provide disconnect means and overload protection to power supply as required. Order transformer separately.

WIRE COLOR	DESIGNATION	FUNCTION
Red	G+	24 VAC Hot
Black	G0	24 VAC Common
Yellow	OUT1	Analog Output Signal
Brown	M	Analog Output Common
Orange	NO	Relay Output Normally Open
Green	COM	Relay Output Common

INSTALLATION

The wall-mount **C7232A** must be installed in a ventilated place where it will not be affected directly by air from ducts, drafts, or in dead spots behind doors or in corners.

The duct-mount **C7232B** mounts to the outside of the air duct, and its sampling tube installs through a 1" (2.54 cm) hole. Leakage into the duct or the sensor box cover will skew the sensor readings, so the box cover and duct must be completely sealed.

ORDERING INFORMATION

MODEL	DESCRIPTION
C7232A1008	Wall-mount CO2 sensor, analog and relay output, LCD display
C7232A1016	Wall-mount CO2 sensor, analog and relay output
C7232A1032	Wall-mount CO2 sensor, analog and relay output, no logo
C7232B1006	Duct-mount CO2 sensor, analog and relay output, LCD display
C7232B1014	Duct-mount CO2 sensor, analog and relay output
C7232B1030	Duct-mount CO2 sensor, analog and relay output, no logo

GAS & SPECIALTY SENSORS

CARBON DIOXIDE SENSORS
GMD20, GMT200, GMW21 SERIES

VAISALA

DESCRIPTION

The Vaisala **GMW21** and **GMD20 Series Carbon Dioxide Sensors** are specially designed for demand-controlled ventilation. The transmitters use the silicon-based CARBOCAP sensor. The simple structure and reference measurement capabilities make these single-beam, dual-wavelength NDIR sensors extremely stable and reliable. The temperature and flow dependence is negligible. Models are available with a temperature output. **GMT200 Series** harsh enviroment models are available for industrial applications measuring low or high concentrations.

GMW21

GMD20

GMT220

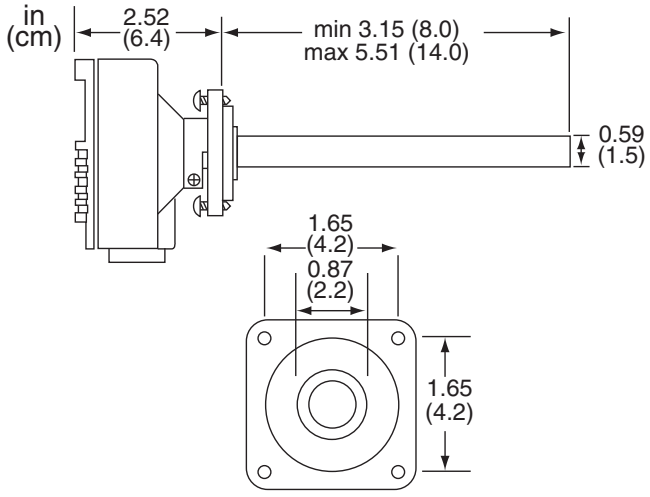
FEATURES

- ***Silicon-based NDIR sensor***
- ***Excellant long-term stability***
- ***Negligible temperature dependence***
- ***Easy installation***
- ***Five-year recommended calibration interval***
- ***Duct sensor measurement in the duct***

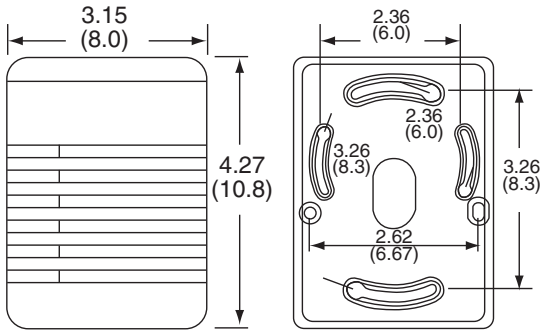
SPECIFICATIONS

Supply Voltage	24 VAC/VDC
Supply Watts	2.5W
Signal Output	0-20 mA or 4-20 mA, and 0-10 VDC
Temperature Output Signal (GMA20T)	0-10 VDC, 32° to 113°F (0° to 50°C), ±0.9°F (0.5°C)
Maximum Output Impedance (mA)	500Ω maximum
Minimum Output Impedance (VDC)	1 kΩ minimum
Relay Setpoint (GMR20)	1000 ppm (adjustable with calibration software
Measurement Range	0-2000 ppm
Accuracy	2% of reading ±30 ppm
Linearity	±1% FS
Stability	<5% FS for 5 years
Response Time	1 minute
Air Velocity	0-2000 fpm (0-10 mps)
Warm Up Time	15 minutes
Operating Humidity	0% to 85% non-condensing
Operating Temperature	23° to 113°F (-5° to 45°C)
Dimensions	
GMT220 (Body Only)	4.69"H X 4.69"W X 1.25"D (11.9 X 11.9 X 3.2 cm)
Weight	
GMD20	4.93 oz (140g)
GMD20D	5.98 oz (170g)
GMW21	3.52 oz (100g)
GMW21D	4.58 oz (130g)
GMT220	10.58 oz (300g)
Warranty	2 years

DIMENSIONS



GMD20, GMD20D



GMW21, GMW21D

CARBON DIOXIDE SENSORS

GMD20, GMT200, GMW21 SERIES

INSTALLATION

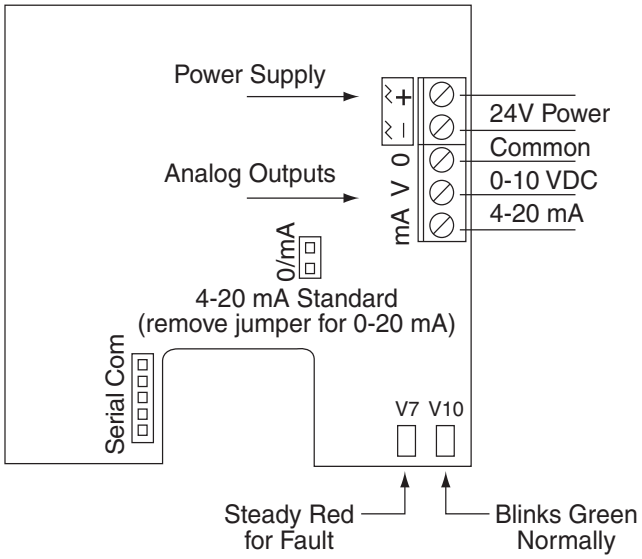
The wall-mount **GMW21 Series** must be placed in an area representative of the entire conditioned space. Recommended mounting height is 5' (1.5m), and the unit may be mounted onto a wall box or surface mounted.

The duct-mount **GMD20 Series** mounts directly to the duct. The duct probe insertion depth is adjustable using the mounting plate. Since the CO2 level is sensed in the duct, there are no minimum airflow requirements.

CALIBRATION

The GM Series is factory calibrated. A recalibration is recommended every five years. A field check can be done with a calibration gas and multimeter. A calibration adjustment requires the Model 19222 GM calibration software.

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
GMD20	Duct-mount CO2 transmitter
GMD20D	Duct-mount CO2 transmitter with relay and display
GMW21	Wall-mount CO2 transmitter
GMW21D	Wall-mount CO2 transmitter with relay and display
GMT221 Series	Harsh environment CO2 transmitter for high concentrations (up to 20% in air)
GMT222 Series	Harsh environment CO2 transmitter for low concentrations (0-2000/10,000 ppm)

Ordering Note: Contact Kele for multiple ranges, probes, and options

ACCESSORIES

GMA20T	Analog temperature option (GMW21 only)
GMR20	Relay option (GMW21 or GMD20 only)
19222GM	Calibration software kit (includes disk and serial adapter)

GAS & SPECIALTY SENSORS

TRI-SENSE TRANSMITTERS
KTS SERIES

DESCRIPTION

The Kele **Tri-Sense Transmitters** combine three different sensors in a stylish, compact enclosure-reducing installation time and space required. The unit is designed to work in tandem with building automation systems to provide proper ventilation in enclosed spaces such as schools, offices, conference rooms, malls, and theaters. Each of the three sensors has an independent analog output for 0-10V or 4-20 mA, but the output type is the same. The unit is pre-calibrated for LED indication with a factory default setting for the appropriate gas. The sensors are equipped with push-button calibration and an easily accessible calibration port for field maintenance. Optional LCD display and relay output are available. The optional LCD display is selectable for any one of the three sensed variables.

Wall Mount

Duct Mount with Display

Duct Mount

FEATURES

- ***Three-in-one sensor combinations***
- ***LED status indication***
- ***Pre-calibrated to 20 ppm CO or 1000 ppm CO2 levels***
- ***0-10V or 4-20 mA output***
- ***Optional relay output***
- ***Isolated power and output***
- ***Simple push-button calibration***
- ***Optional LCD display***

SPECIFICATIONS

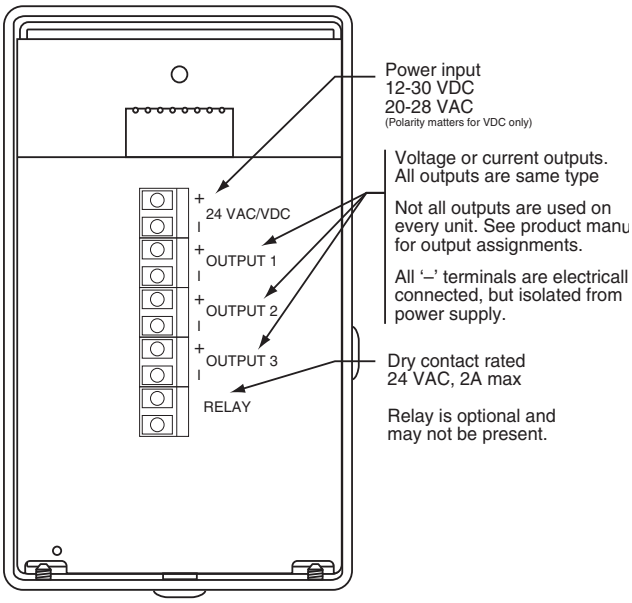
Supply Voltage	20-28 VAC, 50/60 Hz, or 12-30 VDC, 5 VA @ 24 VAC, reverse polarity protected
Signal Output	4-20 mA (500Ω), 0-10V
Relay Output	Optional, SPST, N.O. 2A @ 24 VAC/ VDC
Alarm Relay Setpoint	
CO	Factory set at 20 ppm of CO
CO2	Factory set at 1000 ppm of CO2
Accuracy	
CO	±2.5% full-scale
CO2	±3% of reading or ±40 ppm
Humidity	5% of reading (20% to 80% RH)
VOC	±10% ethanol
Measurement Range	
CO	0-200 ppm
CO2	0-2000 ppm
Humidity	0% to 100%
VOC	0-1000 ppm ethanol

Sensing Technology	
CO	Electrochemical
CO2	Non-dispersive IR (NDIR)
Humidity	Capacitive
VOC	Sintered metal oxide
Visual Indication	LED Flashes above alarm setpoint Display Optional, four-digit LCD
Warm Up Time	<15 minutes (maximum accuracy)
Operating Humidity	0% to 99% RH (noncondensing)
Operating Temperature	32° to 122°F (0° to 50°C)
Enclosure	White ABS
Enclosure Rating	UL 94V-0
Dimensions	
Wall	4.63"H x 2.88"W x 1.0"D (11.8 x 7.3 x 2.54 cm)
Duct Probe	6" L (15.2 cm), 1.7" (4.3 cm) diameter,
Weight	
Wall	4 oz (0.11 kg)
Duct	8 oz (0.23 kg)
Warranty	18 months

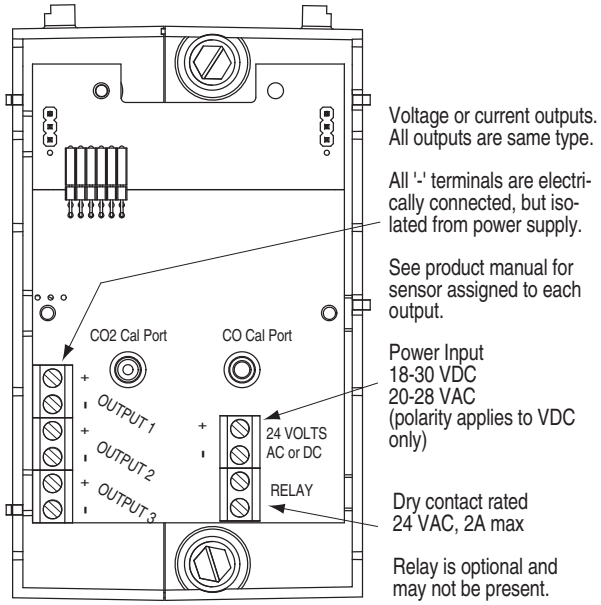
TRI-SENSE TRANSMITTERS

KTS SERIES

WIRING



Wall Mount



Duct Mount

ORDERING INFORMATION

MODEL	DESCRIPTION		
KTS	Kele Tri-Sense IAQ transmitter		
	SENSOR COMBINATION		
	134	CO, RH, VOC transmitter	
	213	CO2, CO, RH transmitter	
	234	CO2, RH, VOC transmitter	
	OUTPUT		
	C	4-20 mA current output	
	V	0-10 VDC voltage output	
	APPLICATION		
	W	Wall mount	
	D	Duct mount	
	OPTIONS		
	R	Integral relay	
	LCD	Four digit LCD display	

GAS & SPECIALTY SENSORS

INDOOR AIR QUALITY MONITOR
IAQPT SERIES

DESCRIPTION

The IAQPT Series provides indoor air quality monitoring of CO2, temperature, and RH for demand control ventilation applications. The unit features pushbutton calibration and jumper selectable 4-20 or 0-20 mA output for CO2, humidity, or temperature. The unit is available for wall or duct mount installations and easily snaps into a standard electrical box.

FEATURES

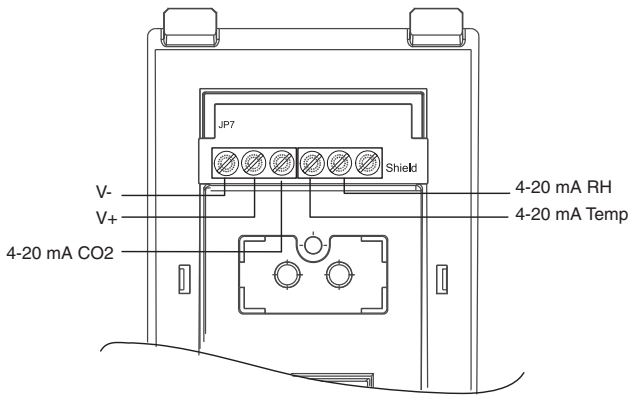
- ***Senses CO2, temperature, and RH***
- ***Analog 4-20 mA outputs***
- ***Jumper selectable gas detection range***
- ***Easy calibration***
- ***Optional backlit LCD***
- ***Independent sensor operation***

IAQPT-DT-A-TRH-D

SPECIFICATIONS

Supply Voltage	20-30 VAC, 50/60 HZ; 18-30 VDC, 200 mA @ 24 VDC
Supply Current	200 mA @ 24 VDC
Signal Output	4-20 mA selectable for CO2, humidity, or temperature
Maximum Output Impedance	500Ω
Accuracy	
CO2	± 3%, 0-2000 ppm; ±10%, 2000-10,000 ppm
RH	±3% RH, 0% to 99% noncondensing
Temperature	± 0.9°F @ 77°F (0.5°C @ 25°C)
Measurement Range	
CO2	0-2000 ppm, 0-10,000 ppm (jumper selectable)
RH	0% to 99% noncondensing
Temperature	-4° to 122°F (-20° to 50°C)
Sensing Technology	
CO2	Non-dispersive infrared
RH/Temperature	Solid state
Display	Graphic LCD; two-line, alphanumeric
Response Time	
CO2	<60 seconds for 90% step change
RH	4 seconds
Temperature	30 seconds
Operating Humidity	0% to 95% RH
Operating Temperature	32° to 100°F (0° to 40°C)
Enclosure	White ABS plastic
Dimensions	
Wall	3.9"H x 2.5"W x 1.2"D (9.9 x 6.3 x 3.0 cm)
Duct Probe	2.1"L (5.3 cm), 0.5" (1.3 cm) diameter
Approvals	CSA C22.2 NO. 61010-1, CE
Weight	
Wall	0.44 lb (0.2 kg)
Duct	0.66 lb (0.3 kg)
Warranty	1 year

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
IAQPT-SM-A-TRH	CO2, temperature, and RH transmitter, wall mount, no display
IAQPT-SM-A-TRH-D	CO2, temperature, and RH transmitter, wall mount, with display
IAQPT-DT-A-TRH	CO2, temperature, and RH transmitter, duct mount, no display
IAQPT-DT-A-TRH-D	CO2, temperature, and RH transmitter, duct mount, with display

NETWORK COMPATIBLE INDOOR AIR QUALITY MONITOR

IAQPOINT SERIES

DESCRIPTION

The IAQPoint Series provides indoor air quality monitoring of CO2, temperature, and RH for demand control ventilation applications. The monitor can be programmed for BACnet, Modbus, or LON communication for easy installation and integration into existing building automation systems.
The IAQPoint Series features a two-line LCD display and programmable setpoints for CO2, humidity, and temperature. The unit is available for wall or duct mount installations and easily mounts to a standard electrical box

IAQPT-DT-A-TRH-D

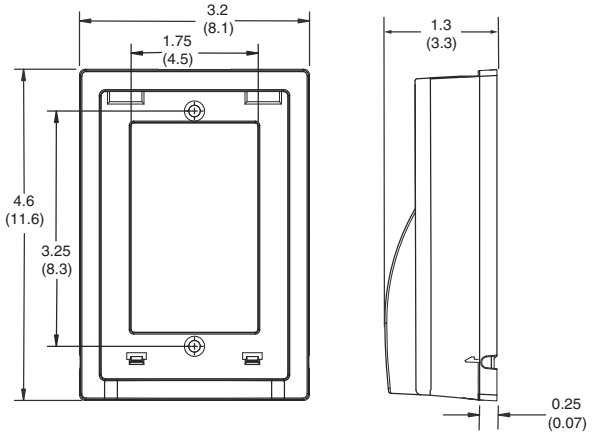
FEATURES

- ***Senses CO2, temperature, and RH***
- ***High accuracy***
- ***BACnet, LON, or Modbus communication***
- ***Menu driven operation***
- ***User selectable gas detection range***
- ***Easy calibration***
- ***Backlit LCD***
- ***Independent sensor operation***

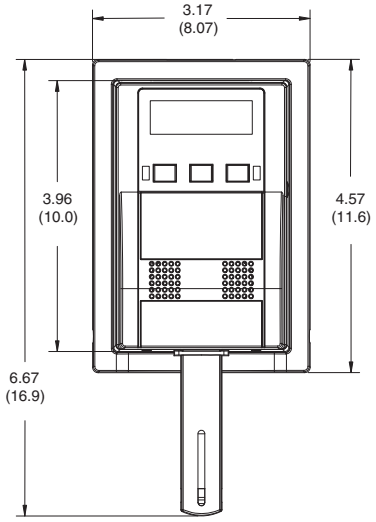
SPECIFICATIONS

Supply Voltage	20-30 VAC, 50/60 HZ 18-30 VDC
Supply Current	200 mA @ 24 VDC
Accuracy	CO2: ± 3%, 0-2000 ppm; ±10%, 2000-10,000 ppm ±3% RH: 0% to 99% noncondensing Temperature: ± 0.9°F @ 77°F (0.5°C @ 25°C)
Measurement Range	CO2: 0-2000 ppm, 0-10,000 ppm (jumper selectable) Humidity: 0% to 99% noncondensing Temperature: -4° to 122°F (-20° to 50°C)
Sensing Technology	CO2: Non-dispersive infrared (NDIR) RH and temperature: Solid state
Display	Graphic LCD; two-line, alphanumeric
Baud Rate	4800, 9600, 19200, 38400, 57600, 76800
Communication Protocol	BACnet MS/TP, LON, Modbus
Response Time	CO2: <60 seconds for 90% step change Humidity: 4 seconds Temperature: 30 seconds
Operating Humidity	0% to 95% RH
Operating Temperature	32° to 100°F (0° to 40°C)
Enclosure	White ABS plastic
Dimensions	Enclosure: 3.9"H x 2.5"W x 1.2"D (9.9 x 6.3 x 3.0 cm) Duct probe: 2.1"L (5.3 cm), 0.5" (1.3 cm) diameter
Approvals	CSA C22.2 NO. 61010-1, CE
Weight	Wall: 0.44 lb (0.2 kg) Duct: 0.66 lb (0.3 kg)
Warranty	1 year

DIMENSIONS



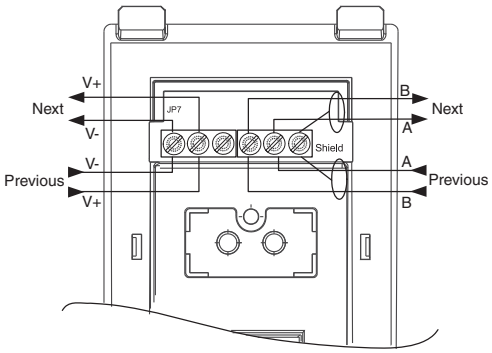
Wall Mount



Duct Mount

WIRING

This drawing applies to units configured with either Modbus or BACnet communication.



RS-485 COMMUNICATION
Communication Wire Gauge:
2-24 AWG (Belden 9841)
Twisted and shielded cable
2000 feet (600 m) per channel
T-tap: 65 feet (20 m) / T-tap
130 feet (40 m) total

Power and communication wires are connected from one unit to the next unit in the "chain", as illustrated in the drawing: the wires come in to the unit from the "previous" unit and can be wired from that unit to the "next" until the network is complete.

LON (TP/FT10) communication connections are not polarity sensitive. Please consult the Echelon documentation for further LON connection details (http://www.echelon.com/support/documentation/manuals/routers/ 078-0167-01B.pdf).

ORDERING INFORMATION

MODEL	DESCRIPTION
IAQPT-SM-B-TRH-D	CO2, temperature, and RH transmitter, wall mount, BACnet MS/TP
IAQPT-SM-L-TRH-D	CO2, temperature, and RH transmitter, wall mount, LON
IAQPT-SM-M-TRH-D	CO2, temperature, and RH transmitter, wall mount, Modbus
IAQPT-DT-B-TRH-D	CO2, temperature, and RH transmitter, duct mount, BACnet MS/TP
IAQPT-DT-L-TRH-D	CO2, temperature, and RH transmitter, duct mount, LON
IAQPT-DT-M-TRH-D	CO2, temperature, and RH transmitter, duct mount, Modbus

VOC/INDOOR AIR QUALITY SENSORS

BA/VOC SERIES

DESCRIPTION

Humans exhale Volatile Organic Compounds (VOCs) as well as CO2. The BA/BS3 VOC measures these VOCs and serves as an indicator of space occupancy with the same reliability as CO2 transmitters.

The BAPI Sensor is different from other VOC sensors. Using a calibration algorithm, the sensor value is converted to an output with a high correlation to a CO2 level.

The sensor also picks up VOCs from other sources such as building materials, perfumes, colognes and furniture off gassing. Using this sensor to ventilate helps to achieve true indoor air quality and not just CO2 dilution.

The unit is available as a VOC sensor alone or as a combination temperature and humidity sensor. The optional display alternates between the measured values and is field adjustable between °F or °C. An optional three color LED indicates “VOC Level” of Good, Fair or Poor.

BA/BS3F with LED VOC Level Indication

BS3F with Arrow VOC Level Indication

RoHS

FEATURES

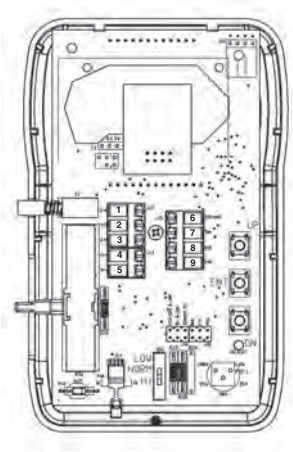
- ***Measures human sourced and environmental VOCs***
- ***Optional display available***
- ***Calibration algorithm for CO2 correlation***
- ***Output corresponds to 0 to 2000 ppm of CO2***
- ***Optional display***
- ***Available with optional temperature and humidity outputs***

SPECIFICATIONS

Supply Voltage	0 to 5 VDC Output Units: 9-35 VDC @ 50 mA Max 0 to 10 VDC Output Units: 15-35 VDC @ 50mA Max
Measurement Range	VOC: 0 to 2,000 CO2 PPM equivalent RH: 0-100% or 35-70% RH
Accuracy	RH: ±1.8%
Sensing Technology	Humidity: Capacitive Polymer VOC: Micro-machined Metal Oxide Temperature: Thermistor, RTD or Semiconductor
Visual Indication	Good, Green < 1,000 PPM Fair, Yellow = 1,000 to 1,500 PPM Poor, Red > 1,500 PPM
Override	Contact: SPST Sensor: Shorts out direct Temperature sensor (Temp) Setpoint: Contact in parallel, resistive setpoint only
Display	Main Display: 0.76" 4-digit Numeric (Numeric Values) Minor Display: 0.34" 3-digit Alpha-Numeric (PPM, %RH, °F, °C) Occ/Un-occ BAPI Man Icon: (Black=Occupied)
Response Time	Less than 60 seconds
Operating Humidity	0-95% RH non-condensing
Operating Temperature	32 to 122°F (0 to 50°C)
Enclosure Rating	ABS Plastic, Material Rated UL94V-0
Mounting	2" x 4" J-Box or drywall mount (screws provided)
Approvals	RoHS
Warranty	2 years

DIMENSIONS

WIRING



BA/VOC Wiring Diagram	
1 (OVR)	Override Output (Dry Contact Switch). When Override switch is pushed this terminal is connected to GND.
2 (SET)	Setpoint output. Referenced to ground.
3 (EXT)	External occupied LCD indicator is activated by logic LOW or ground at this
4-5 (TP+ & TP-)	Temperature Sensor Output (Resistive Output). When a jumper is on J16, TP- is connected to the GND terminal. When the jumper is off of J16, the temperature sensor is floating. (Semiconductor TP+ = +, TP- = -)
6 (CO2/VOC	Voltage output VOC Signal (0 to 2,000 ppm) referenced to GND
7 (HUM)	Voltage output Humidity Signal referenced to the GND terminal
8 (GND)	To controller Ground [GND or Common]
9 (PWR)	Power, referenced to GND

ORDERING INFORMATION

BA/	**VOC Room Sensor in the BAPI-Stat 3 Style Enclosure**									
	Temperature Display Mode (Must select one)									
	-	Duct Option								
	BS3F	Temperatures Displayed in °F (Toggle on or off)								
	BS3C	Temperatures Displayed in °C (Toggle on or off)								
	BS3X	No LCD Display								
		VOC Output (Must select one)								
		VOC05	VOCs Transmitted as 0 to 2,000 ppm CO2 Equivalent, 0 to 5 VDC output							
		VOC10	VOCs Transmitted as 0 to 2,000 ppm CO2 Equivalent, 0 to 10 VDC output							
			Duct Option							
			-	Room applications						
			D-BB	Duct applications - IP66 rated, UV-resistant polycarbonate						
				Humidity Output (Not Available with Duct Option)						
				-	No Humidity Transmitter					
				H205	-H205 ±2% Humidity Transmitter, 0 to 5 VDC output					
				H210	-H210 ±2% Humidity Transmitter, 0 to 10 VDC output					
				H212	-H212 ±2% Humidity Transmitter, 2 to 10 VDC output					
					Passive temperature Output (Not Available with Duct Option)					
					-	No Temperature Output Option				
					0	100 Platinum RTD, 100Ω @ 0°C, 0.385Ω/°C temp coefficient				
					1375	1K Platinum RTD, 1,000Ω @ 0°C, 3.75Ω/°C temp coefficient				
					1	1K Platinum RTD, 1,000Ω @ 0°C, 3.85Ω/°C temp coefficient				
					102	10K-2 Thermistor, 10,000Ω @ 25°C				
					103	10K-3 Thermistor, 10,000Ω @ 25°C				
					20	20K Thermistor, 20,000Ω @ 25°C				
						Override Configuration (Not Available with Duct Option)				
						J	Override as a Separate Output			
						N	Override in Parallel (//) with Sensor			
						P	Override in Parallel (//) with Setpoint: NOT available on voltage setpoint models			
						Z	No Override. (Needed if No Override is required)			
							VOC Level Indication (Not Available with Duct Option)			
							-	No Level Indication		
							LED	Green/Orange/Red LED Legend for Good, Fair and Poor.		
							ARW	Black Arrow on Display with legend to Indicate Good, Fair and Poor		
							BNK	No LED, Arrow Indicators, Legend		

GAS & SPECIALTY SENSORS

CARBON MONOXIDE DETECTORS
KCOP SERIES

DESCRIPTION

The **KCOP Series Carbon Monoxide Detectors** are designed to monitor CO levels in parking garages, loading docks, factories, warehouses, transportation terminals, and more. Models are available with 4-20 mA output or dual relay output for designated warning and alarm CO levels. The detector features a tri-color LED which illuminates green to indicate the unit is powered and functioning properly. On the relay output models, the LED will illuminate amber and red for warning and alarm status. A red LED indicates that the sensor needs to be replaced. The microprocessor-based electronics are housed in a rugged, steel enclosure with hinged- or screw-covers. A low-temperature option is available for colder climates.

