

# TG UL Series Wall & Duct Dual Combustible Gas Sensor/Controller

Analog and BACnet/Modbus protocol options  
Field replaceable calibrated sensing elements  
Detect combustibles and CO in one unit  
Integrated LED indicators and audible alarm



## DESCRIPTION

Senva TG Series sensors can be ordered as individual sensors or as any dual combination of CO/NO<sub>2</sub>/Propane/Methane/H<sub>2</sub>S sensor in a shared enclosure. Detect Methane/Propane leaks and monitor for elevated CO levels, all in one unit.

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 BACnet MS/TP & Modbus network communication in one unit. Standard features include network auto-configuration, programmable fan and alarm relays, LED indicators, integrated display and audible alarm.



## APPLICATIONS

- Boiler rooms
- Commercial kitchens
- Battery Rooms
- Compressed Gas storage
- Residential and commercial heating and water heating
- Vehicle bays and garages for natural gas (LNG) or petroleum gas (LPG) vehicles
- Waste facilities
- OEM applications



**Warning:** Refer to installation instructions that accompany product and heed all safety instructions.

## FEATURES

### Cost-effective dual gas sensing and control

- Integrated display, LED indicators, audible alarm
- Order as individual CO, NO<sub>2</sub>, Propane, Methane, Hydrogen, Oxygen, or Hydrogen Sulfide sensor, or specify any two sensing elements in one enclosure

### Flexibility of analog output model

- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas

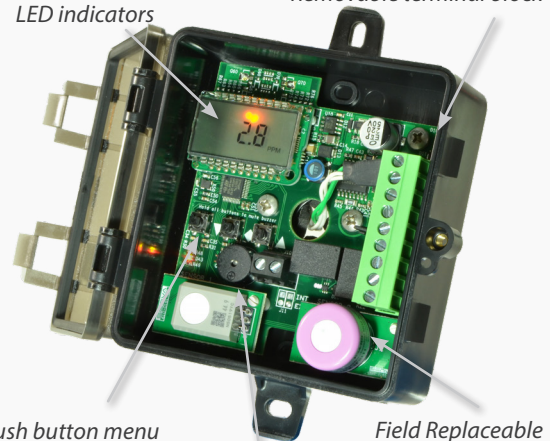
### Versatility with BACnet/Modbus model

- Supports BACnet MS/TP and Modbus RTU networks
- Auto-configuration detects network baud rate, serial format, protocol type and self-addresses

### High reliability reduces call backs

- Temperature compensated elements for maximum accuracy
- UL2034 recognized electrochemical CO sensing element
- Warning indicators alert occupants when element's lifecycle is near end for replacement
- 7-year limited warranty on electronics; 2-year on elements

Standard LCD and LED indicators      Removable terminal block



Push button menu for easy setup and programming

Audible alarm

Field Replaceable Sensing Elements

## Easy to install

- Through the back wiring
- Test mode speeds up field commissioning for verifying warning indicators and relay functions
- Push buttons and LCD to navigate setting parameters



7 year limited warranty

## ORDERING

**TG**  Pkg  -  Out  -  Gas1   Gas2  -  Temp   Lid

### Package

W = Wall Mount  
M = Metal  
D = Duct Mount

### Output Type

A = Analog  
B = BACnet/Modbus

### Gas Type 1

C = Carbon Monoxide (CO)  
N = Nitrogen Dioxide (NO<sub>2</sub>)  
M = Methane (CH<sub>4</sub>)  
P = Propane (C<sub>3</sub>H<sub>8</sub>)  
H = Hydrogen (H<sub>2</sub>)  
O = Oxygen (O<sub>2</sub>)  
S = Hydrogen Sulfide (H<sub>2</sub>S)  
D = Carbon Dioxide (CO<sub>2</sub>)  
E = Dual Channel CO<sub>2</sub>

### Gas Type 2

N = Nitrogen Dioxide (NO<sub>2</sub>)  
M = Methane (CH<sub>4</sub>)  
P = Propane (C<sub>3</sub>H<sub>8</sub>)  
H = Hydrogen (H<sub>2</sub>)  
O = Oxygen (O<sub>2</sub>)  
S = Hydrogen Sulfide (H<sub>2</sub>S)  
D = Carbon Dioxide (CO<sub>2</sub>)  
E = Dual Channel CO<sub>2</sub>  
X = No second gas

### Temperature Output

A = None  
C = 100Pt RTD  
D = 1000Pt RTD  
E = 10K Type 2  
F = 10K Type 3  
G = 10k w/11k  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k

### Enclosure Lid

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

## Replacement Elements

- TGS-CO-UL = Carbon Monoxide
- TGS-NO<sub>2</sub>-UL = Nitrogen Dioxide
- TGS-CH<sub>4</sub>-UL = Methane
- TGS-C<sub>3</sub>H<sub>8</sub>-UL = Propane
- TGS-O<sub>2</sub>-UL = Oxygen
- TGS-H<sub>2</sub>-UL = Hydrogen
- TGS-S-UL = Hydrogen Sulfide



(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) Carbon Monoxide full scale is 1000ppm.

