# ST3 XChem Toxic Gas Sensors
## Millennium II Series Sensors

The ST3 XChem series of electrochemical toxic gas sensors provide high specificity, fast response, and long life. All ST3 sensors are part of the universal Millennium II Gas Detection platform and are compatible with the M21, M22, and M2B transmitters. Our latest design employs our "SimpleClick" sensor element design and low power consumption.

- Sensor end of life diagnostic
- Plug and play design where the transmitter automatically recognizes sensor configuration
- Low power consumption increases uptime
- Two year warranties available on most sensors
- Field selectable gas ranges
- Designed to perform in the most extreme industrial environments



*ST3 Sensors shown with JB-MPD-A/S.*

## Sensor End of Life Diagnostic

As part of the normal lifecycle of an electrochemical sensor the sensor is required to be monitored and replaced on a regular basis. The end of life diagnostic automatically determines the health of the electrochemical sensor cell and provides a fault condition alerting the user the sensor needs to be replaced.

## Single or Dual Channel Transmitter Available

There is no longer the need to purchase multiple gas specific detectors. You have the option to use one or two toxic or combustible gas sensors on a single Millennium II transmitter and easily mix and match any type of sensor in the Millennium II platform.

## Plug and Play Design

The ST3 XChem series sensors are pre-calibrated and easily connected to a transmitter that recognizes a newly fitted sensor, uploading its specific configuration profile.

## Improved Triple Electrode Design

Robust material on sensing, reference, and counter electrodes within the ST3 sensing element ensure long life and enhanced performance.

## Advanced Environmental Immunity

ST3 XChem toxic gas sensors are temperature compensated to their target gas and field selected gas concentration range to provide an accurate and stable gas concentration reading. Humidity is also controlled through the use of an advanced diffusion process as gases pass through our specialized hydrophobic barrier.

**EMERSON**
Process Management

# Specifications

### Table 1 - ST3 XChem Toxic Gas Sensor

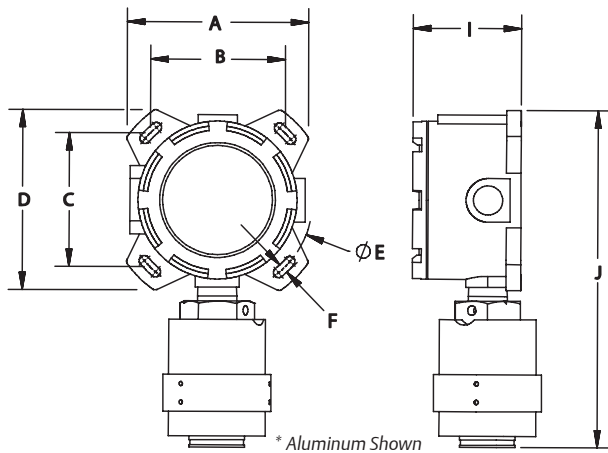| | Hydrogen Sulfide [H$_2$S] (Electrochemical) P/N: ST320(A/S)-100-ASSY | Carbon Monoxide [CO] (Electrochemical) P/N: ST360(A/S)-1000-ASSY | Oxygen [O$_2$] Deficiency (Electrochemical) P/N: ST341(A/S)-25-ASSY |
|---|---|---|---|
| **Performance** | | | |
| Response Time | T20: 10 s<br>T50: 15 s<br>T90: 36 s | T20: 10 s<br>T50: 15 s<br>T90: 30 s | T20: 7 s<br>T50: 10 s<br>T90: 20 s |
| Accuracy | 0 °C to +50 °C (+32 °F to +122 °F)<br>±6 ppm or 17 % of reading, whichever is greater<br><br>-40 °C to 0 °C (-40 °F to +32 °F)<br>±7 ppm or 27 % of reading, whichever is greater | 0 °C to +50 °C (+32 °F to +122 °F)<br>±13 ppm or 5 % of reading, whichever is greater<br><br>-20 °C to 0 °C (-4 °F to +32 °F)<br>±32 ppm or 17 % of reading, whichever is greater | ±0.5 % vol. |
| Detection Range | 0—20/50/100 ppm<br>(Field Selectable) | 0—500/1000 ppm<br>(Field Selectable) | 0—25 % vol. |
| Zero Drift | < 5 % full scale per year | | |
| Repeatability | < 3 % full scale | | |
| Calibration Frequency | 3 months | | |
| Shelf Life | 6 months | | |
| **Environmental** | | | |
| Operating Temperature | -40 °C to +50 °C (-40 °F to +122 °F) | -20 °C to +50 °C (-4 °F to +122 °F) | |
| Storage Temperature | +3 °C to +20 °C (+37 °F to +68 °F) | | 0 °C to +20 °C (+32 °F to +68 °F) |
| Relative Humidity | 15—90 % RH non condensing | | |
| IP/NEMA Rating | IP64 - NEMA Type 4X | | |
| **Enclosure** | | | |
| Weight | Stainless Steel: 3.5 lbs (1.4 kg)<br>Aluminum: 1 lb (0.4 kg) | | |
| Enclosure Material | Aluminum (AL6061)<br>CE stainless steel (SS316) | | |
| Certifications | **North American**<br>CSA<br>Class I Division 1 Groups BCD T5<br>Ex d IIB+ H$_2$ T5<br>Class I Zone 1 AEx d IIB +H$_2$ T5<br>NEMA Type 4X/IP 64<br><br>**ATEX**<br>CE 0575 II 2G Ex d IIB+H$_2$ T5 Gb<br>IP64<br><br>**IECEx**<br>Ex d IIB+H$_2$ T5 Gb<br>IP64 | | **North American**<br>CSA<br>Class I Division 1 Groups BCD T5<br>Ex d IIB+ H$_2$ T5<br>Class I Zone 1 AEx d IIB +H$_2$ T5<br>NEMA Type 4X/IP 64<br><br>**IECEx**<br>Ex d IIB+H$_2$ T5 Gb<br>IP64 |
| **EMC Compliance** | EN 50270:2006 | | |
| **Sensor Separation** | Up to 2,000 feet/600 meters (18 AWG cabling) | | |
| **Transmitter Required** | Millennium II Series (M21, M22, M2B) | | For use with the M21-AH-A/S or M21-AHR-A/S only |
| **Warranty** | Two years | | |