KCOP-A-S

MADE IN USA

The **KCOP Series Carbon Monoxide Detectors** are designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

KCOP-R-H

FEATURES

- ***LED power indication***
- ***4-20 mA or dual relay output***
- ***Replaceable sensor***
- ***Sensor end of life indication***
- ***Jumper selectable warning/alarm levels (KCOP-R)***
- ***Heavy-duty enclosures with hinge- or screw-cover***
- ***Low-temperature option available -22°F (-30°C)***
- ***Temperature compensated***

SPECIFICATIONS

Supply Voltage	
KCOP	20-30 VAC/VDC, 10 VA @ 24 VAC
LT Option	20-30 VAC/VDC, 35 VA @ 24 VAC
Signal Output	Two SPDT relay contacts, 240 VAC, 2A resistive KCOP-A 4-20 mA into 500Ω maximum
Accuracy	±2.5% full scale
Calibration	Recalibrate with 100 ppm CO gas
Sensor Life Expectancy	Approximately 5 years
Setpoints	Warning/alarm: 10/20 ppm, 25/50 ppm or 50/100 ppm, jumper selectable, (KCOP-R only)
Measurement Range	0-200 ppm
Sensing Technology	Electrochemical
Visual Indication	Status Green: Power on, microprocessor operating properly; Amber: Warning; Red: Alarm Sensor Red: Replace sensor
Warm Up Time	Under 15 minutes
Response Time	
KCOP (all)	30 seconds to warning
KCOP-R	13 minutes to alarm (KCOP-R only)
Operating Humidity	5% to 99% noncondensing
Operating Temperature	14° to 140°F (-10° to 60°C)
Low Temperature Option	-22° to 140°F (-30° to 60°C)
Dimensions	6.50"H x 6.0"L x 2.13"D (16.5 x 15.2 x 5.4 cm)
Weight	
KCOP-A	3.5 lb (1.6 kg)
KCOP-R	4.0 lb (1.8 kg)
Warranty	18 months

GAS & SPECIALTY SENSORS

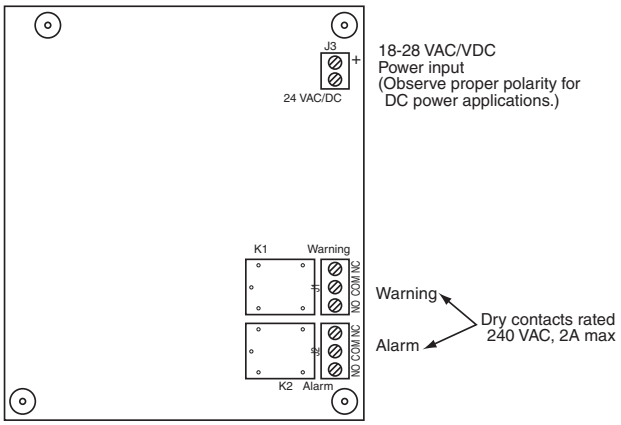
CARBON MONOXIDE DETECTORS
KCOP SERIES

INSTALLATION

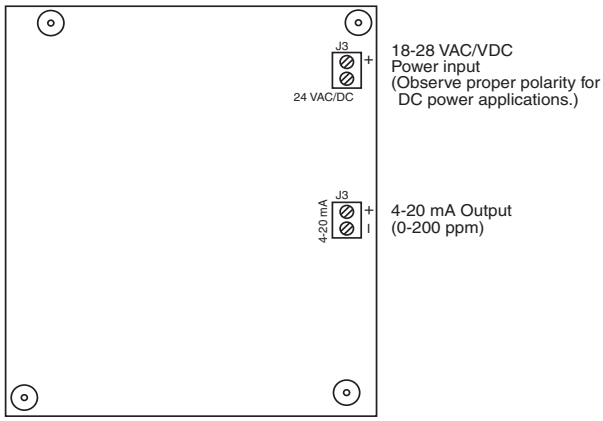
The **KCOP Series** senses levels of CO for up to 5000 ft2 (465m2) of coverage if there is normal air circulation within the area. Mount on a wall or column approximately 5' (1.52m) above the floor. The sensors should not be mounted in corners where airflow could be restricted.

CAUTION: Not for diesel fume applications.

WIRING



Relay Output



Analog Output

ORDERING INFORMATION

MODEL	DESCRIPTION	
KCOP	**R**	Relay output carbon monoxide sensor
	A	Analog output carbon monoxide sensor
	H	Hinged-cover enclosure
	S	Screw-cover enclosure
	LT	Low-temperature option -20°F (-29°C)
	10 ppm	10/20 ppm relay settings (KCOP-R only)
	25 ppm	25/50 ppm relay settings (KCOP-R only)
	50 ppm	50/100 ppm relay settings (KCOP-R only)

KCOP – **R** – **H** – [ ] – **50 ppm**

Example: **KCOP-R-H-50 ppm** Carbon monoxide sensor with relay output and hinged cover enclosure.

RELATED PRODUCTS

KCOP-CAL	KCOP calibration kit (Contains regulator, tubing and instructions. Gas is ordered separately)
GAS-CO-100	100 ppm carbon monoxide (CO) in air, 17L

CARBON MONOXIDE SENSOR

KCO SERIES

DESCRIPTION

The **KCO Series Carbon Monoxide Sensors** are avaiable in analog or relay versions. The sensors are provided in heavy-duty steel enclosures, and the sensors use low-temperature components that are ideal for open parking garages in cold climates.

The **KCO Series Carbon Monoxide Sensors** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

KCO-R-H

KCO-A-H

Note: Front covers are blank

FEATURES

- ***Two-stage alarming (KCO-R)***
- ***0-200 ppm 4-20 mA output (KCO-A)***
- ***Microprocessor controlled recalibration (KCO-A)***
- ***Heavy-duty enclosures***
- ***Operating temperature down to -4°F(-20°C)***
- ***Low-temperature option available -20°F (-29°C)***
- ***Temperature and humidity compensated***

SPECIFICATIONS

Supply Voltage	
KCO-A	24 VAC ±20%, 10 VA
KCO-R	24 VAC/VDC ±20%, 260 mA
Signal Output (KCO-A)	4-20 mA
Maximum Output Impedance	500Ω max
Relay Output (KCO-R)	120 VAC, 2A resistive
Setpoints	Warning 50 ppm, alarm 100 ppm (reset 5-10 ppm change)
Accuracy	±5%
Drift	±10% 2 years
Measurement Range	
KCO-A	0-200 ppm
KCO-R	0-250 ppm
Sensor Type	Solid-state metal oxide semiconductor
Sensor Life Expectancy	10 years
Visual Indication	Amber: Warning
Red: Alarm	
Flashing green/red: Power on, microprocessor operating	
Warm Up Time	30 seconds
Response Time	<30 sec
Time Delay (KCO-A)	10 minutes
Additional Specifications	
	8 bit
Operating Humidity	5% to 95% noncondensing
Operating Temperature	-4° to 185°F (-20° to 85°C)
Weight	3.0 lb (1.4 kg)
Warranty	18 months

INSTALLATION

KCO-R

The **KCO-R** is a two-stage carbon monoxide sensor with a relay output for each stage. If the CO level rises above the warning stage setpoint for over 30 seconds, the warning relay, amber warning LED, and a three-minute minimum “on” timer will activate. Once below the setpoint, the relay and LED will reset. If the concentration continues to rise and exceeds the alarm stage setpoint for 10 minutes, the alarm stage relay and red LED will activate. Calibration of the unit requires the application of a **hydrated** test gas.

KCO-A

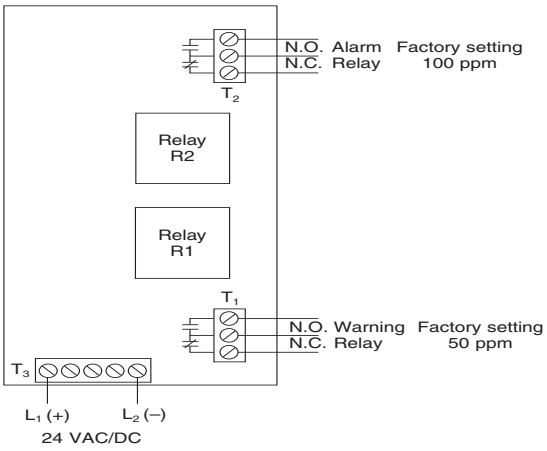
The **KCO-A** is a microprocessor-controlled sensor with a 4-20 mA analog output based on a 0-200 ppm sensing range. The microprocessor controls the heating of the sensor and subsequent reading of the CO level. The microprocessor compensates for any drift in the sensor over time. The microprocessor system includes self-diagnostic, self-restarting, and remote failure reporting. The output signal will drop below 4 mA if a fault is discovered. If power problems cause the unit to malfunction, the unit will self-check and restart. Calibration of the unit requires the application of a **hydrated** test gas, and the push of a button performs the recalibration.

INSTALLATION

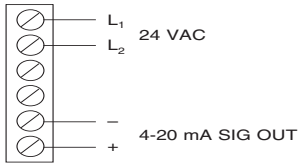
The **KCO Series** senses levels of CO for up to 5000 ft2 (465m2) of coverage if there is normal air circulation within the area. Mount on a wall or column approximately 5' (1.52m) above the floor. The sensors should not be mounted in corners where airflow could be restricted.

CAUTION: Not for diesel fume applications.

WIRING



KCO-R



KCO-A

ORDERING INFORMATION

MODEL	DESCRIPTION	
KCO	R	Relay output carbon monoxide sensor
	A	Analog output carbon monoxide sensor
	H	Hinged-cover enclosure
	LT	Low-temperature option -20°F (-29°C)
	50 ppm	50/100 ppm relay settings (KCO-R only)

KCO – R – H – [ ] – 50 ppm

Example: **KCO-RH-50 ppm** Carbon monoxide sensor with relay output and hinged cover enclosure.

RELATED PRODUCTS		PAGE
GAS-CO-100	100 ppm carbon monoxide (CO) in air, 17L	
GAS-CO-200	200 ppm carbon monoxide (C) in air, 17L	
GAS-CO-25	25 ppm carbon monoxide (CO) in air, 17L	
GAS-CO-50	50 ppm carbon monoxide (CO) in air, 17L	
UCK-1	Universal calibration kit for non-corrosive gases (N2, CO2, CH4, H2, O2, CO, and refrigerants)	374

COMBINATION CARBON MONOXIDE SENSOR WITH CO2, RH, OR VOC

KCOC SERIES

DESCRIPTION

The **KCOC Series Combination Carbon Monoxide Sensors** pair a CO sensor with a CO2, RH, or VOC sensor in the same enclosure-reducing installation time and space required. The unit provides visual indication and analog output of CO levels in enclosed spaces such as schools, offices, malls, and theaters. Each transmitter is available with either a 0-10V or 4-20 mA and is scaled from 0-200 ppm of CO and all outputs will use the same output. They are designed with push button calibration and an easily accessible calibration port for field maintenance. Optional audible alarm indication, LCD display, or relay output is available. The optional relay option closes at 30 ppm and opens at 20 ppm, and the audible alarm will sound at 50 ppm.

Wall Mount | Wall Mount with Display | Duct Mount

The **KCOC Series Carbon Monoxide Detectors** are designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

FEATURES

- ***Combines CO sensor with CO2, RH, or VOC sensor***
- ***LED status indication***
- ***0-10V or 4-20 mA output***
- ***Optional relay output***
- ***Isolated power and output***
- ***Simple push button calibration***
- ***Optional audible alarm***
- ***Optional LCD display***

SPECIFICATIONS

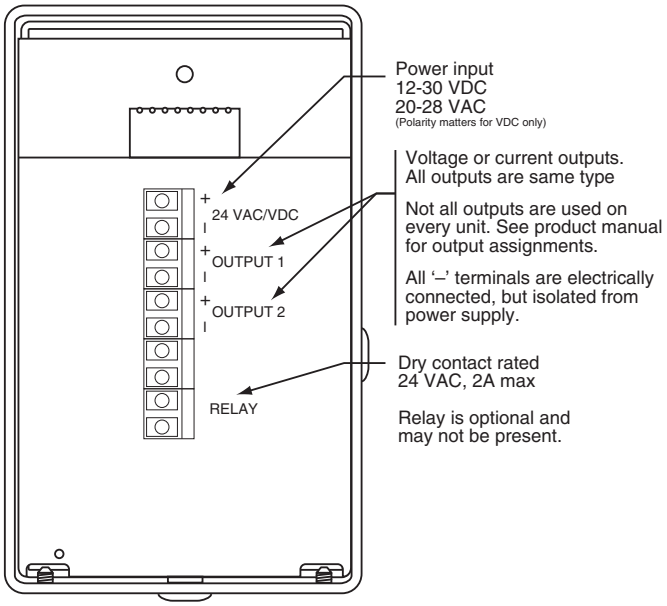
Supply Voltage	20-28 VAC, 50/60 Hz 12-30 VDC, 5 VA @ 24 VAC
Signal Output	4-20 mA, 0-10V
Maximum Output Impedance	500Ω
Relay Output	Optional, SPST 2A @ 24 VAC/VDC, closes >20 ppm
Alarm Auditory Levels	Optional, 65 dB, set at 20 ppm of CO
Accuracy	
CO	±2.5% full scale
CO2	±3% of reading or ±40 ppm
RH	5% of reading 20% to 80% RH
VOC	±10% ethanol equivalent
Measurement Range	
CO	0-200 ppm
CO2	0-2000 ppm
RH	0 to 100% RH
VOC	0-1000 ppm ethanol equivalent
Sensing Technology	
CO	Electrochemical
CO2	Non-dispersive IR (NDIR)
RH	Capacitive
VOC	Sintered metal oxide
Visual Indication	LED Flashes above 20 ppm of CO Display Optional, four-digit LCD
Warm Up Time	<15 minutes (maximum accuracy)
Operating Humidity	0% to 99% RH (noncondensing)
Operating Temperature	32° to 122°F (0° to 50°C)
Enclosure	White finish, ABS, UL 94V-0
Dimensions	
Wall	4.63"H x 2.88"W x 1.0"D (11.8 x 7.3 x 2.54 cm)
Duct Probe	6" L (15.2 cm), 1.7" (4.3cm) diameter
Weight	
Wall	4 oz (0.11 kg)
Duct	8 oz (0.23 kg)
Warranty	18 months

GAS & SPECIALTY SENSORS

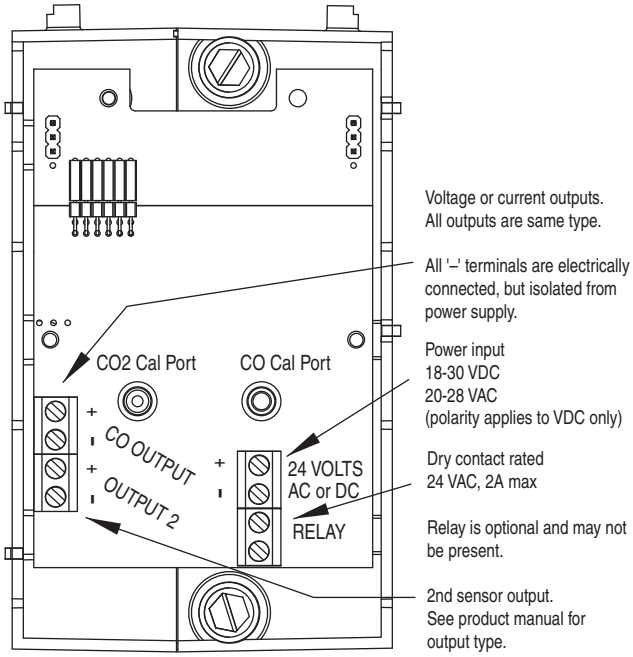
COMBINATION CARBON MONOXIDE SENSOR WITH CO2, RH, OR VOC

KCOC SERIES

WIRING



Wall Mount



Duct Mount

ORDERING INFORMATION

MODEL	DESCRIPTION
KCOC	CO sensor with LED indication
	OPTIONAL ADDITIONAL SENSOR (limit of 2)
CO2	Carbon dioxide sensor
RH	Relative humidity sensor
VOC	Volatile organic compound sensor
	MOUNTING
W	Wall mount
D	Duct mount
	ANALOG OUTPUT
A	4-20 mA output
V	0-10V output
	OPTIONS (Can be combined)
A	Audible alarm
LCD	Four-digit LCD display
R	SPST relay output (for CO or VOC)

KCOC – RH – W – A – LCD

***Example*: KCOC-RH-W-A-LCD** Wall mount CO and RH transmitter with 4-20 mA output, and LCD display

CARBON MONOXIDE TRANSMITTER

TP1-M

DESCRIPTION

The Model TP1-M Carbon Monoxide Sensor features a two-wire, 4-20 mA output signal and two alarm outputs. It is the first available zero-maintenance CO gas monitor with an electrochemical sensor. The **Model TP1-M** has a low initial cost and installs quickly and easily into a standard single-gang outlet box. It has a two to three-year operational life and never needs calibration.

The **Model TP1-M Carbon Monoxide Sensor** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

TP1-M

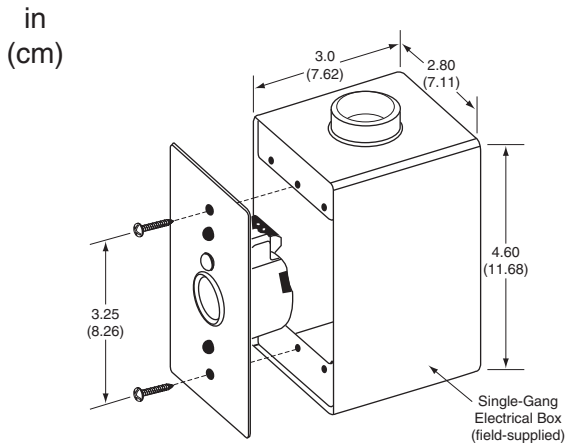
FEATURES

- ***0-500 ppm CO range(non-adjustable)***
- ***High accuracy (5% of range) electrochemical industrial sensor***
- ***Two alarm levels (25 and 200 ppm)***
- ***Two wire, loop-powered 4-20 mA analog output***
- ***LED status/diagnostic indicator***
- ***Low power consumption, only 50 mA***
- ***Fits standard single-gang outlet box***
- ***Automatic, full function self-test performed daily***
- ***Unobtrusive design with rugged stainless steel screen***
- ***Two to three-year operational life***

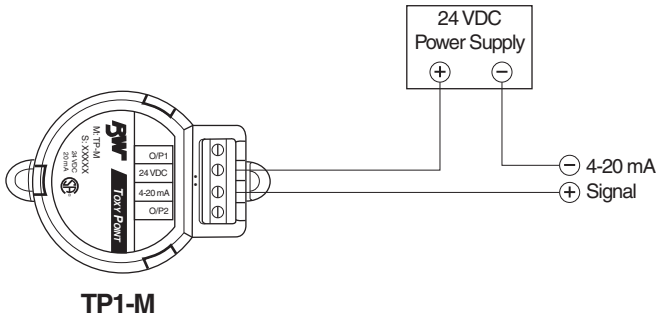
SPECIFICATIONS

Supply Voltage	10-28 VDC, 50 mA
Supply Current	Max 24 mA, nominal 4 mA @ 24 VDC
Signal Output	Two-wire, 4-20 mA Output signal fail modes: Self-test fail 2 mA Sensor expired 2 mA Overrange gas alarm 24 mA
Maximum Output Impedance	650Ω max
Alarm Contacts	250 mA @ 24 VDC max (transistor switch)
Accuracy	±5% of full range
Measurement Range	0-500 ppm
Life Expectancy	2-3 years (plus one-year shelf life)
Visual Indication	Power on: On No power:Off Self-test fail: Fast flash (1 per 0.5 sec) Life ending: Slow flash (1 per 2.0 sec) provides one-month warning Life ended: Off
Operating Humidity	15% to 90% noncondensing
Operating Temperature	-4° to 104°F (-20° to 40°C)
Wiring Terminations	18-22 AWG
Approvals	CSA IEC No. 1010 ANSI/ISA S82.01 CSEC C22.2 No. 1010 EMC Directive 89/336/EEC
Weight	1.34 oz (38g)
Warranty	2 years

DIMENSIONS

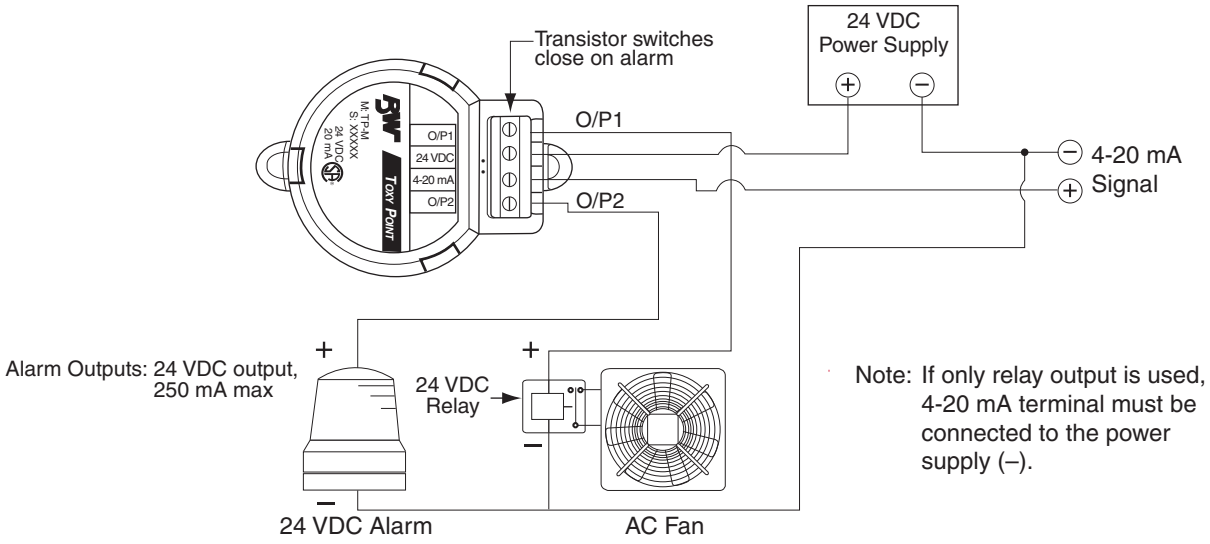


TWO-WIRE INSTALLATION



TP1-M

ALARMS OUTPUTS INSTALLATION



ORDERING INFORMATION

MODEL	DESCRIPTION
TP1-M	Carbon monoxide sensor

CARBON MONOXIDE SENSOR

BA/420CO

DESCRIPTION

Continuously monitor for carbon monoxide (CO) with the **Model BA/420CO Carbon Monoxide Sensor**. The unit is equipped with an on-board electrochemical sensor and provides a 4 to 20 mA output signal proportional to the carbon monoxide concentration detected. The **Model BA/420CO** features a rugged housing with mounting tabs for easy installation. An optional LCD display is available for local indication. Units are factory calibrated and ready for field installation and operation.

The **Model BA/420CO Carbon Monoxide Sensor** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

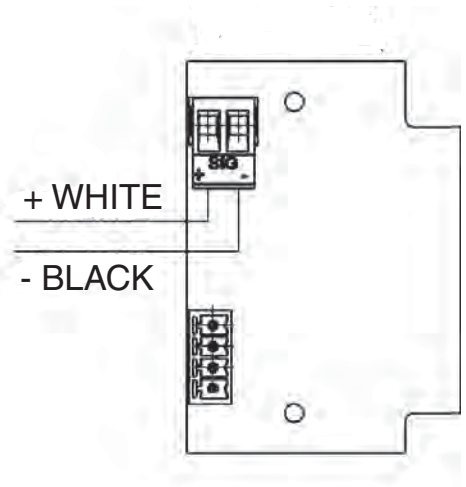
FEATURES

- ***High accuracy at low concentrations***
- ***Long life electrochemical sensor***
- ***Rugged housing***
- ***Calibration certificate included***
- ***Optional LCD display***

SPECIFICATIONS

Supply Voltage	14-27 VDC
Signal Output	Loop powered, 4 to 20 mA, two-wire
Maximum Output Impedance	500Ω max @ 24 VDC
Measurement Range	
CO-1	100 ppm
CO-3	300 ppm
Sensing Technology	Electrochemical
Life Expectancy	> 4 years
Resolution	1 ppm (models with display only)
Response Time	90%; < 40 seconds @ 77° F (25° C)
Operating Humidity	15% to 90% RH (noncondensing)
Operating Temperature	14° to 104°F (-10° to 40°C)
Enclosure	ABS polymer
Dimensions	3.80" diameter x 2.13"H (9.65 X 5.41 cm)
Moutning tabs	4.1" (10.44 cm)
Wiring Terminations	3/4" conduit adapter
Weight	0.25 lb (0.11 kg)
Warranty	2 years

DIMENSIONS



ORDERING INFORMATION

MODEL	DESCRIPTION
BA/420CO-1	CO sensor, 1-100 ppm
BA/420CO-1-D	CO sensor, 1-100 ppm, with display
BA/420CO-1-D-PM	CO sensor, 1-100 ppm with display, panel mount
BA/420CO-1-PM	CO sensor, 1-100 ppm, panel mount
BA/420CO-3	CO sensor, 1-300 ppm
BA/420CO-3-D	CO sensor, 1-300 ppm, with display
BA/420CO-3-D-PM	CO sensor, 1-300 ppm with display, panel mount
BA/420CO-3-PM	CO sensor, 1-300 ppm, panel mount

CARBON MONOXIDE SENSOR
CM-6

DESCRIPTION

The **CM-6** from 3M™ Macurco™ is a low voltage, dual relay Carbon Monoxide (CO) detector, controller and transducer. The **CM-6** has selectable 4-20 mA output, buzzer and digital display options. It is an electronic detection system used to measure the concentration of CO and provide feedback and automatic exhaust fan control to help reduce CO concentrations in parking garages, maintenance facilities or other commercial applications. The **CM-6** is a low level meter capable of displaying from 0-200 ppm of carbon monoxide.

The **CM-6** Carbon Monoxide Sensor is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

APPLICATION

The unit typically covers about 5000 sq. ft. (465 square meters) in a parking garage or similar application and 900 sq. ft. (84 square meters) in a residential or office type application. The coverage depends on air movement in the room or facility. Avoid mounting the **CM-6** in a corner. The detector may be installed on either a ceiling or a wall. If installed on a peaked, gabled, or sloped ceiling, it should be located about 3 feet (0.9 m) from the highest point. Normally, the unit is mounted about 5 feet (1.5 m) above the floor (normal breathing zone), in a central area where air movement is generally good. Additional detectors may be needed near any areas where people work or the air is stagnant.

NEW!

CM-6

FEATURES

- ***Easy calibration***
- ***Selectable fan and alarm activation***
- ***Mounts on standard 4x4 electrical box***
- ***Internally supervised system***
- ***Easy functional verification***

SPECIFICATIONS

Supply Voltage	3W (maximum) from 12 to 24 VAC, 12 to 32 VDC
Supply Current	Stand by 23 mA @ 24 VDC Fan relay 50 mA @ 24 VDC Both relays (alarm) 75 mA @ 24 VDC
Signal Output	4-20 mA current loop
Maximum Output Impedance	900Ω
Relay Output	Fan: 5A, 240 VAC, pilot duty SPDT Alarm: 0.5A @ 200Volts, 10 VA
Relay Setpoint	Fan: Selectable at 25 ppm, 35 ppm (default), 50 ppm, or 100 ppm Alarm: Selectable N.O. (default) or N.C.
Relay Time Delay	Fan and Alarm: Selectable at 0, 1, 3 (default), 5 and 10 minutes
Measurement Range	0-200 ppm
Sensor Coverage	
Parking garage	Approximately 5000 ft^2 (465 m^2)
Residential/Office	Approximately 900 ft^2 (84 m^2)
Life Expectancy	7+ years
Visual Indication	LED (1) Status (green)
Display 3 digit LED Time Range	Fan and Alarm: relay minimum run time: selectable Off (default), 3, 5, 10 or 15 minutes
Operating Humidity	10 to 90% RH
Operating Temperature	0° to 125°F (-18° to 52°C)
Enclosure	Polymeric material, flamability rating of 5 VA and temperature rating of 80°C
Wiring Terminations	Plugs/terminals
Dimensions	4.5"W x 4.0"H x 2.125"D (11.4 x 10.2 x 5.4 cm)
Approvals	ETL listed
Weight	1.0 lbs (0.45 kg)
Warranty	1 year

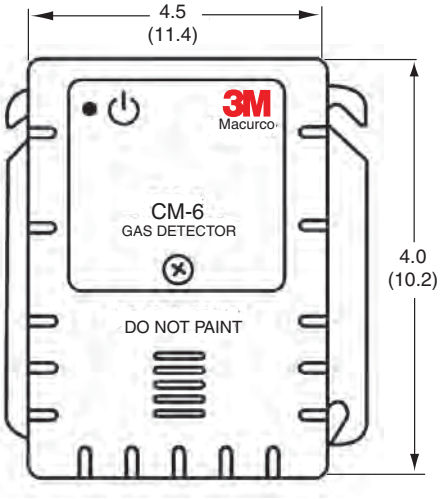
NEW!

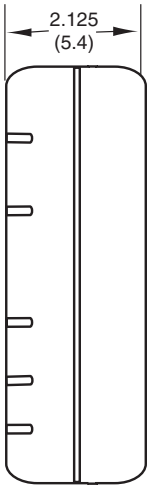
CARBON MONOXIDE SENSOR

CM6

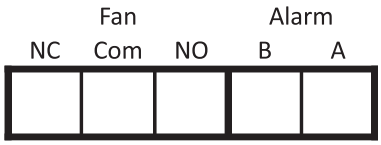
DIMENSIONS/WIRING

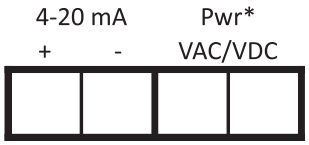
in
(cm)





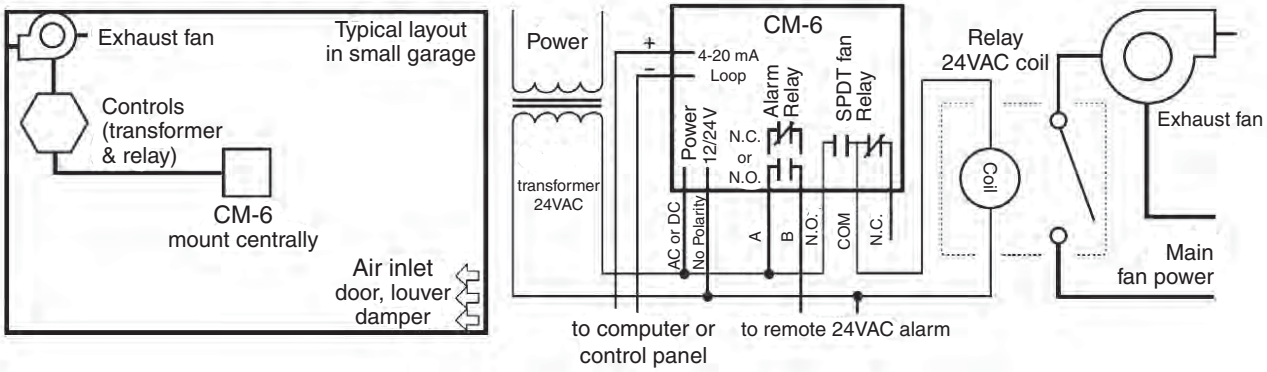
Terminal designations





*No polarity for VDC or VAC

APPLICATION



ORDERING INFORMATION

MODEL	DESCRIPTION
CM6	Wall mounted CO single-point gas detector

RELATED PRODUCTS		PAGE
CME-FCK-C	Calibration kit, 2 gas cylinders (50 and 200 ppm, includes calibration hood	
CME1-FTG	Field verification test kit, includes 11L of 500 ppm CO test gas	
GAS-CO-200	200 ppm carbon monoxide (C) in air, 17L	**374**
GAS-CO-50	50 ppm carbon monoxide (CO) in air, 17L	**374**

GAS & SPECIALTY SENSORS

SINGLE POINT CARBON MONOXIDE CONTROLLER

SPC3 -1112-2-00

DESCRIPTION

The **SPC3-1112** Carbon Monoxide single point gas detection system detects and controls levels of carbon monoxide (CO) and other gases in a wide variety of commercial and industrial applications. These include Carbon Monoxide levels in parking structures, engine repair shops, equipment rooms and ventilation systems, etc. The controller can communicate with any compatible electronic analog control, DDC/PLC control or automation system via binary and/or analog output signal. The **SPC3 Series** has been tested to meet the standards of ANSI/UL 2075 by an independent laboratory, is CE approved and also approved by the City of Los Angeles.

The **SPC3-1112-2-00** Carbon Monoxide Transmitter/ Controller is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

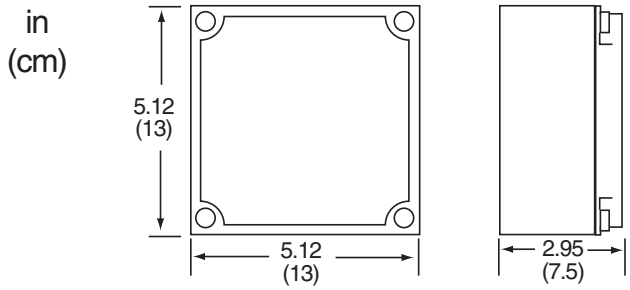
NEW!

