FREEDOM® SERIES

5000 AND 5600 ANALOG GAS TRANSMITTERS

SCOTT®
HEALTH & SAFETY

FREEDOM™ SERIES 5000

MAKE INSTALLATION AND EVERYDAY OPER

The Freedom series transmitters offer full-featured 4-20mA, loop powered transmitters designed to reliably detect oxygen, hydrogen, and any of a number of other 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. A patented elastomeric connector eliminates pin alignments and makes sensor replacement quick and easy.

Intrinsically safe, the Freedom 5000 is housed in a durable, chemical resistant, stainless steel body.

ERATION EASY

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 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 special option allows separation of three feet, perfect for mounting the sensor near ground level while keeping the display at eye level. This option includes flexible conduit.

Operating our Freedom transmitters is simple and intuitive. After start-up, the transmitter automatically configures to the sensors 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) and "S" (span) markings on the enclosure. A programmable local inhibit feature and standard local display allows true one-man calibration.

Series 5600 transmitters also offer an optional integral relay board providing fail, low, and high 5A SPDT relay contacts. A remote reset terminal is provided and the high alarm can be configured as acknowledgeable. Relays can be configured to activate on either rising or falling gas concentration.

Explosion-proof Freedom 5600 with Sensor Self Test (SST) option.

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 not available with flowcell, humi-shield, or duct mount configurations.

FREEDOM™ SERIES ADVA

ADVANCED FEATURES AND SMART SENSOR

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. Patented elastomeric connector makes for quick easy installation.

Freedom from field maintenance and calibration. Smart sensor technology permits sensor removal for remote calibration. Let Scott instruments calibrate your sensors with the CALPLUS sensor calibration program.

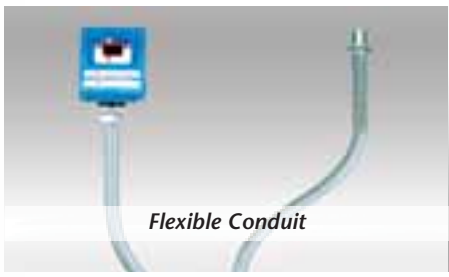
Freedom from zero drift & interfering gases. Rock Solid® Sensor Technology offers super stability and selectivity.

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) and stainless steel construction with conformal coated internal circuitry.



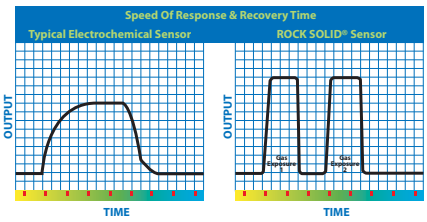
Flexible Conduit

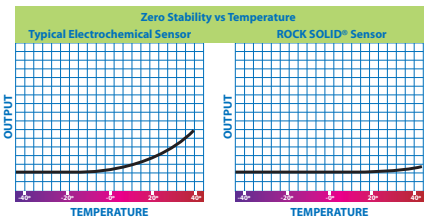
ANTAGES

OR TECHNOLOGY

We Make Sensors that Make a Difference.

Unlike most gas detection companies, Scott develops and manufactures the gas sensors used in its detection instruments. 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 any 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

Remote Sensor

Remote Enclosure with SST Option

SCOTT SMART 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
- Diborane
- Fluorine
- Germane
- Hydrogen
- Hydrogen Bromide
- Hydrogen Chloride
- Hydrogen Cyanide
- Hydrogen Fluoride
- Hydrogen Sulfide
- Methanol
- Methyl Mercaptan
- Methyl Iodide
- Nitric Oxide (NO)
- Nitrogen Dioxide
- Oxygen
- Ozone
- Phosgene
- Phosphine
- Silane
- Silicon Tetrafluoride
- Sulfur Dioxide
- TEOS
- Tungsten Hexafluoride

