TG Series UL Wall & Duct

Refrigerant Sensor/Controller

Sense most A2L and A3 gases

NEMA 3R/IP43

Works as a Stand-Alone Controller (two SPDT relays)





DESCRIPTION

Senva TG UL refrigerant gas detectors are UL61010 listed. The TG UL is NEMA 3R/IP43 rated. It has the option to detect one or two gases per enclosure and has options to accommodate different mounting height requirements. It supports most A2L and A3L gases. All sensors come pre-calibrated with a NIST certificate of calibration and are field replaceable. All TG UL units come standard with an LCD display, RS-485 protocol or analog outputs, LED status indicators, 85db buzzer alarm, and two SPDT adjustable setpoint relays for direct control of fans and external visual/audible alarms.

APPLICATIONS

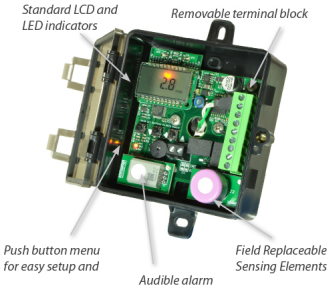
- VRF/VRV Leak Detection
- Supermarkets & Cold Storage
- Data Centers
- Commerical Kitchens
- Waste Facilities



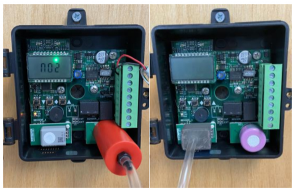
TG Metal LED or Solid Enclosure Available



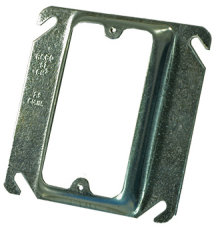
TG ABS Enclosure - Available with Tinted or Solid Lid Options



Two sensing elements, buzzer, three color LEDs, and LCD for setup and calibration



Gas shrouds secure over respective sensing elements for calibration



ABS comes with conduit box adapter



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FEATURES

- Rugged plastic (NEMA 4X) or metal (NEMA 3R) enclosure options
- Detect one or two gases in each TG2 unit
- Remote moutning options for second gas
- NIST Pre-calibrated sensors with certificates of calibration
- LCD display
- Equipped with both RS-485 and analog outputs
- LED status indicators
- 85db alarm
- Two SPDT adjustable setpoint relays (dry contacts)

ORDERING

TG ☐ - ☐ ☐ ☐ - ☐ ☐

Package
W = Wall Mount
M = Metal
D = Duct Mount

Output Type
A = Analog
B = BACnet/ Modbus

Gas Type 1
A= Ammonia
2 = R22
4 = R410A (Multi-Gas)
5 = R404A
6 = R407C
7 = R449A
8 = R513A
9 = 1233ZDE
P = Propane (R290)
E = CO_2 (R_{744})
Z = R_{32}
F = R454A
B = R454B
Q = R454C
G = 1234ZE
J = R1234YF
K = R452B
T = R455A

Gas Type 2
X = No second gas
2 = R22
3 = R134A
4 = R410A
5 = R404A
6 = R407C
7 = R449A
8 = R513A
9 = 1233ZDE

Temperature
A = None
E = 10K Type 2
F = 10K Type 3
K = 20K

Enclosure Lid
Blank = Clear/ Tinted
S = Solid/Opaque
W = All White Solid

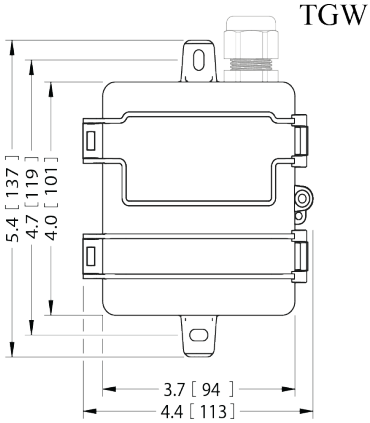
Scan here to see refrigerant cross-sensitivities

Replacement Elements
TGS-A-UL = Ammonia
TGS-3-UL = R134A
TGS-4-UL = R410A
Consult factory for more.

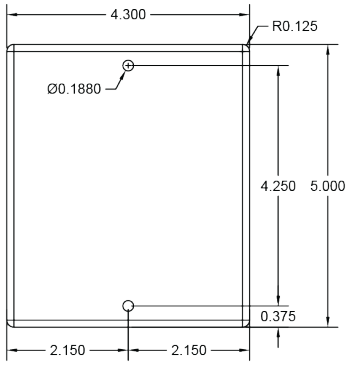
* Other refrigerants available. Consult factory for details. Refrigerant gas sensors may be paired with all other TG gas offerings, except Methane, Propane, and Hydrogen. See combustibles ordering table for a list of gas options.