SPC3-1112-2-00

FEATURES

- ***Conforms to ANSI/UL 2075***
- ***LCD display***
- ***Selectable analog outputs***
- ***2 Relay outputs***
- ***2 Digital outputs***
- ***LED status indicators***
- ***Simple menu driven programming***
- ***Easy plug-in sensor***
- ***Accepts remote sensor***

DIMENSIONS



SPECIFICATIONS

Supply Voltage	24 VAC/VDC, -20%/+15%, 50/60 Hz
Supply VA	5 VA (0.2A) w/ 1 remote sensor
Signal Output (Selectable)	Current 4-20 mA Voltage 2-10 VDC
Maximum Output Impedance (mA)	500Ω
Minimum Output Impedance (VDC)	50 kΩ
Relay Output	(1) SPDT. (1) NC-SPST or (1) NO SPST
Relay Setpoint (Adjustable)	Factory settings: Low limit 25 ppm High limit 100 ppm
Alarm Auditory Levels	83 db @ unit
Accuracy	Stability ±3.0 ppm of reading Repeatability ±3.0% of reading Long term drift <0.4% signal loss per month
Measurement Range	0-250 ppm, span field calibratable 0 to 200-300
Sensing Technology	Electro chemical, diffusion
Sensor Coverage	5000 sq ft
Life Expectancy	3-5 years
Visual Indication	On, stage status, failure
Display	2 lines, 16 characters per line
Response Time	t90 <50 seconds
Operating Humidity	15 to 95%, non-condensing
Operating Temperature	14° to 122°F (-10° to 50°C)
Enclosure	Polycarbonate
Enclosure Rating	UL 94-HB fire retardant, UL50 standards, NEMA 12 (IP55
Wiring Terminations	Terminal blocks, screw type for lead wire
Dimensions	5.12"W x 5.12"H x 2.95"D (13 x 13 x 7.5 cm)
Approvals	CE, City of Los Angeles, NRTL performance tested and certified to STD UL2075
Weight	0.6 lbs (0.3 kg)
Warranty	1 year

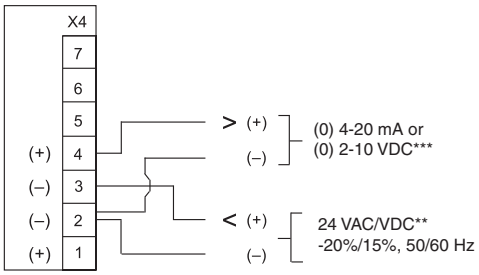
NEW!

SINGLE POINT CARBON MONOXIDE CONTROLLER

SPC3 -1112-2-00

WIRING

24 VAC/VDC Input Power Supply, and Analog Output "AO01"

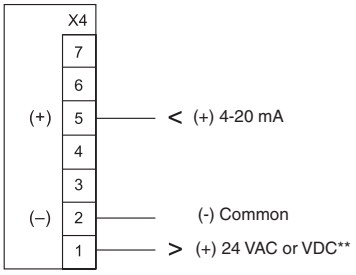


***Jumper output signal "AO01" range selectors:

V-A	Over both pins	= VDC
	Pins not covered	= mA
0-20%	Over both pins	= 4-20 mA / 2-10 VDC
	Pins not covered	= 0-20 mA / 0-10 VDC

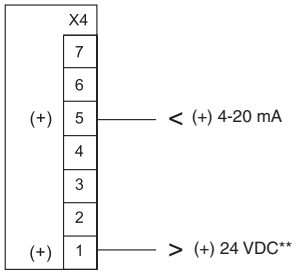
Optional 4-20 Remote Series Sensor/Transmitter Input "SP02"

4-20 mA, 3-wire sensor/transmitter



Optional 4-20 Remote Series Sensor/Transmitter Input "SP02"

4-20 mA, 2-wire loop-powered sensor/transmitter

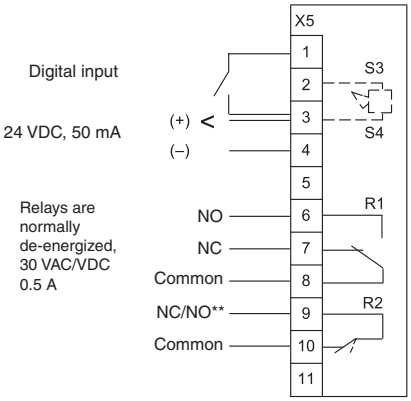


Twisted, shielded wire is recommended for 2- or 3- configurations.

/ Be Alert:***

- Only the same type of power, VAC or VDC, as supplied to the unit, is available for the remote transmitter. I.E. When 24 VDC transmitter power is required, the unit must be powered with 24 VDC.
- 2-wire loop powered transmitter can use the internal power.
- 3-wire transmitters that allow power common to DC common can use the same power supply to power the SPC3 and the transmitter.
- 3-wire transmitters that require separate power common from DC common must use a separate power source.

Binary-Relay Outputs "R01 and R02," 24 VDC switched Output "S4," and Digital Input



S3 = Built-in horn
S4 = Switched output

**Jumper SPST relay (R2) NC/NO selector:

NC	Covers top two pins = SPST-NC
NO	Covers bottom two pins = SPST-NO

ORDERING INFORMATION

MODEL	DESCRIPTION
SPC3-1112-2-00	Carbon Monoxide single point transmitter and controller, tested to UL2075

RELATED PRODUCTS		PAGE
CC-STANDARD -17	Briefcase style calibration kit with foam inserts for 17 liter cylinders	
CONKIT-E/CH-LC	Calibration cup with 6 ft of tubing	
GAS-CO-200	200 ppm carbon monoxide (C) in air, 17L	**374**
GR-17-300	Regulator precalibrated for SPC3	

GAS & SPECIALTY SENSORS

TOXIC AND COMBUSTIBLE GAS DETECTOR
GDS SERIES

DESCRIPTION

The **GDS Series Gas Detector** is a standalone micro-processor-based system for continuous, effective monitoring of toxic and combustible gases. The **GDS Series** provides a 4-20 mA output in proportion to the level of gas present and two relay outputs to activate additional horns, strobes, or ventilation systems. The modular design adds functionality and flexibility with pre-calibrated plug-in sensors. The unit features a two-line LCD for local indication, self test diagnostics, and a built-in 85 dBA buzzer. The rugged polycarbonate housing is resistant to rust, corrosion, and dents.

The **GDS Series Gas Detector** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

GDS

FEATURES

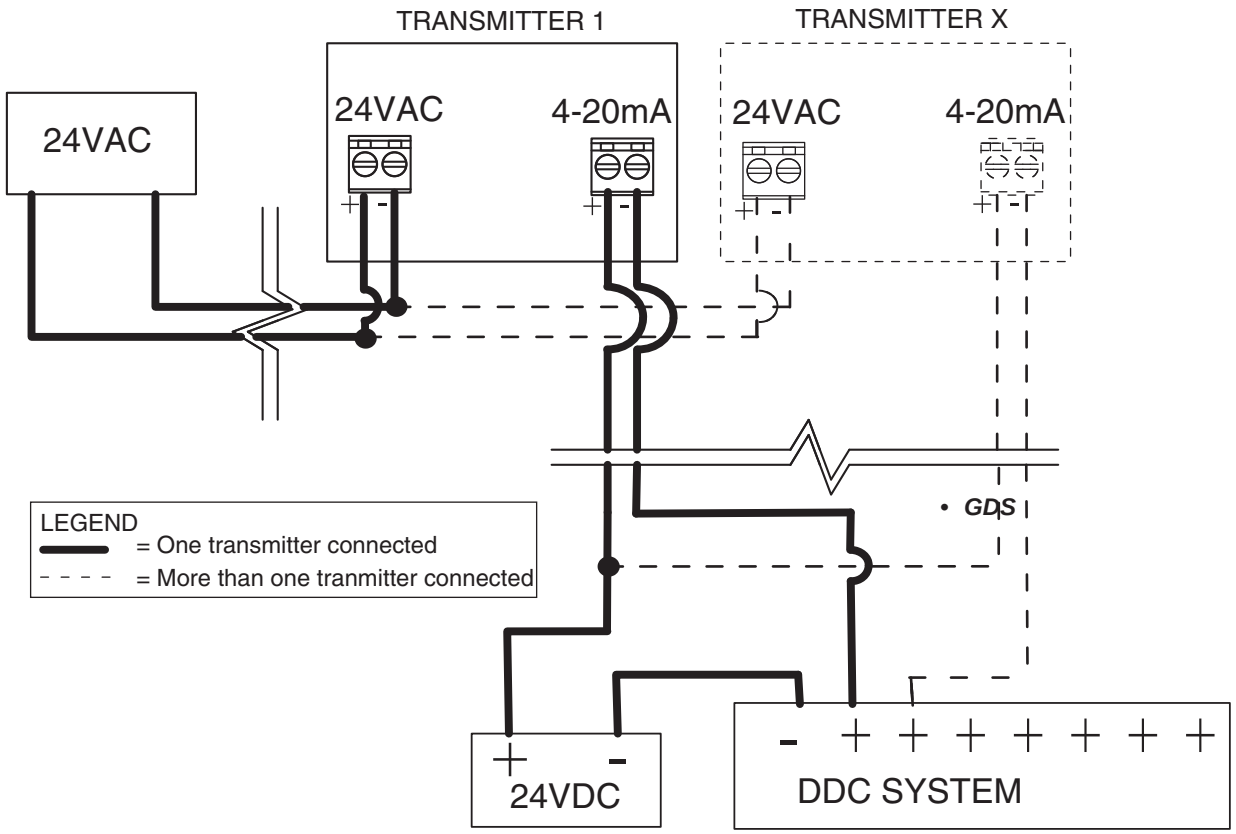
- ***Pre-calibrated plug-in sensors***
- ***Built-in 85 dBA buzzer***
- ***4-20 mA and two relay outputs***
- ***Wide variety of gases detected***
- ***Two-line LCD display***
- ***Wall or duct mount***
- ***Easy installation, commissioning, and operation***
- ***LED status indication***
- ***Password protection***
- ***Gases detected: Carbon monoxide (CO), Nitrogen dioxide (NO2 - diesel exhaust), Oxygen (O2), Hydrogen (H2), Hydrogen Sulfide (H2S), Methane (CH4), Propane (C3H8)***

SPECIFICATIONS

Supply Voltage	17-27 VAC, 50/60 Hz, 0.35A; 24-38 VDC
Signal Output	4-20 mA
Alarm Relay Output	DPDT pilot duty, 150 VA max inductive, 5A @ 30 VDC, 250 VAC
Alarm Auditory Levels	85 dBA @ 10 ft (3m)
Measurement Range	
CO	0-250 ppm
O_2	0% to 25%
H_2S	0-50 ppm
NO_2	0-10 ppm
CH_4, C_3H_8, H_2	0% to 100% LEL
Sensing Technology	
CO, O_2, H_2S, NO_2	Electrochemical
CH_4, C_3H_8, H_2	Catalytic combustion
Calibration Interval	6 months
Life Expectancy	
CO	6 years
All Others	2 years

Visual Indication	
Green LED	Power
Amber LED 1	Alarm/fault
Amber LED 2	Alarm/fault
Display	8 character, two-line LCD
Display Resolution	
CO	1 ppm
O_2	0.2%
H_2S, NO_2	0.2 ppm
CH_4, C_3H_8, H_2	0.5%
Operating Temperature	
CO	-4° to 122°F (-20° to 50°C)
All Others	-40° to 122°F (-40° to 50°C)
Enclosure	Polycarbonate
Dimensions	8.1"H x 5.9"W x 2.7"D (20.6 x 14.9 x 6.7 cm)
Approvals	UL61010, CSA C22.2
Weight	0.86 lb (0.35 kg)
Warranty	1 year

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
GDS-WC3H8	Propane gas detector, wall mount
GDS-WCH4	Methane gas detector, wall mount
GDS-WCO	Carbon Monoxide gas detector, wall mount
GDS-WH2	Hydrogen gas detector, wall mount
GDS-WH2S	Hydrogen Sulfide gas detector, wall mount
GDS-WNO2	Nitrogen Dioxide gas detector, wall mount
GDS-WO2	Oxygen gas detector, wall mount
GDS-DC3H8	Propane gas detector, duct mount
GDS-DCH4	Methane gas detector, duct mount
GDS-DCO	Carbon Monoxide gas detector, duct mount
GDS-DH2	Hydrogen gas detector, duct mount
GDS-DH2S	Hydrogen Sulfide gas detector, duct mount
GDS-DNO2	Nitrogen Dioxide gas detector, duct mount
GDS-DO2	Oxygen gas detector, duct mount

RELATED PRODUCTS

E3SCO	Replacement CO sensor cartridge
E3H2	Replacement H2 (Hydrogen) sensor cartridge
E3H2S	Replacement H2S (Hydrogen Sulfide) sensor cartridge
E3M	Replacement CH4 (Methane) sensor cartridge
E3NO2	Replacement NO2 (Nitrogen Dioxide) sensor cartridge
E3O2	Replacement O2 (Oxygen) sensor cartridge
E3P	Replacement C3H8 (Propane) sensor cartridge
Calibration Gases	CO, CO2, NO2, O2, CH4, NH3, N2, H2S, H2, and Refrigerants (See calibration page)
1309K0002	GDS, GDD, GDN calibration kit for 58 to 103L gas cylinders
1309K0004	GDS, GDD, GDN calibration kit for 17 to 34L gas cylinders

DUAL SENSOR GAS DETECTOR
GDD SERIES

DESCRIPTION

The **GDD Series Dual Sensor Gas Detector** simultaneously monitors two different gases in two different locations. The detector consists of a base unit with built-in sensor coupled with a remote sensor that can be installed up to 200 feet (6om) away. The modular design adds functionality and flexibility with pre-calibrated plug-in sensors. The **GDD Series** provides a 4-20 mA output in proportion to the level of gas present and two relay outputs to activate additional horns, strobes, or ventilation systems. The unit features a two-line LCD for local indication, self test diagnostics, and a built-in 85 dBA buzzer. The remote sensor is sold seperately.

The **GDD Series Dual Sensor Gas Detector** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

GDD

FEATURES

- ***Simultaneously monitor two gases in different locations***
- ***Pre-calibrated plug-in sensors***
- ***Built-in 85 dBA buzzer***
- ***4-20 mA and two relay outputs***
- ***Wide variety of gases detected***
- ***Two-line LCD display***
- ***Easy installation, commissioning, and operation***
- ***LED status indication***
- ***Password protection***
- ***Gases detected: Carbon monoxide (CO), Nitrogen dioxide (NO2 - diesel exhaust), Oxygen (O2), Hydrogen (H2), Hydrogen Sulfide (H2S), Methane (CH4), Propane (C3H8)***

NOTE: The device cannot monitor two combustible gases simultaneously.

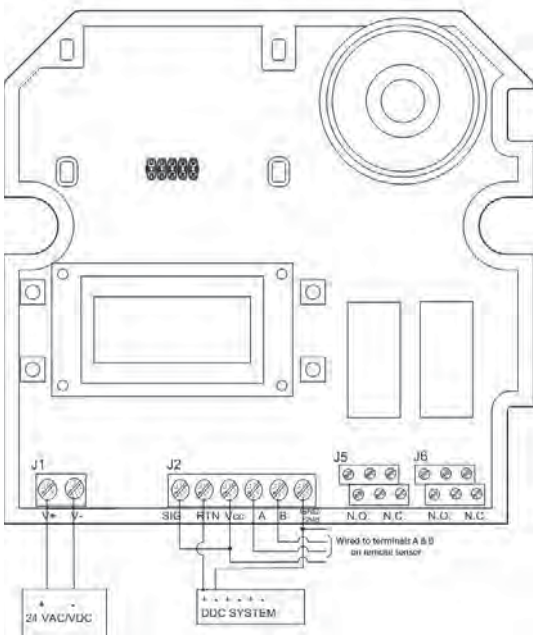
SPECIFICATIONS

Supply Voltage	17-27 VAC, 50/60 Hz, 0.35A; 24-38 VDC
Signal Output	4-20 mA
Alarm Relay Output	DPDT pilot duty, 150 VA max inductive, 5A @ 30 VDC, 250 VAC
Alarm Auditory Levels	85 dBA @ 10 ft (3m)
Measurement Range	
CO	0-250 ppm
O_2	0% to 25%
H_2S	0-50 ppm
NO_2	0-10 ppm
CH_4, C_3H_8, H_2	0% to 100% LEL
Sensing Technology	
CO, O_2, H_2S, NO_2	Electrochemical
CH_4, C_3H_8, H_2	Catalytic combustion
Calibration Interval	6 months
Life Expectancy	
CO	6 years
All Others	2 years
Visual Indication	Green LED: power Amber LED 1: Alarm/fault Amber LED 2: Alarm/fault
Display	8 character, two-line LCD
Display Resolution	
CO	1 ppm
O_2	0.2%
H_2S, NO_2	0.2 ppm
CH_4, C_3H_8, H_2	0.5%
Operating Temperature	
CO & Remote Sensors	-4° to 122°F (-20° to 50°C)
All Others	-40° to 122°F (-40° to 50°C),
Enclosure	Polycarbonate
Dimensions	Base unit 8.1"H x 5.9"W x 2.7"D (20.6 x 14.9 x 6.7 cm) Remote sensor 2.6"H x 1.8"W x 1.4"D (6.5 x 4.5 x 3.5 cm)
Approvals	UL61010, CSA C22.2
Weight	Base: 0.86 lb (0.35 kg) Sensor: 1.4 oz (38 g)
Warranty	1 year

DUAL SENSOR GAS DETECTOR

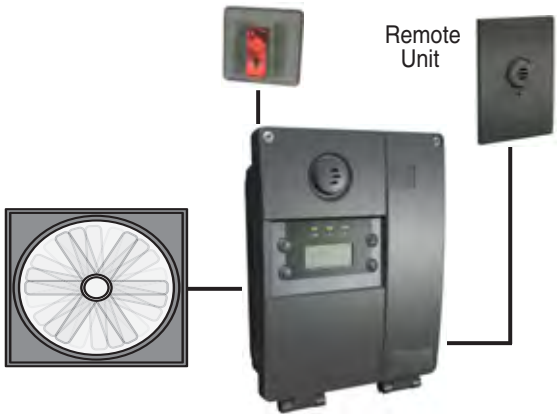
GDD SERIES

WIRING



APPLICATION

Second (remote) sensor allows for dual gas monitoring. Two on-board relays can activate ventilation or strobes.



ORDERING INFORMATION

MODEL	DESCRIPTION
GDD-C3H8	Propane gas detector
GDD-CH4	Methane gas detector
GDD-CO	Carbon Monoxide gas detector
GDD-H2	Hydrogen gas detector
GDD-H2S	Hydrogen Sulfide gas detector
GDD-NO2	Nitrogen Dioxide gas detector
GDD-O2	Oxygen gas detector
GDD-RC3H8	Remote Propane gas sensor
GDD-RCH4	Remote Methane gas sensor
GDD-RCO	Remote Carbon Monoxide gas sensor
GDD-RH2	Remote Hydrogen gas sensor
GDD-RH2S	Remote Hydrogen Sulfide gas sensor
GDD-RNO2	Remote Nitrogen Dioxide gas sensor
GDD-RO2	Remote Oxygen gas sensor

RELATED PRODUCTS

1309K0002	GDS, GDD, GDN calibration kit for 58 to 103L gas cylinders
1309K0004	GDS, GDD, GDN calibration kit for 17 to 34L gas cylinders
Calibration Gases	CO, CO2, NO2, O2, CH4, NH3, N2, H2S, H2, and Refrigerants (See calibration page)
E3H2	Replacement H2 (Hydrogen) sensor cartridge
E3H2S	Replacement H2S (Hydrogen Sulfide) sensor cartridge
E3M	Replacement CH4 (Methane) sensor cartridge
E3NO2	Replacement NO2 (Nitrogen Dioxide) sensor cartridge
E3O2	Replacement O2 (Oxygen) sensor cartridge
E3P	Replacement C3H8 (Propane) sensor cartridge
E3SCO	Replacement CO sensor cartridge

NETWORK COMPATIBLE GAS DETECTOR

GDN SERIES

DESCRIPTION

The **GDN Series Network Compatible Gas Detector** optimizes BAS, fire, ventilation, and other security systems by providing continuous monitoring of toxic and combustible gases. Modbus or BACnet MS/TP protocols are supported by the **GDN Series** and can be quickly integrated into a BAS network . Activate alarms, horns, strobes, and fans through HVAC controls or directly from the on-board relay. The modular design adds functionality and flexibility with pre-calibrated plug-in sensors. The unit features a two-line LCD for local indication, self test diagnostics, and a built-in 85 dBA buzzer.

The **GDN Series Network Compatible Gas Detector** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

GDN

FEATURES

- ***Modbus or BacNet MS/TP compatible***
- ***Pre-calibrated plug-in sensors***
- ***Built-in 85 dBA buzzer***
- ***Wide variety of gases detected***
- ***Two-line LCD display***
- ***DPDT relay output***
- ***Easy installation, commissioning, and operation***
- ***LED status indication***
- ***Password protection***
- ***Gases detected:***
- ***Carbon monoxide (CO)***
- ***Nitrogen dioxide (NO2 diesel exhaust)***
- ***Oxygen (O2)***
- ***Hydrogen (H2)***
- ***Hydrogen Sulfide (H2S)***
- ***Methane (CH4)***
- ***Propane (C3H8)***

SPECIFICATIONS

Supply Voltage	17-27 VAC, 50/60 Hz, 0.35A; 24-38 VDC
Alarm Relay Output	DPDT relay, 5A @ 250 VAC; 150 VA max inductive, 5A @ 30 VDC
Alarm Auditory Levels	85 dBA @ 10 ft (3m)
Communication	RS485 Modbus, BACnet MS/TP master relays, 5A @ 250 VAC
Measurement Range	
CO	0-250 ppm
O2	0% to 25%
H2S	0-50 ppm
NO2	0-10 ppm
CH4, C3H8, H2	0% to 100% LEL
Sensing Technology	
CO, O2, H2S, NO2	Electrochemical
CH4, C3H8, H2	Catalytic combustion,
Calibration Interval	6 months
Life Expectancy	
CO	6 years
All Others	2 years
Visual Indication	Green LED: power Amber LED 1: Alarm/fault Amber LED 2: Alarm/fault
Display	8 character, two-line LCD
Display Resolution	
CO	1 ppm
O2	0.2%
H2S, NO2	0.2 ppm
CH4, C3H8, H2	0.5%
Operating Temperature	
CO	-4° to 122°F (-20° to 50°C)
All Others	-40° to 122°F (-40° to 50°C)
Enclosure	Polycarbonate
Dimensions	8.1"H x 5.9"W x 2.7"D (20.6 x 14.9 x 6.7 cm)
Approvals	UL61010, CSA C22.2
Weight	0.86 lb (0.35 kg)
Warranty	1 year

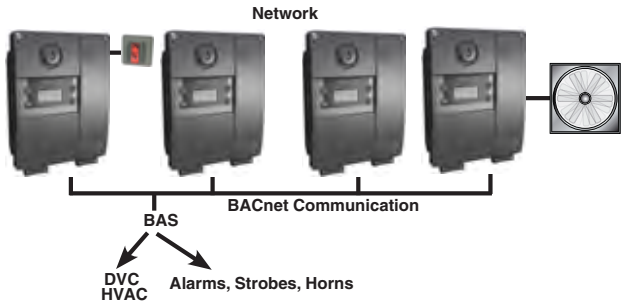
NETWORK COMPATIBLE GAS DETECTOR
GDN SERIES

APPLICATIONS

Modbus Configuration

Supports Modbus protocol to daisy-chain detectors, providing up to 96 points of monitoring on a serial bus. Excellent option for controller-based (VA301C) installations common in larger applications. A relay output is provided as an option for activating ventilation directly (e.g. when fan is located in close proximity to detector).

BACnet (MS-TP) Configuration



GDN Series outputs directly to BACnet or other BAS (building automation system). Alarms, strobes, and horns are activated through the BAS with links to DCV/HVAC controls. The system design supports new and retrofit installations for large buildings, and can couple with a controller to effectively integrate wired and wireless system components. A relay output is provided as an option for activating ventilation directly (e. g. when fan is located in close proximity to the detector).

ORDERING INFORMATION

MODEL	DESCRIPTION
GDN-BC3H8	BACnet network Propane gas detector, wall mount
GDN-BCH4	BACnet network Methane gas detector, wall mount
GDN-BCO	BACnet network Carbon Monoxide gas detector, wall mount
GDN-BH2	BACnet network Hydrogen gas detector, wall mount
GDN-BH2S	BACnet network Hydrogen Sulfide gas detector, wall mount
GDN-BNO2	BACnet network Nitrogen Dioxide gas detector, wall mount
GDN-BO2	BACnet network Oxygen gas detector, wall mount
GDN-MC3H8	Modbus network Propane gas detector, wall mount
GDN-MCH4	Modbus network Methane gas detector, wall mount
GDN-MCO	Modbus network Carbon Monoxide gas detector, wall mount
GDN-MH2	Modbus network Hydrogen gas detector, wall mount
GDN-MH2S	Modbus network Hydrogen Sulfide gas detector, wall mount
GDN-MNO2	Modbus network Nitrogen Dioxide gas detector, wall mount
GDN-MO2	Modbus network Oxygen gas detector, wall mount

RELATED PRODUCTS

1309K0002	GDS, GDD, GDN calibration kit for 58 to 103L gas cylinders
1309K0004	GDS, GDD, GDN calibration kit for 17 to 34L gas cylinders
Calibration Gases	CO, CO2, NO2, O2, CH4, NH3, N2, H2S, H2, and Refrigerants (See calibration page)
E3H2	Replacement H2 (Hydrogen) sensor cartridge
E3H2S	Replacement H2S (Hydrogen Sulfide) sensor cartridge
E3M	Replacement CH4 (Methane) sensor cartridge
E3NO2	Replacement NO2 (Nitrogen Dioxide) sensor cartridge
E3O2	Replacement O2 (Oxygen) sensor cartridge
E3P	Replacement C3H8 (Propane) sensor cartridge
E3SCO	Replacement CO sensor cartridge

TOXIC AND COMBUSTIBLE GAS DETECTOR
GDC-150

DESCRIPTION

The all new **GDC-150** transmitter from Bacharach offers detection and protection for a wide range of hazards including toxic gases such as carbon monoxide (CO), oxygen depletion, combustible gases, refrigerant leaks and total volatile organic compounds (TVOCs).

The **GDC-150** features 4-20 mA or 0-10 VDC linear output signals, an automatic thermal resetting fuse, RoHS compliant circuit boards and LED indicators for power and open loop. The onboard alarm LED's indicate when alarm threshold values are exceeded. The **GDC-150** is packaged in a rugged, polycarbonate housing for both indoor and outdoor applications. Automated calibration and simple maintenance procedures performed in the field allow for continuous operation and high performance.

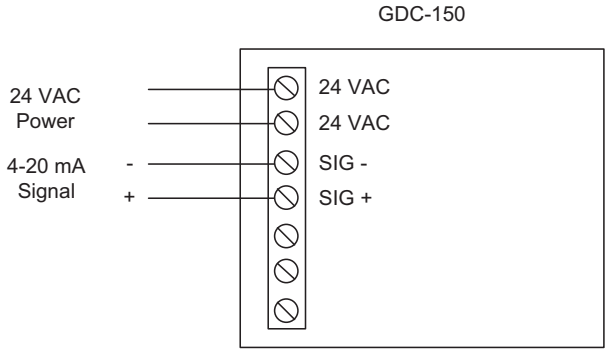
The **GDC-150** Toxic and Combustible Gas Detector is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

NEW!

FEATURES

- ***Wide range of gases detected***
- ***4-20 mA or 0-10 VDC signal***
- ***LED indicators***
- ***Alpha numeric LED display***
- ***NEMA 4X or standard housing***
- ***Automated calibration***

WIRING



SPECIFICATIONS

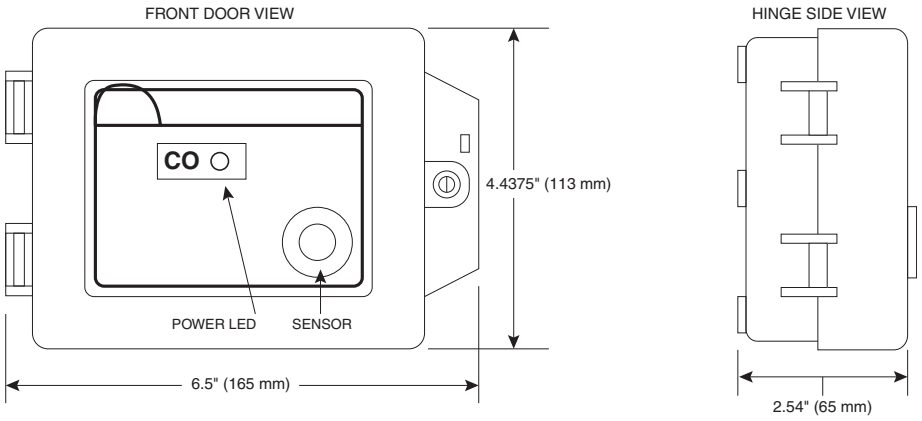
Supply Voltage	12-30 VAC or 16-30 VDC (non-ground reference supply only)
Signal Output	4-20 mA or 0-10 VDC, jumper selectable
Alarm Contacts	Optional, one only SPDT, 2 A at 30 VAC/VDC
Sensing Technology	Electrochemical, Solid State, Catalytic Bead, Photoionization Detector (PID)
Visual Indication	LED: Green = power, Red = alarm, Flashing Red = fail Amber LED, internal relay coil status indicator (only supplied with relay option) Red LED 4-20 mA “open loop” indicator for remote transmitter
Operating Humidity	15-95% RH Non-condensing
Operating Temperature	-4° to 104°F (-20° to 40°C)

Enclosure Rating	
Standard	Rugged PVC with hinged, secured, drip-proof door
NEMA 4X	Water and dust-tight, corrosion resistant polycarbonate with hinged, secured door
Wiring Terminations	
VDC	3 conductor shielded
VAC	4 conductor shielded
Dimensions	
Standard	4.43"L x 6.5"W x 2.54"D (11.3 x 16.5 x 6.5 cm)
NEMA 4X	5.05"L x 5.05"W x 3.05"D (12.9 x 12.9 x 7.7 cm)
Approvals	C-Tick Certified
Weight	
Standard	20 oz (0.57 kg)
NEMA 4X	16 oz (0.45 kg)
Warranty	1 year

TOXIC AND COMBUSTIBLE GAS DETECTOR

GDC-150

DIMENSIONS



ORDERING INFORMATION

GDC150	**Wall mount gas detector**				
	Enclosure option				
	1	Standard Enclosure			
	2	NEMA 4X enclosure			
	3	NEMA 4X enclosure w/splash guard			
		Feature Options			
		1	LED numeric display		
		2	Relay		
		3	Relay and display		
			Sensor options		
			01	Carbon Monoxide (CO) Electro Chemical	
			02	Hydrogen Sulfide (H2S) Electro Chemical	
			03	Oxygen (O2) Electro Chemical	
			04	Nitrogen Dioxide (NO2) Electro Chemical	
			05	Ammonia (NH3) Electro Chemical	
			06	Nitric Oxide (NO) Electro Chemical	
			09	Sulfur Dioxide (SO2) Electro Chemical	
			13	Formaldehyde (HCHO) Electro Chemical	
			20	Combustible Gas (Catalytic)	
			28	TVOC 0-50 ppm (PID)	
			29	TVOC 0-300 ppm (PID)	
			30	Combustible Gas (Solid State)	
			31	Refrigerant (Solid State)	
			32	TVOC (Solid State)	

RELATED PRODUCTS

5209-0004	Splash guard (for NEMA 4X sensors only)
5209-0006	Calibration adapter for all other sensors
5209-0016	Calibration adapter for catalytic sensor
5209-0019	Guard to protect GDC-150 (16 gauge galvanized metal)

GAS & SPECIALTY SENSORS

TOXIC AND COMBUSTIBLE STAND-ALONE GAS DETECTOR

GDC-350

NEW!