FREEDOM™ SERIES 5000

5000 AND 5600 TRANSMITTERS GAS AND SENSOR LISTS

FREEDOM 5000 AND 5600 GAS LIST

No sensor with standard endcap

No sensor with Rock Solid® endcap
Ammonia (NH_3) (0-50, 100, 150, 250, 500) PPM
Arsine (AsH_3) Rock Solid (0-500 PPB, 3, 10 PPM)
Arsine (AsH_3) (0-1000 PPB, 3, 10) PPM
Boron Trichloride (BCl_3) Rock Solid (0-1, 3, 5) PPM
Boron Trifluoride (BF_3) Rock Solid (0-1, 3, 5) PPM
Bromine (Br_2) Rock Solid (0-1, 3, 5, 10, 15, 25, 30) PPM
Bromine (Br_2) (0-1, 3, 5, 10, 15, 25, 30, 50, 100) PPM
Carbon Monoxide (0-50, 100, 150, 200, 250, 300, 500, 1000) PPM
Chlorine (Cl_2) Rock Solid (0-1, 3, 5, 10, 15, 25, 30) PPM
Chlorine (Cl_2) (0-1, 3, 5, 10, 15, 25, 30, 50, 100, 200) PPM
Chlorine Dioxide Rock Solid (0-1, 3, 5, 10, 15) PPM
Chlorine Dioxide (ClO_2) (0-1, 3, 5, 10, 15, 25, 30, 50, 100) PPM
Dichlorosilane (SiH_2Cl_2) - Order Rock Solid HCl sensor
Diborane (B_2H_6) (0-1000 PPB, 2, 10) PPM
Diborane (B_2H_6) Rock Solid (0-1000, 500 PPB, 2, 3, 5, 10) PPM
Fluorine (F_2) Rock Solid (0-1, 3, 5, 10, 15, 20, 30) PPM
Fluorine (F_2) (0-1, 3, 5, 10, 15, 25, 30, 50, 100) PPM
Germane (GeH_4) (0-1000 PPB, 3, 10) PPM
Hydrogen (H_2) (0-1%, 4%, 5%, 10%)
Hydrogen Bromide Rock Solid (0-1, 3, 5, 10, 15, 20, 25, 30) PPM
Hydrogen Chloride Rock Solid (0-1, 3, 5, 10, 15, 2, 0, 25, 30) PPM
Hydrogen Chloride (HCl) (0-10, 25, 50, 100) PPM
Hydrogen Cyanide (HCN) Rock Solid (0-1, 2, 3, 5, 10) PPM
Hydrogen Cyanide (HCN) (0-10, 25, 30, 50, 100) PPM
Hydrogen Fluoride (HF) Rock Solid (0-1, 3, 5, 10, 15, 25, 30) PPM
Hydrogen Fluoride (HF) (0-10, 15, 25, 50, 100) PPM
Hydrogen Sulfide (H_2S) (0-10, 25, 50, 100, 200) PPM
Methanol (CH_3OH) (0-500) PPM
Methyl Mercaptan (0-5 with H_2S filter) PPM
Methyl Mercaptan (0-3 with filter) PPM
Methyl Iodide (CH_3I) (0-25) PPM
Methylene Chloride (CH_2Cl_2) (0-200) PPM
Nitric Oxide (NO) (0-25, 50, 100, 500) PPM
Nitrogen Dioxide (NO_2) (0-10, 25, 50, 100, 250) PPM
Nitrogen Trifluoride (NF_3) (0-10) PPM
Oxygen (O_2) (0-10%, 5%)
Ozone (O_3) (0-1, 2, 3, 5, 10, 15, 25, 30, 50, 100) PPM
Ozone Rock Solid (O_3) (0-1, 3, 5, 10, 15, 20, 25, 30) PPM
Phosgene (0-1) PPM
Phosgene with HCN filter (0-2) PPM
Phosphine (PH_3) Rock Solid (0-500 PPB 1, 3, 5 PPM)
Phosphine (PH_3) (0-1000 PPB, 3,10 PPM)
Silane (SiH_4) (0-1000 PPB, 0-10 PPM)
Silicon Tetrafluoride (SiF_4) Rock Solid (0-1, 3, 5) PPM
Sulfur Dioxide (SO_2) Rock Solid (0-1, 3, 5, 10, 15, 25, 50, 30) PPM
Sulfur Dioxide (SO_2) (0-10, 15, 25, 50, 100, 500) PPM
TEOS ($Si(O_2H_5)_4$) (0-50) PPM
Tungsten Hexafluoride (WF_6) Rock Solid (0-1, 3, 5) PPM

