Series F12 Gas Transmitter

The Series F12 Gas Transmitter is an Intrinsically Safe (IS) version of our explosion-proof D12 transmitter. In its standard form, it is designed for detection of a variety of toxic gases in hazardous area applications requiring IS devices. In addition, it is also well suited for all general purpose applications where toxic gas measurement is required. For IS installations, this transmitter is also available with a Hart™ communication option.

F12 Transmitters use ATI's standard smart sensors for maximum flexibility. Sensors are easily exchanged and contain all calibration constants in sensor memory, eliminating the need for field calibration of transmitters. Sensors may be calibrated separately on the bench and then simply plugged into the transmitter. Calibration data is read into the transmitter automatically and no other adjustments are normally required.

For general purpose gas detection applications, the F12 transmitter is also available in Non-IS versions. One version provides for easy interface to RS-485 networks using a standard MODBUS™ communication protocol. A second version provides a complete AC powered instrument with 3 alarm relays (SPST) available for external alarming.

- **Intrinsically Safe Design**: Transmitters are designed for use in applications requiring intrinsically safe devices for safety purposes.
- **Interchangeable Sensors**: Every transmitter will accept up to 45 different sensor modules, greatly reducing the need for multiple transmitter models.
- **Smart Sensor Modules**: Plug-in sensors store calibration data, allowing sensors to be calibrated separately from the transmitter. This allows bench calibration (or factory calibration) of sensors to reduce the necessity for carrying calibration gas around the plant.
- **Alarm & Relay Option**: A non-IS version of the transmitter provides 3 integral alarm relays. Relays are programmable for setpoint, hysteresis, on-delay, off-delay, and other variables.
- **Serial Communication Interface**: The IS version of the transmitter is available with HART™ communications. The HART protocol supports the HART Universal and Common Practice Commands at 1200 baud using the Bell 202 FSK modem standard. The non-IS versions of the trasnmitter are available with MODBUS™ communications. The MODBUS protocol supports 9600 baud access to concentration and status information, and supports alarm setup and many other functions.
- **LCD Graphics Display**: Gas Concentrations are displayed in large, easy to read numbers. The display also provides alarm indication and complete menus for setting up operating parameters.

- **Internal Data Logger**: Measured gas values are stored at user definable intervals and can be recalled when needed on the LCD display. Data can be downloaded using a HART™ or MODBUS™ interface.

- **Sensor Calibration History**: Each time a sensor is zeroed or calibrated, the data is stored in memory. Calibration history can be recalled and sensor condition reviewed by operating personnel whenever necessary.

- **Non-intrusive Operation**: Operating functions such as calibration, alarm setup, alarm reset, data view, and setup options are all available using sealed front panel switches on the face of the Nema 4X transmitter enclosure.

- **Password Protection**: Program setting stored in the transmitter may be protected by a user selectable password. Operators may still review all functions, but changes may only be made by authorized personnel.

- **Output Simulation**: Transmitter analog output can be set to user definable values and relay outputs can be set to specific states for complete simulation of detection system operation. Output and alarms may also be inhibited for maintenance and calibration.

Specifications

Gas Type:	Customer selected from available sensor list.
Sensor Type:	Electrochemical for toxic gases and oxygen
Range:	User adjustable within limits of selected sensor module.
Response Time:	Sensor dependent
Accuracy:	Generally ±10% of value, but limited by available calibration gas accuracy.
Electronic Repeatability:	±1%
Electronic Linearity:	±0.5%
Zero Drift:	Less than 2% full scale per month, non-cumulative
Span Drift:	Dependent on operating environment but generally less than 3% per month
Analog Output:	Loop-powered 4-20 mA, 800 ohms maximum at 24 VDC
Serial Interface:	HART™ (1200 baud modem interface) MODBUS™ (1200-9600,14.4k,28.8k – RS232 or RS485, s/w selectable)
Power:	12 - 30 VDC, 25 mA maximum in loop-powered mode 12 – 30 VDC, 200 mA maximum in 3-wire mode. 85-265 VAC, 50/60 Hz. for AC version
Alarm Relay Option:	Three SPST, 5 A @ 230 VAC resistive
Relay Coil:	Programmable either normally energized or normally de-energized.
Enclosure:	Nema 4X polycarbonate
Controls:	4 program switches on front of transmitter
Operating Temperature:	-30º to +60º C (Minimum temp. for O_2 sensor is -10º C)
Weight:	1 Lb. (.5 Kg.)

Ordering Information

MODEL F12 – A – B – C Gas Transmitter

F12 transmitters are designed to use electrochemical sensors only. This transmitter uses the same sensors as those used in the PortaSens II and D12 series products. This transmitter series does not support catalytic bead or IR sensors.