BACHARACH

DESCRIPTION

Bacharach's all new **GDC-350** full-featured fixed gas monitors provide superior operation - standalone or as part of a larger system utilizing the standard analog outputs. This state-of-the-art instrument can detect a wide range of gases including carbon monoxide (CO), oxygen (O2), combustible gases, refrigerants and total volatile organic compounds (TVOCs). The **GDC-350** provides a unique two sensor interface, allowing for multiple gases to be detected with onboard or remote sensors. Sensors can be located integral to the unit or remotely allowing for sensors to be placed directly in areas where potential leaks can occur. Bacharach's proprietary calibration algorithms extend the amount of time required between calibrations, reducing maintenance costs and lowering the overall cost of ownership for non-critical applications.

The **GDC-350** has all the features and functionality for any application. LED alarm indicators visually indicate when alarm conditions are met and an audible alarm alerts nearby personnel. An onboard alpha numeric display shows gas readings in real time for each sensor. Integral dry contact relays are available to drive external audible / visual alarms, activate fans, or connect to building management and control systems. Installation and maintenance is simple and easy, reducing overall system cost. A pre-wired plug-in option is available for out-of-the-box operation. Simply plug the unit into any standard AC outlet for immediate detection and protection.

The **GDC-350** Toxic and Combustible Gas Detector is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

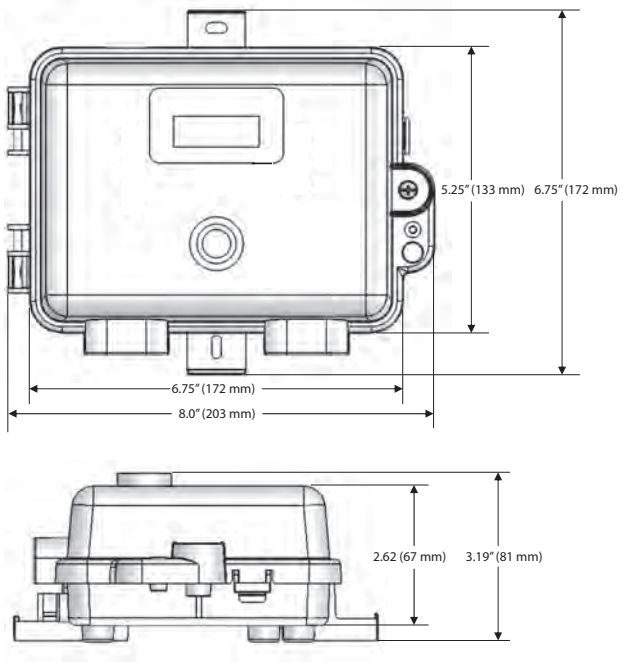
FEATURES

- ***Can be used as a stand alone controller***
- ***On board or remote sensing***
- ***Wide range of gases detected***
- ***Dual 4-20 mA signals***
- ***Unique two sensor interface***
- ***LED indicators***
- ***Alpha numeric LED display***
- ***NEMA 4X or standard housing***
- ***Automated calibration***

SPECIFICATIONS

Supply Voltage	12-28 VAC, 15-30 VDC
Signal Output	4-20 mA (dual outputs for 2 sensor onboard configurations)
Alarm Contacts	Two SPDT relays, 5A @ 250 VAC
Alarm Auditory Levels	80 dB Audible alarm w/ silence
Sensing Technology	Electrochemical, Solid State
Visual Indication	LED indicators for Power, Fail, Low Gas Alarm, High Gas Alarm
Operating Humidity	15-90% RH Non-Condensing
Operating Temperature	-5° F to 120° F (-20° C to 50° C)
Enclosure Rating	Standard: Rugged PVC NEMA 4X: Watertight polycarbonate
Wiring Terminations	
VDC	3 conductor shielded
VAC	4 conductor shielded (optional pre-wired power supply 110-220 VAC
Dimensions	Standard: 5.3" L x 6.8" W x 2.6" D (13.5 x 17.3 x 6.6 cm)
NEMA 4X	5.1" L x 7.1" W x 3.9" D (13.0 x 18.0 x 10.0 cm)
Approvals	CSA Certified; UL Certified; C-Tick Certified
Weight	Standard: 1 lb (0.45 kg) NEMA 4X: 1 lb (0.45 kg)

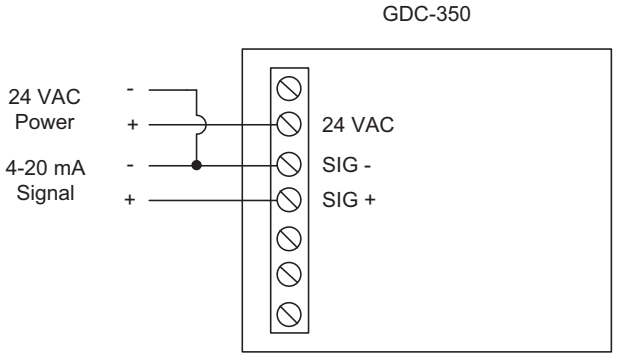
DIMENSIONS



TOXIC AND COMBUSTIBLE STAND-ALONE GAS DETECTOR

GDC-350

WIRING



ORDERING INFORMATION

GDC350	Multi-Gas Detector/Controller
	Product option
1	Single sensor, onboard
2	Single sensor, remote
3	Dual sensor, onboard
4	Dual sensor, onboard & remote
	Enclosure option
1	Standard enclosure, no display
2	Standard enclosure, w/ display
3	NEMA 4X enclosure, no display
4	NEMA 4X enclosure, w/ display
5	NEMA 4X enclosure, w/ splash guard, no display
6	NEMA 4X enclosure, w/ splash guard & display
7	Standard enclosure, no display, pre-wired supply
8	Standard enclosure, w/ display, pre-wired supply
	Sensor option 1
00	No on board sensor
01	CO Carbon Monoxide (electro chemical)
03	O2 Oxygen (electro chemical)
04	NO2 Nitrogen Dioxide (electro chemical)
06	NO Nitrogen Oxide (electro chemical)
09	SO2 Sulphur Dioxide (electro chemical)
	Sensor Option 2
00	No on board sensor (or remote GDC-150 as an input)
01	CO Carbon Monoxide (electro chemical)
03	O2 Oxygen (electro chemical)
04	NO2 Nitrogen Dioxide (electro chemical)
06	NO Nitric Oxide (electro chemical)
09	SO2 Sulphur Dioxide (electro chemical)
30	Combustible Gas (specify gas - must be remote)
31	Refrigerants (specify refrigerant - must be remote)
32	TVOCs (must be remote)

RELATED PRODUCTS

5209-0004	Splash guard (for NEMA 4X sensors only)
5209-0006	Calibration adapter for all on board sensors
5909-0003	Guard to protect GDC-350 (16 gauge galvanized metal)
5909-0004	Enclosed external transformer 120 VAC to 220 VAC)

GAS & SPECIALTY SENSORS

MULTIPOINT SAMPLE DRAW GAS MONITOR
VASQN8X

DESCRIPTION

The **VASQN8X** is a sample draw gas monitor. The standard unit (VASQN82) has two sampling points and a three-relay output for different stages of alarm. The unit is ideal for MRI rooms as the sampling point tubing can be up to 1000' from the monitor. The optional two-gas model will pick up both gases at each sampling point. Each unit includes 2 100 ft lengths of sampling tubing.

The **VASQN8X** Multipoint Sample Draw Gas Monitor is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

VASQN8X

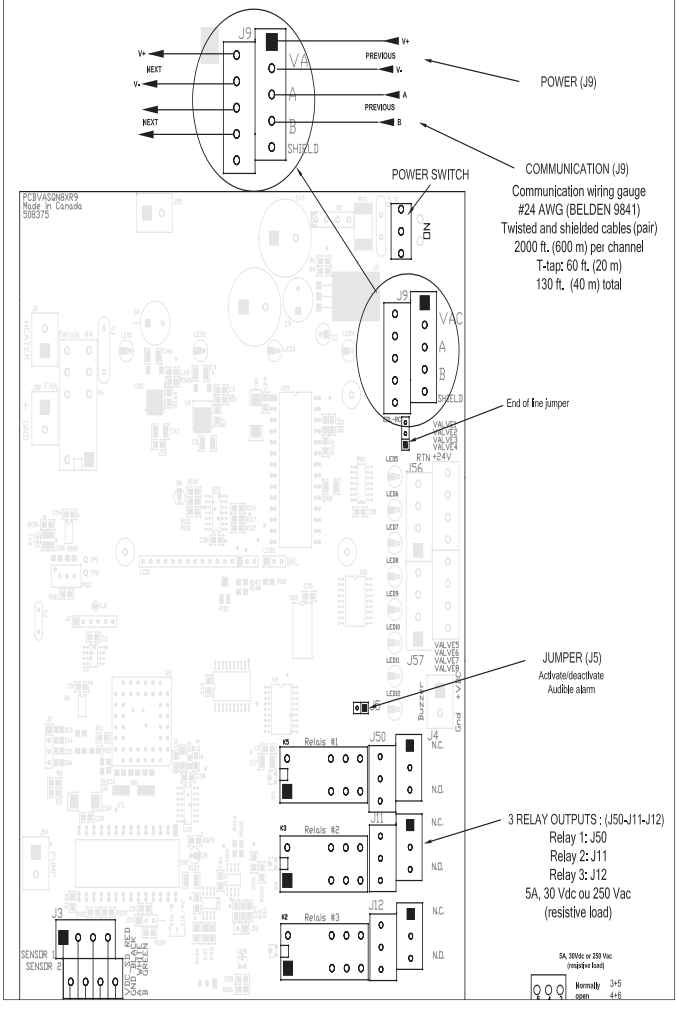
FEATURES

- ***Visual indicators and audible alarm***
- ***Programmable alarm levels***
- ***Two sampling points***
- ***Failure indicator***
- ***Three alarm levels***
- ***Integrated flow loss surveillance***

SPECIFICATIONS

Supply Voltage	24 VAC
Supply Current	0.74A
Relay Output	Three DPDT relays (three alarms)
Relay Output Rating	5A, 30 VDC or 250 VAC (resistive)
Alarm Auditory Levels	110 dBA at 3 ft (1m)
Accuracy	±3%
Measurement Range	CO (Carbon monoxide) 0-250 ppm Combustibles 0% to 100% LEL NO2 (Nitrogen dioxide) 0-10 ppm O2 (Oxygen) 0% to 25% CO2 (Carbon dioxide) 0-2000 ppm
Sensing Technology	Toxic: Electrochemical Combustion: Catalytic Oxygen: Diffusion fuel cell Refrigerants: 1-1000 ppm
Maximum Sampling Distance	1000 ft (305m)
Visual Indication	Green LED: Normal Red LED: Alarm levels 1 and 2 Yellow LED: failure indication Green LED: Aspirated zone indication
Included Accessories	Two 100' lengths of 1/8" polymer tubing
Operating Humidity	0% to 95% RH, noncondensing
Operating Temperature	32° to 100°F (0° to 40°C)
Dimensions	19"H x 13.0"W x 3.75"D (48 x 33 x 10 cm)
Approvals	
Certified to:	CSA C22.2 No 205
Conforms to:	cULus standard 1244
Weight	26.5 lbs (12 kg)
Warranty	1 year

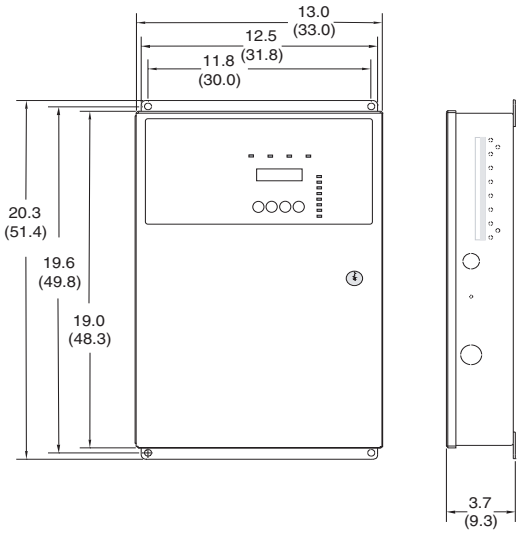
WIRING



MULTIPOINT SAMPLE DRAW GAS MONITOR

VASQN8X

DIMENSIONS



VASQN8X

APPLICATION TABLE

Detected Gas	Installation Height	Radius of Ceverage	Area Covered	Range	Alarm A	Alarm B	Alarm C
CO Carbon Monoxide	3 - 5 foot (1 - 1.5 m) from floor	50 ft (15m)	7,854 ft2 (707 m2)	0-250 ppm	25 ppm	200 ppm	220 ppm
NO2 Nitrogen Dioxide *	1 - 3 foot (30 cm to 1 m) from ceiling	51 ft (15m)	7,854 ft2 (707 m2)	0-10 ppm	0.72 ppm	2 ppm	9 ppm
O2 Oxygen	3 - 5 foot (1 - 1.5 m) from floor	26 ft (7m)	1,257 ft2 (154 m2)	0-25% Volume	19.5% Volume	22% Volume	22.5% Volume
Refrigerants (All except R-123)	1 foot (30 cm) from floor	31 ft (7m)	1,257 ft2 (154 m2)	0-1000 ppm	250 ppm	500 ppm	900 ppm
Refrigerants (R-123)	1 foot (30 cm) from floor	32 ft (7m)	1,257 ft2 (154 m2)	0-1000 ppm	50 ppm	500 ppm	900 ppm
COMB (heavier than air)	1 foot (30 cm) from floor	32 ft (7m)	1,257 ft2 (154 m2)	0-100% LEL	25% LEL	50% LEL	90% LEL
COMB (lighter than air)	1 foot (30 cm) from ceiling	33 ft (7m)	1,257 ft2 (154 m2)	0-100% LEL	25% LEL	50% LEL	90% LEL

*NO2 is normally heavier than air but heated exhuast may cause the gas to rise creating a specific variation in an application

ORDERING INFORMATION

	Multipoint Gas Detector with Two Sampling Points		
VASQN82	G1	Primary gas detected; CO, NO2, O2, R11, R12, R22, R123, R125, R134A, COMB	
		G2	Secondary gas detected; CO, NO2, O2, R11, R12, R22, R123, R125, R134A, COMB

Example: VASQN82-CO-NO2 Multipoint gas detector with two sampling points for CO & NO2

REFRIGERANT LEAK DETECTOR
RLD-5

DESCRIPTION

The **RLD-5** is a solid-state CFC refrigerant leak detector capable of detecting the presence of escaping refrigerants. It is field adjustable for five different CFC refrigerant types: R-11, R-12, R-22, R-113, and R-502. An analog output is provided to allow interfacing to computer monitoring equipment. An alarm relay is also provided with adjustable set point and jumper-selectable time delay function to prevent nuisance alarms. Four LEDs provide status indication for warm-up, ready, warning, and alarm.

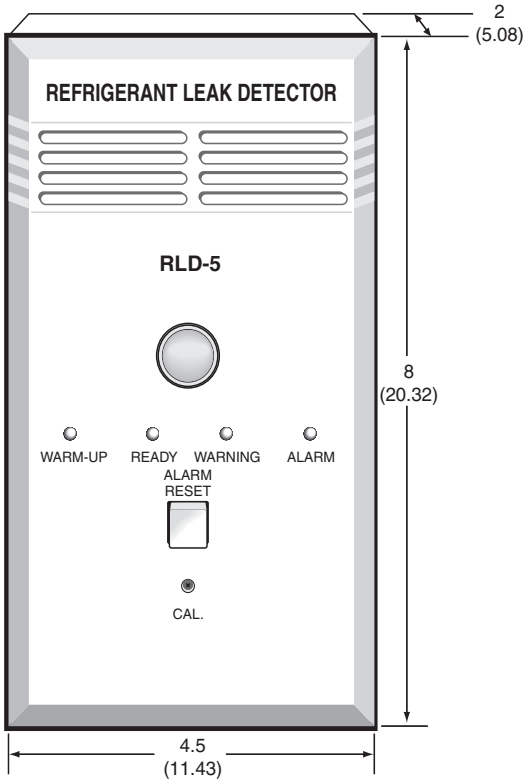
The **RLD-5** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

FEATURES

- ***R-11, R-12, R-22, R-113, and R-502 detection***
- ***Selectable analog output***
- ***LED status indication***
- ***Alarm relay output***
- ***Field-replaceable sensor***
- ***Refrigerant leak detection as described in ASHRAE 15-2004***
- ***Minimum 15 minute time delay***

DIMENSIONS

in
(cm)



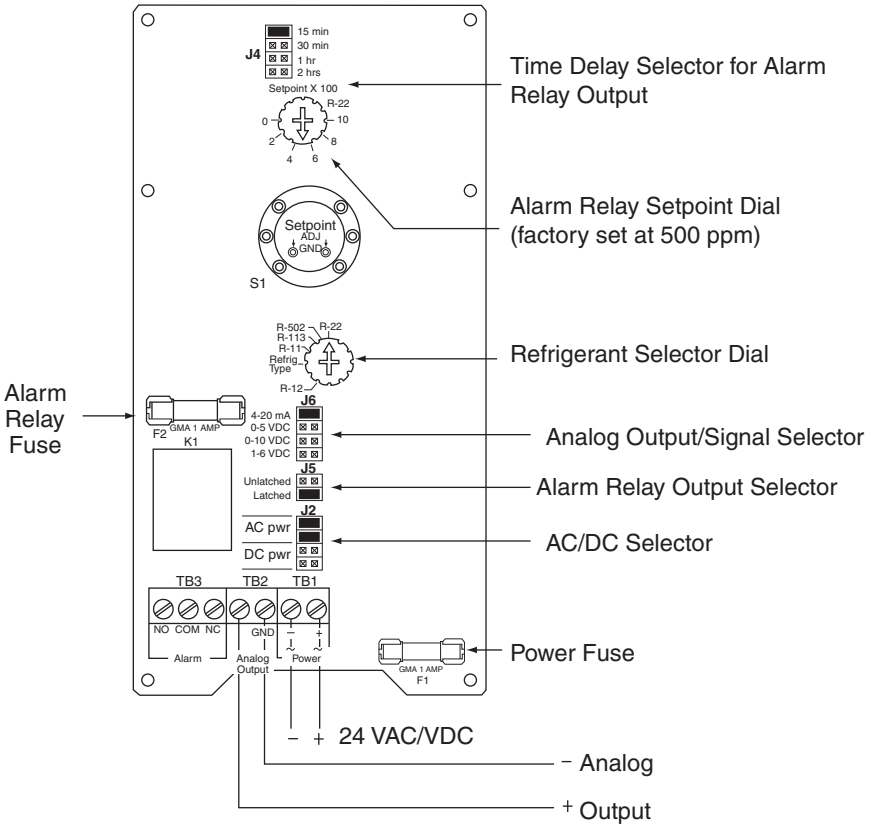
SPECIFICATIONS

Supply Voltage	24 VAC/VDC ±10%
Supply Current	VAC 325 mA VDC 250 mA
Signal Output	4-20 mA, 0-5 VDC, 0-10 VDC, 1-6 VDC (jumper selectable)
Maximum Output Impedance (mA)	300Ω maximum
Minimum Output Impedance (VDC)	5 kΩ minimum
Alarm Relay Output	SPDT 0.5A 24 VAC/VDC (jumper selectable); Manual reset (latched), Auto reset (unlatched)
Alarm Relay Setpoint	Adjustable 0-1000 ppm Factory set 500 ppm
Alarm Time Delay	15 min., 30 min., 1 hr, 2 hr (jumper selectable)
Accuracy	±5% Long term drift 8%
Measurement Range	0-1000 ppm
Operating Humidity	10% to 95% non-condensing
Warranty	1 year

REFRIGERANT LEAK DETECTOR

RLD-5

WIRING



INSTALLATION / OPERATION

Installation

The **RLD-5** is suitable for indoor use only. Mount the unit as close to the source of potential refrigerant leaks as possible. Some recommended considerations are as follows:

1. Mount approximately 3' (0.9m) from floor (refrigerants are heavier than air and will settle on the floor).
2. Mount at least 5' (1.5m) from exhaust fans (direct airflow across sensing element will affect accuracy).
3. If used in refrigeration pits, mount 1' (0.3m) above floor.

Operation

To test operation, place a small amount of alcohol below the sensing element. The analog output signal should increase.

Note: Make all connections in accordance with national and local codes.

ORDERING INFORMATION

MODEL	DESCRIPTION
RLD-5	Refrigerant leak detector

RELATED PRODUCTS

170-0830	Replacement sensing element
NIOSHSCBA-WC	Self-contained breathing apparatus kit with SCBA-WALCASE wall case

REFRIGERANT LEAK DETECTOR
RLD-134A

DESCRIPTION

The **RLD-134A** is a solid-state HFC refrigerant leak detector capable of detecting the presence of escaping refrigerant R-134a.

An analog output is provided to allow interfacing to computer monitoring equipment. An alarm relay is also provided with adjustable set point and jumper-selectable time delay function to prevent nuisance alarms. Four LED's provide status indication for warm-up, ready, warning, and alarm.

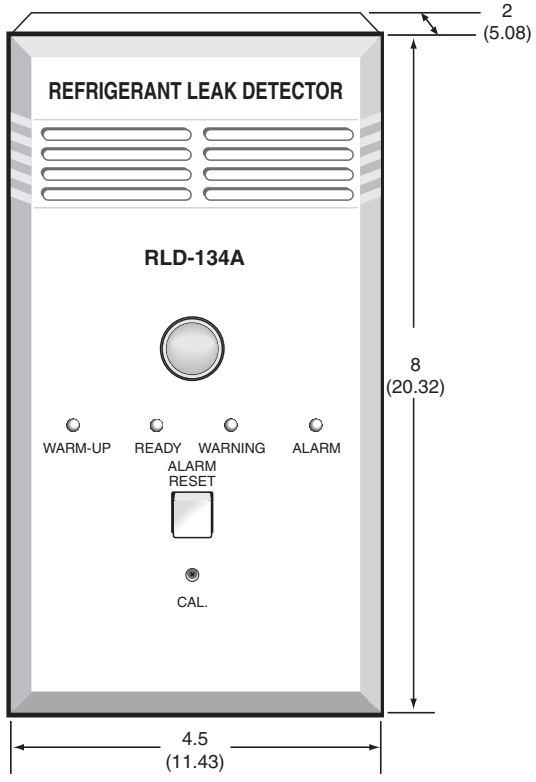
The **RLD-134A** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

FEATURES

- ***R-134a detection***
- ***Selectable analog output***
- ***LED status indication***
- ***Alarm relay output***
- ***Field-replaceable sensor***
- ***Wall-mounting kit***
- ***Refrigerant leak detection as described in ASHRAE15-2004***
- ***Minimum 15 minute time delay***

DIMENSIONS

in
(cm)



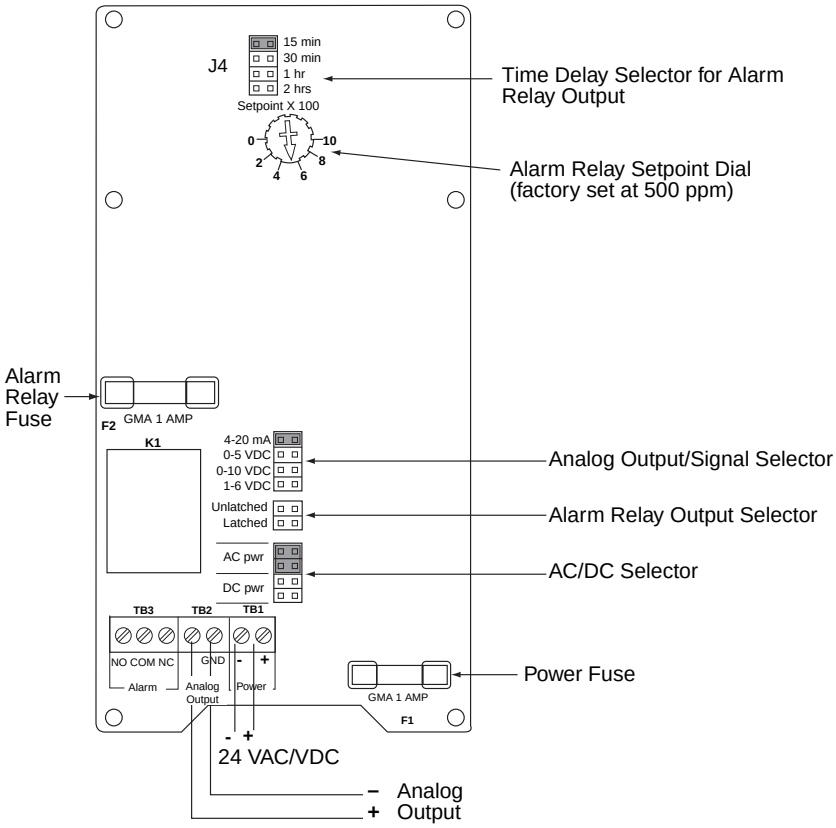
SPECIFICATIONS

Supply Voltage	24 VAC/VDC ±10%
Supply Current	VAC 325 mA VDC 250 mA
Signal Output	4-20 mA, 0-5 VDC, 0-10 VDC, 1-6 VDC (jumper selectable)
Maximum Output Impedance (mA)	300Ω maximum
Minimum Output Impedance (VDC)	5 kΩ minimum
Alarm Relay Output	SPDT 0.5A 24 VAC/VDC Manual reset (latched) Auto reset (unlatched) (jumper selectable)
Alarm Relay Setpoint Factory set 500 ppm	Adjustable 0-1000 ppm
Alarm Relay Time Delay	15 min., 30 min., 1 hr, 2 hr (jumper selectable)
Accuracy	±5%; Long term drift 8%
Measurement Range	0-1000 ppm
Operating Humidity	10% to 95% non-condensing
Operating Temperature	32° to 158°F (0° to 70°C)
Warranty	1 year

REFRIGERANT LEAK DETECTOR

RLD-134A

WIRING



INSTALLATION / OPERATION

Installation

The **RLD-134A** is suitable for indoor use only. Mount the unit as close to the source of potential refrigerant leaks as possible. Some recommended considerations are as follows:

1. Mount approximately 3' (0.9m) from floor (refrigerants are heavier than air and will settle on the floor).
2. Mount at least 5' (1.5m) from exhaust fans (direct airflow across sensing element will affect accuracy).
3. If used in refrigeration pits, mount 1' (0.3m) above floor.

Operation

To test operation, place a small amount of alcohol below the sensing element. The analog output signal should increase.
Note: Make all connections in accordance with national and local codes. Not recommended for MRI rooms.

ORDERING INFORMATION

MODEL	DESCRIPTION
RLD-134A	Refrigerant leak detector

RELATED PRODUCTS

170-0832	Replacement sensing element
NIOSHSCBA-WC	Self-contained breathing apparatus kit with SCBA-WALCASE wall case

OXYGEN SENSOR
OS-1

DESCRIPTION

The **Model OS-1** is a dependable, economical oxygen sensor designed to monitor oxygen levels in ambient air. It has a jumper-selectable analog output for interfacing with a BAS controller and an SPDT relay output to activate an alarm in the event of oxygen depletion due to a refrigerant leak. The units are powered by 24 VAC/VDC and are housed in a rugged polystyrene enclosure for dust and moisture protection.

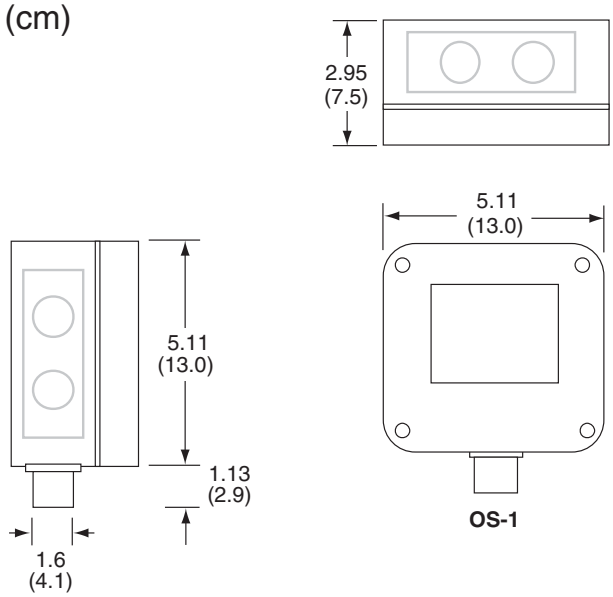
The **Model OS-1** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

FEATURES

- ***4-20 mA, 0-5 VDC, or 0-10 VDC output, jumper-selectable***
- ***SPDT alarm relay***
- ***24VAC/VDC power***
- ***0% to 25% range***
- ***Rugged polystyrene enclosure***

DIMENSIONS

in
(cm)



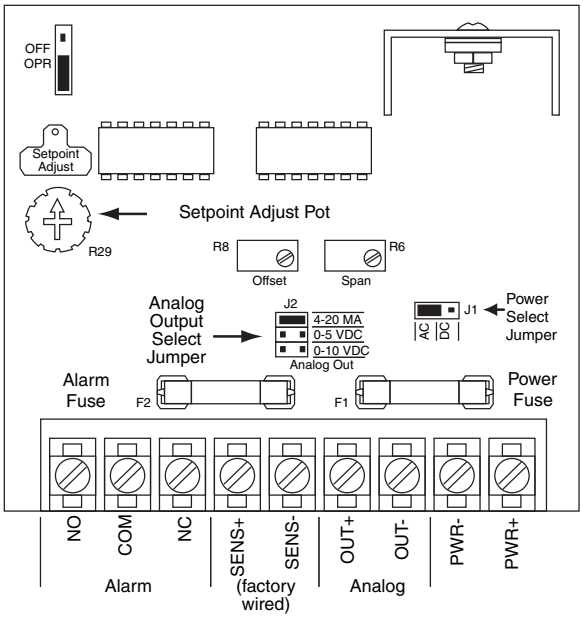
SPECIFICATIONS

Supply Voltage	24 VAC/VDC @ 0.25A
Signal Output	(jumper selectable) 4-20 mA (300Ω max) 0-5 VDC (20 kΩ min) 0-10 VDC (20 kΩ min)
Relay Type	SPDT 24 VAC/VDC @ 0.5A, factory set @ 19.5%
Accuracy	±1%
Measurement Range	0% to 25% oxygen
Sensing Technology	Galvanic cell
Life Expectancy	Approximately five years @ 68°F (20°C) in ambient air
Response Time	Approximately 12 seconds
Operating Humidity	10% to 95% non-condensing
Operating Temperature	40° to 104°F (5° to 40°C)
Storage Temperature	-4° to 140°F (-20° to 60°C)
Weight	1 lb (0.45 kg)
Warranty	1 year

OXYGEN SENSOR

OS-1

WIRING



Note:
AC power must be floating and may not be grounded. If AC power is grounded a separate transformer is required for each OS-1.

