TG Series UL Wall & Duct
Refrigerant Sensor/Controller

Sense most A2L and A3 gases
Analog and BACnet/Modbus protocol options
Rugged ABS or Metal enclosure options
Operates as a stand-alone sensor or local controller

DESCRIPTION

Senva TG Series refrigerant sensors are a great solution for refrigerant leak detection in many applications. It can be ordered as individually calibrated R134A or R410A sensors or any combination with CO or NO2 sensors. Buy pre-calibrated for R134A or R410A or factory calibrate to any refrigerant including R134A, R410A, R407C, R404A, R22, R123. The analog output model features 2 outputs that support daisy chain wiring - multiple sensors may be used in a parallel sequence (0-10V) for cost-effective coverage of large areas. The unit can also act as a stand-alone controller, utilizing the relay for exhaust fan operation or the output for direct control of a VFD. The BACnet/Modbus model supports one unit of MS/TP & Modbus network communication. Standard features include network auto-configuration, a programmable fan relay, LED indicators, an integrated display, and an audible alarm.
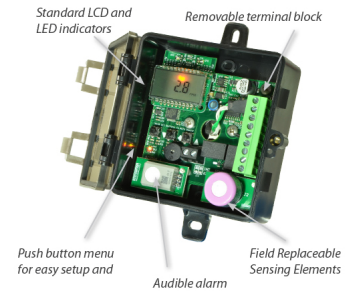
APPLICATIONS

- A2L and A3 leak detection in mechanical rooms
- Pre-calibrated for R134A or R410A or factory calibrate to any refrigerant including R134A, R410A, R407C, R404A, R22, R123 and most A2L gases
- Monitor multiple gases with one mounted unit
- Alert occupants of elevated gas levels
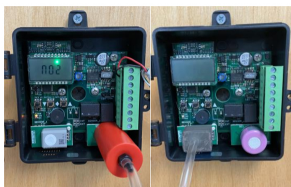- Directly control exhaust fans

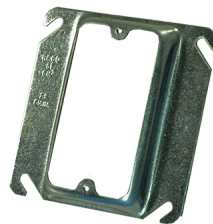*TG Metal LED or Solid Enclosure Available*

TG ABS Enclosure - Available with Tinted or Solid Lid Options

Standard LCD and LED indicators
Removable terminal block
Push button menu for easy setup and
Audible alarm
Field Replaceable Sensing Elements

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

Designed and manufactured in America
World-class quality backed by seven year limited warranty

Buy American Act Certified

FEATURES

- Integrated display, LED indicators, audible alarm
- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- BACnet supports BACnet MS/TP and Modbus RTU networks with auto-configuration for network baud rate, serial format, protocol type, and self-addressing
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas
- UL2034 recognized electrochemical CO sensing element

- Warning indicators alert occupants when the element's lifecycle is near the end for replacement
- Installer-friendly circuit board makes through-the-back wiring simple
- Test mode speeds up field commissioning for verifying warning indicators and relay functions
- Push buttons and LCD to navigate setting parameters
- UL Listed (UL61010-1)
- 7-year limited warranty on electronics; 2-year on elements

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
3 = R134A
(Multi-Gas)
4 = R410A
5 = R404A
6 = R407C
7 = R449A
8 = R513A
9 = 1233ZDE
M = Methane
P = Propane (C3H8)
E = NDIR Dual Channel (CO2)

Gas Type 2
X = No second gas
2 = R22
3 = R134A
4 = R410A
5 = R404A
6 = R407C
7 = R449A
8 = R513A
9 = 123ZDE

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

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

Scan here to see refrigerant cross-sensitivities

* 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

5.4 [137]
4.7 [119]
4.0 [101]
2.1 [53]
3.7 [94]
4.4 [113]

TGM Base

4.300
R0.125
Ø0.1880
4.250   5.000
0.375
2.150   2.150

TGM Lid

0.250
2.150
R0.125

TGM Bottom View

4.3000
2.0000
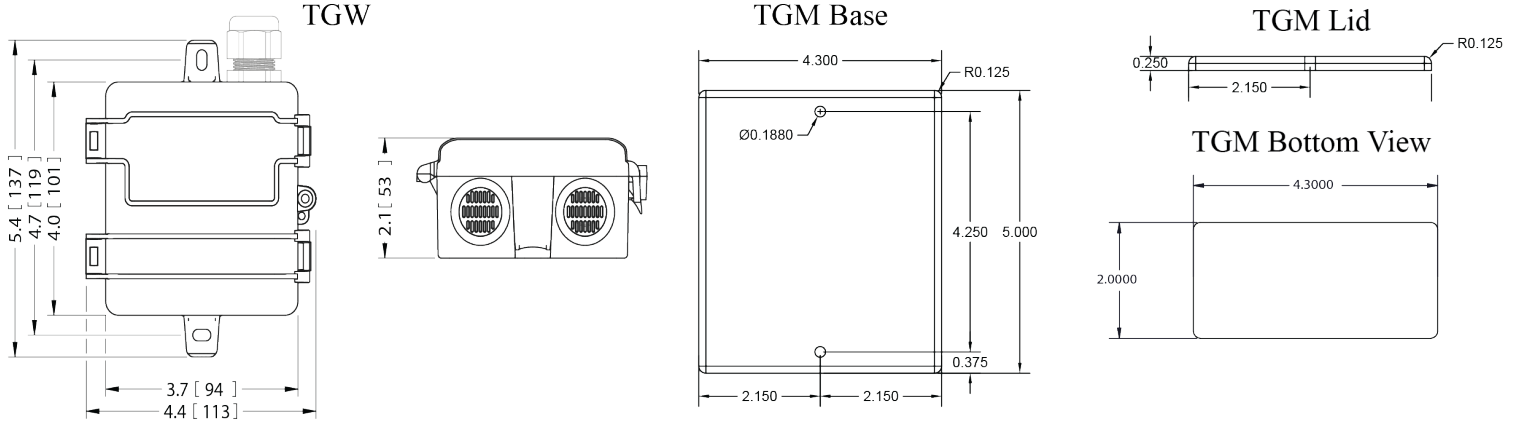
⚠️ **Warning:** The datasheet is designed for reference only. Refer to installation instructions that accompany the product and heed all safety instructions. Product improvement is a continuing process at Senva. Changes may occur to products without prior notice.

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	6 months
	Recommended Height and Coverage Area	Hydrogen/Methane: 0.5 to 1 foot from ceiling; coverage 5000-7500 sq. ft.
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$_2$S) Sensor Performance	Type	Electrochemical
	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
	R134A Sensitivity[2]	@300ppm test gas: 450 ppm R410A, 425 ppm R407C, 400 ppm R404A, 370 ppm R22, 300 ppm R134A, R134
	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) R134A sensor is factory calibrated to R134A 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.

* 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.