DIMENSIONS

TGW



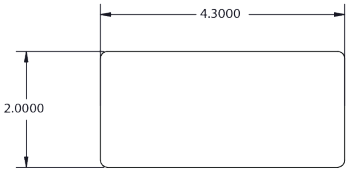
TGM Base



TGM Lid



TGM Bottom View



Warning: The datasheet is designed for reference only. Refer to installation instructions that accompany the product and heed all safety instructions. Product improvement is a continuing process at Senva. Changes may occur to products without prior notice.

SPECIFICATIONS

Power Supply		15-30VDC/24VAC(1), 4W max, 160mA max
Wiring	Conductor	14-24 AWG, Minimum 600V, 75°C
	Terminal Torque	0,5 N·m
Analog Outputs	2 programmable outputs	0-10V (default), 0-5V, 1-5V, 4-20mA (menu selectable)
	CO Output Scaling	0-200ppm (default), 0-1000ppm (menu selectable)
	NO_2 Output Scaling	0-10ppm (default), 0-30ppm (menu selectable)
	CO_2 Output Scaling	0-10,000ppm (default); 0-10,000ppm (menu selectable)
	Propane/Methane/Hydrogen Output Scaling	0-50% LEL (default), 0-50% LEL (menu selectable)
	Oxygen Output Scaling	0-25% Vol (default), 0-25% Vol (menu selectable)
	Refrigerant Output Scaling	0-1000ppm (default), 0-1000ppm (menu selectable)
	Hydrogen Sulfide (H2S) Output Scaling	0-100ppm (default), 0-100ppm (menu selectable)
	Ammonia (NH3) Output Scaling	0-100ppm (default), 0-100ppm (menu selectable)
	Temperature Output Scaling	-20 to 85°C
BACnet/Modbus	Protocol RS-485	BACnet MS/TP, Modbus RTU, Modbus ASCII
	Baud Rates	9600, 19200, 38400, 57600, 76800, 115200
	RS-485 Loading	1/4 unit
Fan Relay	Fan relay characteristics	N.C. 1A@24/30VDC (50/60Hz) (no mains connection)
	Fan relay setpoint	300 ppm (default), 0-1000 ppm (menu selectable)
Alarm Relay	Alarm relay characteristics	N.C. 1A@24/30VDC (50/60Hz) (no mains connection)
	Alarm relay setpoint	600 ppm (default), 0-1000 ppm (menu selectable)
Display	3-1/2 digit LCD	Indicates CO ppm, NO_2 ppm, Temp (menu selectable) (menu selectable)
LEDs	Green, Yellow, Red	Green = Normal, Yellow = Relay, Red = Alarm
Audible Alarm	85dB @4" Piezo transducer	30 minutes above alarm setpoint per UL2075 (menu selectable)
CO Sensor Performance (6)	Type	Electrochemical
	Accuracy	±5% of Default Range, ±5% of Reading Above 200ppm
	Resolution	1ppm
	Certifications	UL2075 Recognized component
	Life Expectancy	7 years
	Recommended Calibration	Annual

	Recommended Height and Coverage Area	3 to 6 feet; coverage 500-7500 sq. ft.
NO_2 Sensor Performance [7]	Type	Electrochemical
	Accuracy	±5% of Default Range, ±5% of Reading Above 20ppm
	Resolution	0.1ppm
	Certifications	UL2075 Recognized component
	Life Expectancy	7 years
	Recommended Calibration	Annual
	Recommended Height and Coverage Area	3 to 6 feet; coverage 5000 - 7500 sq. ft.
CO_2 Sensor Performance	Type	Non-dispersive Infrared (NDIR)
	Accuracy [8]	±(30ppm +3% of reading) (400-2000ppm), @-10-50°C
		±(50ppm +5% of reading) Standard (2000-5000ppm), @-10-50°C
		±(50ppm +3% of reading) Dual Channel (2000-5000ppm), @-10-50°C
		±(100ppm +10% of reading) (5000-10000ppm), @0-50°C
	Drift with ABC disabled [9]	35ppm/month [10] (Standard) 5ppm/month [10] (Dual Channel)
	Range	0-2000/5000ppm; Programmable up to 10,000ppm
	Resolution	1 ppm
	Life Expectancy	15 years
	Response Time	30s
	Sample Rate	1s
	Recommended Height and Coverage Area	3 to 6 feet; coverage 5000 - 7500 sq. ft.
Methane/Propane/Hydrogen Sensor Performance	Type	Catalytic
	Detection Range	0-50% LEL (Lower Explosive Limit)
	Accuracy	±5% of Range
	Resolution	1% LEL
	Certifications	UL2075 Recognized component for Methane/Propane
	Life Expectancy	>5years
	Response Time	<10s to 90%
	Recommended Calibration	Bump test annually, calibrate or replace if necessary. [11]
	Long Term Stability Drift	Zero: <±2mV/year
		Sensitivity: <±2mV/month
	Recommended Height and Coverage Area	Hydrogen/Methane: 0.5 to 1 foot from ceiling; coverage 5000-7500 sq. ft.
		Propane: 1-3 ft. above finished floor; coverage 5000 square feet.
Oxygen Sensor Performance	Type	Electrochemical
	Detection Range	0-25% Volume
	Accuracy	±5% of Range
	Resolution	0.1%
	Life Expectancy	5 years
	Recommended Calibration	Annual
	Recommended Height and Coverage Area	3 to 6 feet; coverage 5000-7500 sq. ft.
Hydrogen Sulfide (H_2S) Sensor	Type	Electrochemical

