Model GT811 Toxic Gas NOVA-Sensor®

- ***Maintenance free electrochemical cell sensing element in stainless steel housing***
- ***Epoxy coated Copper-free aluminum electronics enclosure with viewing window***
- ***Pushbutton switch initiates "one-man" calibration sequence***
- ***Digital readout of gas concentration in PPM***
- ***Alarm and Fault relay outputs for local control***
- ***Analog/digital/discrete outputs***
- ***Addressable via RS485 protocol***
- ***4-20 mA output suitable for connection to external equipment, including SST NOVA-5000 modules, PLC's, SCADA or distributed control systems.***
- ***24 volt DC nominal operating voltage***
- ***CompTest™ check of analog and relay outputs***
- ***Suitable for Class I Division 1 Groups A,B,C,D locations***

The SST Model GT811 Toxic Gas NOVA-Sensor® is a completely self-contained device that measures and displays the concentration of gas accumuated in a protected area, performs local control functions, and optionally transmits this information to a central control point. The SST sensors use an electrochemical fuel cell with a patented diffusion barrier. Located inside a stainless steel flameproof housing, the sensing element is exposed to the detected gas through a suitable filter.

The three electrode toxic gas micro fuel cells are designed to be maintenance free and stable over long periods of time. They use a capillary diffusion barrier technology which results in a direct response to volume concentration. A high reserve of electro-chemical activity insures a long life and excellent temperature stability. The performance is relatively unaffected by humidity, provided that conditions are non-condensing.

Each SST NOVA-Sensor includes a high reliability microprocessor based transmitter/controller in the associated explosion proof housing. A digital readout continuously displays operating status and the actual concentration of gas present in parts per million (PPM). The transmitter converts this reading to a standard 4-20 mA signal. This signal may be connected to any remote device with a standard 4-20 mA input. Connections between the transmitter and control device are normally made with 3 conductor cable [24 VDC (+), 24 VDC (-), signal]. Relays are provided for Alarm A1, Alarm A2, and Fault. The A1 and A2 relays operated at user adjustable trip points; the fault relay operates upon loss of power or internal failure of the unit. Relays are suitable for controlling local HVAC or equipment shutdown.

Additionally an RS-485 digital interface is available, enabling multiple GT811's to be addressable and connected to a common pair of wires for communication to a central acquisition system.

The "One-Man" automatic calibration sequence is initiated by depressing the pushbutton switch located on the side of the enclosure. The sensor is then exposed to the fresh air, followed by calibrating gas. The microprocessor stores the results of these tests in its permanent (non-volatile) memory for use in subsequent PPM measurements.

There are no screwdriver or other manual adjustments required, and the calibration can be performed even in the presence of toxic gases. During the calibration process, the 4-20 mA and relay outputs from the sensor are normally suppressed. The sensor automatically returns to normal operation when the calibration is complete. During installation, the technician may optionally activate the built-in comprehensive I/O test (CompTest™). During CompTest, the NOVA-Sensor's analog and relay outputs are not suppressed, thus providing a complete operational check of the overall system before commissioning.

The Model GT811 is suitable for the most demanding applications. A large body mass insures excellent vibrational characteristics when used for offshore use. Corrosion resistant materials permit uses in most environments.

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

Toxic gas sensing capability shall be provided by electrochemical fuel cell sensors with diffusion barrier contained in a stainless steel housing. The sensing element shall be exposed to the detected gas through a suitable filter. The element shall use a capillary diffusion barrier technology which results in direct response to volume concentration. The performance shall be relatively unaffected by humidity, provided that conditions are non-condensing. The sensor shall include a microprocessor based control electronics which converts the measured gas concentration to the industry standard 4-20 mA signal, plus alarm and fault relay outputs. A continuously reading digital display shall be provided on the sensor, capable of displaying sensor status in the current PPM reading. A switch for initiating sensor calibration shall be provided. Calibration shall not require any operator adjustment. All calibration data shall be stored in non-volatile memory in the sensor. Relay and analog outputs shall normally be inhibited during calibration; however, it shall be possible for the calibrating technician to selectively enable outputs when desired. The sensor shall be suitable for offshore use, and the manufacturers data shall so state. Safety Systems Technology Model GT811 Combustible Gas NOVA-Sensor®, or approved equivalent, shall be supplied.

TECHNICAL SPECIFICATIONS

Power Input:	24 volts DC nominal, 80 mA standby, 140 mA in alarm Will operate within specifications at any supply voltage between 16 and 32 volts.
Sensor Current:	0.3 to 1.75 micro amps per PPM Converted to 4-20mA by transmitter card.
Response Time:	20 seconds (SO_2), 35 seconds (CO), 60 seconds (H_2S), 90 seconds (NH_3 or CL_2) Maximum time required for measured concentration to reach 90% of the final concentration.
Operating Temperature:	-40 to +131° F/ -40 to +55° C (H_2S, SO_2) +23 to +131° F/ -5 to +55° C (CO) -13 to +131° F/ -25 to +55° C (NH_3) +5 to +131° F/ -15 to +55° C (CL_2) All sensors may be operated intermittently up to +150° F.
Resolution:	0.1 PPM @ 68° F (H_2S, SO_2,CO,CL_2) 0.5 PPM @ 68° F (NH_3)
Output Drift:	Less than 2% signal loss per month.
Repeatability:	1% (H_2S, CO), 2% (SO_2, NH_3,CL_2)
Relative Humidity:	15% to 90% All sensors may be operated intermittently between 0 and 99% relative humidity.
Operating Life:	2 years minimum
Relay Outputs:	Low Alarm (latching or non-latching) High Alarm (latching) Malfunction (non-latching)
Relay Contact Ratings:	6 amps @ 28 VDC Resistive, 6 amps @ 300 VAC Resistive, 1/8 HP @ 120/240 VAC
Analog Output:	0 to 20 mA into a load of 600 ohms or less
Digital Ouput:	Designed per RS-485 to permit bi-directional communication between detectors and data acquisition system over shielded twisted pair.
Size:	4.5 inches diameter X 3.23 inches deep Includes junction box and sensor. Conduit connections are 3/4" NPT thread.
Weight:	5.0 pounds
Approval Code:	Class I, Division 1, Groups A,B,C,D Standards BS 5501: Pt 1 & 7
Approval Agency:	BASEEFA, CSA, UL, FM, and CENELEC

ORDERING INFORMATION

PART NO.	DESCRIPTION
811-1-(**)	**Model GT811 H_2S** (Hydrogen Sulfide) Gas NOVA-Sensor®
811-2-(**)	**Model GT811 SO_2** (Sulfur Dioxide) Gas NOVA-Sensor®
811-3-(**)	**Model GT811 CO** (Carbon Monoxide) Gas NOVA-Sensor®
811-4-(**)	**Model GT811 NH_3** (Ammonia) Gas NOVA-Sensor®
811-5-(**)	**Model GT811 CL_2** (Chlorine) Gas NOVA-Sensor®

**Insert 20, 50 or 100 (Sensor range in PPM)

Consult factory for digital version part number.

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