Model 5400 Dual Channel Transmitter For Catalytic Gas Sensors

- ***Provides source of operating current for catalytic type sensor***
- ***Generates 4-20 mA output signal proportional to the gas concentration being sensed***
- ***Convenient snap-on tracks for mounting multiple Transmitter Units in the NOVA-5000 Cabinet***
- ***Supervises field wiring to the sensor for open or short circuits***
- ***Low-Pass Filter provides high degree of false alarm rejection***
- ***LED indication of operation and detection status***
- ***Plug-in jacks allow insertion of high-accuracy meter into circuit for calibration without removing power from transmitter or sensor***
- ***Designed for use with SST Model 5020 Series Combustible Gas Detection Modules***
- ***May also feed any other 4-20 mA input such as PLC's, Remote Data Acquisition Systems, Annunciators, etc.***

The SST Model 5400 Dual Channel Transmitter for Catalytic Gas Sensors is designed to allow the use of any manufacturer's standard catalytic sensor with the Model 5020 Combustible Gas Detection Module. Each Model 5400 unit contains two identical channels, for use with two sensors and two modules. The input to the transmitter is a nominal 24 volt DC supply. The transmitter unit then provides three critical functions for interfacing the sensor to the associated control electronics:

1. The Sensor drive current can be adjusted to the manufacturer's specifications for any catalytic or pellister type gas sensor. This circuit has been designed to have an extremely high stability against any changes in detector circuit resistance and supply voltage.
2. The output signal from the sensor, proportional to the concentration of combustible gas in the protected area in percentage of the Lower Explosive Limit (% LEL) is converted to a standard 4-20 mA signal for transmission to the Gas Detection Module.
3. The Field wiring between the Sensor and the transmitter is continuously "supervised" for open or short circuits.

The Model 5400 Dual Channel Transmitter is mounted inside the NOVA-5000 system cabinet by snapping each transmitter onto a standard "track." Signals from the gas sensor are low-pass filtered to minimize the transmission of noise and interference. This provides a high degree of rejection of false alarms. A green Light Emitting Diode (LED) for each channel is visible on the front panel of the transmitter. The LED glows at normal brightness when the channel is operational; brightness is increased when the channel is detecting gas.

The Model 5400 is designed to minimize the risk of damage to the field sensors. The constant current source for drive current has a minimum of stored energy, and is unconditionally stable under normal supply voltage variations and load conditions. The sensor circuit is also monitored (supervised) for open and short circuit conditions at all times.

Two miniature telephone jacks are provided in each channel to permit insertion of a milliammeter for setup and calibration to the installed field sensor. One jack measures the sensor excitation current, which is adjusted using a potentiometer on the transmitter. The other jack measures the output current, and is used to set the zero and span pots on the transmitter. The milliammeter may be inserted into or removed from either jack without removing power to the transmitter or sensor. This is a great time saver, as it is not necessary to wait for the sensor to warm up after the calibration connection is made. And there is no chance of sensor damage due to an incorrect reconnection after calibration.

All wiring connections to the Model 5400 are made via screw terminals with pressure clamp plates to accept standard stranded wire. No terminal lugs or pretinning of conductors is required.

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

Combustible Gas Transmitter Units shall be provided to interface each of the field mounted gas sensors to the Detection and Control System. The transmitter units shall be located in the Main Detection System control cabinet. Externally mounted transmitters are not acceptable. Each transmitter unit shall be capable of operation with any manufacturer's catalytic or pellister type combustible gas sensor. The transmitter shall provide controls for measuring and setting the excitation current to the sensor, and for adjusting the output of the transmitter such that it will vary from 4 to 20 Milliamps, corresponding to gas concentrations between 0 and 100% of the Lower Explosive Limit (LEL) of the measured gas. Two jacks shall be provided on each channel for insertion of the calibrating meter. It shall not be necessary to remove power from the unit to insert or remove the calibrating meter. The transmitter unit shall continuously supervise the field wires between the sensor and transmitter for open circuits and short circuits. All published performance specifications shall be met when the transmitter is operated on any supply voltage between 16 and 32 volts DC, and shall not degrade as the sensor resistance changes. Low-pass filtering shall be used to minimize noise, interference and false alarms. An LED indication of the operational status of each channel shall be provided. Two identical and independent transmitters shall be assembled into a common plastic housing; the housing shall snap onto an accessory mounting track, and be sized such that up to 10 housings (20 channels) occupy no more than 23 inches of mounting space. Safety Systems Technology Model 5400 Dual Channel Transmitters, or approved equivalent, shall be supplied.

TECHNICAL SPECIFICATIONS

Sensor Input:	Suitable for any standard catalytic sensor, 3 wire, supervised for open or short circuits. Connections provided for sensitive bead, reference bead and common lead from sensor.
Transmitter Gain:	Sufficient to produce rated output when used with sensor sensitivity down to 0.5 mV per %LEL. Includes an allowance for sensor ageing.
Transmitter Output:	4 to 20 mA current sink Output draws 4-20 mA from a positive supply of 3 to 32 volts DC. Input of control equipment connects between transmitter output and the positive supply.
Operating Voltage:	16 to 32 volts DC (24 VDC Nominal) Transmitter will meet all specifications when operating from any supply voltage in this range.
Power Consumption:	65 mA @ 24 VDC typical per channel Includes current to a typical sensor (200 mA @ 4 volts)
Front Panel Indicators:	Channel Operating LED LED brightness is intensified when the sensor is detecting gas.
Wiring Connections:	Screw terminal blocks for each channel Terminals accept up to 12 AWG (4 mm^2) wires.
Calibration Connections:	Jacks for 0.141 inch diameter miniature telephone plug. Used to connect milliammeter for calibration. Plug may be inserted or removed with power on.
Mounting:	Snap on mounting to standard symmetrical rail Each dual channel unit occupies 2.2 inches of rail mounting space.
Size:	2.2 inches wide x 3.0 inches high x 4.3 inches deep
Weight:	7 ounces

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
35400	Model 5400 Dual Channel Transmitter for Catalytic Gas Sensors
35370	Symmetrical Mounting Rail for Transmitter. 39 inches long. Mounts up to 17 transmitters. May be cut to any length as required.

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