FREEDOM 5000 SENSOR CONNECTIONS AVAILABLE

Integral Sensor with Transmitter
Separated Sensor with 3 ft of cable (cables up to 50 ft are available)
Integral Sensor with Transmitter and Sensor Self Test (SST not available with remote sensor, flowcell or duct mount configurations)
Remote Sensor Option for Rigid Conduit Installations: Separated Sensor with 3 ft 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, ¾ 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 used with Rock Solid BCL_3, BF_3, Cl_2, ClO_2, HBr, HCl, HF, O_3, SO_2, SiF_4,WF_6 sensors and conventional Cl_2 sensor.
SST not available with remote sensor, flow Cell, humi-shield or duct mount configurations
Type B used with H_2S sensor

FREEDOM 5000 TRANSMITTER MOUNTING ADAPTER

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

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
(4 ft 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 ADAPTERS AVAILABLE

Quarter Turn Rain Shield (typical)
Combined Rain Shield/Cal Adapter with Stainless Steel End Cap
(for remote sensor calibration applications)
Quarter Flowcell
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 BCL_3, BF_3, Cl_2, ClO_2, HBr, HCl, HF, O_3, SO_2, SiF_4, WF_6 sensors and conventional Cl_2 sensor. SST not available with remote sensor, flowcell, humi-shield or duct mount configurations
Type B - (for SST Option only) used with H_2S sensor

FREEDOM 5600 DISPLAY/RELAY OPTIONS

Local Display with Magnetic Switches
Blind (uses 096-2741 Hand Held Plug-In Display Order Separately)
Local Display with Push Button Switches (requires cover to be removed for use)
Local Display with Magnetic Switches and Relay Option*
Blind with Relay Option (uses 096-2741 Order Separately)*
Local Display with Pushbutton Switches and Relay Option*
(requires cover to be removed for use)

*A1|A2| Fail Relays are Form C Rated 5 A SPDT at 30 VDC - 270 VAC

FREEDOM 5000 SPECIFICATIONS

Transmitter Enclosure . . . NEMA-4X Noryl plastic with stainless steel screws and hinge 2 each ½ in FNPT fittings

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 nL IIc T6,
LCIE 03 ATEX 6437 X

Relay Options . . . . . Requires separate additional 24 VDC power supply. (3) SPDT 5A noninductive Fault, Low, High. Configurable latching/non-latching, failsafe/non-failsafe, rising/falling. A2 can be configured as acknowledgeable.

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 Load . . . . . 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) LCD -40° to 140°F (-40° to 60°C)* Note: at temperatures below 22°F display may not be visible

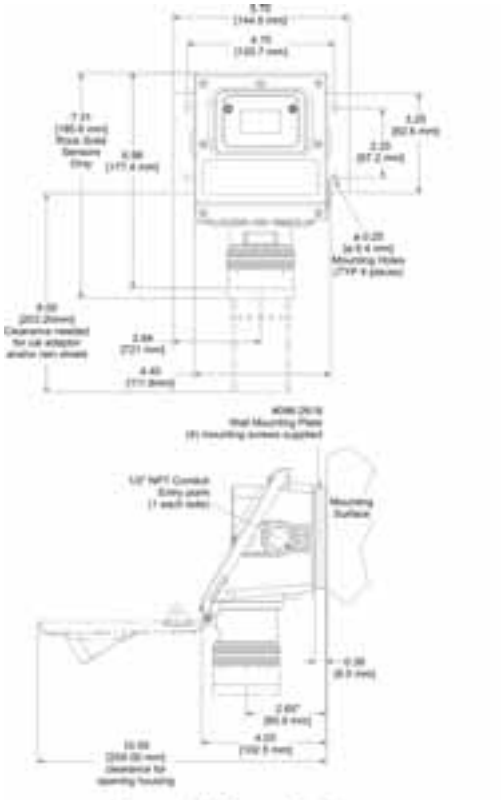
Humidity . . . . . Up to 99% RH, non-condensing (up to 100% R.H. with optional humi-shield) Not recommended for continuous extreme high/low humidity applications

