DET-TRONICS®

SPECIFICATION DATA

Electrochemical Toxic Gas Detector GT3000 Series Includes Transmitter (GTX) and Sensor Module (GTS)





DESCRIPTION

The Det-Tronics GT3000 line of electrochemical gas detectors is designed to provide continuous monitoring of the atmosphere for potentially hazardous gas leaks or oxygen depletion. Models are available for detecting a variety of gas types in various concentration ranges.

The GT3000 toxic gas detector is a two-wire loop powered device and is designed as a stand alone unit that supports local calibration. It is also fully compatible with the FlexVu® UD10/UD20/UD30 Universal Display Units.

The GT3000 consists of a replaceable sensor module (GTS) connected to a transmitter module (GTX). The transmitter generates a 4-20 mA output signal with HART, which is proportional to the concentration of the target gas and directly corresponds to 0-100% full scale.

The electrochemical sensor cell uses capillary diffusion barrier technology for monitoring gas concentrations in ambient air. When compared to solid state type sensors, the electrochemical sensing element provides improved accuracy, stability and reliability, and can also extend calibration intervals. This results in superior performance and reliability, as well as reduced maintenance.

HIGHLIGHTS

- Performance approved and verified
- Electrochemical sensor cell for increased accuracy, stability and reliability
- Highly specific response reduces the chance of false alarms resulting from the presence of other gases
- Self-contained transmitter circuitry
- Temperature compensated to ensure consistent performance over entire operating temperature range
- Suitable for outdoor applications requiring IP66 rating
- Hydrophobic filter easily replaced without opening the device or use of tools
- Hot swappable IS sensor module for live maintenance without de-classification of hazardous area
- EMI/RFI hardened
- Event and calibration logs are stored in non-volatile memory and are accessible using a UD10/UD20/UD30, HART device or AMS software.
- Real-time clock with battery back-up
- Magnetic switch and LEDs for user interface

SPECIFICATIONS

Calibration		Sensors are calibrated at the factory. Gas type and range are read by the transmitter. Calibration is initiated at the detector, at the UD10/ UD20 Universal Display Unit, or by some other HART interface device. Calibration cannot be initiated from the UD30.
Operating Voltage		24 Vdc nominal; Operating range is 12 to 30 Vdc
Power Consumption		0.8 watt maximum @ 30 Vdc
Max. Loop Resistance		300 ohms at 18 Vdc, 600 ohms at 24 Vdc
Current Output		4-20 mA (Normal operating mode) 3.8 mA indicates calibrate mode 3.5 mA or less indicates a fault condition
Wiring		2x22 AWG, 1x16 AWG, 600V, 20"
Storage Temp.	**(GTX)**	–55°C to +75°C (–67°F to +167°F)
	(GTS)	0°C to +20°C (+32°F to +68°F) Ideal: +4°C to +10°C (+39°F to +50°F)
Storage Life		6 months in factory-sealed packaging
Humidity Range		15 to 90% RH.
Tropicalization / PC BD Protection		Conformal coated printed circuit boards: CTI Rating of 600V, maximum allowed by standard Third party tested per ASTM-D-3638-07
Pressure Range		Atmospheric ±10%
Warm-Up		Warm-up time can last up to 150 seconds
Thread Options		3/4" NPT or M25
Enclosure Material		GTX Transmitter: 316 Stainless Steel GTS Sensor Module: PPA (30% Carbon filled)
Expected Operating Life		GTS: 2 years in an open air environment
Expected Shelf Life		GTS: 6 months in factory sealed packaging
Warranty (For the GTX. See Table below for the GTS)		18 months from date of shipment

Certification

Explosion-Proof Model	FM:	Class I, Div. 1, Groups A, B, C & D Class I, Zone 1, Group IIc IP66 Conduit seal not required Acidic atmospheres excluded
	CSA:	Class I, Div. 1, Groups A, B, C & D (T6) Class I, Div. 2, Groups A, B, C & D (T6) IP66
	IECEx:	Ex d mb [ia Ga] IIC T4 Gb IP66 IECEx FMG 10.0003X
	INMETRO:	UL-BR 15.0752X Ex db mb [ia Ga] IIC T4 Gb IP66 Tamb –40°C to +50°C (H_2S) Tamb –20°C to +50°C (other)
Intrinsically Safe Model	FM:	IS Class I, Div. 1, Groups A, B, C & D Class I, Zone 0, Group IIC Performance verified per ANSI/ISA 92.00.01 and FM6340 IP66
	CSA:	Class I, Div. 1, Groups A, B, C & D (T4) IP66
	IECEx:	Ex ia IIC T4 Ga IP66 IECEx FMG 08.0005X
	INMETRO:	UL-BR 15.0404X Ex ia IIC T4 Gb IP66 Tamb –40°C to +50°C
SIL Approval		IEC 61508 Certified SIL 2 Capable SIL Certification includes H_2S, H_2S+ and O_2 models only