SUFFIX A – TRANSMITTER TYPE

1 – Intrinsically Safe 2-wire
2 – Non-IS system for RS-485 communication
3 – Non-IS system, AC with alarms

SUFFIX B – SENSOR HOLDER STYLE

1 – Integral holder for toxic sensor
2 – Remote sensor system for toxic sensor
3 – Remote sensor system for toxic sensor and generator
4 – Duct mount sensor holder with 25' extension cable (requires 00-1388 Adapter)

SUFFIX C – DIGITAL OUTPUT

1 – None
2 – Hart interface
3 – Modbus interface (Requires option 2 or 3 under suffix A)

ACCESSORIES

00-1056	Calibration adapter
00-1251	Flowcell assembly
00-0981	Sensing module keeper for 4 sensors
00-1388	Duct sensor adapter, 1½" MNPT

Gas Sensor Modules

Part No.	Gas & Range
00-1000	Bromine, 0-1/5 PPM (2 PPM Standard)
00-1001	Bromine, 0-5/100 (20 PPM Standard)
00-1002	Chlorine, 0-1/5 PPM (2 PPM Standard)
00-1003	Chlorine, 0-5/100 (20 PPM Standard)
00-1004	Chlorine Dioxide, 0-1/5 PPM (2 PPM Standard)
00-1005	Chlorine Dioxide, 0-5/100 (20 PPM Standard)
00-1006	Fluorine, 0-1/5 PPM (2 PPM Standard)

Part No.	Gas & Range
00-1007	Fluorine, 0-5/100 (20 PPM Standard)
00-1163	Ozone, 500/2000 PPB (1000 PPB Standard)
00-1008	Ozone, 0-1/5 PPM (2 PPM Standard)
00-1009	Ozone, 0-5/100 PPM (20 PPM Standard)
00-1010	Ammonia, 0-50/500 PPM (200 PPM Standard)
00-1011	Ammonia, 0-500/2000 PPM (1000 PPM Standard)
00-1012	Carbon Monoxide, 0-50/1000 PPM (200 PPM Standard)
00-1013	Hydrogen, 0-1/10% (4% Standard)
00-1014	Oxygen, 0-5/25% (25% Standard)
00-1015	Phosgene, 0-1/5 PPM (2 PPM Standard)
00-1016	Phosgene, 0-5/100 PPM (100 PPM Standard)
00-1017	Hydrogen Chloride, 0-10/200 PPM (20 PPM Standard)
00-1018	Hydrogen Cyanide, 0-10/200 PPM (20 PPM Standard)
00-1019	Hydrogen Fluoride, 0-10/200 PPM (20 PPM Standard)
00-1020	Hydrogen Sulfide, 0-10/200 PPM (50 PPM Standard)
00-1021	Nitric Oxide, 0-50/500 PPM (200 PPM Standard)
00-1022	Nitrogen Dioxide, 0-10/200 PPM (20 PPM Standard)
00-1023	Sulfur Dioxide, 0-10/500 PPM (20 PPM Standard)
00-1024	Arsine, 0-500/2000 PPB (1000 PPB Standard)
00-1025	Arsine, 0-10/200 PPM (10 PPM Standard)
00-1026	Diborane, 0-500/2000 PPB (1000 PPB Standard)
00-1027	Diborane, 0-10/200 PPM (10 PPM Standard)
00-1028	Germane, 0-500/2000 PPB (1000 PPB Standard)
00-1029	Germane, 0-10/200 PPM (10 PPM Standard)
00-1030	Hydrogen Selenide, 0-500/2000 PPB (1000 PPB Standard)
00-1031	Hydrogen Selenide, 0-10/200 PPM (10 PPM Standard)
00-1032	Phosphine, 0-500/2000 PPB (1000 PPB Standard)
00-1033	Phosphine, 0-10/200 PPM (10 PPM Standard)
00-1034	Phosphine, 0-200/2000 PPM (1000 PPM Standard)
00-1035	Silane, 0-10/200 PPM (10 PPM Standard
00-1036	Iodine, 0-1/5 PPM (2 PPM Standard)
00-1037	Iodine, 0-5/100 PPM (20 PPM Standard)
00-1038	Acid Gases, 0-10/200 PPM (20 PPM Standard)
00-1039	Ethylene Oxide, 0-20/200 PPM (20 PPM Standard)
00-1040	Formaldehyde, 0-20/200 PPM (20 PPM Standard)
00-1041	Hydrogen, 0-500/2000 PPM (2000 PPM Standard)
00-1042	Hydrogen Peroxide, 0-10/100 PPM (20 PPM Standard)
00-1043	Alcohol, 0-50/500 PPM (200 PPM Standard)
00-1044	Alcohol, 0-500/2000 PPM (2000 PPM Standard)
00-1057	Acetylene, 200/2000 PPM (500 PPM Standard)
00-1169	Hydrogen Peroxide, 200/2000 PPM (1000 Standard)
00-1181	NO_X, 0-50/500 PPM (200 PPM Standard)
00-1285	Silane, 0-500/2000 PPB (1000 PPB Standard)
00-1349	Formaldehyde, 500/2000 PPM (1000 Standard)
00-1358	Ozone, 200/1000 PPM (1000 PPM Standard)
00-1359	Chlorine Dioxide, 200/1000 PPM (1000 PPM Standard)
00-1425	Chlorine Dioxide, 1/5 PPM (low Cl_2 response)
00-1450	Dimethylamine (DMA), 100/200 PPM (100 PPM Standard)
00-1455	Hydrogen Bromide, 10/200 PPM (20 PPM Standard)
00-1469	Hydrogen Sulfide, 200/1000 PPM (500 PPM Standard)