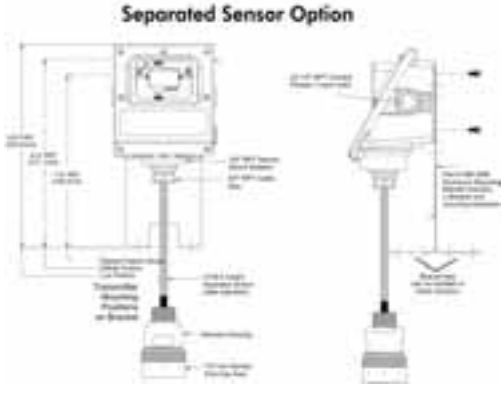
Warranties . . . . . Transmitter: 1 Year
Sensor: 1 Year (except phosgen sensor which is 7 months)

INSTALLATIONS

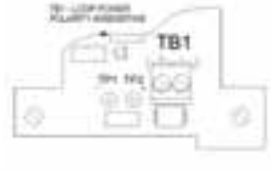
5000 AND 5600 ANALOG GAS TRANSMITTERS

SERIES 5000

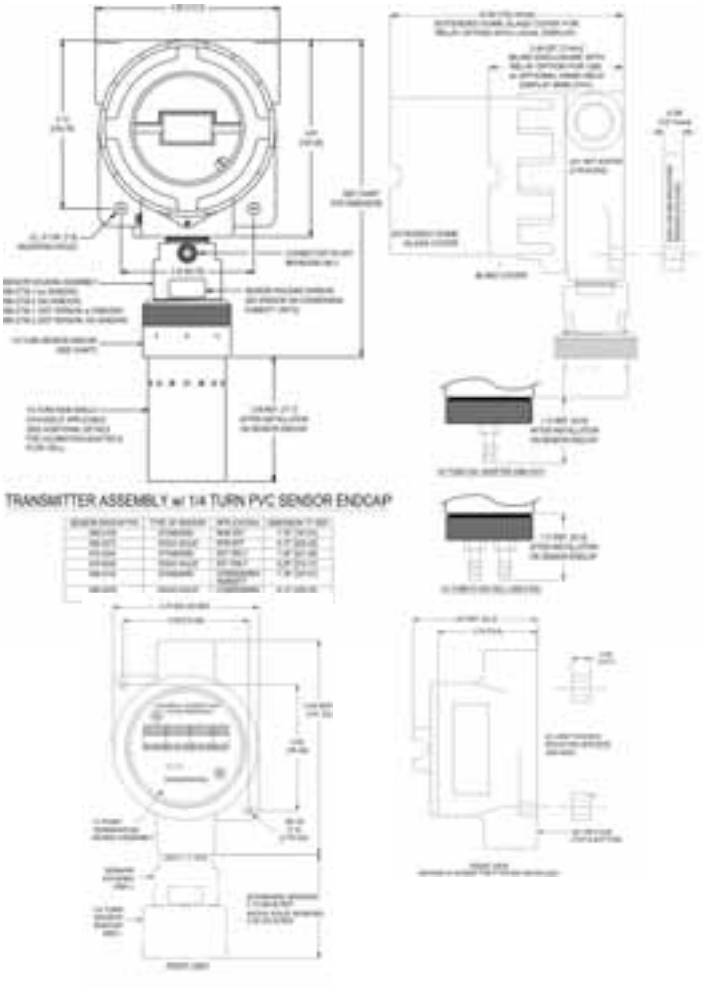




ELECTRICAL CONNECTIONS - SERIES 5000



SERIES 5600



ELECTRICAL CONNECTIONS - SERIES 5600