INSTALLATION

The **OS-1** is suitable for indoor use only. Mount the unit as close to the source of potential refrigerant leaks as possible. Some recommended considerations are as follows:

1. Mount the unit with the sensor pointing down.
2. Mount the unit in a location with low vibration. Strong vibration may cause a change in the condition of the internal membrane.
3. The sensor should be mounted 3' to 5' (0.9 to 1.5m) from the floor in equipment rooms or 1' (0.3m) above the floor in refrigeration pits.
4. The **OS-1** should cover about 1000-1500 square feet with adequate air movement.
5. Mount at least 5' (1.5m) from the exhaust fan.
6. Verify operation yearly.

Note: Make all connections in accordance with national and local codes. Not recommended for MRI rooms.

ORDERING INFORMATION

MODEL	DESCRIPTION
OS-1	Oxygen sensor, 0% to 25% range

RELATED PRODUCTS		PAGE
GAS-O2-18	18% oxygen (O2) in nitrogen (N2), 17L	
UCK-1	Universal calibration kit for non-corrosive gases (N2, CO2, CH4, H2, O2, CO, and refrigerants)	**374**

GAS & SPECIALTY SENSORS

GAS DETECTION EXPANSION MODULE
VA301EM

DESCRIPTION

The **VA301EM** Expansion Module allows the monitoring of toxic and combustible gases and refrigerants. Up to four sensors can be placed 500' away for toxic and combustible gases, and 200' away for refrigerant gas monitoring. The transmitter is equipped with a backlit LCD display and keypad that can be placed in a safe area, remote from the sensors. Alarm relays and Modbus communication are standard. The unit is compatible with the **VA301C** controller.

The **VA301EM** Gas Detection and Expansion Module is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

VA301EM

S301D2CO

VA301RFSR134a

FEATURES

- ***Sense one to four zones***
- ***Sensors available for toxic and combustible gases and refrigerants***
- ***RS-485 Modbus communication***
- ***Contact input for manual break-glass switches***
- ***Three 24VDC outputs to activate strobes and horns***
- ***4-20mA output for each sensor***
- ***Four relay outputs***
- ***Easy-to-read LCD display***
- ***Explosionproof sensors for combustible and toxic gases***

SPECIFICATIONS

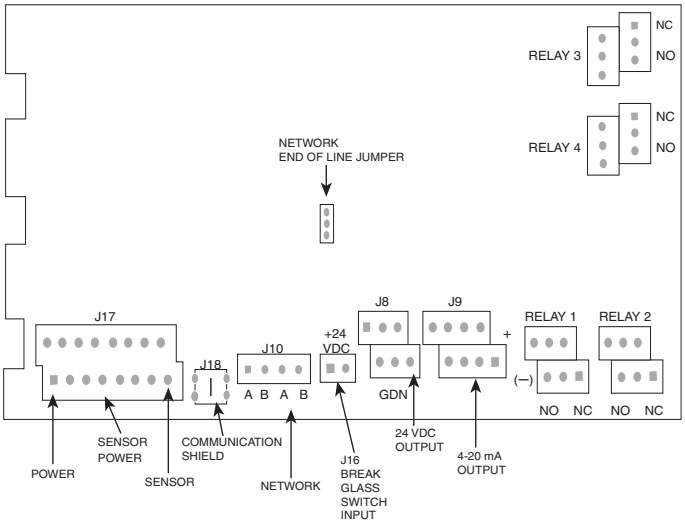
Supply Voltage	22-27 VAC, 50/60 Hz; 29-38 VDC
Supply Current	2.0 A max @ 29 Vdc
Signal Output	(4) 4-20 mA, RS-485 Modbus
Maximum Output Impedance	1000Ω @ 24 VDC
Relay Output	4 DPDT relays, 3 low voltage switches (3) 24 VDC@ 250 mA
Relay Output Rating	(4) 5A, 30 VDC or 250 VAC (resistive load), (3) 24 VDC @250 mA
Alarm Auditory Levels	105 dBA @ 3 ft (1m)
Accuracy	±3%
Gases Detected	
VA301IRFS	R11, R12, R22, R22, R123, R125, R134A, R227, R245A, R404A, R407C, R410A, R507A, R508B
S301D2	CO, CL2, H2S, NO2, O2, SO2
Measurement Range	
CO	0-250
CL2	0-15 ppm`
Combustibles	0-100% LEL
H2S	0-50 ppm
NO2, SO2	0-10 ppm
O2	0-25%
Refrigerants	0-1000 ppm
Sensing Technology	
CO, CL2, H2S, NO2, SO2	Electrochemical
O2	Diffusion Fuel Cell
Refrigerants	Dual Infrared Sensor
Combustibles	Catalytic

Distance To Transmitters	
VA301 Sensor	200 ft (60.9m) maximum- maximum;
S301 Sensor	Up to 500 feet (160 m)
Altitude Limits	Up to 9843 ft (3000m)
Calibration Interval	6 months
Visual Indication	Green - Normal Red - Alarms A, B, & C Yellow - Fault/Service Alarm Amber - Tx (network mode)
Display	Backlit LCD
Response Time	60 seconds
Operating Humidity	0% to 95% RH (noncondensing)
Operating Temperature	
VA301 Sensor	32° to 104°F (0 to 40°C)
SD301 Sensor	
Toxic	-40° to 104°F (-40° to 40°C)
Combustible	-40° to 122°F (-40° to 50°C)
Enclosure (VA301)	ABS & Polycarbonate
Enclosure (S301D2)	Class 1, Division 1, Groups B, C, D
Dimensions	
Transmitter	7.99"H x 11.02"W x 2.76"D (20.3 x 28 x 7 cm)
Sensor	4.02"H x 11.02"W x 2.48"D (10.2 x 28 x 6.3 cm)
Weight	2.25 lbs (1.02 kg)
Warranty	1 year

GAS DETECTION EXPANSION MODULE

VA301EM

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
VA301EM	Gas detection expansion module
VA301EM-RFS	Wall mounted gas controller/expansion module with built in red strobe
VA301EM-RFSA	Wall mounted gas controller/expansion module with built in red strobe, light, and horn

	ACCESSORIES	PAGE
1309K0002	GDS, GDD, GDN calibration kit for 58 to 103L gas cylinders	
1309K0004	GDS, GDD, GDN calibration kit for 17 to 34L gas cylinders	
Calibration Gases	CO, CO2, NO2, O2, CH4, NH3, N2, H2S, H2, and Refrigerants (See calibration page)	
UCK-1	Universal calibration kit for non-corrosive gases (N2, CO2, CH4, H2, O2, CO, and refrigerants)	**374**
UCK-2	Universal calibration kit for corrosive gases (NO2, H2S, SO2, and NH3)	**374**
UCK-3	Universal calibration kit for non-corrosive or corrosive gases	**374**

RELATED PRODUCTS

S301D2CL2	Remote Chlorine gas sensor
S301D2CO	Remote Carbon Monoxide gas sensor
S301D2COMB	Remote combustible gas sensor (specify gas at time of order)
S301D2H2S	Remote Hydrogem Sulfide gas sensor
S301D2NO2	Remote Nitrogen Dioxide gas sensor
S301D2O2	Remote Oxygen gas sensor
S301D2SO2	Remote Sulphur Dioxide gas sensor
VA301IRFSR11	Remote R11 refrigerant sensor
VA301IRFSR12	Remote R12 refrigerant sensor
VA301IRFSR123	Remote R123 refrigerant sensor
VA301IRFSR125	Remote R125 refrigerant sensor
VA301IRFSR134A	Remote R134A refrigerant sensor
VA301IRFSR22	Remote R22 refrigerant sensor
VA301IRFSR227	Remote R227 refrigerant sensor
VA301IRFSR245a	Remote R245A refrigerant sensor
VA301IRFSR404a	Remote R404A refrigerant sensor
VA301IRFSR407C	Remote R407C refrigerant sensor
VA301IRFSR410A	Remote R410A refrigerant sensor
VA301IRFSR507A	Remote R507A refrigerant sensor
VA301IRFSR508B	Remote R508A refrigerant sensor

GAS DETECTION CONTROLLER
VA301C

DESCRIPTION

The **VA301C Gas Detection Controller** provides continuous monitoring of up to 96 inputs/outputs, on three channels, at distances up to 2000'. Modbus communication channels are included. The **VA301C** is pre-programmed at the factory, but menu driven changes can be made in the field. The **VA301C** allows monitoring of an entire network and will initiate an alarm or ventilation activation upon detection of a gas. One model is available with datalogging.

The **VA301C Gas Detection Controller** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. Please read "Environmental Safety Devices" in our technical reference section for a more complete explanation on the proper application and use of this device.

VA301C

VA-301R-8

FEATURES

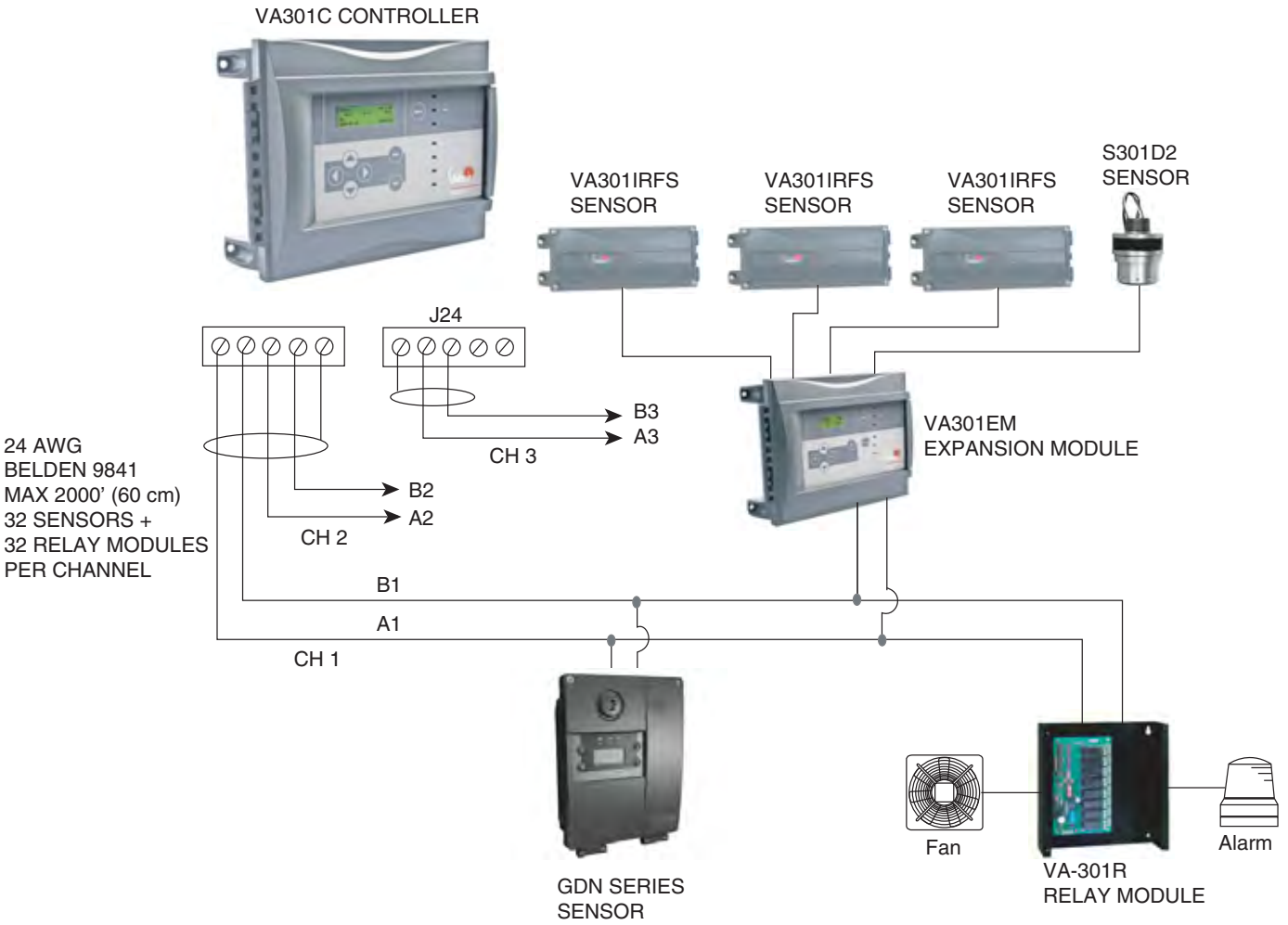
- ***Full array of visual indicators and audible alarm***
- ***Multiple fully programmable alarm levels***
- ***Programmable time delays***
- ***Failure indicator***
- ***Up to 96 transmitters and relay modules***
- ***Up to 768 events***
- ***Up to 128 zoning groups***
- ***Graphic 122 x 32 dot-matrix display***
- ***Datalogging available***

SPECIFICATIONS

Supply Voltage	
VA301C	17-27 VAC, 24-38 VDC, 500 mA
VA301R	17-27 VAC, 24-38 VDC, 250 mA
Relay Output	5A, resistive 30 VDC or 250 VAC
Alarm Contacts	
VA301C	4 DPDT relays (alarms/fault), buzzer
VA301R	8 DPDT relays
Alarm Auditory Levels	65 dBA @ 3' (1m)
Alarm Relay Setpoint	Multiple with high and low setpoints
Alarm Time Delay	0, 30 sec, 45 sec, 1-99 minute before and after alarm
Network	Capacity: Up to 96 transmitters and 96 relay modules
Communication	Three Modbus zones
Distance To Transmitters	2000' (600m) maximum, 65 ft (20m) T-Tap, 130 ft (40m) total T-Tap
Visual Indication	Blinking Green LED: Normal operation Red LED: Alarm Level 1, 2, and 3 Blinking Amber LED: Signal Tx Blinking Green LED: Signal Rx Yellow LED: Failure
User Interface	Dot-matrix display and keypad
Operating Temperature	-4° to 122°F (-20° to 50°C)
Storage Humidity	0% to 95% RH non-condensing
Enclosure Rating	NEMA 4X Polycarbonate - ABS
Dimensions	
VA301C	8.0" H x 11.0" W x 2.8" D (20.3 x 28.0 x 7.0 cm)
VA301R	8.4" H x 8.6" W x 2.5" D (21.3 x 21.8 x 6.35 cm)
Weight	
VA301C	2.4 lb (1.1 kg)
VA301R	3.5 lb (1.58 kg)
Warranty	1 year

GAS DETECTION CONTROLLER
VA301C

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
VA301C-DLC	Gas detection controller with datalogging
VA301R-8	Eight-relay module
VA301C	Gas detection controller

RELATED PRODUCTS

VA301EM	Gas detection expansion module
GDN Series	Network compatible gas detector

GAS & SPECIALTY SENSORS

INFRARED REFRIGERANT GAS DETECTOR

IR-F9 SERIES

NEW!

Honeywell

DESCRIPTION

The **IR-F9 Series** refrigerant detector is a highly accurate, affordable, micro-processor based infrared sensor that will provide years of reliable service. A true "diffusion" sensor, the IR-F9 Series does not require either the use of pumps or filters and allows all points of detection to be monitored perpetually. The versatile sensor is housed in a high mass metal bench structure that enables thermal stability and freedom from the effects of vibration.

The **IR-F9 Series** Infrared Refrigerant Gas Detector is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

FEATURES

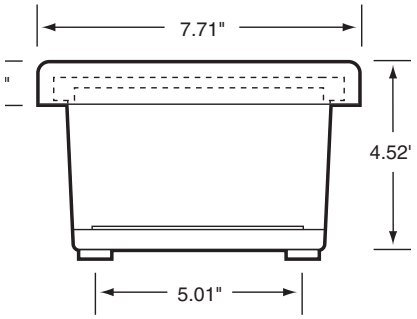
- ***Available in seven different refrigerants***
- ***R134a, R22, R404a, R407a, R410a, R422a, R507a***
- ***Visual indication***
- ***Infrared technology***
- ***4-20 mA output***
- ***Easy calibration with cal kit***
- ***No pump***
- ***Continual monitoring***
- ***Optional RS-485 Modbus communication***

IR-F9

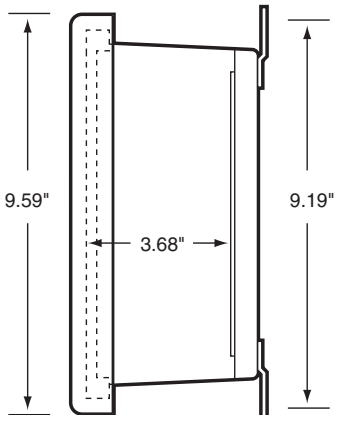
SPECIFICATIONS

Supply Voltage	24 VDC regulated 1.2A maximum
Signal Output	4-20 mA
Maximum Output Impedance	500Ω
Accuracy	±3% full scale
Repeatability	1% full scale
Gases Detected	R134a, R22, R404a, R407a, R410a, R422d, R507a
Detection Range	1000 ppm standard (0-500 ppm to 0 to 3000 ppm)
Sensing Technology	Dual infrared sensor
Calibration Interval	Every 6 months
Visual Indication	For testing and verification of 4-20 mA loop, calibration and operation
Response Time	10 seconds with full scale calibration gas @ 0.75 liters/ minimum flow rate
Operating Humidity	0% to 100% RH non-condensing
Operating Temperature	-40° to 140°F (-40° to 60°C)
Storage Temperature	-20° to 140°F (-28° to 60°C)
Enclosure Rating	NEMA 4 fiberglass reinforced polyester
Dimensions	9.59"H x 7.71"W x 4.52"D (24.4 x 19.6 x 11.5 cm)
Weight	4.4 lb (2.0 kg)
Warranty	1 year

MOUNTING DIMENSIONS



Top View



NEW!

INFRARED REFRIGERANT GAS DETECTOR

IR-F9 SERIES

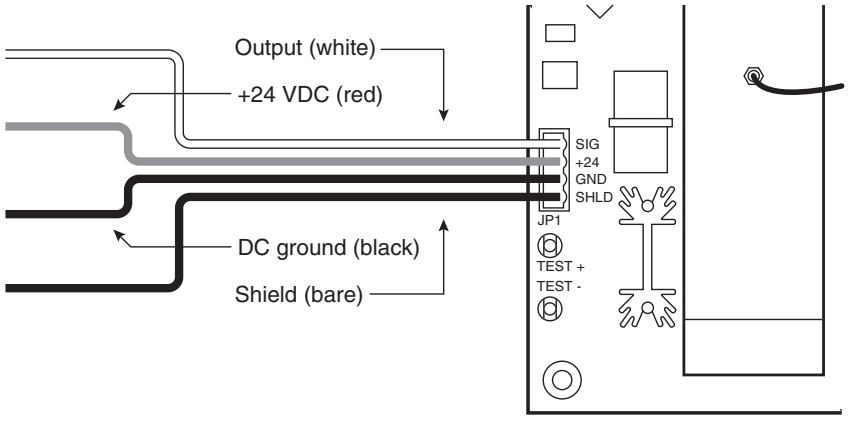
WIRING

White connects to signal input of monitoring equipment

Red connects to 24 VDC power supply positive side

Black connects to 24 VDC ground side

Bare wire wrap connects to case ground at monitoring equipment (earth ground)



INSTALLATION / OPERATION

Installation

The **IR-F9** can only report what it is seeing at the moment and it is very important the sensor be located where leaks are most likely to occur. CFC/HCFC/HFC vapor is heavier than ambient air, so in a room with no air movement it will tend to settle. For quickest detection, mount the sensor about one to two feet from the floor, close to the potential leak source. Be aware the indicated concentration may not be representative of personnel exposure and easy access for the required calibration and maintenance could be compromised. Some recommended considerations are as follows:

1. Must be easily accessible for calibration and maintenance.
2. Always mount the sensor vertically.
3. Mount the sensor close to the potential leak source for fastest possible leak detection.
4. Protect sensor from water, excessive humidity, and wash-down.
5. Always make a drip loop in the conduit.
6. Never mount sensor on a vibrating surface.

Operation

The **IR-F9** has two internal pushbutton(s), and two adjustment pots that are utilized for navigation of test functions, calibrations, and operating modes. In addition, a pair of test points is also provided that assist in the connection to standard meter leads for use in the upcoming calibration and diagnostic procedures.

*NOTE: The pushbutton(s) must be pressed the correct number of times and at the correct rate.

ORDERING INFORMATION

MODEL	DESCRIPTION
IR-F9-R134A	Stand-alone infrared refrigerant detector for R134a
IR-F9-R22	Stand-alone infrared refrigerant detector for R22
IR-F9-R404A	Stand-alone infrared refrigerant detector for R404a
IR-F9-R407A	Stand-alone infrared refrigerant detector for R407a
IR-F9-R410A	Stand-alone infrared refrigerant detector for R410a
IR-F9-R422D	Stand-alone infrared refrigerant detector for R422d
IR-F9-R507A	Stand-alone infrared refrigerant detector for R507a

RELATED PRODUCTS

DRM	Dual relay module
RP	Relay plug-in module with setpoint adjustment (uses 4-20 mA terminals)
NIOSHSCBA-WC	Self-contained breathing apparatus kit with SCBA-WALCASE wall case
420MDBS	Interface module 4 to 20 mA to RS485 with Phoenix connector
Calibration Gases	CO, CO2, NO2, O2, CH4, NH3, N2, H2S, H2, and Refrigerants (See calibration page)
IRF9-CK	IR-F9 Calibration kit (order gas separately)

GAS & SPECIALTY SENSORS

MULTI-ZONE REFRIGERANT MONITOR
HGM-MZ

DESCRIPTION

The **Model HGM-MZ Multi-Zone Refrigerant Gas Monitor** is designed for continuous multi-point monitoring of CFC, HFC, and HCFC refrigerants and halogen gases. The standard unit monitors four discrete points and can be expanded to sixteen point monitoring in four point increments. The unit features 34 pre-programmed refrigerants plus one custom gas. Three adjustable alarm levels with relay output dseignate leak, spill, and evacuation concentrations. Gas alarms and system fault conditions are indicated by visual and audible alarms. The **Model HGM-MZ** provides a system fault relay output and RS-485 serial interface for integration with a building management system.

The **HGM-MZ Multi-Zone Refrigerant Gas Monitor** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

FEATURES

- ***Four-point monitoring expandable to sixteen points***
- ***38 pre-programmed refrigerants and one custom***
- ***Up to 1200 ft (365m) distance between measuring point and monitor***
- ***Three alarm levels and system fault alarm with SPDT contacts***
- ***Self diagnostics verify operation***
- ***100 data point logging***
- ***Audible and visual alarm indication with silence button***
- ***Local indication of current and peak gas levels***

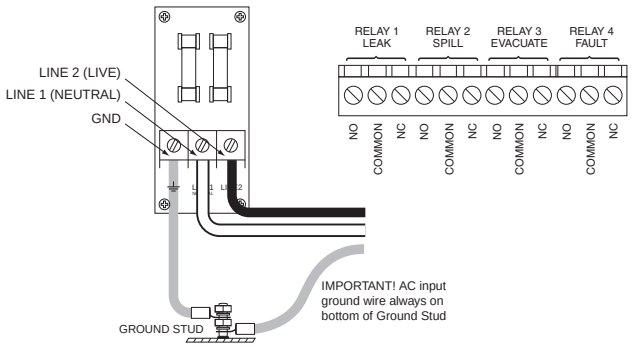
SPECIFICATIONS

Supply Voltage	100 to 240 VAC, 50/60 Hz, 21W
Relay Output	3 SPDT alarm relays, 1 fault relay, 250 VAC, 3A; Dual 4-20mA output (optional)
Accuracy	±1 ppm ±10% reading
Communication	Optional: LON and N2
Gases Detected	R-11, R-12, R21, R-22, R-23, R-113, R-114, R-123, R-124, R-125, R-134a, R-227, R-236FA, R-245FA, R-401a, R-402a, R-402b, R-404a, R-407a, R-407c, R-408a, R-409a, R-410a, R-422a, R-422d, R-427a R-500, R-502, R-503, R-507, R-508b, H-1211, H-1301, H-2402, N-1230, FA188, FC72, HFP
Measuring Range	1000 ppm
Sensing Technology	Single pass, infrared non-dispersive
Coverage	Monitoring distance: 1200 ft (365m) maximum per zone
Sensitivity	1 ppm
Response Time	5 to 120 seconds depending on sample tube length
Number of Zones	
HGM-MZ	4
HGM-MZ-8	8
HGM-MZ-12	12
HGM-MZ-16	16
Operating Humidity	5% to 90% RH (noncondensing)
Operating Temperature	32° to 122° F (0° to 50°C)
Dimensions	12.2"L x 13.7"H x 5.0"D (31 x 35 x 12.7 cm)
Approvals	UL (61010-1), CSA, CE
Weight	15 lb (6.8 kg)
Warranty	2 years

INSTALLATION

The monitor should be located outside the mechanical room and readily accessible for verification and servicing. The sample line should be located as close as possible to the source of a potential leak.

WIRING



Use supplied crimp-on ring terminals, washers, and nuts to connect AC ground wires to Ground Stud as shown to meet approval agency requirements.

ORDERING INFORMATION

MODEL	DESCRIPTION
HGM-MZ	Multi zone refrigerant monitor (4-zone)
HGM-MZ-8	Multi zone refrigerant monitor (16-zone)
HGM-MZ-12	Multi zone refrigerant monitor (8-zone)
HGM-MZ-16	Multi zone refrigerant monitor (12-zone)

RELATED PRODUCTS

3015-5152	Dual 4-20mA output board
3015-5171	Four zone expansion kit*
HGM-RD	Remote display
HGM-LON	Lonworks Communication Adapter
HGM-N2	Metasys N2 Communication Adapter
3015-3411	Line end filters (4)
NIOSHSCBA-WC	Self-contained breathing apparatus kit with SCBA-WALCASE wall case

***NOTE: Must order 3015-3411 filter kit.**

REFRIGERANT GAS MONITOR

HGM-SZ

DESCRIPTION

The **Model HGM-SZ Single Zone Refrigerant Gas Monitor** is designed for continuous monitoring of CFC, HFC, and HCFC refrigerants and halogen gases. The unit features 30 pre-programmed refrigerants plus one custom gas. Three adjustable alarm levels with relay output designate leak, spill, and evacuation concentrations. Gas alarms and system fault conditions are indicated by visual and audible alarms. The **Model HGM-SZ** provides a system fault relay output and a 4 to 20 mA output for integration with remote monitoring equipment or building management systems.

The **HGM-SZ Single Zone Refrigerant Gas Monitor** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

FEATURES

- ***30 pre-programmed refrigerants and one custom***
- ***Self diagnostics verify operation***
- ***Three alarm levels with SPDT alarm contacts***
- ***System fault alarm***
- ***200 data point logging***
- ***4-20 mA output signal***
- ***50-foot sampling tube and end filter included***
- ***Audible and visual alarm indication***
- ***Local indication of current and peak gas levels***
- ***Alarm-silence button***

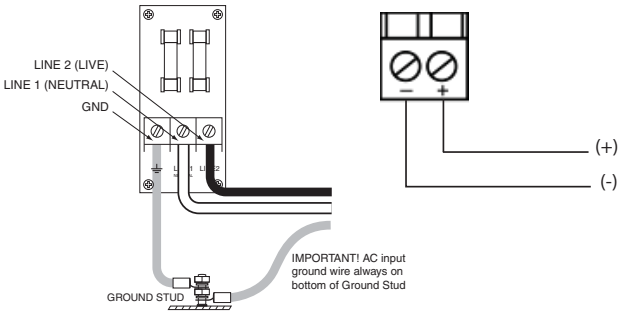
SPECIFICATIONS

Supply Voltage	100 to 240 VAC, 50/60 Hz
Signal Output	3 alarm relays, 1 fault relay, 240 VAC, 5A, and 4-20 mA 500Ω (non-isolated)
Accuracy	±1 ppm ±10% reading
Gases Detected	R-11, R-12, R-22, R-23, R-113, R-114, R-123, R-124, R-125, R-134a, R-227, R-236fa, R-245fa, R-401a, R-402a, R- 402b,R-404a, R-407a, R-407c, R-408a, R-409a, R-410a, R-500, R-502, R-503, R-507, R-508b, H-1211, H-1301, H-2404, N-1230
Measurement Range	0-1000 ppm
Sensing Technology	Single pass, infrared non-dispersive
Sensitivity	1 ppm
Warm Up Time	15 minutes
Response Time	9 to 90 seconds depending on sample tube length
Operating Humidity	5% to 90% RH non-condensing
Operating Temperature	32° to 122°F (0° to 50°C)
Dimensions	7.7"H x 3.6"D x 13.7"L (20 x 9 x 35 cm)
Approvals	UL (61010-1), CSA, CE
Weight	7 lb (3.2 kg)
Warranty	2 years

INSTALLATION

The monitor should be located outside the mechanical room and readily accessible for verification and servicing. The sample line should be located as close as possible to the source of a potential leak.

WIRING



Use supplied crimp-on ring terminals, washers, and nuts to connect AC ground wires to Ground Stud as shown to meet approval agency requirements.

ORDERING INFORMATION

MODEL	DESCRIPTION
HGM-SZ	Single zone refrigerant monitor

RELATED PRODUCTS

M1104KF	Replacement line end filter
125-SS-2	Replacement charcoal filter*
***NOTE: Recommend replacing every six months**	
NIOSHSCBA-WC	Self-contained breathing apparatus kit with SCBA-WALCASE wall case

SINGLE ZONE AMMONIA GAS MONITOR
AGM-SZ

DESCRIPTION

The **Model AGM-SZ Single Zone Ammonia Gas Monitor** is designed for single point monitoring of ammonia gas with up to 50 ft (15.2 m) distance from measuring point to monitor. The unit features a digital display for local indication of current gas levels and peak value. Three adjustable alarm levels with relay output designate leak, spill, and evacuation concentrations. Gas alarms and system fault conditions are indicated by visual and audible alarms. The **Model AGM-SZ** provides a system fault relay output and a 4 to 20 mA output for integration with remote monitoring equipment or building management systems.

The **AGM-SZ Single Zone Ammonia Gas Monitor** is designed to be used as part of a control system that helps to prevent the formation of a hazardous environment when properly installed and maintained. For more information on the proper application and use of this product please read "Environmental Safety Devices" in our technical reference section.

