

FREEDOM SERIES®

5000 AND 5600 GAS TRANSMITTERS



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The Freedom Series 5000 and 5600 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 Scott 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



SENSOR SELF TEST

Any electrochemical sensor can potentially fail without warning. The Sensor Self Test (SST) option reduces overall maintenance costs by providing users with a means to conduct an automatic functional test of the sensor in wind speeds up to 22 mph. A built-in, programmable gas generator exposes the sensor to a “test gas” at user determined intervals and alerts personnel if the unit fails to respond by pulsing the Fault output for a 10 second interval once a minute. The SST continues to re-test the sensor until a successful functional test has been completed.

Only available for use with certain gas sensors. SST feature are not available with flowcell, humi-shield, or duct mount configurations.

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 remotod 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.



Explosion-proof Freedom 5600



FREEDOM SERIES ADVANTAGES

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 bump testing. Sensor Self Test option automatically challenges sensor with real gas.

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

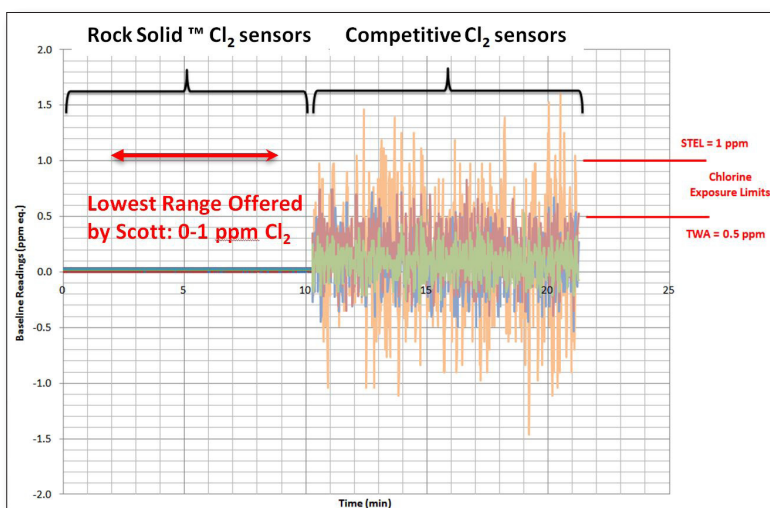
Our team of research and development scientists work every day to advance sensor technologies and improve manufacturing techniques. The result – over 40 reliable, stable, and gas specific sensors including our Rock Solid™ series of high performance sensors.

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

SCOTT ROCK SOLID™ SENSOR TECHNOLOGY

Our advanced electrochemical, high performance Rock Solid™ sensors for the Freedom Series 5000 and 5600 are available to detect most toxic gases.

Ammonia
Arsine
Boron Trichloride
Boron Trifluoride
Bromine
Carbon Monoxide
Chlorine
Chlorine Dioxide
Diborane
Fluorine
Germane
Hydrogen
Hydrogen Bromide
Hydrogen Chloride
Hydrogen Cyanide
Hydrogen Fluoride
Hydrogen Sulfide
Methanol
Methyl Mercaptan
Methyl Iodide
Nitric Oxide
Nitrogen Dioxide
Oxygen
Ozone
Phosphine
Silane
Silicon Tetrafluoride
Sulfur Dioxide
TEOS
Tungsten Hexafluoride



FREEDOM SERIES

5000 AND 5600 TRANSMITTERS

FREEDOM 5600 SENSOR CONNECTIONS AVAILABLE

- Integral Sensor with Transmitter
- Integral Sensor with Transmitter and Sensor Self Test
- Transmitter with Remote Sensor/Junction Box (4 ft Cable Standard/Max. Length 50 ft)
- Transmitter with Remote Sensor, SST option and Junction Box (4ft Cable Standard/Max. Length 50 ft)
- Transmitter with Integral Sensor and Condensing Humidity Sensor Housing and Humi-Shield End-Cap (4 ft Cable – Standard/Max. Length 50 ft)
- Transmitter with Remote Sensor, Condensing Humidity Sensor Housing and Humi-Shield End-Cap, and Junction Box (4 ft Cable Standard/Max. Length 50 ft)
- Transmitter with Remote Sensor, (No Junction Box) (Max. length 50 ft)