Performance	Detection Range	0-100 ppm
	Accuracy	±5% of Range
	Resolution	1 ppm
	Life Expectancy	5 years
	Recommended Calibration	6 months
	Recommended Height and Coverage Area	3 to 6 feet; coverage 5000 - 7500 sq. ft.
Ammonia (NH_3) Sensor Performance	Type	Electrochemical
	Detection Range	0-100 ppm
	Accuracy	±5% of Range
	Resolution	0.1 ppm
	Life Expectancy	5 years
	Recommended Calibration	6 months
	Recommended Height and Coverage Area	0.5 to 1 foot from ceiling; coverage 5000-7500 ft.
Refrigerant Sensor Performance	Type	MOS
	Detection Range	0-1000 ppm
	Resolution	1 ppm
	R22, R134A, R410A, R404A, R407C	Factory calibrated for respective gas
	Other detectable gases[3]	R407A, R407F, R427A, R452B, R507, R448A, R454B, R455A, R455C, R422A, R422D, R452A, R514A, R32, R123. Consult factory for other A2L gases
	Life expectancy	>10 years (typical life expectancy for MOS sensors)
	Recommended Calibration	6 months
	Recommended Height and Coverage Area	6 inches above floor; no more than 18 inches above lowest level of equipment location for leak detection; coverage 5000-7500 sq. ft. (Click for details)
Operating Environment	Temperature, Operational[4]	-20 to 50°C (MOS rated down to -30°C; CO_2 versions rated to -40°C)
	Humidity	15-90% continuous, 0-99% intermittent
	Max Elevation	2000m, Refrigerant 2629 m (8625 ft) [5]
Enclosure (Wall & Duct)	Material	ABS/Polycarbonate
	Dimensions	4.0"h x 4.4"w x 2.1"d
	Conduit Opening	Tapped 1/2" NPT
	Rating	IP43 or NEMA 3R
Enclosure (Metal)	Material	Powder-coated steel/acrylic
	Dimensions	5.0"h x 4.3"w x 2.25"d
	Opening	Dual air vents on bottom of enclosure
	Mounting	Pre-drilled for 2x4" electrical box
	Rating	IP41 or NEMA 3R
Agency	Compliance	UL61010-1 Listed UL, cUL, CE

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended. No mains circuit connection allowed. In addition, it is required to use an isolated power supply that is certified by a national or international standard (i.e. UL). Use of a Class 2 LPS power supply or greater is required.
(2) R410A sensor is factory calibrated to R410A gas but may be used as a general-purpose refrigerant sensor. Sensitivity to some other gases can be found in the installation manual. Actual response may vary depending on installation. For more accurate response to a specific gas, a unit may be field calibrated.
(3) These gases may be detected by the sensor, but sensitivity curves are not available at this time.

(4) Accuracy of CO_2 reading may be reduced at temperatures below 14°F (-10°C).

(5) Refrigerant sensors have been tested to perform at this altitude. To maintain accuracy spec, a field calibration is recommended.

(6) Carbon Monoxide full scale is 1000ppm.

(7) Nitrogen Dioxide full scale is 30ppm.

(8) CO2 sensor is equipped with a heater to account for temperatures down to -40°C.
(9) It is not recommended to de-activate ABC (auto-calibration) except for continuously occupied spaces or greednhouses. Drift ratings may vary based on encironment.
(10) Combination CO/Methane, CO/Propane, or CO/Refrigerant sensors should be mounted according to Propane/Methane/Refrigerant recommendations. Consult factory for other comvinations. Mounting height recommendations may be adjusted according to installation. Ensure sensor is accessible for maintenance and target gas has unobstructed access to sensor. Mount in accordance with ANSI/NFPA 70 and NEC or CEC.
(11) A bump test involves exposing the sensor to a reference gas and detecting the sensor's response. If sensor response is out of accuracy range, recalibration or replacement of the sensor element may be necessary.

** Product improvement is a continual process at Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.*