FEATURES

- ***Three alarm levels with SPDT alarm contacts***
- ***Self diagnostics verify operation***
- ***LED status indication***
- ***System fault alarm***
- ***200 data point logging***
- ***4-20 mA output signal***
- ***50-foot sampling tube and end filter included***
- ***Audible and visual alarm indication***
- ***Local indication of current and peak gas levels***
- ***Alarm-silence button***

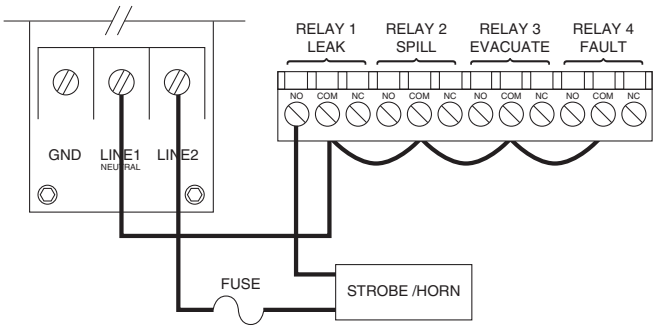
SPECIFICATIONS

Supply Voltage	100 to 240 VAC, 50/60 Hz
Signal Output	3 alarm relays, 1 fault relay, 240 VAC, 3A, and 4-20 mA 500Ω (non-isolated)
Accuracy	±10 ppm from 25 to 100 ppm or ±10% reading from 100 to 10,000 ppm
Gases Detected	Ammonia (NH3, R-717)
Measurement Range	25-10,000 ppm
Sensing Technology	Single-pass, infrared non-dispersive
Coverage	Up to 50 ft (15m) from measuring point to monitor
Sensitivity	1 ppm
Warm Up Time	15 minutes
Response Time	9 to 30 seconds depending on sample tube length
Operating Humidity	5% to 90% RH non-condensing
Operating Temperature	32° to 122°F (0° to 50°C)
Dimensions	7.4"H x 15"L x 3.3"D (18.8 x 38.1 x 8.4 cm)
Approvals	UL (61010A-1), CSA, CE
Weight	7.0 lb (3.2 kg)
Warranty	2 years

INSTALLATION

The monitor should be located outside the mechanical room and readily accessible for verification and servicing. The sample line should be located as close as possible to the source of a potential leak.

WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
AGM-SZ	Single zone ammonia gas monitor

RELATED PRODUCTS

304-2742	Replacement sample tubing
304-2743	Replacement exhaust/purge tubing
3015-3420	Replacement line end filter
NIOSHSCBA-WC	Self-contained breathing apparatus kit with SCBA-WALCASE wall case

DUCT SMOKE DETECTORS

SM-501 SERIES

DESCRIPTION

The **SM-501 Series Duct Smoke Detectors** provide early detection of smoke and combustion products present in air moving through HVAC ducts. Air sampling is accomplished by intake sampling tubes, which are ordered separately. A standard length exhaust tube is provided with each detector. The **SM-501 Series** is designed to operate in duct widths from 6" (15 cm) to 10.0' (3.05m) with an air velocity from 500-4000 fpm (2.5-20.3 mps). Complete systems may be shut down in the event of smoke detection.

OPERATION

The **SM-501 Series** will operate on any one of four input voltages: 24 VAC, 24 VDC, 115 VAC, or 230 VAC. It uses either photoelectric or ionization smoke detector heads. Each detector contains two alarm contacts, which transfer in the event of smoke, and one trouble contact, which supervises the presence of input power and removal of the detector head. A manual test/reset switch and visual indicators of pilot and alarm are provided on the front of the detector. Up to 30 **SM-501 Series** units may be wired to use a common test/reset function and to alarm simultaneously when a single unit alarms. If remote signal devices such as horns or strobes are used, up to 15 detectors may be interconnected to operate with a single alarm.

SM-501

FEATURES

- ***Universal voltage: 24 VAC, 24 VDC, 115 VAC, or 230 VAC***
- ***Remote reset, alarm, and indication available***
- ***Two alarm contacts and one trouble contact***
- ***Interchangeable "plug-in" photoelectric or ionization heads***
- ***Compatible with building automation and fire alarm systems***
- ***Dust filtering included in detector head***
- ***Interconnect up to 15 detectors for common functions***

SPECIFICATIONS

Supply Voltage	50/60 Hz (without accessories)
24 VAC @ 35 mA standby, 74 mA alarm	
24 VDC @ 15 mA standby, 56 mA alarm	
115 VAC @ 25 mA standby, 32 mA alarm	
230 VAC @ 12 mA standby, 16 mA alarm	
Alarm Contacts	Alarm 2-SPDT, 10A, 115 VAC, resistive
Trouble 1-SPDT, 10A, 115 VAC, resistive	
Air Velocity	500-4000 fpm (2.5-20.3 mps)
Radioactive Element	For SM-501-N only Americium 241, 0.9 µCi
Operating Humidity	10% to 85% RH non-condensing
Operating Temperature	
SM-501-N	32° to 158°F (0° to 70°C)
SM-501-P	32° to 140°F (0° to 60°C)
Enclosure Rating	18-gauge steel back box, clear plastic cover (94V-0), Gray paint with clear cover
Wiring Terminations	Solid or stranded, 12 to 22 AWG terminals
Dimensions	9.13"H x 7.25"W x 2.25"D (23.19 x 18.42 x 5.72 cm)
Approvals	UL & cUL listed UL268A; UROX, UROX7, File #S2829 CSFM listed 3240-1004:108 MEA approved 73-92-E, Vol. 26
Weight	4.0 lb (1.8 kg)
Warranty	1 year

MOUNTING

Mount the detector in an air duct using the provided template and four sheet metal screws. Detector must be mounted at least six duct widths from the fan or other sources of turbulence with airflow from 500-4000 fpm (2.5-20.3 mps). The intake sampling tube has holes drilled the entire length of the tube and should extend the entire width of the duct. The holes must be facing into the airflow (see Figure 1 to the right). The exhaust tube is a piece of steel piping approximately 7" long (17.8 cm).

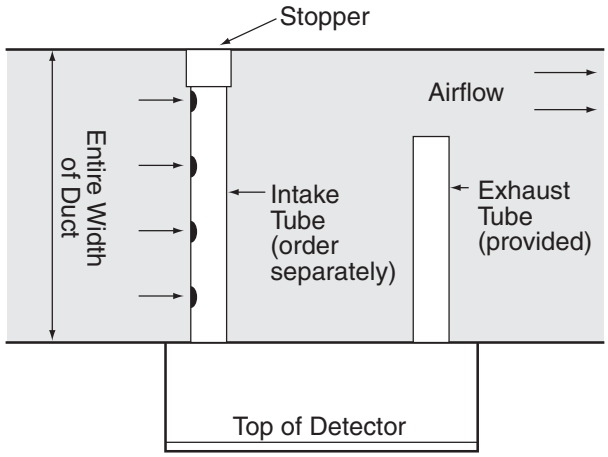
Intake Sampling Tube Lengths

Model	Duct Width
STS-2.5	6.0" to 2.5' (0.15 to 0.7m)
STS-5.0	2.5' to 5.0' (0.7 to 1.5m)
STS-10.0	5.0' to 10.0' (1.5 to 3m)

Installation

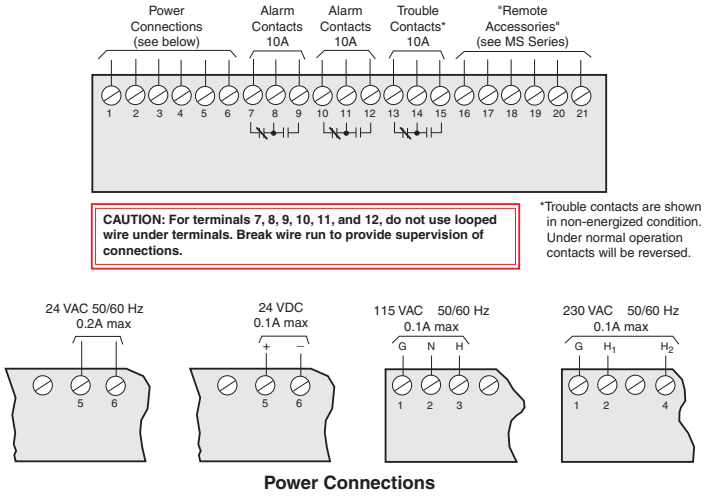
1. Cut the intake sampling tube to the desired length.
2. Firmly insert the stopper (provided with the detector) in the end of the intake sampling tube.
3. Follow instruction sheet provided with each detector.

FIGURE 1. TYPICAL DUCT NSTALLATION



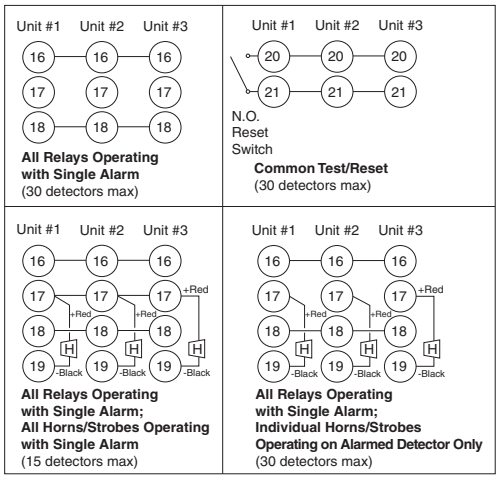
Note: Sampling tubes over 3' (0.9m) must be supported on the opposite side of the duct from the detector.

WIRING



Power Connections

INTERCONNECTING WIRING



Note: Use a common independent power supply for all interconnected detectors.

ORDERING INFORMATION

MODEL	DESCRIPTION
SM-501-N	Ionization duct smoke detector for 24 VAC, 24 VDC, 115 VAC, 230 VAC
SM-501-P	Photoelectric duct smoke detector for 24 VAC, 24 VDC, 115 VAC, 230 VAC

RELATED PRODUCTS

55000-250APO	Replacement ionization smoke detector head only
55000-350APO	Replacement photoelectric smoke detector head only
STS-10.0	Sampling tube for 5.0' to 10.0' (1.5 to 3m) duct widths
STS-2.5	Sampling tube for 6.0" to 2.5' (0.15 to 0.7m) duct widths
STS-5.0	Sampling tube for 2.5' to 5.0' (0.7 to 1.5m) duct widths
TG-1000	Aerosol test gas
WP-1	NEMA 3R enclosure for SM Series duct smoke detector

DUCT SMOKE DETECTOR
SL-2000 SERIES

DESCRIPTION

The **SL-2000 Series Duct Smoke Detectors** provide early detection of smoke and combustion products present in air moving through HVAC ducts. Air sampling is accomplished by intake sampling tubes, which are ordered separately. A standard length exhaust tube is provided with each detector. These devices are designed to prevent the recirculation of smoke in areas by the air handling systems, fans and blowers. Complete systems may be shut down in the event of smoke detection.

OPERATION

The **SL-2000 Series** is designed to operate in duct widths from 12.0" to 10.0' (30.5 cm to 3.05m) with an air velocity from 100-400 fpm (0.5-20.3 mps). The **SL-2000 Series** will operate on any one of four input voltages: 24 VAC, 24 VDC, 115 VAC, or 230 VAC. It uses either a photoelectric or ionization smoke detector head. Each detector contains two Form C and one Form A contact, which transfer in the event of smoke. There is also one trouble contact, which supervises the presence of input power and the removal of the detector head. A manual test/reset switch and visual indicators of pilot and alarm are provided on the front of the detector. Up to 30 **SL-2000 Series** units may be wired to use a common test/reset function and to alarm simultaneously when a single unit alarms.

FEATURES

- ***Low-flow technology, 100-4000 fpm***
- ***Universal voltage: 24 VAC, 24 VDC, 115 VAC, or 230 VAC***
- ***Two Form C and one Form A alarm contacts and one trouble contact***
- ***Interchangeable "plug-in" photoelectric or ionization heads***
- ***Compatible with building automation and fire alarm systems***
- ***Dust filtering included in detector head***
- ***Interconnect up to 30 detectors for common functions***
- ***Compatible with MS Series Remote Accessories***
- ***Cover removal trouble indication***
- ***Magnet test capability***
- ***Front or rear loading sampling tubes***
- ***Optional weatherproof enclosure***

SPECIFICATIONS

Supply Voltage	(50/60 Hz with accessories) 24 VAC @ 55 mA standby, 190 mA alarm 24 VDC @ 15 mA standby, 70 mA alarm 115 VAC @ 16 mA standby, 32 mA alarm 230 VAC @ 10 mA standby, 20 mA alarm
Alarm Contacts	Alarm (2) SPDT, 10A, 115 VAC, resistive Alarm (1) SPST-NO, 2A, 115 VAC, resistive Trouble (1) SPDT, 10A, 115 VAC, resistive
Air Velocity	100-4000 fpm (0.5-20.3 mps)
Radioactive Element	Americium 241, 0.9 µCi
Operating Humidity	10% to 85% RH non-condensing
Operating Temperature	
SL-2000-N	32° to 155°F (0° to 68°C)
SL-2000-P	32° to 100°F (0° to 38°C)
Enclosure Rating	Gray plastic back box, clear plastic cover
Dimensions	4.5"H x 13.5"L x 2.25"D (11.4 x 34.3 x 5.7 cm)
Approvals	UL 268A; UROX.S2829 CSFM 3240-1004:105 MEA 73-92-E, Vol. 27
Weight	2.5 lb (1.13 kg)
Warranty	1 year

MOUNTING

Mount the detector in an air duct using the provided template and sheet metal screws. Detector should be mounted at least six duct widths from the fan or other sources of turbulence with airflow from 100-4000 fpm (0.5-20.3 mps). The intake sampling tube has holes drilled the entire length of the tube and should extend the entire width of the duct, with the end opposite the detector capped. The holes must be facing into the airflow (see Figure 1 to the right). The exhaust tube is a piece of steel piping approximately 7" long (17.8 cm).

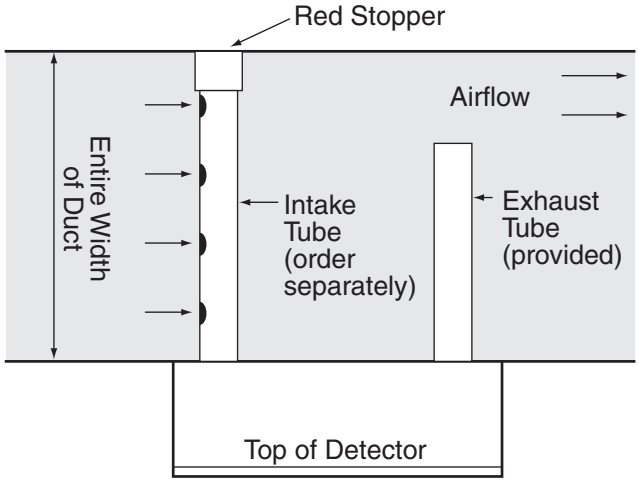
Intake Sampling Tube Lengths

Model	Duct Width
STN-2.5	1.0' to 2.5' (0.3 to 0.7m)
STN-5.0	2.5' to 5.0' (0.7 to 1.5m)
STN-10.0	5.0' to 10.0' (1.5 to 3m)

Important

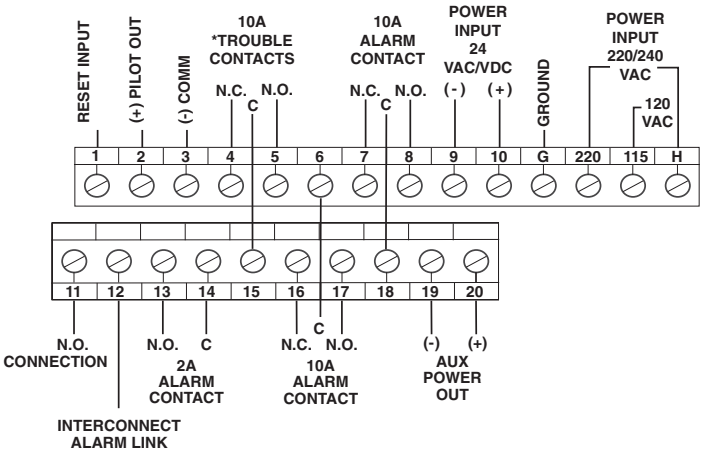
For the correct installation, testing and maintenance of a duct smoke detector, follow the instructions provided with the detector and refer to your locally enforced fire, mechanical, and/or building codes. Please also review NFPA 72 (National Fire Alarm Code) and NFPA 90A (Standard for Installation of Air Conditioning and Ventilation Systems). Your local authority having jurisdiction (AHJ) should also be consulted.

FIGURE 1. TYPICAL DUCT INSTALLATION



Note: Sampling tubes over 3' (0.9m) must be supported on the opposite side of the duct from the detector.

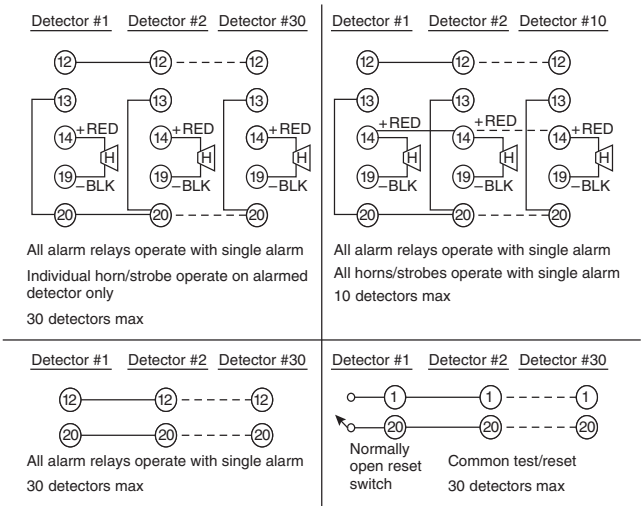
WIRING



*Trouble contacts are shown in non-energized condition. Under normal operation contacts will be reversed.

CAUTION: For terminals (7, 8, 18), (6, 16, 17), and (13, 14) do not use looped wire under terminals. Break wire run to provide supervision of connections.

INTERCONNECTING WIRING



NOTE: When using detector interconnection functions, wire all detectors to a common power source. Use of multiple power sources for interconnected detectors may cause damage to the detectors and/or may prevent the detectors from functioning properly.

ORDERING INFORMATION

MODEL	DESCRIPTION
SL-2000-N	Ionization duct smoke detector for 24 VAC, 24 VDC, 115 VAC, 230 VAC
SL-2000-P	Photoelectric duct smoke detector for 24 VAC, 24 VDC, 115 VAC, 230 VAC

Ordering Note: For a complete selection of accessories please see the Remote accessories page for the SM-501 smoke detectors. Smoke Dectctors require duct sampling tubes STN-2.5, STN-5.0 or STN-10.0.

PLENUM SMOKE DETECTOR

HS-100 SERIES

DESCRIPTION

The **HS-100 Series Plenum Smoke Detectors** provide early detection of smoke and combustion products present in air moving through HVAC plenum return systems in commercial rooftop package unit applications. The detectors are designed to prevent the recirculation of smoke in areas by the air handling system's fans and blowers.

HS-100

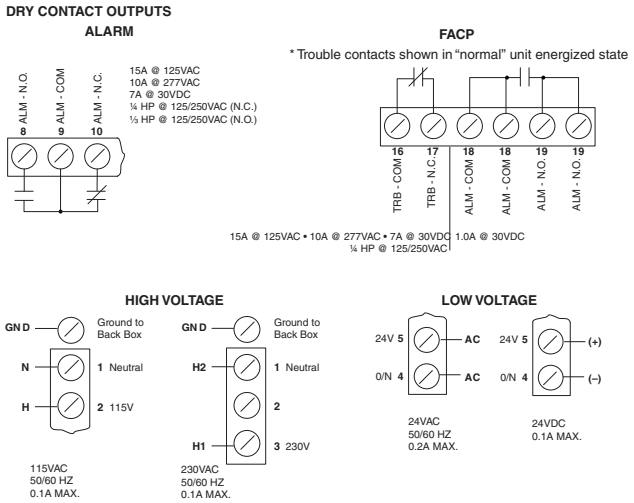
FEATURES

- ***Universal voltage: 24 VAC, 24 VDC, 115 VAC, or 230 VAC***
- ***Visual indication of power and alarm status***
- ***Two alarm contacts and one trouble contact***
- ***Interchangeable "plug-in" photoelectric or ionization heads***
- ***Compatible with building automation and fire alarm systems***
- ***Dust filtering included in detector head***
- ***Interconnect up to 30 detectors for common function***

SPECIFICATIONS

Supply Voltage	24 VAC: @ 35 mA standby, 74 mA alarm; 24 VDC:@ 15 mA standby, 56 mA alarm; 115 VAC: @ 25 mA standby, 32 mA alarm; 230 VAC @ 12 mA standby, 16 mA alarm
Alarm Relay Output	Alarm 1-SPDT, 10A, 115 VAC, resistive; 1-SPST-NO, 2A Trouble 1-SPST-NC, 10A, 115 VAC, resistive
Air Velocity	
HS-100-N	0-2000 fpm (0-10.2 mps)
HS-100-P	0-3000 fpm (0-15.2 mps)
Radioactive Element	For HS-100-N only Americium 241, 0.9 µCi
Operating Humidity	0% to 85% RH non-condensing
Operating Temperature	HS-100-N 32° to 158°F (0° to 70°C) HS-100-P 32° to 140°F (0° to 60°C)
Enclosure Rating	White plastic (Makrolon 94V-0)
Wiring Terminations	Solid or stranded, 12 to 22 AWG terminals
Dimensions	6" Dia. x 4.0"H (15.2 x 10.2 cm)
Approvals	UL & CUL listed UL268A; UROX, UROX7, File #S2829 CSFM listed 3240-1004:118 MEA approved 73-92-E, Vol. 26
Weight	1.0 lb (0.45 kg)
Warranty	1 year

WIRING



⚠ ***CAUTION***: *Do not use looped wire under terminals. Break wire run to provide for proper supervision of connections.*

ORDERING INFORMATION

MODEL	DESCRIPTION
HS-100-N	Plenum ionization smoke detector
HS-100-P	Plenum photoelectric smoke detector

GAS & SPECIALTY SENSORS

REMOTE ACCESSORIES FOR SM-501 AND SL-2000
MS SERIES

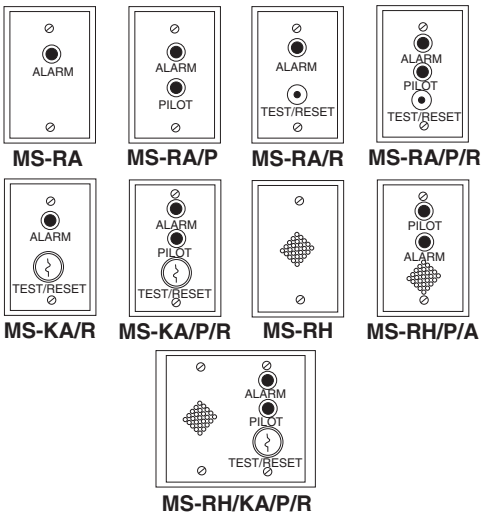
DESCRIPTION

The **MS Series** remote accessories are used with the SM-501, SL-2000, or HS-100 Series duct smoke detectors to provide audible and visual indication as well as remote test/reset functions.

All devices have a brushed stainless steel face plate. All devices are also designed to be mounted on a single- or double-gang box.

FEATURES

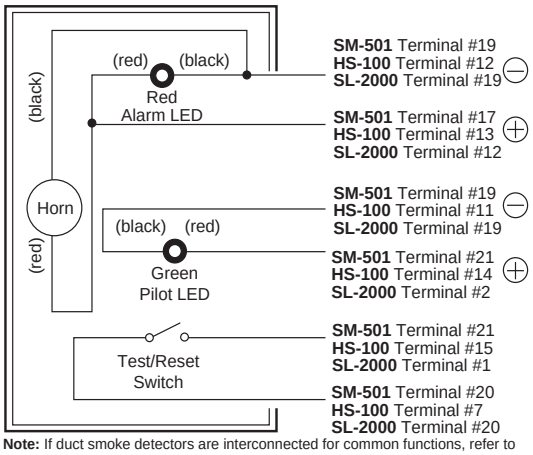
- ***Remote indication for SM-501, SL-2000, and HS-100 smoke detectors***
- ***Available with alarm and pilot LEDs and alarm horn***
- ***Available with momentary push button or maintained key-operated test/reset switch***
- ***Mounts to standard single- or double-gang box***



SPECIFICATIONS

Supply Current	
Alarm LEDs	15 mA @ 24 VDC from detector
Pilot LEDs	15 mA @ 24 VDC from detector
Horn	20 mA @ 24 VDC from detector
Alarm Auditory Levels	78 db @ 10' (3.0m)
Reset	Normally open
Wiring Terminations	
LEDs/Horn	6" (15.2cm)/24 AWG pigtails
Switches	6" (15.2cm)/22 AWG pigtails
Dimensions	
Single-gang	2.75"W x 4.5"H (6.9 x 11.4 cm)
Double-gang	4.5"W x 4.5"H (11.4 x 11.4 cm)
Approvals	UL listed UL, URRQ File #S7425 CSFM 7300-1004:107 MEA 73-92-E, Vol. 25
Weight	0.6 lb (0.3 kg) maximum
Warranty	1 year

WIRING



Note: If duct smoke detectors are interconnected for common functions, refer to detector installation guide for proper connection of remote alarm functions.

Remote Accessory Wiring for SM-501, HS-100, and SL-2000 Smoke Detectors

ORDERING INFORMATION

MODEL	DESCRIPTION
MS-KA/R	Remote red alarm LED and key-operated test/reset switch
MS-KA/P/R	Remote red alarm LED, green pilot LED, and key-operated test/reset switch
MS-RA	Remote red alarm LED
MS-RA/P	Remote red alarm LED and green pilot LED
MS-RA/P/R	Remote red alarm LED, green pilot LED, and push button test/reset switch
MS-RA/R	Remote red alarm LED and push button test/reset switch
MS-RH	Remote alarm horn
MS-RH/KA-P/A/T	Remote duct smoke det w/alarm/horn/LED/pilot/fault-trouble/key operated test/reset
MS-RH/KA/P/R	Remote alarm horn, red alarm LED, green pilot LED, and key-operated test/reset switch
MS-RH/P/A	Remote alarm horn, red alarm LED, and green pilot LED

Ordering Note: For a complete selection of accessories please see the Remote accessories page for the SM-501 smoke detectors. Smoke Dectctors require duct sampling tubes STN-2.5, STN-5.0 or STN-10.0.

PHOTOELECTRIC DUCT SMOKE DETECTOR

D4120

DESCRIPTION

The **InnovairFlex D4120** 4-wire photoelectric duct smoke detector features a pivoting housing that fits both square and rectangular footprints and mounts to round or rectangular ductwork. This unit senses smoke in the most challenging conditions, operating in airflow speeds of 100 to 4,000 feet per minute, temperatures of -4ºF to 158°F, and a humidity range of 0 to 95 percent (non-condensing). A plug-in sensor head offers improved false alarm immunity and simple installation, testing, and maintenance. An improved cover design isolates the sensor head from the low-flow feature for simple maintenance.

D4120

FEATURES

- ***Photoelectric, integrated low-flow technology***
- ***NEMA 4 models for outdoor mounting***
- ***Versatile mounting options: square or rectangular configuration***
- ***Plug-in sensor offers superb false alarm immunity and the latest sensor technology***
- ***2:1 sensor-to-power capability allows one power board to monitor both supply and return smoke sensors***
- ***Patented sampling tube installs from front or back of the detector with no tools required***
- ***Increased wiring space with a newly added 3/4-inch conduit knockout***
- ***One easy-access Test/Reset button and improved LED status***
- ***Patented interconnect feature for multi-fan shutdown • New high contrast terminal designations***
- ***Built-in short circuit protection from operator wiring errors***
- ***Field selectable settings for configuring the detector***
- ***Two DPDT Form-C relay contacts***
- ***24 VAC/DC or 120VAC***
- ***Backward compatibility***

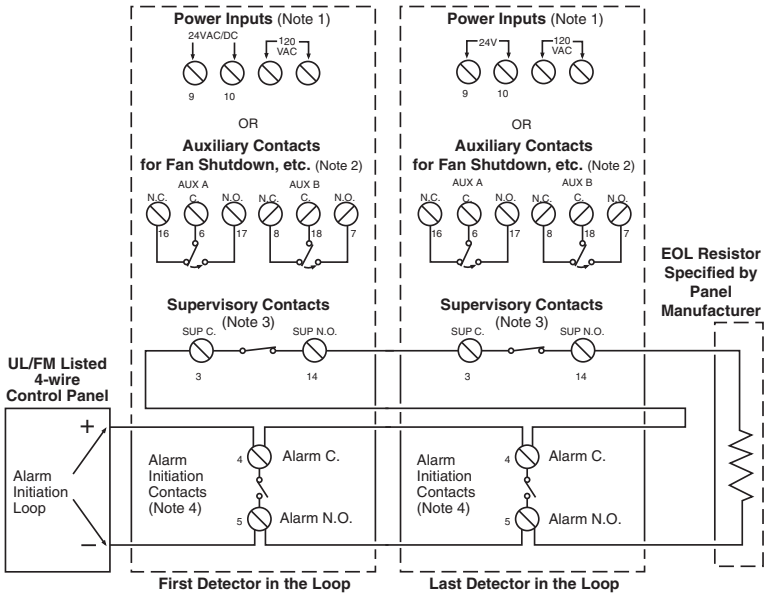
SPECIFICATIONS

Supply Voltage	20-29 VDC, 24 VAC 50-60 Hz, 120 VAC 50-60 Hz	**Supervisory Contacts**	(SPDT) 2.0A @ 30 VDC (resistive) 2.0A @ 125 VAC (resistive)
Supply Current	Using no accesories: 21 mA @ 24 VDC 65 mA RMS @ 24 VAC 60Hz 20 mA RMS @ 120 VAC 60Hz	**Alarm Response Time**	15 seconds
Alarm Contacts	Alarm init contacts (SPST) 2.0A @ 30 VDC (resistive)	**Reset Voltages**	3.0 VDC minimum, 2.0 VAC minimum, 10 VAC minimum
Alarm aux contacts (DPDT)	10A @ 30 VDC (resistive), 10A @ 250 VAC (resistive), 1/2 HP @ 240 VAC, 1/4 HP @ 120 VAC	**Air Velocity**	100 to 4000 ft/min (0.5 to 20.32 m/sec)
		Power Up Time	35 seconds maximum
		Reset Time	Using RTS45:1 0.03 to 0.3 seconds powering down: 0.6 seconds maximum
Alarm Current Maximum	20-29 VDC: 65 mA @ 24 VDC 24 VAC: 135 mA RMS @ 24 VAC 60Hz 120 VAC: 35 mA RMS @ 120 VAC 60Hz	**Operating Humidity**	0% to 95% non-condensing
		Operating Temperature	-4° to 158°F (-20° to 70°C)
		Warranty	3 years

GAS & SPECIALTY SENSORS

PHOTOELECTRIC DUCT SMOKE DETECTOR
D4120

WIRING



NOTE 1: 24V Power Inputs accept a non-polarized 24VDC or 24VAC 50-60Hz. 120VAC Power Inputs accept only 120VAC 50-60Hz. Connect power source to appropriate terminals of each detector. See specifications for additional power supply information.
NOTE 2: Auxiliary contacts shown in standby position. Contacts switch during alarm as indicated by arrows. Auxiliary contacts are not to be used for connection to the control panel. See specifications for contact ratings.
NOTE 3: Supervisory contacts shown in standby position. Open contacts indicate a trouble condition in the panel. See specifications for contact ratings.
NOTE 4: Alarm Initiation contacts shown in standby position. Closed contacts indicate an alarm condition to the panel. See specifications for contact
ratings.
*Please refer to the corresponding installation manual for accessory wiring diagrams.

ORDERING INFORMATION

MODEL	DESCRIPTION
D4120	4-wire photoelectric low-flow duct smoke detector
D4120W*	Watertight 4-wire photoelectric low-flow duct smoke detector

*You must order two D4120W units for installations requiring two watertight detectors.


