Model 100
Toxic Gas Sensors

Description
Model DM-100 Series sensors feature intelligent electronics, non-intrusive operator interface and comprehensive fault diagnostics. The sensor is packaged in an electro-polished 316 stainless steel housing fitted with a ¾ inch NPT thread. The plug-in, field replaceable sensor cell features large surface area gold-plated pins that reduce the effects of corrosion in harsh industrial environments. Signal conditioning electronics are completely encapsulated in the sensor housing adding a high level of durability to the design. The packaging is XP-intrinsically safe. This innovative design marks a return to a simple, more affordable, and durable gas detection sensor without compromising quality.

Model DM-100 sensors provide a 2-wire loop powered 4-20 mA current signal equivalent to the sensor range of detection. Upper enclosure options are aluminum and stainless steel (includes a transient protection terminal board). Additional accessories include wireless communications, a loop powered digital display. Each sensor is shipped with a splash guard with integral calibration port. Detcon’s toxic gas sensors have a long shelf life and are supported by an industry-leading warranty.

Applications
- Oil and Gas
- Chemical Plants
- Food and Beverage
- Steel Mills
- Pulp and Paper
- Refineries
- Waste Water Treatment Plants
- Utilities

Features
- XP-intrinsically Safe
- Class I, Div. 1, Groups B, C & D
- 2 Wire Loop powered
- Field Replaceable Electrochemical Sensor
- Non-intrusive Magnetic Interface
- Built-in Diagnostics
- Fully Encapsulated ITM Electronics
- Electropolished 316SS Construction ITM
- Quick Thread Release (for sensor replacement)
- Integral Calibration Port

Electrochemical Fuel Cell
(shown as PN 961-340022-25P in Aluminum j-box with Loop Powered Display)

Scrolling Full Message/Text Display
<table>
<thead>
<tr>
<th>Gas</th>
<th>Part Number</th>
<th>Warranty</th>
<th>Measuring</th>
<th>Accuracy</th>
<th>Response Time</th>
<th>Operating Temp</th>
<th>Storage Temp</th>
<th>Operating Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia</td>
<td>961-500022-100</td>
<td>2 years</td>
<td>0-100 ppm</td>
<td>±2% FS</td>
<td>T90≤90 seconds</td>
<td>-40 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>961-550022-020</td>
<td>2 years</td>
<td>0-20 ppm</td>
<td>±2% FS</td>
<td>T90≤20 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Chlorine</td>
<td>961-740022-010</td>
<td>2 years</td>
<td>0-10 ppm</td>
<td>±2% FS</td>
<td>T90≤60 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Chlorine Dioxide 701</td>
<td>961-770022-001</td>
<td>2 years</td>
<td>0-1 ppm</td>
<td>±2% FS</td>
<td>T90≤60 seconds</td>
<td>-4 to 104°F/-20 to 40°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Diborane</td>
<td>961-260022-005</td>
<td>1.5 years</td>
<td>0.5 ppm</td>
<td>±2% FS</td>
<td>T90≤60 seconds</td>
<td>-4 to 104°F/-20 to 40°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>20-95% RH non-condensing</td>
</tr>
<tr>
<td>Ethanol</td>
<td>961-EO0022-100</td>
<td>2 years</td>
<td>0-100 ppm</td>
<td>±2% FS</td>
<td>T90≤140 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Ethylene Oxide</td>
<td>961-EO0022-100</td>
<td>2 years</td>
<td>0-100 ppm</td>
<td>±2% FS</td>
<td>T90≤140 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Ethylene</td>
<td>961-EO0022-100</td>
<td>2 years</td>
<td>0-100 ppm</td>
<td>±2% FS</td>
<td>T90≤140 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>961-EP0022-100</td>
<td>2 years</td>
<td>0-100 ppm</td>
<td>±2% FS</td>
<td>T90≤140 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Fluorine</td>
<td>961-270022-001</td>
<td>1.5 years</td>
<td>0.1 ppm</td>
<td>±2% FS</td>
<td>T90≤60 seconds</td>
<td>14 to 104°F/-10 to 40°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Hydrogen Chloride</td>
<td>961-090022-030</td>
<td>1.5 years</td>
<td>0-30 ppm</td>
<td>±2% FS</td>
<td>T90≤70 seconds</td>
<td>-4 to 104°F/-20 to 40°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>10-95% RH non-condensing</td>
</tr>
<tr>
<td>Hydrogen Cyanide</td>
<td>961-130022-030</td>
<td>2 years</td>
<td>0-30 ppm</td>
<td>±2% FS</td>
<td>T90≤40 seconds</td>
<td>-40 to 104°F/-40 to 40°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>5-90% RH non-condensing</td>
</tr>
<tr>
<td>Hydrogen Fluoride</td>
<td>961-330022-010</td>
<td>1.5 years</td>
<td>0-10 ppm</td>
<td>±2% FS</td>
<td>T90≤90 seconds</td>
<td>-4 to 95°F/-20 to 35°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>10-80% RH non-condensing</td>
</tr>
<tr>
<td>Methanol</td>
<td>961-EE0022-100</td>
<td>2 years</td>
<td>0-100 ppm</td>
<td>±2% FS</td>
<td>T90≤140 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Methyl Mercaptan</td>
<td>961-EM0022-100</td>
<td>2 years</td>
<td>0-100 ppm</td>
<td>±2% FS</td>
<td>T90≤45 seconds</td>
<td>-40 to 122°F/-40 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Nitric Oxide</td>
<td>961-940022-100</td>
<td>3 years</td>
<td>0-100 ppm</td>
<td>±2% FS</td>
<td>T90≤10 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>961-640022-010</td>
<td>2 years</td>
<td>0-10 ppm</td>
<td>±2% FS</td>
<td>T90≤40 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Oxygen</td>
<td>961-340022-025</td>
<td>2 years</td>
<td>0-25% volume</td>
<td>±1% FS</td>
<td>T90≤10 seconds</td>
<td>-4 to 122°F/-20 to 50°C</td>
<td>-40 to 122°F/-40 to 50°C</td>
<td>15-90% RH non-condensing</td>
</tr>
<tr>
<td>Ozone</td>
<td>961-390022-001</td>
<td>2 years</td>
<td>0.1 ppm</td>
<td>±2% FS</td>
<td>T90≤120 seconds</td>
<td>14 to 104°F/-10 to 40°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>10-95% RH non-condensing</td>
</tr>
<tr>
<td>Phosphine</td>
<td>961-200022-005</td>
<td>1.5 years</td>
<td>0-5 ppm</td>
<td>±2% FS</td>
<td>T90≤30 seconds</td>
<td>-4 to 104°F/-20 to 40°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>20-95% RH non-condensing</td>
</tr>
<tr>
<td>Silane</td>
<td>961-230022-050</td>
<td>1.5 years</td>
<td>0-50 ppm</td>
<td>±2% FS</td>
<td>T90≤60 seconds</td>
<td>-4 to 104°F/-20 to 40°C</td>
<td>-31 to 131°F/-35 to 55°C</td>
<td>20-95% RH non-condensing</td>
</tr>
</tbody>
</table>

