

Gas Sensor Test-on-Demand (ToD™) Delivers Reliability – Low Maintenance

ToD™ is the trademark for Sensidyne's gas sensor test capability which is built into the new SensAlert PLUS gas detection transmitters. Two Test-on-Demand cell types are presently available for use with SensAlert PLUS electro-chemical sensors, with more capability being added.

The ToD™ cell is an optional module that plugs into the sensor housing next to the sensor. It recognizes the gas sensor, and if compatible, permits manual or automatic bump-testing of the gas sensor from the transmitter's non-intrusive interface.

Electro-chemical is the name given to fuel cell or galvanic gas sensors. This discussion concerns fuel cell based Toxic Gas sensors which Reduce or Oxidize the target gas, generating an electrical signal to indicate gas presence. Such sensors are typically quite accurate, detect in the low ppm range, may exhibit moisture transient response, and have specific temperature and humidity operational limits.

Since gas sensors generate a signal in the presence of gas, the normal state for safe conditions is zero output. If the gas sensor fails, the voltage output is also zero, which is not a fail-safe condition. The only method for determining proper operation is to apply gas to the sensor. Periodic calibration with gas standards is performed to verify operation and offset any changes or degradation of the sensor.

Bump testing, that is applying a "puff" of gas to the sensor, is often used between calibrations to verify sensor response and rule out sensor failure. This is usually for critical (IDLH¹) applications where the target gas is highly toxic and personnel protection or fence-line considerations mandate such measures. Some example gases are Hydrogen Sulfide, Ammonia, and Chlorine.

Field Calibration of sensors is labor intensive and costly. Reducing maintenance and improving the reliability of gas sensors advanced significantly with Smart Sensors, transportable calibration, and integral bump testing features.

SensAlert PLUS has an Intrinsically Safe sensor head that makes hot-swapping of the sensor in a hazardous classified area a reality. Besides the ToD™ or Bump test option, the sensor also has a predictive failure function with complete access to its calibration record and other data.

These advances in gas sensors have streamlined maintenance programs and enabled employees to extend maintenance intervals and eliminate time in the plant environment carrying calibration or bump-testing equipment.

SensAlert PLUS delivers the highest level of reliability and function while having the lowest cost of ownership.

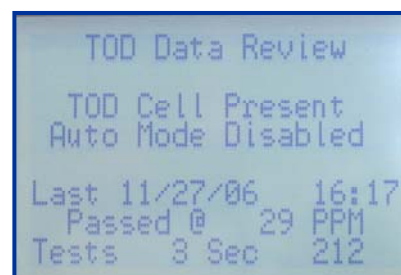
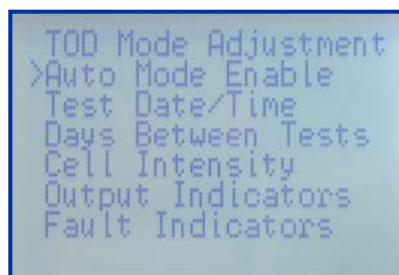


SensAlert PLUS Sensor and ToD™ Cell

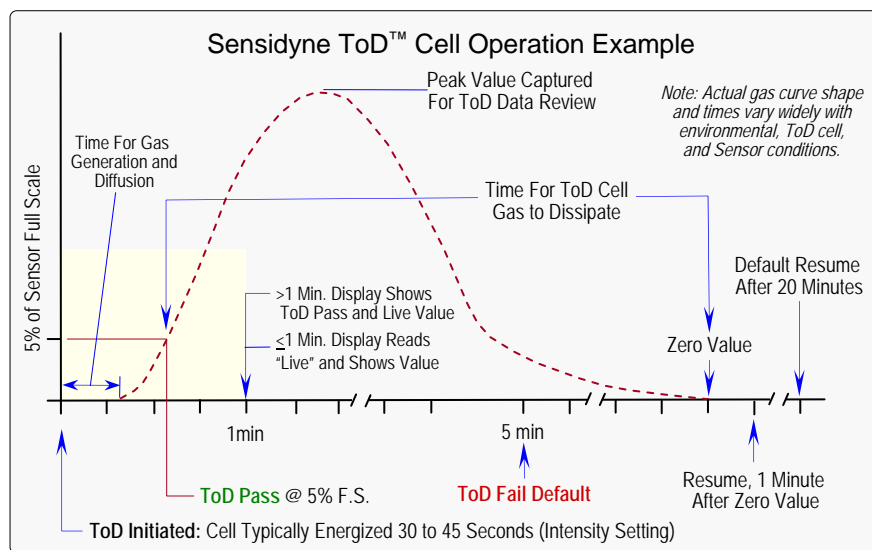
The ToD™ cell has an integral Li ion battery and operates in 2 or 3-Wire transmitters. ToD™ works in remote mounted sensors (100 feet). The sensor head is approved Intrinsically Safe in all configurations.

More on ToD™ Cell

Test-on-Demand costs less than \$1.50 per test but replaces manual bump testing, saving the associated labor and test gases. ToD™ is typically programmed for daily or weekly operation, but may be initiated manually from the non-intrusive interface. *The 4-20 mA output can be set active or inactive, and test failure is a timed and configurable fault current.* The configuration choices are in the ToD™ Menus, shown below. The ToD™ cell has an intensity setting which is user adjustable for actual environmental conditions. ToD™ cells have a minimum life of 300 tests and are warranted for a year.



Actual Transmitter LCD photos shown Life size on the printed page.



CAUTION

One company offers a self-test cell for Catalytic Bead Combustible sensors with "unmatched security," which generates Hydrogen as the test gas. *This is viable as long as the target gas is Hydrogen!* Pellistor type sensors can detect many combustible gases and vapors. Sensor response is directly proportional to the target gases' required oxidation energy, and the active bead catalyst's condition. As sensitivity is lost, the higher oxidation energy compounds can no longer be detected. A sensor in a Methane application may not respond at all to Methane, but might see Hydrogen just fine, due to Hydrogen's very, very low Oxidation energy. *Hydrogen self-test will not prove the response of a catalytic sensor to anything other than Hydrogen!*

¹ IDLH, Immediately Dangerous to Life and Health. *The maximum exposure concentration in the workplace from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects.*
NIOSH (United States National Institute for Occupational Safety and Health)