D4120W


D4120


D4S


D4P120


2D51

ACCESSORIES

AOS	Mini-alert add-on strobe, clear
APA151	Remote annunciator with piezo alarm
D4P120	Power board component only, 24 VAC/VDC, 120 VAC
D4S	Remote or replacement sensor (not watertight)
DST1	D4120 metal duct sampling tube, 1 ft (0.3m)
DST1.5	D4120 metal duct sampling tube, 1.5 ft (0.45 m)
DST10	D4120 metal duct sampling tube, 10 ft (3.0m)
DST3	D4120 metal duct sampling tube, 3.0 ft (0.91m)
DST5	D4120 metal duct sampling tube, 5 ft (1.5m)
MHR	Mini Horn, Red
MHW	Mini Horn, White
RA100Z	Remote annunciator, red alarm LED
RTS151	Magnetic remote test station, red alarm LED
RTS151KEY	Key-activated remote test/reset station with bi-color (green/red) power/alarm LED
RTS2	Key-activated remote test/reset station with sounder and power, trouble, and alarm LEDs

D4120 ACCESSORIES

D4120 SERIES REMOTE ACCESSORIES

DESCRIPTION

System Sensor provides flexibility with a variety of accessories for notification and test purposes. The smoke detector accessories add functionality to the detection system by allowing quick eye level inspections and audible/visual notification options. All System Sensor accessories are UL listed.

APA151

The **APA151** piezo annunciator provides an audible alarm signal and LED for alarm and status indication. The unit is designed for applications without a system control panel to comply with NFPA 90 A.

MHR/MHW

The **MHR** and **MHW** mini horns feature temporal or continuous tones at high or low volume settings. Designed for small or tight areas, the unit mounts to a single gang back box.

RA100Z/RA100ZA

The **RA100Z** and **RA100ZA** remote annunciators are designed for both conventional and intelligent applications. A red LED provides visual indication of an alarm condition.

RTS151/RTS151KEY

The **RTS151** and **RTS151KEY** remote test stations are automatic fire detector accessories designed to test duct smoke detectors from a convenient location. The **RTS151** features a multi-colored LED that alternates between steady green and red for four-wire detectors and illuminates red to indicate alarm when used with two-wire detectors.

RTS2/RTS2-AOS

The **RTS2** and **RTS2-AOS** multi-signaling accessories are designed to work with four-wire conventional smoke detectors. The units feature a key switch that can be used to select one of two connected sensors to be tested, reset, or both by a push button switch.

SYSTEM SENSOR

APA151 Piezo Annunciator (UL S4011)

MHR Mini-horn, red (UL S4011)

MHW Mini-horn, white (UL S4011)

AOS Add-On Strobe

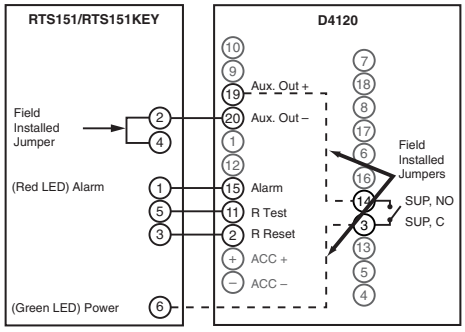
Multi-Signaling Accessory (UL S2522)

RTS151 Remote Testing Station (UL S4011)

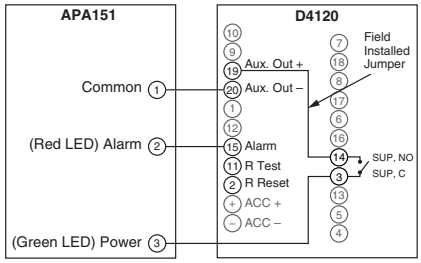
RTS151KEY Remote Testing Station with Key (UL S2522)

SPECIFICATIONS			
Model	**Standby mA**	**Trouble mA**	**Alarm mA**
RA100Z	0 mA	-	10 mA maximum
APA151	12.5 mA maximum	-	30 mA maximum
RTS151	12 mA maximum	-	7.5 mA maximum
RTS151KEY	12 mA maximum	-	7.5 mA maximum
RTS2	8 mA	16 mA	40 mA maximum
MHR/MHW	0 mA	-	30 mA maximum
AOS	0 mA	-	25 mA maximum

WIRING



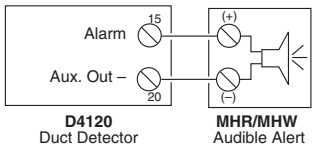
For RTS151KEY Only Without a Control Panel



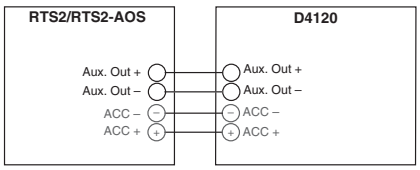
NOTE: Wiring diagram shown is for D4120 4-wire duct smoke detector system equipped without a control panel.

NOTE: A trouble condition is indicated when the green LED is not illuminated.

D4120 to APA151



D4120 to MHR/MHW



D4120 to RTS2/RTS2-AOS

ORDERING INFORMATION

MODEL	DESCRIPTION
AOS	Mini-alert add-on strobe, clear
MHW	Mini Horn, White
RA100Z	Remote annunciator, red alarm LED
RTS151	Magnetic remote test station, red alarm LED
RTS151KEY	Key-activated remote test/reset station with bi-color (green/red) power/alarm LED
RTS2	Key-activated remote test/reset station with sounder and power, trouble, and alarm LEDs
APA151	Remote annunciator with piezo alarm
MHR	Mini Horn, Red

PH OR ORB TRANSMITTER

DS8202 SERIES

DESCRIPTION

The Berkert **DS8202** pH and ORB transmitter is a compact device designed for measuring the pH or oxidation-reduction potential (ORB) in clean liquids or liquids that may have low conductivity. The transmitter consists of a replaceable standard 120 mm pH or ORP probe screwed in a probe holder with integrated Pt1000 temperature sensor.

This assembly is then mated to an enclosure containing the electronic module and a removable display for a quick and easy installation. The pH/ORP transmitter can operate independent of the display, but it will be required for programming the transmitter and also for visualizing the measured and processed data.

The **DS8202 Standard i**s available with either two transistors and one 4-20 mA output or two transistors and two 4-20 mA outputs. The **DS8202 Nutrino** Series is a cost effective less featured product measuring pH and ORB but with one 4-20 mA output and is not available with an LCD display.

Principles of Operation: The 8202 device can be used as a pH or a ORP transmitter according to the probe version mounted into the holder. The pH or redox probe is a glass membrane with variable selectivity according to the pH or the redox, which must be calibrated with buffer solution before the installation of the transmitter into the pipe.

When a pH probe is immersed into the solution a difference in potential is formed due to ions (H+) between the glass membrane and the solution. This difference in potential measured in relation to a reference electrode is directly proportional to the pH value (59.16 mV per pH unit at 25°C.

NEW!

DS8202

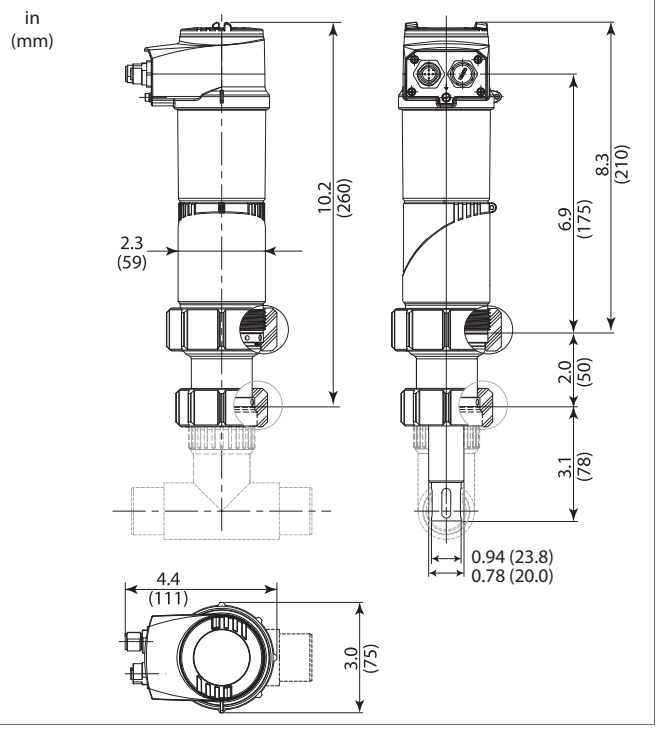
FEATURES

- ***Programmable outputs: two transistor and single or dual analog 4-20 mA (Process + Temp)***
- ***Removable backlighted display***
- ***Universal process connection***
- ***Compatible with 120 mm pH/ ORP probes***
- ***Diagnostic function***

SPECIFICATIONS

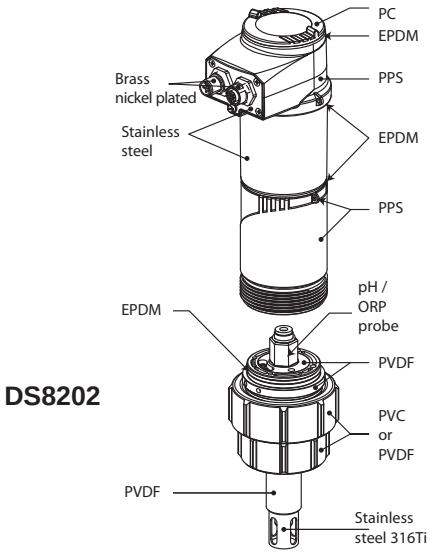
Supply Voltage	Single analog output: 14-36 VDC Dual analog output: 12-36 VDC
Protection	Reversed polarity of DC Voltage peak Short circuit
Supply Current	With Sensor:≤ 1 A (with transistor loads) Single analog output: ≤ 25 mA (at 14 VvDC without transistor loads, with current loop) Dual analog output: ≤ 5 mA (at 12 V DC without transistor loads, without current loop)
Signal Output	Transistor (programmable as PNP or NPN) Current: 4-20 mA
Maximum Output Impedance	610 Ω at 24 V DC
Accuracy	pH: ±0.02 pH or 0.5 mV ORB: ± 3 mV temperature: ±1°C (1.8°F)
Measurement Range	pH: -2 to 16 pH or -580 to +580 mV ORB: -2000 to +2000 mV Temperature: -40 to +130°C (-40 to 266°F)
Display	Grey dot matrix 128x64 with backlighting
Resolution	pH: 0.01 pH or 0.1 m ORB: 1 mV Temperature: 0.1°C (0.18°F)
Response Time	150 ms (10 to 90%)
Fluid Pressure Limit	0 to 87 PSI (0 to 6 bar)
Maximum Pressure	58 psi (4 bar)
Media Compatibility	pH: Contaminated fluids (viscous, suspended solids, small volumes) ORB: - Clean (cooling-water, waste water or slightly contaminated)
Media Temperature Range	pH: 32° to 176°F (0° to +80°C) 14° to 122°F (-10° to +50°C)
Operating Humidity	≤ 85%, without condensation
Operating Temperature	Transmitter: 14° to 140°F (-10° to +60°C) Probe (Flatrobe) 32° to 140°F (0° to +60°C)
Materials Of Construction	Housing / cover / seals: Stainless steel 1.4561, PPS / PC / EPDM Screws / Display / navigation key: Stainless steel / PC / PBT Fixed connector mounting plate: Stainless steel 1.4404 (316L) Fixed connector / Nut: Brass nickel plated / PVC or PVDF Wetted part materials Probe holder: PVDF, Stainless steel 1.4571 (316Ti) Probe
Enclosure Rating	IP65 and IP67 with M12 cable plug mounted and tightened and cover fully screwed down
Cable Type	Shielded cable
Wiring Terminations	Single analog output: 1x 5-pin M12 male fixed connector Dual analog output: 1x 5-pin M12 male and 1x 5-pin M12 female fixed connectors
Dimensions	Standard: 8.9"H x 2.95" diameter (exposed) Nutrino: 8.4"H x 2.3" diameter (exposed)
Approvals	UL-Recognized: 61010-1 + CAN/CSA-C22 No.61010-1 EMC: EN 61000-6-2, EN 61000-6-3
Warranty	1 year

DIMENSIONS

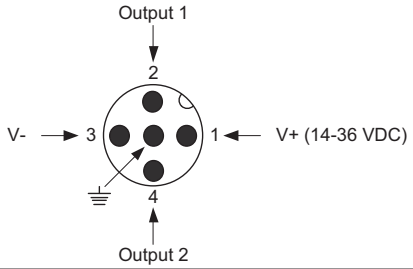


Installation: The 8202 pH/ORP transmitter can be installed into any adaptor with G 1-1/2" external threaded sensor connection by just threading the main nut. Select the required S022 adaptor (see below in related products) according to specific requirements of the sensor and material (temperature and pressure), and install it in a vertical position with an angle no greater than 75° from the vertical center line.

MATERIALS OF CONSTRUCTION



WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
559634	DS8202 Standard pH trnsmitter, single analog output, PVC mounting nut
559636	DS8202 Standard pH trnsmitter, single analog output, PVDF mounting nut
559635	DS8202 Standard pH trnsmitter, dual analog output, PVC mounting nut
559637	DS8202 Standard pH trnsmitter, dual analog output, PVDF mounting nut
561686	DS8202 Nutrino pH trnsmitter, single analog output, cable gland, PVC mounting nut

Ordering note: Choose one transmitter and one probe.

RELATED PRODUCTS

559168	Removable display/programmer module (not available for Nutrino products)
560854	SO22 adapter for use with existing Burkert fitting body DN32 or bigger, PVC-U/FKM, EPD
561025	pH probe 0° to 176°F, 0 to 87 psi bar, pH 0 to 14 - FLATRODE pH 4.7" (120 mm)
561027	ORP probe 0 to176°F, 0 to 87psi, -2000 to +2000 mV - FLATRODE ORP 4.7" (120 mm)
561227	SO22 solvent adapter for use with a 1" x 1" up to a 3" x 1" Tee, PVC-U/FKM, EPDM
561228	SO22 threaded adapter for use with threaded tank or pipe, 1 1/4" NPT, PVC-U/FKM, EPD
561230	SO22 adapter for use with existing Burkert fitting body DN32 or bigger, PP/FKM, EPD
561232	SO22 welded adapter for use directly on a pipe, Stainless steel/FKM, EPD
561233	SO22 adapter for use with existing Burkert fitting body DN32 or bigger, Stainless steel/FKM, EPD

ACCESSORIES

418540	Buffer solution, 500 ml, pH = 4
418541	Buffer solution, 500 ml, pH = 7
418543	Buffer solution, 500 ml, pH = 10
418555	Buffer solution, 500 ml, ORP = 475 mV
418557	Storage solution for probes (KCl 3M), 500 ml
560949	Cleaning solution set for probes, 3x 500 ml

CONDUCTIVITY TRANSMITTER
DS8222 SERIES

DESCRIPTION

The Burkert transmitter DS8222 is a compact transmitter designed for measuring the conductivity of fluids. The transmitter consists of a sensor, enclosure with cover, and an optional and removeable display. The sensor comprises a cell with two electrodes and a platinum 1000 ohm temperature probe. The sensor itself is available with three different cell constants; C = 0.01, 0.1, and 1.0. The C = 1.0 constant uses graphit electyrode, while the other two incorporate stainless steel. The conductivity transmitter can operate independant of the display but the display is required for programming the transmitter. The DS8222 Series is available with three fully programmable outputs (two transistor and one 4-20 mA analog output) or with four fully programmable outputs (two transistor and two 4-20 mA analog outputs).

The DS8222 "Nutrino" Series, a less featured conductivity transmitter, has only one 4-20 mA analog output and is not available with LCD display.

NEW!

DS8222

559168 Display/ Programings Module

FEATURES

- ***Programmable outputs: two transistor and single or dual analog 4-20 mA***
- ***Removable backlighted display***
- ***Universal process connection***
- ***Three cell constants for covering a wide measuring range***
- ***Diagnostic functions***

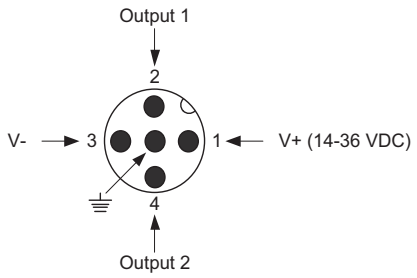
Installation: The DS8222 Series conductivity transmitters can be installed into any adaptor with G 1-1/2" external threaded sensor connection by just fixing the main nut. Select and install the required SO22 adaptor (see related products) onto the pipe according to specific requirements of the sensor and material (temperature and pressure). For mounting on a tank or direct mounting on a pipe (DN100 and DN110), an adaptor with a G 1-1/2" external threaded sensor connection must be used. The transmitter can be installed in any position. In order to get reliable measurement air bubbles must be avoided.

Please ensure that the mounting location provides a continuous and complete immersion of the sensor in the flow stream. Consult the installation manual for complete installation instructions.

SPECIFICATIONS

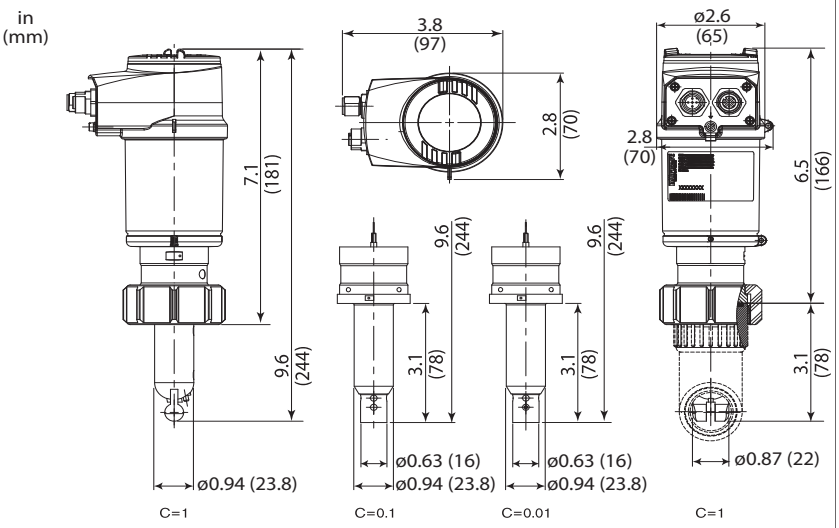
Supply Voltage	Single analog output: 14-36 VDC Dual analog output: 12-36 VDC Nutrino
Protection	Reversed polarity of DC Voltage peak Short circuit
Supply Current	With Sensor:≤ 1 A (with transistor loads) Single analog output: ≤ 25 mA (at 14 VvDC without transistor loads, with current loop) Dual analog output: ≤ 5 mA (at 12 V DC without transistor loads, without current loop)
Signal Output	Switch: (programmable as PNP or NPN) Current: 4-20 mA
Maximum Output Impedance	610 Ω at 24 V DC
Accuracy	Conductivity: ± 3% of measured value Temperature: ± 1.8°F (1°C)
Measurement Range	Conductivity: 0.05 µS/cm to 10 mS/cm Temperature: -40° to 266°F (-40° to +130°C)
Display	Grey dot matrix 128x64 with backlighting
Resolution	1 nS/cm
Response Time	150 ms (10 to 90%)
Fluid Pressure Limit	0 to 87 PSI (0 to 6 bar)
Maximum Pressure	58 psi (4 bar)
Media Compatibility	pH: Contaminated fluids (viscous, suspended solids, small volumes) ORB: - Clean (cooling-water, waste water or slightly contaminated)
Media Temperature Range	PVC nut connection: 32° to 122°F (0° to +50°C) PVDF nut connection: -4° to 212°F (-20° to +100°C)
Operating Humidity	≤ 85%, without condensation
Operating Temperature	Transmitter: 14° to 140°F (-10° to +60°C) Probe (Flatrobe) 32° to 140°F (0° to +60°C)
Materials Of Construction	Housing / cover: Stainless steel 1.4561, PPS / PC Seals / Screws EPDM / Stainless steel Fixed connector mounting plate: Stainless steel Fixed connector: Brass nickel plated Display / navigation key: PC / PBT Nut: PVC or PVDF Wetted part materials Conductivity sensor: PVDF, stainless steel 1.4571 (316Ti) Electrode: Stainless steel 1.4571 (316Ti) for cell constant C=0.01 or C=0.1 or graphite for cell constant C=1.0
Enclosure Rating	Standard: IP65 and IP67 with M12 cable plug mounted and cover tightened Nutrino: also includes NEMA 4X and NEMA 6P
Cable Type	Shielded cable
Wiring Terminations	Single analog output: 1x 5-pin M12 male fixed connector Dual analog output: 1x 5-pin M12 male and 1x 5-pin M12 female fixed connectors
Dimensions	Standard: 7.1"H x 2.8" diameter (exposed) Nutrino: 4.1"H x 2.3" diameter (exposed)
Approvals	UL-Recognized: 61010-1 + CAN/CSA-C22 No.61010-1 EMC: EN 61000-6-2, EN 61000-6-3
Warranty	1 year

WIRING



Principles of operation: Conductivity is defined as the ability of a solution to conduct electrical current. The load carriers are ions (e.g. dissolved salt or acids). In order to measure conductivity two electrodes are used which are set at a fixed distance apart and with a known specified surface. An AC voltage source is connected to the electrodes. The measured current is a direct function of the conductivity of the solution.

DIMENSIONS



ORDERING INFORMATION

MODEL	DESCRIPTION
562394	DS8222 Standard conductivity transmitter, single analog output, C=0.01, PVC mounting nut
562396	DS8222 Standard conductivity transmitter, single analog output, C=0.01, PVDF mounting nut
599624	DS8222 Standard conductivity transmitter, single analog output, C=0.10, PVC mounting nut
559626	DS8222 Standard conductivity transmitter, single analog output, C=0.10, PVDF mounting nut
559638	DS8222 Standard conductivity transmitter, single analog output, C=1.0, PVC mounting nut
559622	DS8222 Standard conductivity transmitter, single analog output, C=1.0, PVDF mounting nut
562395	DS8222 Standard conductivity transmitter, dual analog output, C=0.01, PVC mounting nut
562397	DS8222 Standard conductivity transmitter, dual analog output, C=0.01, PVDF mounting nut
559625	DS8222 Standard conductivity transmitter, dual analog output, C=0.10, PVC mounting nut
559627	DS8222 Standard conductivity transmitter, dual analog output, C=0.10, PVDF mounting nut
559639	DS8222 Standard conductivity transmitter, dual analog output, C=1.0, PVC mounting nut
559623	DS8222 Standard conductivity transmitter, dual analog output, C=1.0, PVDF mounting nut
561662	DS8222 Nutrino conductivity transmitter, analog output, C=0.01, Cable gland
561664	DS8222 Nutrino conductivity transmitter, analog output, C=0.10, Cable gland
561666	DS8222 Nutrino conductivity transmitter, analog output, C=1.0, Cable gland
561668	DS8222 Nutrino conductivity transmitter, analog output, C=0.01, G3/4" external thread
561670	DS8222 Nutrino conductivity transmitter, analog output, C=0.10, G3/4" external thread
561672	DS8222 Nutrino conductivity transmitter, analog output, C=1.0, G3/4" external thread

RELATED PRODUCTS

560854	SO22 adapter for use with existing Burkert fitting body DN32 or bigger, PVC-U/FKM, EPD
561227	SO22 solvent adapter for use with a 1" x 1" up to a 3" x 1" Tee, PVC-U/FKM, EPDM
561228	SO22 threaded adapter for use with threaded tank or pipe, 1 1/4" NPT, PVC-U/FKM, EPD
561230	SO22 adapter for use with existing Burkert fitting body DN32 or bigger, PP/FKM, EPD
561232	SO22 welded adapter for use directly on a pipe, Stainless steel/FKM, EPD
561233	SO22 adapter for use with existing Burkert fitting body DN32 or bigger, Stainless steel/FKM, EPD

ACCESSORIES

440015	Buffer solution, 500 ml, 5 µS
440016	Buffer solution, 500 ml, 15 µS
440017	Buffer solution, 500 ml, 100 µS
440018	Buffer solution, 500 ml, 706 µS
440019	Buffer solution, 500 ml, 1413 µS

VIBRATION TRANSMITTER

140T

DESCRIPTION

A low cost, highly accurate and rugged vibration transmitter, the **Model 140T** is ideal for use with all machines, even those that previously may have been considered uneconomical to monitor.The **Model 140T** easily mounts by use of a standard 1/4-20 stud. It is a two-wire, loop-powered transmitter that can feed the vibration level of operating machinery to a data logger, milliamp monitor, or process control computer. Solid-state accelerometer and circuit design provide a 4-20 mA signal proportional to vibration velocity. Intrinsically safe, it can safely be used in hazardous environments when coupled with a Model MTL7706 instrinsic safety barrier.

FEATURES

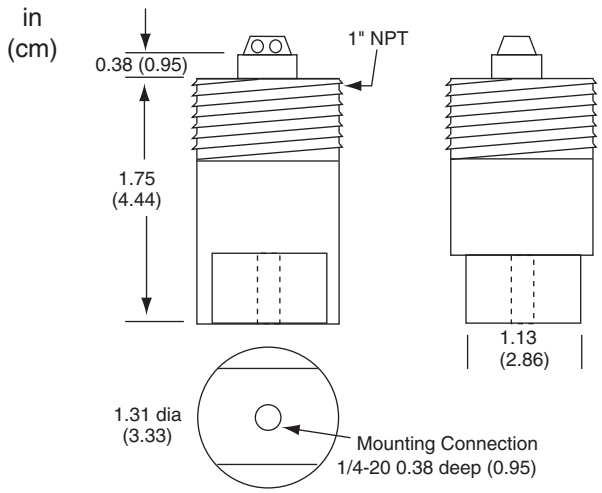
- ***Reliable performance***
- ***Easy to install***
- ***4-20 mA signal compatible with BAS controllers***
- ***Intrinsically safe Class I, Division 1, Groups A, B, C; Class II, Division 1, Groups E, F, G***
- ***Two year warranty***

APPLICATION

Vibration monitoring can provide help in alerting for the destructive effects of vibration on mechanical system equipment, such as the following:

- ***Air handler fans***
- ***Cooling tower fans***
- ***Pumps***
- ***Compressors***

DIMENSIONS



SPECIFICATIONS

Supply Voltage	12-50 VDC, black=negative, red=positive, with reverse voltage protection
Signal Output	4-20 mA
Maximum Output Impedance	RL = 50 (Vs-12)Ω; 600Ω @ 24 VDC
Accuracy	5% to 10% of scale
Isolation	500V, circuit-to-case
Measurement Range	
140T-1	0-1 in/sec vibration
140T-2	0-2 in/sec vibration
Frequency Range	7-1300 Hz ±3% (420-78,000 rpm)
Vibration Range	
140T-1	Output 4-20 mA, proportional to vibration level, 0-1 in/sec (25.4 mm/sec)
140T-2	Output 4-20 mA, proportional to vibration level, 0-2 in/sec (25.4 mm/sec)
Operating Temperature	-4° to 185°F (-20° to 85°C)
Enclosure Rating	NEMA 4, weatherproof, Cadmium-plated steel
Mounting	1/4"-20 stud
Process Connection	1" MNPT
Weight	1.4 lb (0.64 kg)

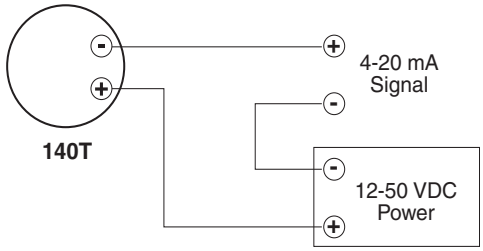
INSTALLATION

The mounting orientation can be in any position. This position should be in an area for the best vibration signal definition or where there is a good transfer of the machine's (fan's, pump's, etc.) vibrations. The best location will vary from machine to machine. The location of the transmitter should be selected carefully. When selecting the site for the mounting location, it is helpful to survey the site with the aid of a vibration meter.

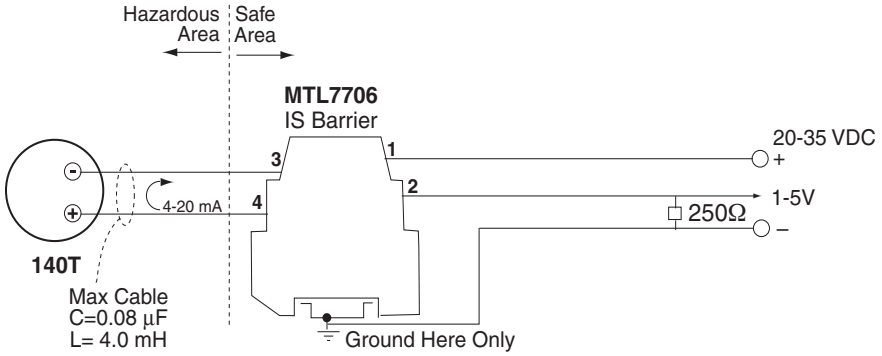
WIRING

Wiring subject to physical damage should be adequately protected. When installing electrical conduit, it is recommended that a short length (12") of flexible conduit be used between the transmitter and an associated junction box. This construction will provide some vibration isolation in the conduit line. Conduit and fittings should conform to the environment of the transmitter location. Weather-resistant or rain-tight fittings should be used to protect the transmitter wiring from a humid or corrosive atmosphere.

Note: Make all connections in accordance with national and local codes.



Standard Wiring



Intrinsically Safe Wiring

NOTE: Ensure that the transmitter is rigidly attached to the monitoring point for the proper sensing of the vibration.

ORDERING INFORMATION

MODEL	DESCRIPTION
140T-1	Intrinsically-safe vibration transmitter, range 0-1 in/sec (25.4 mm/sec)
140T-2	Intrinsically-safe vibration transmitter, range 0-2 in/sec (50.8 mm/sec)

RELATED PRODUCTS

MTL7706+	Intrinsic safety barrier, 4-20 mA two-wire transmitters

Note: Each application should be evaluated on an individual basis. Consult equipment manufacturers for specific details concerning safe vibration levels.

VIBRATION TRANSMITTER / SWITCH

550

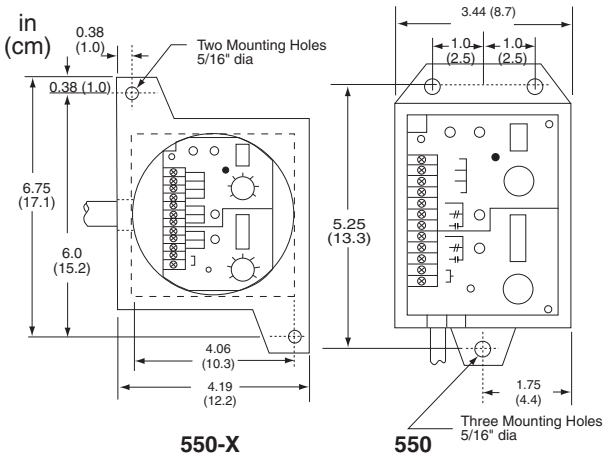
DESCRIPTION

The **Model 550 Vibration Transmitter/Switch** provides low cost, reliable vibration protection for rotating machinery operating within the range of 120- 60,000 rpm. The switch's vibration sensor, mounted perpendicular to the unit's base, responds to the velocity (in/sec) signal and effects automatic shutdown or alarm when preset limits are exceeded. The unit may be mounted with the sensitive axis in any plane (horizontal, vertical, or axial), even in an inverted position. Two limit set points are provided. One is set for the maximum allowable vibration (in/sec), while the other is set for a percentage of that setting, which trips the alarm relay when that percentage is reached. A built-in, adjustable time delay prevents triggering due to transient vibrations. The switch can be wired for automatic reset when vibration falls below setpoint, or it can be wired for latch and remote reset. The unit has a 4-20 mA output that may be used with a panel meter or data logger, permitting analysis of vibration trends. Once the switch has been installed and the limits set, it requires no attention. The **Model 550** is enclosed in heavy, water-tight cast-aluminum housing. Explosionproof housings are available.

