



# F12/D TOXIC GAS DETECTOR

How dependable is your toxic gas leak detection system?

ATI's Series F12/D provides a high level of confidence that your system is functional at all times. Our **Auto-Test** feature provides an actual gas "bump test" every 24 hours, verifying system integrity. Not an electronic test of some kind but a true test of sensor response to gas.



**ATI**  
ANALYTICAL TECHNOLOGY, INC.

# MODEL F12/D TOXIC GAS DETECTOR

- **Power:** Available in 12-24 VDC, 115 VAC, or 230 VAC configurations
- **Interchangeable Sensors:** The F12/D accommodates 60 different sensor modules
- **Sensor Verification:** Auto-Test generator option provides a true gas response test. Test history is stored in sensor memory for user review at any time
- **LCD Graphic Display:** Allows clear gas concentration display plus complete menu-driven operator interface
- **Heated Sensor Option:** A heated sensor holder allows operation in high humidity to avoid condensation problems
- **Remote Sensor:** A junction box with digital output allows sensor location up to 500 ft. from the F12/D display unit
- **Internal Data Logger:** Gas values are stored at user defined intervals from 1 to 60 minutes. Stored data may be reviewed or graphed on the LCD display
- **Calibration History:** Sensor calibration adjustments of zero and span are stored in sensor memory and may be viewed on the F12/D display
- **Communication:** F12/D is available with either HART® or Modbus RTU
- **Approvals:** CE and RoHS Compliant



## INSTALLATION OPTIONS

The sensor holder in the F12/D is normally mounted to the transmitter enclosure. For applications where this configuration is not ideal, there are a number of different configurations for meeting specific requirements. These include a 6 ft. (1.9 m) cable extension, a remote junction box for longer sensor separation distances, and a duct mount sensor.

F12/D with integral sensor holder



F12/D with integral sensor holder & Auto-Test generator



6 ft. extended sensor holder



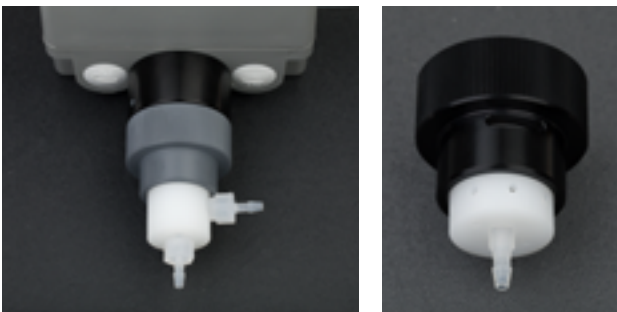
Insertion sensor assembly



Remote sensor holder & digital interface



## FLOWCELL AND CALIBRATION ADAPTERS



Calibration adapters slide into the sensor holder for easy connection of calibration gas. A flowcell assembly is also available where pumped sampling systems are used.



An accessory device called a "sensor keeper" is available for storing standby spares. The keeper provides sensor bias circuitry that maintains spare sensors in a ready-to-use state without the need for stabilization time.

## SMART SENSORS

The F12/D uses ATI **smart sensors** that allow easy interchangeability. Each sensor contains signal conditioning electronics and data memory. Sensors can be calibrated using a spare unit in the shop to avoid using calibration gases in the plant. Sensors may also be returned to ATI for factory calibration, which is useful for gases that are costly or difficult to obtain. Each sensor adjustment (zero or span) is stored in sensor memory and can be reviewed on the F12/D display. This data is very useful in assessing the sensor's condition and estimating remaining sensor life.