# Drawings and Dimensions



\* Aluminum Shown

**Table 2 - ST3 XChem Toxic Gas Sensor**

|  | A | | B | | C | | D | | E | |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum Housings | 6.3 | 160 | 5.6 | 142 | 5.4 | 137 | 9.7 | 246 | 6.0 | 152 |
| Stainless Steel Housings | 5.9 | 150 | 5.1 | 130 | 4.6 | 117 | 8.9 | 226 | 6.0 | 152 |
|  | F | | G | | H | | I | | | |
| Aluminum Housings | 5.7 | 145 | 2.6 | 66 | 2.9 | 74 | 4.1 | 103 | | |
| Stainless Steel Housings | 5.8 | 147 | 2.6 | 66 | 2.9 | 74 | 3.9 | 100 | | |

# Accessories and Ordering Information

**Table 3 - ST3 XChem Toxic Gas Sensor**

| | |
|---|---|
| JB-MPD-S | Termination Box - Digital Output - Stainless Steel |
| JB-MPD-A | Termination Box - Digital Output - Stainless Steel |

| | |
|---|---|
| CCS-1 | Calibration Cup/Rain Shield/Splash Guard/Dust Filter with DF-1 |
| DSC-1 | Dust/Sand protective clip (includes DF-1 disposable filter) |

| | |
|---|---|
| IPF-001 | IP 66/67 Filter for SX3 Series sensors, enhanced sensor protection from contamination by dirt and moisture |

**Order Information**

**ST320A-100-ASSY (ST320S-100-ASSY Stainless Steel)**
Hydrogen Sulfide [$H_2S$], 0–20/50/100 ppm Field Selectable

**ST341A-25-ASSY (ST341S-25-ASSY Stainless Steel)**
Oxygen [$O_2$] Deficiency, 0–25 % By Volume

**ST360A-1000-ASSY (ST360S-1000-ASSY Stainless Steel)**
Carbon Monoxide [CO], 0–500/1000 ppm Field Selectable

**EmersonProcess.com/FlameGasDetection**

YouTube.com/user/RosemountAnalytical

Twitter.com/RAIhome

Analyticexpert.com

Facebook.com/EmersonRosemountAnalytical

**Emerson Process Management**
Rosemount Analytical
2721 Hopewell Place N.E.
Calgary, AB T1Y 7J7 CANADA
Toll Free + 866 347 3427
T + 403 219 0688
F + 403 219 0694
**SAFETY.CSC@Emerson.com**

**EMERSON**
Process Management