FM Approvals Performance Approved Electrochemical Gas Sensors

Gas	Range	Response Time[1]	Accuracy/Repeat-ability (Whichever is Greater)	Operating Temperature Range	Zero Drift	Performance Approved Standard	Storage Temperature Range	Warranty (from ship date)
Hydrogen Sulfide+ (H_2S+)	0-20 PPM	T20 = ≤10 Sec., T50 = ≤13 Sec., T90 = ≤23 Sec.	±2 ppm or ±10% of Reading	–40°C to +55°C	± 1 ppm/Mo.	ISA 92.00.01[4]	10°C to 30°C	18 months
Hydrogen Sulfide+ (H_2S+)	0-50 PPM	T20 = ≤6 Sec., T50 = ≤9 Sec., T90 = ≤15 Sec.	±2 ppm or ±10% of Reading	–40°C to +55°C	± 1 ppm/Mo.	ISA 92.00.01[4]	10°C to 30°C	18 months
Hydrogen Sulfide+ (H_2S+)	0-100 PPM	T20 = ≤6 Sec., T50 = ≤8 Sec., T90 = ≤15 Sec.	±2 ppm or ±10% of Reading	–40°C to +55°C	± 2 ppm/Mo.	ISA 92.00.01[4]	10°C to 30°C	18 months
Ammonia (NH_3)	0-100 PPM[2]	T50 = 24 Sec., T90 = 65 Sec.	±4 ppm or ±10% of Reading	–20°C to +40°C	± 2 ppm/Mo.	FM6340[4]	0°C to 20°C	12 months
Ammonia (NH_3)	0-500 PPM[2]	T50 = 30 Sec., T90 = 120 Sec.	±4 ppm or ±10% of Reading	–20°C to +40°C	± 10 ppm/Mo.	Det-Tronics Verified	0°C to 20°C	12 months
Oxygen (O_2)[5]	1-21% V/V[3]	T20 = 7 Sec., T90 = 30 Sec.	< 0.5% V/V	–20°C to +50°C	< 2 %/Mo.	FM6340[4] ISA 92.00.01[4]	0°C to 20°C	18 months
Carbon Monoxide (CO)	0-100 PPM	T50 = 15 Sec., T90 = 40 Sec.	±5 ppm or ±10% of Reading	–20°C to +50°C	± 2 ppm/Mo.	ISA 92.00.01[4]	0°C to 20°C	18 months
Carbon Monoxide (CO)	0-500 PPM	T50 = 12 Sec., T90 = 25 Sec.	±5 ppm or ±10% of Reading	–20°C to +50°C	± 9 ppm/Mo.	ISA 92.00.01[4]	0°C to 20°C	18 months
Sulfur Dioxide+ (SO_2+)	0-20 PPM	T50 = 12 Sec., T90 = 30 Sec.	±0.6 ppm or ±10% of Reading	–40°C to +55°C	± 0.4 ppm/Mo.	Det-Tronics Verified	0°C to 20°C	12 months
Sulfur Dioxide+ (SO_2+)	0-100 PPM	T50 = 15 Sec., T90 = 35 Sec.	±0.6 ppm or ±10% of Reading	–40°C to +55°C	± 0.4 ppm/Mo.	Det-Tronics Verified	0°C to 20°C	12 months
Chlorine (Cl_2)	0-10 PPM	T50 = ≤14 Sec., T90 = ≤34 Sec.	±0.6 ppm or ±10% of Reading	–20°C to +50°C	< 0.2 ppm/Mo.	FM6340[4] ISA 92.00.01[4]	0°C to 20°C	12 months
Hydrogen (H_2)	0-1000 PPM	T50 = 8 Sec., T90 = 60 Sec.	±50 ppm or ±10% of Reading	–20°C to +40°C	± 20 ppm/Mo.	Det-Tronics Verified	0°C to 20°C	18 months
Nitrogen Dioxide (NO_2)	0-20 PPM	T50 = 7 Sec., T90 = 31 Sec.	±2 ppm or ±10% of Reading	–20°C to +40°C	± 0.1 ppm/Mo.	Det-Tronics Verified	0°C to 20°C	12 months

[1] Time to reach percentage of final reading when gas concentration equal to full scale is applied to sensor
[2] Background concentrations of ammonia may shorten lifetime of sensor
[3] Sensor approved for oxygen depletion (< 21% V/V) only
[4] FM Approvals Performance Approved
[5] Oxygen sensor will indicate fault if <1% volume oxygen is detected