*Note 2: This product is a safety device to detect hazardous conditions, and is not intended for process control application in fire opening operations.*
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**System specifications**

System Specifications

Sensor Type
- Continuous diffusion/adsorption
- 2-electrode electrochemical cell
- Plug-in field replaceable Type

Span Drift
- <5% signal loss per year (in first 2 years)

Outputs
- Linear 4-20 mA DC

Electrical Classification
- Explosion proof
- cCSAus
- Class I, Division 1, Groups B, C, D (Tamb = -40°C to +50°C)

Safety Approvals
- cCSAus

Sensor Life/Warranty
- See sensor detail table above for specific sensor warranty

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**Environmental Specifications**

Operating Temperature Range
- Refer to chart on prior page per gas type.

Storage Temperature Range
- Refer to chart on prior page per gas type.

Operating Humidity Range
- 0% to 99% RH non-condensing (continuous)
- 0%-100% RH (intermittent)

Operating Pressure Range
- Atmospheric ±10%

Specifications subject to change without notice

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**Mechanical specifications**

Dimensions
- 7"H x 2.2" Dia.; 178mmH x 65mm Dia. (sensor assembly only)
- 11"H x 6.1"W x 3.75"D; 280mmH x 155mmW x 96mmD (with junction box)

Mounting holes (J-box) 5.5"; 140mm center to center

Weight
- 2 lbs; 0.907 kg (sensor only)
- 6 lbs; 2.72 kg (w/aluminum j-box)
- 9 lbs; 4.08 kg (w/stainless steel j-box)

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**Electrical specifications**

Power Input
- 11 - 30 VDC

Power Consumption
- Normal operation = 30mA @ 24V (<0.75 watt)
- Maximum = 50mA @ 24V (1.2 watts)

Inrush Current
- 500mA @ 24V (typical)

Analog Output
- Linear 4-20mA DC (1,000 ohms max loop load @ 24VDC)

0mA All Fault Diagnostics
2mA In-Calibration
4-20mA 0-100% full-scale
22mA Over-range condition

Status Indicators
- Optional 4-digit LED display with gas concentration
- Full-script menu prompts for AutoSpan, Set-up Options, and Fault Reporting

Faults Monitored
- Loop, Input Voltage, Missing Sensor, Zero, Processor, Memory, Calibration

Cable Requirements

Power/Analog
- 3-wire shielded cable
- Maximum distance is 13,300 feet with 14 AWG

Serial Output
- 2-wire twisted-pair with ground, shielded communication cable specifically for use with RS-485 installations
- Maximum distance is 4,000 feet to last sensor

I/O Protection
- Over-voltage, Miswiring