Freedom Series

5000 gas transmitters

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Making installation and everyday operation easy

The Freedom Series 5000 are full-featured 4-20mA, loop powered transmitters designed to reliably detect oxygen, hydrogen, and any of a number of toxic gases. Its universal electronics and flexible, user-friendly features drive down gas detection costs for almost any facility.

Advanced Gas Sensors and Universal Electronics

The Freedom series advanced GasPlus sensor technology combines with the Freedom's universal electronics to simplify use and minimize maintenance requirements of your gas detection system. Every Teledyne Gas & Flame Detection instruments "smart" sensor provides data such as gas type, range, and calibration data to the universal electronics for automatic transmitter configuration. A built-in lithium battery keeps the sensor "hot," which eliminates the need for sensor warm-up time. On board electronics enables users to maintain and calibrate the sensor remote from the instrument. An E-connector eliminates pin alignments and makes sensor replacement quick and easy.

Freedom 5000 is housed in a light weight plastic enclosure

Easy Installation, Operation and Maintenance

The unique electrical design of the Freedom transmitter and sensor virtually eliminate false alarms due to RFI/EMI sources. The transmitter (Series 5000 only) can be mounted directly to rigid conduit and is available with several optional adapters including wall/surface mount and a special "L" shaped bracket to allow mounting on top of flat surfaces such as gas cabinets. Freedom series transmitters are also available with quick connect 1/4 turn sample draw and (flat or round) duct mount adapters. The sensor can be remoted from the transmitter up to 50 feet with or without conduit. A standard option allows separation of three feet, perfect for mounting the sensor near ground level while keeping the display at eye level. This option is also available in flexible conduit.

Operating Freedom transmitters is simple and intuitive. After start-up, the transmitter automatically configures to the sensor's parameters. The "missing sensor indicator" alerts operators that the sensor is either missing or the sensor transmitter connection has been broken.

Calibration is non-intrusive, performed by touching a magnet to the "Z" (zero), "S" (span), and up and down arrow markings on the enclosure. A programmable local inhibit feature and standard local display allows true one-person calibration.

Advanced features and smart sensor technology

Standard Features of the Freedom Series

Freedom from stocking additional electronics. Universal transmitter electronics for all gas models.

Freedom from intrusive operation/calibration. A simple magnetic interface and local inhibit eliminates special tools or expensive IR remote controls.

Freedom from sensor pins or wires. E-connector makes for quick easy installation.

Freedom from field maintenance and calibration. Smart sensor technology permits sensor removal for remote calibration.

Freedom from zero drift and interfering gases. Rock Solid™ Sensor Technology offers superior stability and selectivity.

Freedom from sensor failure without warning. Built-in calibration factor notifies user of remaining sensor life.

Freedom from RFI/EMI induced alarms. Design concept eliminates interference through electronic design versus shielding.

Freedom from sensor warm-up times. An internal battery keeps the sensor "warm" for immediate start up.

Freedom from corrosion. All plastic (5000) construction with conformal coated internal circuitry.

- Redundancy of Safety Features – gives confidence in the life-saving equipment and allows workers to focus on the critical job at hand.

- Ease of Use – provides users a simple-to-use gas detector that requires minimal training, increases operational efficiencies and reduces training costs.

- Low Cost of Ownership – lowers costs after initial sale through its rugged design, assembly and warranty policy enabling you to direct valuable funding to training and other equipment cost.
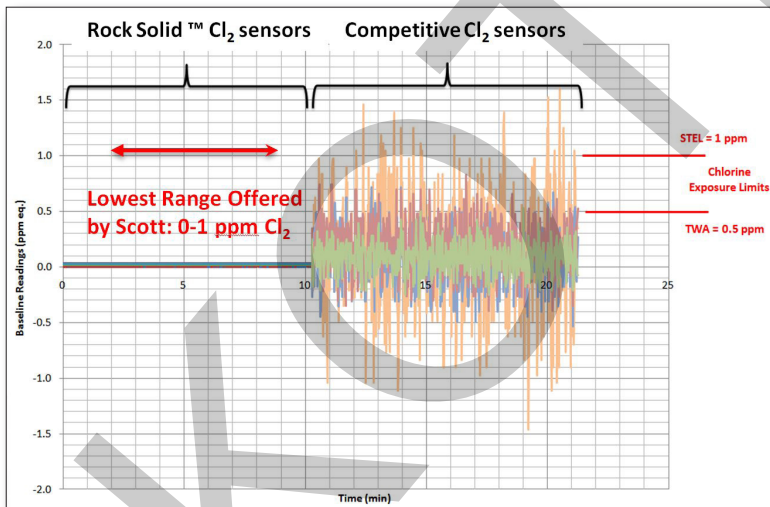
We Make Sensors that Make a Difference

Our team of research and development scientists work every day to advance sensor technologies and improve manufacturing techniques. The result – over 40 reliable, stable, and gas specific sensors including our Rock Solid™ series of high performance sensors.