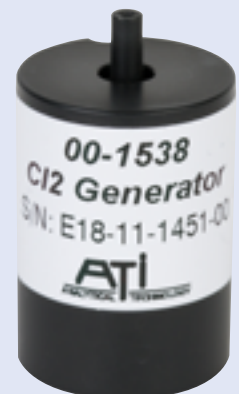
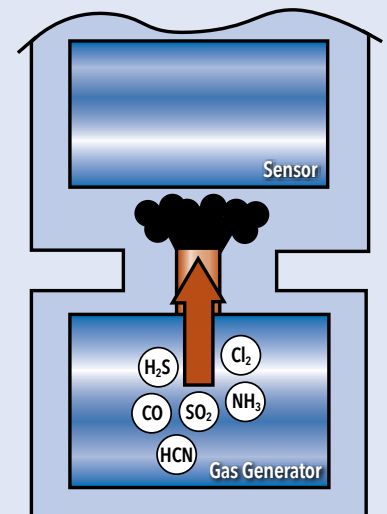
### AVAILABLE SENSORS

00-1000*	Br <sub>2</sub> , 0-1/5 ppm (00-1538)	00-1024	AsH <sub>3</sub> , 0-500/2000 ppb
00-1001*	Br <sub>2</sub> , 0-5/200 ppm (00-1538, 20 max.)	00-1025	AsH <sub>3</sub> , 0-10/200 ppm
00-1002*	Cl <sub>2</sub> , 0-1/5 ppm (00-1538)	00-1026	B <sub>2</sub> H <sub>6</sub> , 0-500/2000 ppb
00-1003*	Cl <sub>2</sub> , 0-5/200 ppm (00-1538, 20 max.)	00-1027	B <sub>2</sub> H <sub>6</sub> , 0-10/200 ppm
00-1004*	ClO <sub>2</sub> , 0-1/5 ppm (00-1538)	00-1028	GeH <sub>4</sub> , 0-500/2000 ppb
00-1005*	ClO <sub>2</sub> , 0-5/200 ppm (00-1538, 20 max.)	00-1029	GeH <sub>4</sub> , 0-10/200 ppm
00-1359	ClO <sub>2</sub> , 200/1000 ppm	00-1030	H <sub>2</sub> Se, 0-500/2000 ppb
00-1425*	ClO <sub>2</sub> , 0-1/5 ppm (low Cl <sub>2</sub> )(00-1538)	00-1031	H <sub>2</sub> Se, 0-10/200 ppm
00-1006*	F <sub>2</sub> , 0-1/5 ppm (00-1538)	00-1032	PH <sub>3</sub> , 0-500/2000 ppb
00-1007*	F <sub>2</sub> , 0-5/200 (00-1538, 20 max.)	00-1033	PH <sub>3</sub> , 0-10/200 ppm
00-1008*	O <sub>3</sub> , 0-1/5 ppm (00-1538)	00-1034	PH <sub>3</sub> , 0-200/2000 ppm
00-1009*	O <sub>3</sub> , 0-5/200 ppm (00-1538, 20 max.)	00-1035	SiH <sub>4</sub> , 0-10/200 ppm
00-1358	O <sub>3</sub> , 200/1000 ppm	00-1036*	I <sub>2</sub> , 0-1/5 ppm (00-1538)
00-1163	O <sub>3</sub> , 500/2000 ppb (00-1538)	00-1037*	I <sub>2</sub> , 0-5/200 ppm (00-1538, 20 max.)
00-1010*	NH <sub>3</sub> , 0-50/500 ppm (00-1539, 100 max.)	00-1038*	Acid Gas, 0-10/200 ppm (00-1538, 20 max)
00-1011	NH <sub>3</sub> , 0-500/2000 ppm	00-1039*	ETO, 0-20/200 ppm (00-1540, 20 max.)
00-1012*	CO, 0-50/1000 ppm (00-1540, 100 max.)	00-1040	HCOH, 0-20/200 ppm (00-1540, 20 max.)
00-1013	H <sub>2</sub> , 0-1/10%	00-1349	HCOH, 500/2000 ppm
00-1041	H <sub>2</sub> , 0-500/2000 ppm	00-1042	H <sub>2</sub> O <sub>2</sub> , 0-10/100 ppm (00-1542)
00-1014	O <sub>2</sub> , 0-5/25%	00-1169	H <sub>2</sub> O <sub>2</sub> , 200/2000 ppm
00-1015	COCl <sub>2</sub> , 0-1/5 ppm	00-1043	Alcohol, 0-50/500 ppm
00-1016	COCl <sub>2</sub> , 0-5/100 ppm	00-1044	Alcohol, 0-500/2000 ppm
00-1017*	HCl, 0-10/200 ppm (00-1541, 20 max.)	00-1057	C <sub>2</sub> H <sub>2</sub> , 0-50/500 ppm
00-1018*	HCN, 0-10/200 ppm (00-1611, 20 max.)	00-1181	NO <sub>x</sub> , 0-50/500 ppm
00-1019*	HF, 0-10/200 ppm (00-1538, 20 max.)	00-1450*	DMA, 100/200 ppm (00-1539, 100 max.)
00-1020*	H <sub>2</sub> S, 0-10/200 ppm (00-1541, 100 max.)	00-1455*	HBr, 10/200 ppm (00-1538, 20 max.)
00-1469	H <sub>2</sub> S, 200/1000 ppm	00-1516	HC Sensor - Consult Factory)
00-1021	NO, 0-50/500 ppm	00-1045	CH <sub>3</sub> COOH, 100/500 ppm
00-1022*	NO <sub>2</sub> , 0-10/200 ppm (00-1538, 20 max.)	00-1704	PAA Vapor, 1/5 ppm
00-1023*	SO <sub>2</sub> , 0-10/500 ppm (00-1542, 20 max.)	00-1705	PAA Vapor, 10/100 ppm

