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# Combustible Gas Detector

## Model A12-17 LEL Transmitter



Gas Sensor / Generator Assembly

*Reliable Performance,  
Unmatched Security.*





*Now Sensor Response  
Can Be Verified Every  
24 Hours Automatically.*

## INTRODUCTION.

Combustible Gas Detectors are used in a wide variety of industrial plants to detect gas leakage or buildup before it reaches explosive levels. These detectors rely on thermal oxidation of any combustible gas or vapor on the surface of a heated catalyst. In other words, they simply burn the gas and measure the heat released in the combustion process. While this type of sensor is generally stable and reliable, it is also subject to poisoning by silicon vapor, lead compounds, and other environmental contaminants. To detect loss of sensitivity, most users test combustible sensors either weekly or biweekly to ensure response. The procedure is simple, but requires manpower to perform the test.

ATI's Auto-Test Combustible Gas Transmitter eliminates the need for frequent response checks. This transmitter performs an automatic gas test on the sensing element every 24 hours. The result is a combustible gas detector system with a level of reliability beyond that of any other system available. This daily sensor response verification is as close to a fail-safe detection system as you can find, with the added benefit of greatly reduced manual testing.

*Combustible Gas Detection just got Safer...*

## FEATURES.

**Integral Display.** Transmitters contain an LCD display indicating LEL values locally.

**Non-intrusive Calibration.** Magnetic transmitter controls allow adjustments without removing enclosure cover.

**Manual Auto-Test.** The hydrogen generator may be activated manually on command to observe sensor response, if desired.

**Auto-Test Log.** The result of each Auto-Test is logged in transmitter memory. Operators may review the number of passes and fails from the LCD.

**Signal Simulation.** The 4-20 mA output from the transmitter may be manually set to 3, 4, 12, or 20 mA in order to test external alarm devices.

**Plug-in Design.** Electronic transmitters are modular, plugging into a standard relay base for ease of service.

**Dual Condulet Option.** Where installations require the sensor be located remote from transmitter electronics, sensors may be supplied with an explosion-proof junction box and a remote gas feed system to facilitate calibration.

## AUTO-TEST SYSTEM OPERATION.

Combustible gas sensors are made up of two matched sensing elements, one active and one passive. Both are electrically heated and form two legs of a Wheatstone bridge circuit. When combustible gas contacts the sensor, the active element catalyzes the oxidation of gas, heating the active element and changing its resistance. The passive element remains unchanged, resulting in a change in the bridge circuit that is proportional to the gas concentration. As long as the active element remains in good condition, the sensor will respond rapidly to the presence of combustible gas.

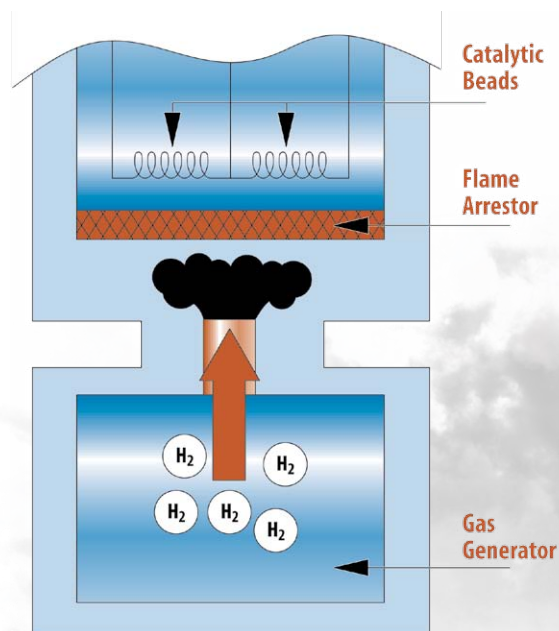
The Auto-Test sensor is actually a combination of a gas sensor and an electrochemical hydrogen gas generator integrated into an explosion-proof stainless steel housing. When activated by the electronic transmitter, the generator produces hydrogen that diffuses to the gas sensor through the flame arrestor protecting the sensor. If the sensor responds properly, the transmitter will show a "Pass" indication. Should the sensor not respond properly, an "Auto Test Fail" message will activate at the transmitter and the 4-20 mA output from the transmitter will drop to 3 mA, providing for remote fault indication.



Plug-in Transmitter



Gas Sensor / Generator Assembly



# A12-17 LEL Transmitter SPECIFICATIONS

## TRANSMITTER

<b>Gas Type</b>	Calibrated for methane unless otherwise specified
<b>Range</b>	0-100% LEL
<b>Response Time (T90)</b>	10 seconds
<b>Accuracy</b>	Generally +5% of value, but limited by available calibration gas accuracy.
<b>Electronic Repeatability</b>	±1%
<b>Electronic Linearity</b>	±0.5%
<b>Zero Drift</b>	Less than 2% full scale per month
<b>Span Drift</b>	Less than 3% per month
<b>Output</b>	Powered 4-20 mA, 1000 ohms max at 24 VDC
<b>Power</b>	12-30 VDC, 125 mA maximum
<b>Enclosure</b>	Explosion-proof, Class 1, Div 1, Groups B,C, & D
<b>Sensor</b>	316 stainless steel
<b>Sensor Auto-Test</b>	Hydrogen gas generator integral to gas sensor housing
<b>Control</b>	4 magnetic switches on front of transmitter
<b>Operating Temp.</b>	-40° F to +70° C
<b>Weight</b>	4lbs (1.8 kg)

## ACCESSORIES

- 00-0261** Splash guard/remote calibration adapter for standard sensor
- 00-0258** Calibration adapter for standard sensor
- 45-0081** Splash guard for Auto-Test sensor (required for Auto-Test sensor)

## ORDERING INFORMATION

Model A12-17 - DDD - E - F

### Suffix DDD - Range

Code the measurement range using a 4-digit number. The standard range for a combustible gas system is 0-100% LEL, so the code is normally 0100. However, systems used for hydrogen are sometimes displayed in %, with a range of 0-4 percent (code 0004). If a range other than 0-100% LEL or 0-4% is required, consult factory for availability.

### Suffix E - Units of Measurement

- 3 - %
- 4 - % LEL

### Suffix F - Sensor Style

- 1 - Sensor without Auto-Test
- 2 - Sensor with Auto-Test
- 3 - Remote sensor with junction box
- 4 - Remote sensor with junction box and Auto-Test



## Compatible Alarm System

Need alarm relays or remote display?  
Ask for details on ATI's B14 Alarm System.



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### Analytical Technology, Inc.

6 Iron Bridge Drive  
Collegeville, PA 19462  
**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** 014557 874 468  
**Email** [sales@atiuk.com](mailto:sales@atiuk.com)

### Represented by:

 **INTERTECH RIO**  
CONTROLE DE PROCESSOS E INSTRUMENTAÇÃO  
(21) 99607-2513  
[contato@intertechrio.com.br](mailto:contato@intertechrio.com.br)  
[intertechrio.com.br](http://intertechrio.com.br)