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 Universal Display Unit.

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, HART device, or AMS software.
- Real-time clock with battery back-up
- Magnetic switch and LEDs for user interface

## SPECIFICATIONS

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| **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. |
| **Operating Voltage** | 24 Vdc nominal; Operating range is 12 to 30 Vdc. |
| **Power Consumption** | 0.8 watt maximum @ 30 Vdc. |
| **Maximum Loop Resistance** | 300 ohms at 18 Vdc, 600 ohms at 24 Vdc. |
| **Current Output** | 4-20 mA (Normal operating mode)<br>3.8 mA indicates calibrate mode<br>3.5 mA or less indicates a fault condition. |
| **Wiring** | 2x22 AWG, 1x16 AWG, 600V, 20". |
| **Storage Temperature (Transmitter)** | –55°C to +75°C (–67°F to +167°F). |
| **Storage Temperature (Sensor)** | 0°C to +20°C (+32°F to +68°F)<br>Ideal: +4°C to +10°C (+39°F to +50°F). |
| **Humidity Range** | 15 to 90% RH. |
| **Pressure Range** | Atmospheric ±10%. |
| **Warm-Up** | Warm-up time can last up to 150 seconds. |
| **Electro-Magnetic Compatibility** | EMC Directive 2004/108/EC<br>EN55011 (Emissions)<br>EN50270 (Immunity). |
| **Thread Options** | 3/4" NPT or M25. |
| **Enclosure Material** | GTX Transmitter: 316 Stainless Steel<br>GTS Sensor Module: PPA (30% Carbon filled). |
| **Warranty** | 12 months from date of installation or 18 months from date of shipment, whichever occurs first. |

### Certification

**Explosion-Proof Model**

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| FM/CSA: | Class I, Div. 1, Groups A, B, C & D (T4).<br>Class I, Div. 2, Groups A, B, C & D (T4).<br>Class I, Zone 1, AEx d mb [ia Ga] IIC T4.<br>IP66.<br>Conduit seal not required.<br>Acidic atmospheres excluded. |
| ATEX: | CE 0539 Ex II 2(1)G.<br>Ex d mb [ia Ga] IIC T4 Gb IP66.<br>FM10ATEX0009X. |
| IECEx: | Ex d mb [ia Ga] IIC T4 Gb IP66.<br>IECEx FMG 10.0003X. |
| INMETRO: | CEPEL 10.1927X.<br>Ex d mb [ia Ga] IIC T4 Gb IP66.<br>Tamb –40°C to +50°C ($H_2S$).<br>Tamb –20°C to +50°C (Other). |

**Intrinsically Safe Model**

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|---|---|
| FM: | IS Class I, Div. 1, Groups A, B, C & D (T4).<br>Class I, Zone 0, AEx ia IIC (T4).<br>Performance verified per ANSI/ISA 92.00.01, FM6340/41, and EN50104.<br>IP66. |
| CSA: | Class I, Div. 1 & 2, Groups A, B, C & D (T4).<br>IP66. |
| ATEX: | CE 0539 II 1 Ex ia IIC T4 Ga IP66.<br>FM08ATEX0045X. |
| IECEx: | Ex ia IIC T4 Ga IP66.<br>IECEx FMG 08.0005X. |
| INMETRO: | CEPEL 12.2172X.<br>Ex ia IIC T4 Gb IP66.<br>Tamb –40°C to +50°C. |

Factory Mutual Performance Approved Electrochemical Gas Sensors

| Gas | Range | Response Time* | Accuracy of Reading (Whichever is Greater) | Operating Temperature Range | Zero Drift | Performance Approved Standard |
|---|---|---|---|---|---|---|
| Hydrogen Sulfide ($H_2S$) | 0-20 PPM | T50 = 10 Sec.<br>T90 = 23 Sec. | ±2 ppm or<br>±10% of Reading | –40°C to +50°C | ± 1 ppm/Mo. | ISA 92.00.01 |
| Hydrogen Sulfide ($H_2S$) | 0-50 PPM | T50 = 10 Sec.<br>T90 = 23 Sec. | ±2 ppm or<br>±10% of Reading | –40°C to +50°C | ± 1 ppm/Mo. | ISA 92.00.01 |
| Hydrogen Sulfide ($H_2S$) | 0-100 PPM | T50 = 12 Sec.<br>T90 = 28 Sec. | ±2 ppm or<br>±10% of Reading | –40°C to +50°C | ± 2 ppm/Mo. | ISA 92.00.01 |
| Ammonia ($NH_3$) | 0-100 PPM** | T50 = 24 Sec.<br>T90 = 65 Sec. | ±4 ppm or<br>±10% of Reading | –20°C to +40°C | ± 2 ppm/Mo. | FM6340 |
| Ammonia ($NH_3$) | 0-500 PPM** | T50 = 30 Sec.<br>T90 = 120 Sec. | ±4 ppm or<br>±10% of Reading | –20°C to +40°C | ± 10 ppm/Mo. | Det-Tronics Verified (CSA Exd) |
| Oxygen ($O_2$) | 0-25% V/V*** | T20 = 7 Sec.<br>T90 = 30 Sec. | < 0.5% V/V | –20°C to +50°C | < 2 %/Mo. | BS EN 50104 |
| Carbon Monoxide (CO) | 0-100 PPM | T50 = 15 Sec.<br>T90 = 40 Sec. | ±5 ppm or<br>±10% of Reading | –20°C to +50°C | ± 2 ppm/Mo. | ISA 92.00.01 |
| Carbon Monoxide (CO) | 0-500 PPM | T50 = 12 Sec.<br>T90 = 25 Sec. | ±5 ppm or<br>±10% of Reading | –20°C to +50°C | ± 9 ppm/Mo. | ISA 92.00.01 |
| Sulfur Dioxide ($SO_2$) | 0-20 PPM | T50 = 12 Sec.<br>T90 = 30 Sec. | ±0.6 ppm or<br>±10% of Reading | –20°C to +50°C | ± 0.4 ppm/Mo. | Det-Tronics Verified (CSA Exd) |
| Sulfur Dioxide ($SO_2$) | 0-100 PPM | T50 = 15 Sec.<br>T90 = 35 Sec. | ±0.6 ppm or<br>±10% of Reading | –20°C to +50°C | ± 0.4 ppm/Mo. | Det-Tronics Verified (CSA Exd) |
| Chlorine ($Cl_2$) | 0-10 PPM | T50 = ≤14 Sec.<br>T90 = ≤34 Sec. | ±0.6 ppm or<br>±10% of Reading | –20°C to +50°C | < 0.2 ppm/Mo. | FM6340 |
| Hydrogen ($H_2$) | 0-1000 PPM | T50 = 8 Sec.<br>T90 = 60 Sec. | ±50 ppm or<br>±10% of Reading | –20°C to +40°C | ± 20 ppm/Mo. | Det-Tronics Verified (CSA Exd) |
| Nitrogen Dioxide ($NO_2$) | 0-20 PPM | T50 = 7 Sec.<br>T90 = 31 Sec. | ±2 ppm or<br>±10% of Reading | –20°C to +40°C | ± 0.1 ppm/Mo. | Det-Tronics Verified (CSA Exd) |

* Time to reach percentage of final reading when gas concentration equal to full scale is applied to sensor.
** Background concentrations of ammonia may shorten lifetime of sensor.
*** Sensor approved for oxygen depletion (< 21% V/V) only.

Specifications subject to change without notice.