**Notes:** XXX for each sensor indicates minimum and maximum ranges for that sensor.  
 \* indicates availability of Auto-Test. Generator part number shown in ( ).  
 Auto-Test not available for ranges above indicated maximum.

## AUTOMATIC SENSOR VERIFICATION

With the F12/D, users can take advantage of ATI's unique Auto-Test sensor verification system. While other gas transmitters rely on less reliable electronic sensor tests, the Auto-Test system consists of an actual gas test. A test gas is generated right at the sensor and the response of the sensor is verified. Manual bump testing to verify response is eliminated, greatly reducing maintenance requirements.



## AUTO-TEST GENERATORS

00-1538	E18-11 Chlorine gas generator
00-1539	E18-15 Ammonia gas generator
00-1540	E18-16 Carbon Monoxide gas generator
00-1541	E18-24 Hydrogen Sulfide gas generator
00-1542	E18-27 Sulfur Dioxide gas generator
00-1611	E18-22 HCN gas generator

## ORDERING INFORMATION

### MODEL F12/D - A-B-C-D

F12/D transmitters are designed to use electrochemical sensors only. Specify transmitter and then select sensors from page 3. Add the Auto-Test generator if that feature is desired.

#### SUFFIX A - POWER

- 2 - 24 VDC, 4-20 mA & RS-232/485 outputs only
- 3 - 115 VAC, 50/60 Hz, 4-20 mA, RS-232/485, & relay outputs
- 4 - 230 VAC, 50/60 Hz, 4-20 mA, RS-232/485, & relay outputs
- 5 - 12-30 VDC, 4-20 mA, RS-232/485, & relay outputs

#### SUFFIX B - SENSOR HOLDER STYLE

- 1 - Integral sensor holder
- 2 - Remote sensor holder with junction box (order 31-0185 interconnect cable below)
- 3 - Integral heated sensor holder
- 4 - Remote heated sensor holder with junction box (order 31-0068 interconnect cable below)
- 5 - Duct mount sensor holder with 25 ft. extension cable (requires 00-1388 Adapter)
- 6 - Sensor holder with 6 ft. cable
- 7 - Remote junction box plus 6 ft. cable with holder
- 8 - Remote junction box with close-coupled duct mount sensor (requires 00-1388 Adapter)
- 9 - Heated sensor holder with 6 ft. cable.