FREEDOM 5600 ADAPTER AVAILABLE

- Quarter Turn Rain Shield
- Combined Rain Shield/Cal Adapter with Stainless Steel End Cap (for remote sensor calibration applications)
- Flow Cell
- Flat Duct Adapter (for Transmitter with Remote Sensor Only)
- Round Duct Adapter (for Transmitter with Remote Sensor Only)

FREEDOM 5600 SENSOR SELF TEST OPTIONS

- Type A (for SST Option only)
- Type A used with Rock Solid BCL₃, BF₃, Cl₂, ClO₂, HBr, HCl, HF, O₃, SO₂, SiF₄, WF₆ sensors and conventional or duct mount configurations
- Type B – (for SST Option only) used with H₂S sensor

FREEDOM 5600 DISPLAY

- Local Display with Magnetic Switches
- Blind (uses 096-2741 Hand Held Plug-in Display Ordered Separately)
- Local Display with Push Button Switches (requires cover to be removed for use)
- Local Display with Magnetic Switches
- Blind (uses 096-274 Ordered Separately)
- Local Display with Pushbutton Switches (requires cover to be removed for use)



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 SENSOR SELF TEST OPTIONS

- Type A (Integral Sensor with Transmitter and Sensor Self Test must be ordered)
- Type A can be used with Rock Solid BCL3, BF3, Cl2, ClO2, HBr, HCl, HF, O3, SO2, SiF4, WF6, sensors and conventional Cl2 sensor. SST is not available with remote sensor, flow Cell, humi-shield or duct mount configurations
- Type B used with H2S sensor

FREEDOM 5000 TRANSMITTER MOUNTING ADAPTER

- Wall/Surface Mount
- "L" Bracket used for mounting horizontal surfaces

FREEDOM 5000 AND 5600 GAS AND SENSOR LIST

Ammonia (NH3)
 Arsine (AsH3) Rock Solid
 Arsine (AsH3)
 Boron Trichloride (BCl3) Rock Solid
 Boron Trifluoride (BF3) Rock Solid
 Bromine (Br2) Rock Solid
 Carbon Monoxide (CO)
 Chlorine (Cl2) Rock Solid
 Chlorine (Cl2)
 Chlorine Dioxide (ClO2) Rock Solid
 Chlorine Dioxide (ClO2) Diborane (B2H6)
 Diborane (B2H6) 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 Fluoride (HF)
 Hydrogen Sulfide (H2S)
 Methanol (CH3OH)
 Methyl Mercaptan (CH3SH)
 Methyl Iodide (CH2I)
 Methylene Chloride (CH2Cl2)
 Nitric Oxide (NO)
 Nitrogen Dioxide (NO2)
 Nitrogen Trifluoride (NF3)
 Oxygen (O2)
 Ozone (O3)
 Ozone (O3) Rock Solid Phosphine (PH3)
 Rock Solid
 Phosphine (PH3)
 Silane (SiH4)
 Silicon Tetrafluoride (SiF4) Rock Solid
 Sulfur Dioxide (SO2) Rock Solid
 Sulfur Dioxide (SO2)
 TEOS (Si(O2H5)4)
 Tungsten Hexafluoride (WF6) Rock Solid

SPECIFICATIONS AND ORDERING INFORMATION

FREEDOM 5000 SPECIFICATIONS

Transmitter Enclosure	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

FREEDOM 5600 SPECIFICATIONS

Transmitter Enclosure	NEMA 4X, 7 Copper-free cast aluminum, baked epoxy finish 2 each ¾ in FNPT fittings
Weight	3.0 lbs (1.3kg)
Approvals	CSA and ATEX Class 1 Division 2 Groups A, B, C and D ATEX EEx NI IIC T6, LCIE 03 ATEX 6437 X

COMMON SPECIFICATIONS

Self-Diagnostics	Weak sensor indication; Electronic faults; Missing sensor; Sensor configuration (range and type); and SST failure Output drops to 3.1Ma in above failures except for weak sensor indication (output unaffected)
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; SST in Operation Indication (SST); 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