FEATURES

- ***Reliable performance***
- ***Dual SPDT relay and 4-20 mA output***
- ***Easy to install***
- ***Two year warranty***

DIMENSIONS



SPECIFICATIONS

Supply Voltage	115 VAC 50/60 Hz
Signal Output	4-20 mA DC
Maximum Output Impedance	500Ω
Relay Output	SPDT relay 5A @ 125 VAC; 5A @ 28 VDC
Accuracy	±5%
Measurement Range	0.1-2.75 in/sec (2.5-70 mm/sec)
Frequency Range	2-1000 Hz (120-60,000 rpm)
Vibration Sensitive Axis	Perpendicular to the base, omnidirectional mounting
Time Delay	1-30 seconds
Limits	Limit #1 (alarm) Set as a percent of Limit #2 (shutdown) Limit #2: (shutdown) Set at a velocity level in inches/sec
Remote Reset	Circuit closure between latch and common will reset both outputs
Operating Temperature	-30° to 165°F (-34° to 74°C)
Enclosure Rating	Rugged, water- and dust-tight cast aluminum NEMA 3, 4, and 12, NEMA 7CD, 9EFG
Mounting	1/4" hardware, 3 mounting holes
Wiring Terminations	Accept 12 AWG wire
Dimensions	
550	3 .44"W x 5.937"H x 3.88"D (8.73 x 15.09 x 9.84 cm)
550X	4.81"W x 7.13"H x 4.5"D (12.2 x 18.1 x 11.4 cm)
Weight	3.75 lb (1.7 kg)

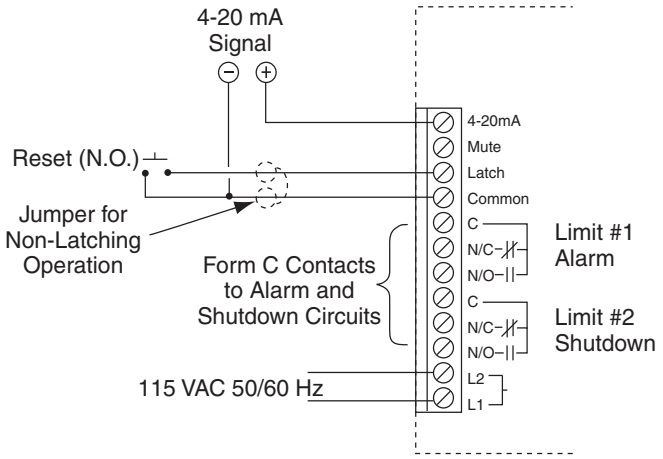
GAS & SPECIALTY SENSORS

VIBRATION TRANSMITTER / SWITCH
550

WIRING

The wiring access is through the 3/4" NPT conduit hole on the side of the switch enclosure. Wiring subject to physical damage should be adequately protected. When installing electrical conduit, a short length (12") of flexible conduit must be used between the vibration switch and an associated junction box. This construction will provide some vibration isolation in the conduit line. Conduit and fittings should conform to the environment of the vibration switch location. In hazardous locations, the proper explosionproof fittings should be used. Weather-resistant or rain-tight fittings should be used to protect the switch wiring from a humid or corrosive atmosphere.

Note: Make all connections in accordance with national and local codes.

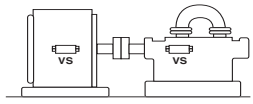


OPERATION

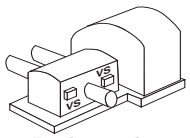
The **550** is a self-contained, vibration protection limit switch. It guards against destructive levels of vibration by tripping a relay that has a user-adjustable limit setpoint in terms of vibration velocity (in/sec). This relay output is connected to an alarm or control system to provide a warning or shutdown. It mounts at the monitoring point and is enclosed in a watertight, heavy castaluminum housing. Terminals are provided for remote or manual reset. A 4-20 mA output for recording or metering can connect to a remote readout panel meter or BAS controller.

NOTE: You must ensure that the switch is rigidly attached to the monitoring point for the proper sensing of the vibration.

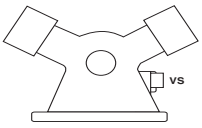
TYPICAL INSTALLATIONS



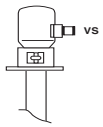
Centrifugal Compressor



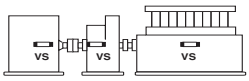
Reciprocating Compressor



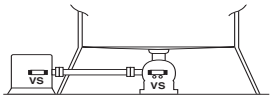
Y-Type Compressor



Vertical Pump



Engine Gear Compressor



Cooling Tower Fan

ORDERING INFORMATION

MODEL	RANGE	NUMBER OF LIMITS	ENCLOSURE
550	0.1 to 2.75 in/sec	2	NEMA 3, 4, 12 Aluminum
550-X	0.1 to 2.75 in/sec	2	NEMA 7CD, 9EFG

GAS & SPECIALTY SENSORS

VIBRATION SWITCH
VK SERIES

DESCRIPTION

The **VK Series** vibration monitor continuously monitors HVAC and industrial equipment to prevent machine downtime and expensive downtime. The compact **VK Series** switch is designed to be permanently mounted to monitor a machine's vibration level. The monitor provides continuous feedback of vibration within a range of 10Hz to 1000Hz with a 4-20 mA analog signal. Setup is quick using two setup dials to adjust the maximum RMS velocity setpoint and response delay time. The sensor continuously monitors real-time RMS vibration velocity (based on the ISO 10816 standard) and provides an analog output of the velocity as well as a switching output when an alarm value is exceeded. Highly-visible LEDs provide local indication for power and alarm.

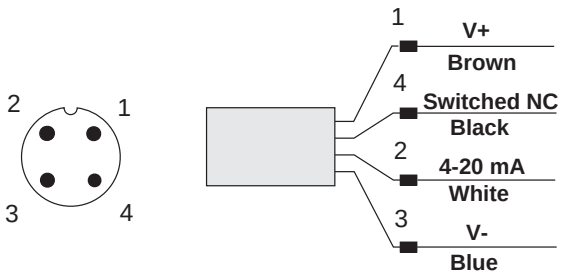
NEW!

ifm efector

FEATURES

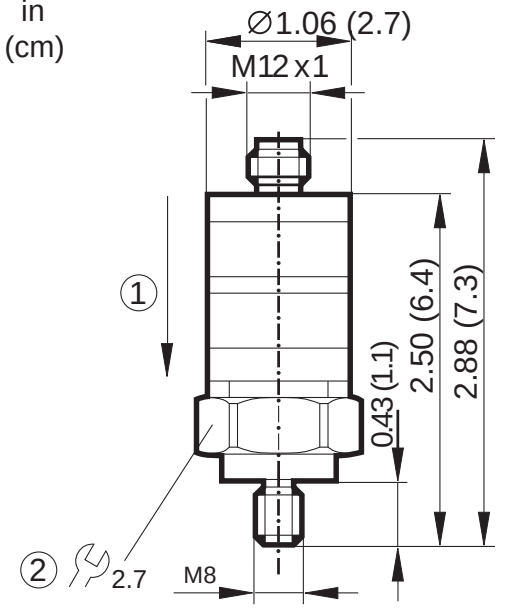
- ***Two easy to use dual setup dials***
- ***Solid state electronics***
- ***Analog and switched outputs***
- ***No software needed***
- ***Local LEDs for power and switching status***

WIRING



1: V+
2: switched NC
3: 4-20 mA
4: V-

DIMENSIONS

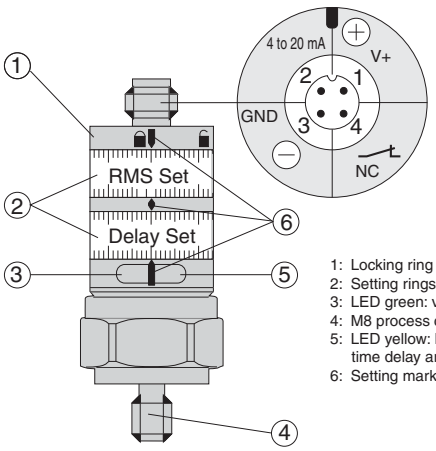


SPECIFICATIONS

Supply Voltage	18 – 32 VDC, 525 mA
Signal Output	4-20 mA
Maximum Output Impedance mA	500Ω
Contact Rating	0.5A DC PNP (Sourcing)
Contact Type	1 NC open collector transistor
Accuracy	
Transmitter	<±5% of full range
Switch	<±4% of full range
Linearity	<±0.25% of full range
Repeatability	<0.5% of full range
Measurement Range	
VK021	0 to 1"/second (25 mm/second)
VK022	0 to 2"/second (50 mm/second)
Frequency Range	10 Hz to 1000 Hz
Visual Indication	Power Green LED Switching status Yellow LED (Energized = Switched)
Shock	400g
Switch Adjustment	up to 50 mm/sec
Time Delay	1 to 60 seconds
Operating Temperature	13° to 176°F (-25° to 80°C)
Enclosure Rating	PBT (Pocan); PC (Makrolon); FPM (Viton); stainless steel 316L, IP67
Process Connection	M8 (order mounting adapter separately)
Wiring Terminations	4 pin M12 reg foot connector (order separately)
Dimensions	1.06" diameter x 2.88"H x 3.88"D (2.7 x 7.31 cm)
Approvals	cULus, CE, E174189
Weight	0.25 lb (0.114 kg)
Warranty	2 years

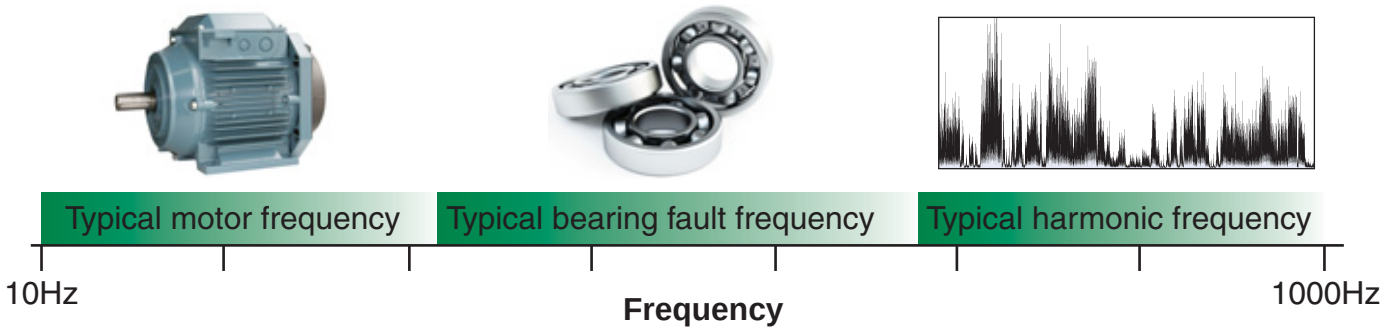
NEW!

SETTING / CONNECTION DIAGRAM



1: Locking ring
2: Setting rings (manually adustable after unlocking)
3: LED green: voltage supply
4: M8 process connection
5: LED yellow: lights when switching threshold and time delay are exceeded
6: Setting marks

FREQUENCY DIAGRAM



ORDERING INFORMATION

MODEL	DESCRIPTION
VK021	VK Series vibration monitor, switch point 0 to 25 mm/sec
VK022	VK Series vibration monitor, switch point 0 to 50 mm/sec

Ordering Note: Connector required, see below

RELATED PRODUCTS

EVC001	6' foot straight connector
EVC002	15' straight connector
EVC003	30' straight connector
EVC004	6' right-angled connector
EVC005	15' right-angled connector
EVC006	30' right-angled connector
F90037	Octavis mounting adhesive
F90042	Octavis mounting base
F90043	Octavis mounting magnet

RAIN/SNOW SENSOR CONTROLLER

DS-2B

DESCRIPTION

The **Model DS-2B Rain/Snow Sensor Controller** provides reliable rain and snow detection and control for commercial or residential applications. It detects rain to control motorized windows, roof vents, window wipers, etc., and detects snow to control snow melt and deicing systems for wheelchair ramps, stairways, driveways, loading docks, roofs, and more. The **Model DS-2B** is a low cost, easy-to-install, energy-saving alternative to thermostats, manual switches, or timer controls. It can be used stand-alone or in combination with building automation systems.

FEATURES

- ***Low cost***
- ***Full 30A @ 240 VAC N.O. load contact rating***
- ***UL listed and CE approved***
- ***Replaceable precipitation sensor element***
- ***Override switch for manual-on, auto, standby/reset***
- ***Remote operation up to 1000' (305m)***
- ***Adjustable temperature trigger point***
- ***Adjustable delay-off time***
- ***Activate or disable low temperature cutout***
- ***Smart manual-on operates for one delay-off cycle***

SPECIFICATIONS

Supply Voltage	100-120/200-240 VAC, field selectable
Supply Watts	15W (peak)
Relay Output	Load 30A @ 240 VAC Monitor 24 VAC/VDC, 400 mA, 10W total
Alarm Relay Time Delay	Sensor 2 minutes Controller 30-90 minutes, field selectable
Life Expectancy	Minimum 100,000 cycles (relay)
Trigger temperature	34°, 39°, or 44°F (1.1°, 3.9°, or 6.6°C), field selectable
Operating Temperature	-40° to 185°F (-40° to 85°C)
Enclosure Rating	Two-gang PVC NEMA 3R
Mounting	3/4" rigid conduit or 4 mounting tabs
Wiring Terminations	18" (45.72 cm) leads Power 14 AWG 18" (45.72 cm) leads Load 10 AWG 18" (45.72 cm) leads Remote control 22 AWG, five-wire cable
Dimensions	7.0"H x 4.75"W x 2.75"D (17.78 x 12.07 x 6.99 cm)
Approvals	UL listed, CE
Weight	2 lb (0.91 kg)

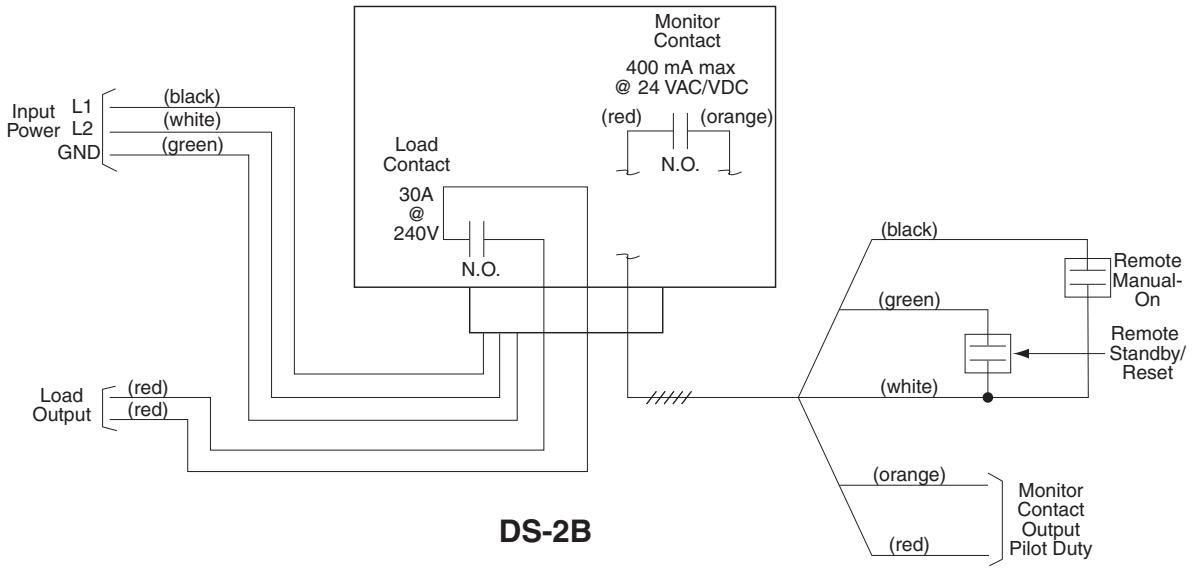
OPERATION

The **DS-2B** senses precipitation and outdoor air temperature. It also provides on/off control for direct operation of rain or snow control loads and on/off status indication to a building automation system or other light load. It installs out in the open. Rain and snow will fall directly on the top of the enclosure where the sensing element is located. When precipitation, in the form of rain or snow, is present, the load and monitor relay contacts close based on the adjustable settings for the trigger (setpoint). When precipitation stops, the contacts remain closed until the adjustable delay-off timer expires.

Factory settings are 39°F (3.9°C) trigger point, and the delay-off timer is enabled and set for one hour. Also, the lowtemperature cutout is disabled, so the trigger will switch even below 15°F (-9.4°C).

A three-position toggle switch on the housing allows manual override. The manual-on position turns on the control (closes the relay outputs). The automatic position allows automatic control based on the adjustable settings. If switched to manual-on then back to automatic within two seconds, the control will execute one delay-off cycle. The toggle switch also has a standby/reset position, which turns off the control and resets the off timer. These manual override functions may also be accomplished remotely by wiring dry contacts to the remote control/monitoring cable (See Wiring below)

WIRING



DS-2B

ORDERING INFORMATION

MODEL	DESCRIPTION
DS-2B	Rain/Snow sensor controller with remote control/monitor cable

RELATED PRODUCTS	
MG-1	Precipitation grid replacement kit

WEATHER INSTRUMENTS

A70 SERIES

DESCRIPTION

The A70 Series Weather Instruments with signal conditioning provide a 4-20 mA output proportional to wind speed (A70-SL), wind direction (A70-DL), barometric pressure (A70-PL) or rainfall (A70-RL). The A70 Series provides the user with weather information that can be used for monitoring purposes or as an input to control systems.

FEATURES

- ***Rugged construction***
- ***Reliable operation***
- ***Industry standard 4-20 mA output***
- ***Track-mounted transmitter***

A96
Lightning Arrestor

APPLICATION

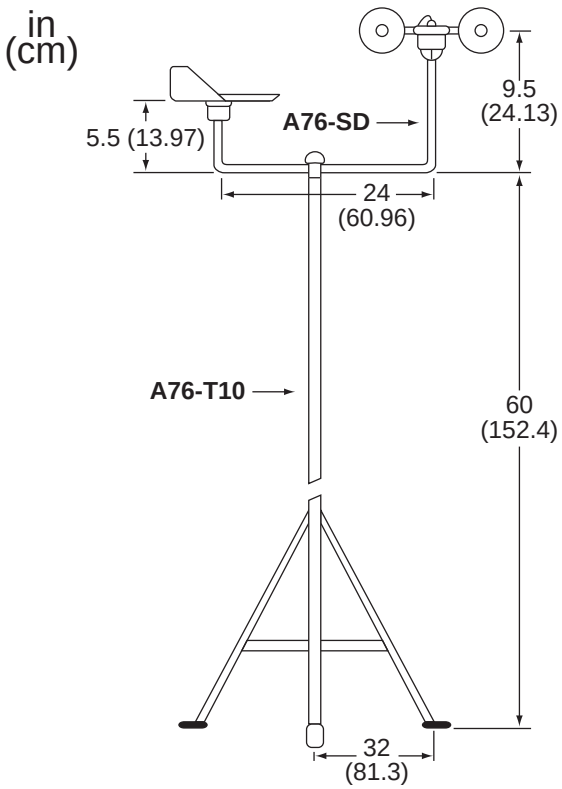
Wind Speed (A70-SL)
The wind speed is measured with a three-cup anemometer, and a 4-20 mA output signal proportional to 0-100 mph is generated. Accuracy from 3-9 mph is ±1 mph; above 10 mph, accuracy is ±5% of reading. The **A70-SL** is supplied with 60' (18.28m) of cable and a 10" (25.40 cm) stub mast for mounting the anemometer.

Wind Direction (A70-DL)
Wind direction is measured with a precision potentiometric wind vane that produces a signal proportional to the azimuth of the wind. This signal is converted to a 4-20 mA output over 0 to 360 degrees The vane has a four-degree deadband on either side of north. The **A70-DL** is provided with 60' (18.28m) of cable and an S mast for mounting.

Barometric Pressure (A70-PL)
The **A70-PL** senses barometric pressure by an integrated silicon, absolute pressure sensor with integral temperature compensation. It outputs a 4-20 mA signal over 27" to 31" Hg. Accuracy is ±0.05" Hg. The sensor is mounted to the transmitter board, and a 3/16" (0.48 cm) tube may be attached to the sensor to provide remote pressure sensing.

Rainfall (A70-RL)
The **A70-RL** utilizes tipping bucket technology to measure rainfall and outputs a 4-20 mA signal over a range of 0" to 1" (0 to 2.5 cm). When the output reaches 20 mA (1"), it resets to 4 mA, and the cycle begins over again. Accuracy is ±4%. The sensor includes 50' (15.24m) of cable.

ASSEMBLY / DIMENSIONS

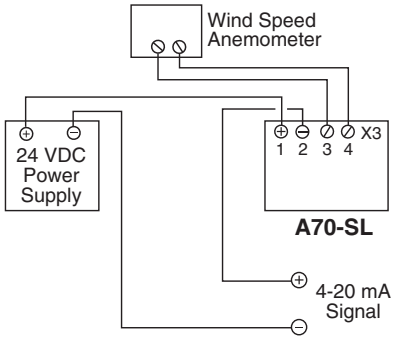


Tripod Mounting

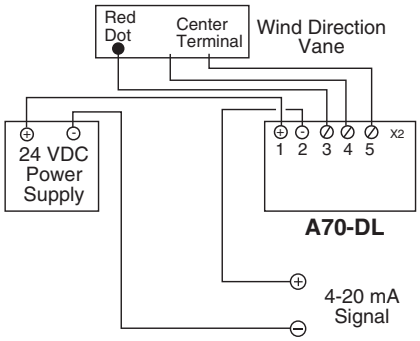
COMMON SPECIFICATIONS

Supply Voltage	12-24 VDC, 30 mA max
Signal Output	4-20 mA
Maximum Output Impedance	700Ω @ 24 VDC, R=(Supply Voltage -10) x 50Ω
Accuracy	±1%

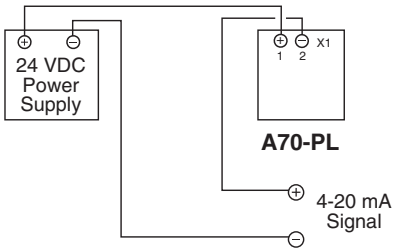
WIRING



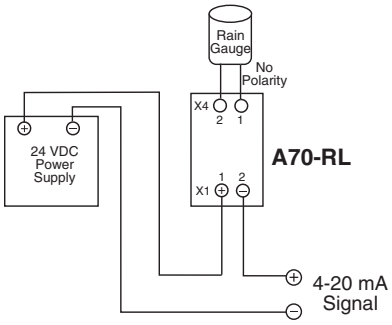
Wind Speed



Wind Direction



Barometric Pressure



Rainfall

ORDERING INFORMATION

MODEL	DESCRIPTION
A70-DL	Wind direction transmitter
A70-PL	Barometric pressure transmitter
A70-RL	Rainfall transmitter
A70-SDL	Wind speed/direction transmitters
A70-SDPL	Wind speed/direction and barometric pressure transmitters
A70-SL	Wind speed transmitter

ACCESSORIES

A76-SD	Mounting bracket for wind speed and direction transmitters
A76-T10	Tripod tower with mast (10 ft/3m total height) for wind speed and direction sensors
A96-100P	Lightning arrestor for wind speed sensor (includes pipe-mounting clamp)
A96-200P	Lightning arrestor for wind direction sensor (includes pipe-mounting clamp)

GAS CALIBRATION AND VERIFICATION KITS

C0/C02/N02-C KIT SERIES, 3015 SERIES, MODEL UCK

GAS CALIBRATION KITS

The **1309K0002 and the 1309K0004** calibration kits from Honeywell Analytics are designed to ensure optimal performance from each of their gas detection devices. It is also ideal for the Kele GDS, GDN, and GDD Series gas detectors. These gas calibration kits include, tubing, regulator, calibration adapter, carrying case, and instructions to properly test and maintain gas detection instrumentation. Calibration gases are available in 17L, 58L, or 103L cylinder and must be ordered separately. These kits are not applicable to the VASQN8X and the XCD gas detectors.

(Gas Sold Seperately)

ORDERING INFORMATION

MODEL	DESCRIPTION
1309K0002	GDS, GDD, GDN calibration kit for 58 to 103L gas cylinders
1309K0004	GDS, GDD, GDN calibration kit for 17 to 34L gas cylinders

REFRIGERANT VERIFICATION KITS

Perform operation validation on refrigerant monitoring devices in the field with the **3015 Series Refrigerant Verification Kit**s. Each kit includes a 1L filled refrigerant gas cylinder, 5 ft (1.5m) of plastic tubing, variable regulator, and a hard carrying case.

ORDERING INFORMATION

MODEL	DESCRIPTION
3015-3430	R-22 Gas verification kit
3015-3437	R-134a Gas verification kit
3015-3438	R-123 Gas verification kit

UNIVERSAL CALIBRATION KIT

The **Model UCK Universal Calibration Kit** contains essential items to perform gas calibration on a variety of gas monitoring equipment. The kit includes assorted tubing sizes, couplings, adapters, restrictors, a regulator, pressure gage, and a hard carrying case. Gas cylinders are sold separately. The **Model UCK-1** contains a regulator to fit 17L cylinders for non-corrosive gases (N2, CO2, CH4, H2, O2, CO, and refrigerants). For corrosive gases (NO2, H2S, SO2, and NH3), use **Model UCK-2** which contains a regulator for 58L cylinders. **Model UCK-3** contains both 17L and 58L regulators.

ORDERING INFORMATION

MODEL	DESCRIPTION
UCK-1	Universal calibration kit for non-corrosive gases (N2, CO2, CH4, H2, O2, CO, and refrigerants)
UCK-2	Universal calibration kit for corrosive gases (NO2, H2S, SO2, and NH3)
UCK-3	Universal calibration kit for non-corrosive or corrosive gases

GAS CYLINDERS AND SAFETY EQUIPMENT

GAS SERIES AND MODEL NIOSHSCBA

The **GAS Series Gas Cylinders** are available in 17L or 58L sizes for a variety of different gases and refrigerants. The weight for 17L cylinders is 1.6 lb (0.82 kg) and 2.1 lb (0.95 kg) for 58L cylinders.

ORDERING INFORMATION

MODEL	DESCRIPTION
GAS-CO-100	100 ppm carbon monoxide (CO) in air, 17L
GAS-CO-200	200 ppm carbon monoxide (C) in air, 17L
GAS-CO-25	25 ppm carbon monoxide (CO) in air, 17L
GAS-CO-50	50 ppm carbon monoxide (CO) in air, 17L
GAS-CO2-1000	1000 ppm carbon dioxide (CO2) in nitrogen (N2), 17L
GAS-CO2-2000	2000 ppm carbon dioxide (CO2) in nitrogen (N2), 17L
GAS-CO2-800	800 ppm carbon dioxide (CO2) in nitrogen (N2), 17L
GAS-H2-2	2.0% hydrogen (H2) in air, 17L
GAS-H2S-25	25 ppm hydrogen sulfide (H2S) in air, 58L
GAS-N2	Nitrogen (N2), 17L
GAS-NH3-50	50 ppm ammonia (NH3) in nitrogen (N2), 58L
GAS-NO2-5	5 ppm nitrogen dioxide (NO2) in air, 58L
GAS-O2-18	18% oxygen (O2) in nitrogen (N2), 17L
GAS-R11-500	500 ppm R-11 in air, 17L
GAS-R12-500	500 ppm R-12 in air, 17L
GAS-R123-100	100 ppm R-123 in air, 17L
GAS-R134A-500	500 ppm R-134a in air,17L
GAS-R22-500	500 ppm R-22 in air, 17L

The **Model NIOSHSCBA** Self-Contained Breathing Apparatus Kit provides dependable respiratory protection in hostile environments. The unit meets NIOSH (National Institute for Occupational Safety and Health) requirements and has an assigned OSHA protection factor of 10,000. The kit includes a nylon harness assembly, hood, compact demand valve with adjustable flow by-pass, and a filled 30 minute aluminum cylinder.

ORDERING INFORMATION

MODEL	DESCRIPTION
NIOSHSCBA	Self-contained breathing apparatus kit
NIOSHSCBA-WC	Self-contained breathing apparatus kit with SCBA-WALCASE wall case

WHAT'S YOUR IAQ?

Indoor Air Quality (IAQ) is a topic that has remained hot for over two decades. Thanks to several high-profile contaminant incidents, the public has a heightened awareness of the potential effects of unintentional exposure to carbon monoxide, mold and mildew, corona viruses, and legionella. Added to their concerns are threats of intentional exposure to anthrax, smallpox, and other unknown agents of chemical and biological warfare.

In response to these potential dangers, mechanical engineers face the important challenge of changing the way ventilation is designed. They are diligently searching for the types of sensors and controls that will help them take the best steps possible to ensure that the air we breathe in our facilities is clean.

Through our network of manufacturers, research institutions, and military contacts, we're aware of research that's in progress, and we're among the first to evaluate any IAQ-related product that has the potential of being brought to market.

WHERE ARE WE WITH SENSORS TO DETECT CONTAMINANTS?

Our GDD, GDN, and GDS Series gas detectors offer state-of-the-art solutions for common toxic and combustible gases. They can provide a reliable source of alarm and control when a potential hazard is known. Refrigerant sensors range from the RLD-5 and RLD-134A, to the AGM, HGM, VA301, VAQN8X and GDC Series for single and multizone applications. Look under the "Gas & Specialty Sensors" and "Hazardous Locations" sections in the 2012 Kele Catalog for information on these products and their capabilities.

WHAT ABOUT SENSORS FOR TOXINS AND MICROORGANISMS?

Sensors for the higher-profile toxins and microorganisms are on the way, but they're not cost-effective yet. Even though success has been proven for demand-controlled ventilation (DCV), its implementation rate remains low.

Cost is the typical reason for leaving out this important part of a project. Trimming costs is understandable, but with a typical 6 to 18 month payback using DCV, it is far better even in the short run to maximize energy efficiency this way. Kele stocks a variety of CO2 sensors to help meet any specification. Our KCO2, KCD Series, 5001 and 8041 Specialty, and C7232A are all time-proven, low-maintenance devices that do the job at a competitive price.

WHAT ABOUT MOLD AND MILDEW?

Mold and mildew are tough to sense, but Kele's wide range of humidity sensors, water leak detectors, and float switches can all play a role in preventing these growths from occurring in the first place. While they can't prevent every growth, controlling humidity adequately and detecting water are excellent steps
to take to help prevent the proliferation of mold and mildew. Leak detectors and float switches are also found in the "Level" section of the catalog, and our "Humidity" section can also provide you with what you need.