#### SUFFIX C - SENSOR AUTO-TEST

- 1 - No Auto-Test Generator Holder
- 2 - With Auto-Test Generator Holder

#### SUFFIX D - DIGITAL OUTPUT

- 1 - None
- 2 - HART® interface
- 3 - Modbus interface

## ACCESSORIES

- 00-1056** Calibration adapter
- 00-1251** Flowcell assembly
- 03-0118** Flowcell with 03-0460 sensor cap
- 00-0981** Sensing module keeper for 4 sensors
- 00-1388** Duct sensor adapter, 1½" MNPT
- 31-0185** 4-Conductor Interconnect Cable, specify length, max. 500 ft.
- 31-0068** 6-Conductor Interconnect Cable, specify length, max. 500 ft.
- 05-0094** Panel mount bracket kit

**Note:** When ordering an F12/D unit with a flowcell, the 03-0460 sensor cap will be supplied in place of the standard sensor cap and does not need to be ordered separately. If a flowcell is being added to an existing F12/D, order the 03-0118 assembly which includes both the flowcell and sensor cap.

## SPECIFICATIONS

<b>Sensor Type</b>	Electrochemical cell
<b>Gas Type</b>	Select sensor from listing on page 3
<b>Range</b>	User adjustable within limits of selected sensor
<b>Response Time</b>	Sensor dependent
<b>Accuracy</b>	Generally ±5-10% of value, limited by available calibration gas accuracy.
<b>Repeatability</b>	±1% (Electronic)
<b>Linearity</b>	±0.5% (Electronic)
<b>Zero Drift</b>	Less than 2% full scale per month, non-cumulative
<b>Span Drift</b>	Dependent on sensor environment but generally less than 3% per month
<b>Analog Output</b>	4-20 mA, 600 ohms max. at 24 VDC
<b>Serial Interface</b>	(Optional) HART® digital signaling over the 4-20mA current loop (Optional) Modbus RTU over RS232/485
<b>Power Requirements</b>	DC/RS-485: 24-30 VDC, 100 mA max. 115 VAC (±15%), 50-60 Hz, 6 VA max. 230 VAC (±15%), 50-60 Hz, 6 VA max. 12-30 VDC (with relays): 250 mA max.
<b>Enclosure</b>	IP 65, polycarbonate with stainless steel hardware. Weatherproof and corrosion resistant. Refer to F12/D Support Drawings for Dimensions
<b>CE Mark</b>	2014/35/EU - Low voltage directive 2014/30/EU - Electromagnetic compatibility
<b>Mounting</b>	(Standard) Wall or pipe mount bracket. U-Bolts suitable for 1.5" or 2" I.D. (Optional) Panel mount kit available.
<b>Auto-Test Option</b>	Dependent on sensor gas type and full scale range
<b>Display</b>	96x32 Dot-matrix Graphic LCD, Backlit, Transflective
<b>Controls</b>	Four, dome-type push buttons; Remote alarm reset input (w/optional alarm relays only)
<b>Temperature</b>	-30°C to +60°C (Min. temp. for O <sub>2</sub> Sensor is -20°C)
<b>Environment</b>	10 to 95% RH (non-condensing)
<b>Weight</b>	1.5 lb (0.68 kg)

Visit Us on the Web: [www.analyticaltechnology.com](http://www.analyticaltechnology.com)

**Analytical Technology, Inc.**  
6 Iron Bridge Drive  
Collegeville, PA 19426  
**Phone** 610.917.0991  
**Toll-Free** 800.959.0299  
**Fax** 610.917.0992  
**Email** [sales@analyticaltechnology.com](mailto:sales@analyticaltechnology.com)

**Analytical Technology**  
Unit 1 & 2 - Gatehead Business Park  
Delph New Road, Delph  
Saddleworth OL3 5DE  
**Phone** 01457 873 318  
**Fax** 01457 874 468  
**Email** [sales@atiuk.com](mailto:sales@atiuk.com)

**Represented by:**