(3) Nitrogen Dioxide full scale is 30ppm.

(4) Accuracy of CO<sub>2</sub> reading may be reduced at temperatures below 14°F (-10°C).

## SPECIFICATIONS

Power Supply		15-30 VDC/24VAC <sup>(1)</sup> , 4 W max, 160 mA max.
Analog Outputs	2 programmable outputs	0-10 V (default), 0-5V, 1-5 V and 4-20 mA (menu selectable)
	Output scaling	Menu selectable; see installation manual for ranges
BACnet /Modbus	Protocol RS-485	BACnet MS/TP, Modbus RTU, Modbus ASCII
	Baud Rates	9600, 19200, 38400, 57600, 76800, 115200
Fan Relay	Fan relay characteristics	N.C. 1A@24/30 VDC (50/60 Hz) (no mains connection)
Alarm Relay	Alarm relay characteristics	N.C. 1A@24/30 VDC (50/60 Hz) (no mains connection)
Display	3-1/2 digit LCD	Indicates ppm or % LEL or % Vol (menu selectable)
LEDs	Green, Yellow, Red	Green = Normal, Yellow = Relay, Red = Alarm
Audible Alarm Exposure	85dB Piezo transducer	30 minutes above alarm setpoint per UL2034 (menu selectable)
	Type	Electrochemical
CO Sensor Performance	Accuracy	±5% of default range <sup>(2)</sup> ±5% of reading above 200 ppm
	Resolution	1 ppm
	Certifications	UL2034 Listed Component
	Life expectancy	>7 years
	Coverage Area	5000-7500 square feet
NO <sub>2</sub> Sensor Performance	Type	Electrochemical
	Accuracy	±5% of default range <sup>(3)</sup> ±5% of reading above 20 ppm
	Resolution	0.1 ppm
	Life expectancy	>7 years
	Coverage Area	5000-7500 square feet
Methane/Propane/ Hydrogen Sensors Performance	Type	Catalytic
	Detection Range	0-50% LEL (Lower Explosive Limit)
	Accuracy	5% of range
	Resolution	1%LEL
	Life expectancy	>5 years
Oxygen Sensor Performance	Coverage Area	Methane/Hydrogen 5000-7500 sq ft; Propane 5000 sq ft
	Type	Electrochemical
	Detection Range	0-25% Volume
	Accuracy	±5% of range
	Resolution	0.1 %
H <sub>2</sub> S Sensor Performance	Life expectancy	5 years
	Coverage Area	5000-7500 square feet
	Type	Electrochemical
	Detection Range	0-100 ppm
	Accuracy	±5% of range
Carbon Dioxide (CO <sub>2</sub> )	Resolution	1 ppm
	Life expectancy	15 years
	Coverage Area	5000-7500 square feet
	Accuracy <sup>(4)</sup>	±(30ppm +3% of reading) (400-2000ppm), @-10-50°C ±(50ppm +5% of reading) Standard (2000-5000ppm), ±(50ppm+3% of reading) Dual Channel (2000-5000ppm), ±(100ppm+10% of reading) (5000-10000ppm)
	Operating Environment	Temperature, continuous
Operating Environment	Humidity	15-95% continuous, 0-95% intermittent
	Max Elevation	2000m
	Material	ABS/Polycarbonate
Enclosure (Wall & Duct)	Dimensions	4.0"h x 4.4"w x 2.1"d
	Conduit Opening	Tapped 1/2" NPT
	Rating	IP20
Enclosure (Metal)	Material & Enclosure Rating	Powder coated steel/acrylic, NEMA 3R
	Dimensions	5.0"h x 4.3"w x 2.25"d
	Opening	Dual air vents on bottom of enclosure
Agency	Mounting	Pre-drilled for 2x4" electrical box
	Rating	IP20
Agency	Compliance	UL61010-1 Listed UL, cUL, CE