High Performance Gas Sensors

Rock Solid™ high performance sensors use our proprietary technology that significantly enhances sensor performance. Rock Solid sensors can detect gas concentrations lower than other electrochemical gas sensor.

Rock Solid™ sensors provide:
- Highest stability
- Lowest zero drift
- Greatest sensitivity
- Greatest specificity to the target gas
- Fastest speed of response and recovery time

Rock Solid™ Sensor Performance

Rock solid ™
Sensor technology

Our advanced electrochemical, high performance Rock Solid™ sensors for the Freedom Series 5000 are available to detect most toxic gases.

Ammonia

Arsine

Boron Trichloride

Boron Trifluoride

Bromine

Carbon Monoxide

Chlorine

Chlorine Dioxide

Fluorine

Germane

Hydrogen

Hydrogen Bromide

Hydrogen Chloride

Hydrogen Cyanide

Hydrogen Fluoride

Hydrogen Sulfide

Methanol

Methyl Iodide

Nitric Oxide

Nitrogen Dioxide

Oxygen

Ozone

Silane

Silicon Tetrafluoride

Sulfur Dioxide

Tungsten Hexafluoride

Remote Sensor

Freedom 5000 sensor connections available

- Integral Sensor with Transmitter

- Separated Sensor with 3 ft of cable (cable up to 50 ft are available) available with remote sensor, flowcell or duct mount configurations)

- Remote Sensor Option for Rigid Conduit Installations: Separated Sensor with 3ft of cable and customer supplied conduit (cables up to 50 ft are available)

- Flexible Conduit Option: Separated Sensor with 3 ft of cable and flexible conduit supplied (flexible conduit is PVC jacketed metal, sunlight resistant, liquid tight, 3/4 in conduit with stainless steel fittings supplied).

Freedom 5000 adapters available

- Rain Shield

- Flat Duct Adapter

- Round Duct Adapter (6 to 8 in diameter typical)

- Flow Cell

Freedom 5000 transmitter mounting adapter

- Wall/Surface Mount

- "L" Bracket used for mounting horizontal surfaces

Freedom 5000
Gas and sensor list

Ammonia (NH3)

Arsine (AsH3)

Boron Trichloride (BCl3) Rock Solid

Boron Trifluoride (BF3) Rock Solid

Bromine (Br2) Rock Solid

Carbon Monoxide (CO)

Chlorine (Cl2) Rock Solid

Chlorine Dioxide (ClO2) Rock Solid

Fluorine (F2) Rock Solid

Germane (GeH4)

Hydrogen (H2)

Hydrogen Bromide (HBr) Rock Solid

Hydrogen Chloride (HCl) Rock Solid

Hydrogen Chloride (HCl)

Hydrogen Cyanide (HCN) Rock Solid

Hydrogen Fluoride (HF) Rock Solid

Hydrogen Sulfide (H2S)

Methanol (CH3OH)

Methyl Iodide (CH2I)

Nitric Oxide (NO)

Nitrogen Dioxide (NO2)

Oxygen (O2)

Ozone (O3) Rock Solid

Silane (SiH4)

Silicon Tetrafluoride (SiF4) Rock Solid

Sulfur Dioxide (SO2) Rock Solid

Sulfur Dioxide (SO2)

Tungsten Hexafluoride (WF6) Rock Solid

Specifications and ordering information

Freedom 5000 specifications

Transmitter Enlosure	NEMA-4X Noryl plastic with stainless steel screws and hinge 2 each ½ in FNPT
Weight	1.0 lbs (0.45kg) without accessories
Approvals	CSA Ex ia IIC T4, AEx ia IIC T4 2002 1280868x Zone 0, Class 1, Division 1, Groups A, B, C and D (with conforming I.S. barrier) Class 1, Division 2, Groups A, B, C and D (without the need for an I.S. barrier) ATEX Ex ia IIc T4 LCIE 03 ATEX 6426 X

Common specifications

CSA and ATEX Class 1 Division 2 Groups A, B, C and D ATEX EEx NI IIc T6, LCIE 03 ATEX 6437 X

Self-Diagnostics	Weak sensor indication; Electronic faults; Missing sensor; Sensor configuration (range and type)
Repeatability	+- 2% FS
Linearity	+- 2% FS
Output	4-20mA
Max Loop Road	2-Wire; 700 ohms at 24 VDC (22 mA based)
Power	10 to 28 VDC 2-wire loop power, 0.5 Watts at 24 VDC
Separated Sensor	Up to 50 ft (15.25m)
Display	3.5 digit LCD; 0 to 100% concentration bargraph; Inhibit Indication (IHB); Overrange Indication (OR); Low Cal Factor Indication – below 150 (SEN)
Local Inhibit	Programmable: 3.0 to 20mA
Temperature	Sensor: See Capabilities Chart Transmitter: -40° to 140°F (-40° to 60°C)* Note: at temperatures below 22°F display may not be visible
Humidity	Up to 99% RH, non-condensing (up to 100% R.H. with optional humi-shield) Not recommended for continuous extreme high/low humidity applications

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