Model DM-100-HBr

Hydrogen Bromide Sensor

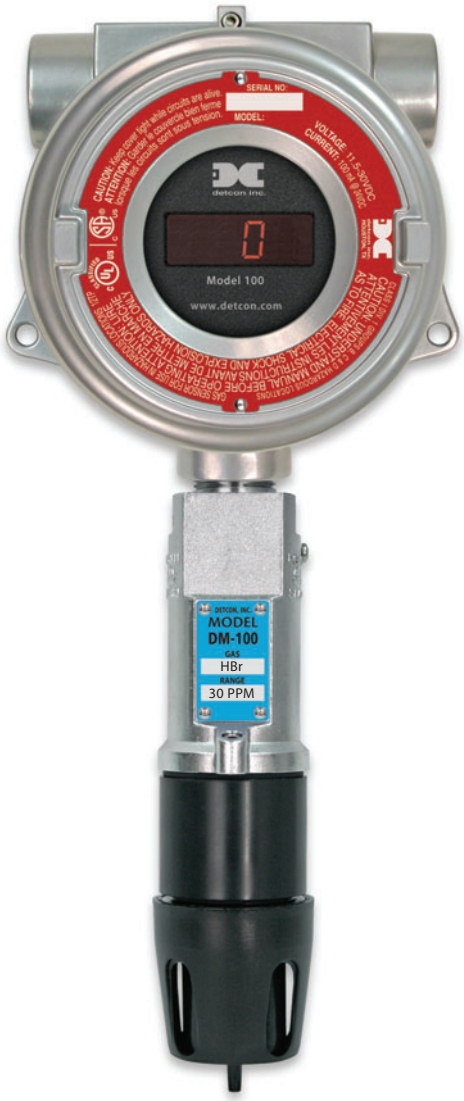
GAS DETECTION SENSORS ▪ INTEGRATED CONTROL SYSTEMS ▪ SMARTWIRELESS® ▪ PIPELINE ANALYZERS ▪ ALARMS

Description

Detcon Model DM-100-HBr is a gas detection sensor designed to detect and monitor Hydrogen Bromide in air over the range of 0-30 ppm using electrochemical sensor technology. Method of detection is by diffusion adsorption. Air and gas molecules diffuse through a porous membrane contacting an electrolyte solution which creates a change in electrical conductance between a reference and measure electrode. This change in conductance is conditioned by internal electronic circuitry to provide a linear 4-20 milliamp signal proportional to the gas concentration.

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, Remote Alarm Module (RAM), HART, and a current to RS-485 converter. The standard serial converter is Modbus RTU. 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.



(shown as PN 961-080022-030 in Aluminum j-box with Loop Powered Display)

Features

- XP-intrinsically Safe Design
- NEMA 4X Weatherproof & NEMA 7 Explosion Proof
- Class I, Div. 1, Groups A, B, C, & D
- 2 Wire Loop-powered
- Field Replaceable Electrochemical Sensor
- Non-intrusive Magnetic Interface
- Built-in Diagnostics
- Fully Encapsulated Electronics
- Electropolished 316SS Construction
- Quick Thread Release (for sensor replacement)
- Integral Calibration Port

Applications

- Oil & Gas
- Chemical Plants
- Food and Beverage
- Steel Mills
- Pulp and Paper
- Refineries
- Wastewater Treatment Plants
- Utilities

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R061611

System Specifications

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

Measurement Range
0-30 ppm, Other ranges available

Accuracy/Repeatability
±2% FS

Response/Clearing Time
T90 <70 seconds

Span Drift
<3% signal loss per month

Outputs
Linear 4-20 mA DC

Electrical Classification
Explosion proof
CSA and US (NRTL)
Class I, Division 1, Groups A, B, C, D (Tamb = -40°C to +50°C)
Class I, Zone 1, Group IIC
ATEX
II 2 G Ex d [ib] ib IIC T4 (Tamb = -40°C to +50°C)
II 1 G Ex ia II C T4 (with IS barrier installed)

Ingress Protection
NEMA 4X, IP66

Safety Approvals
cCSAus
ATEX
CE Marking (Pending)

Sensor Life/Warranty
Plug-in cell - 1 1/2 years; Transmitter - 2 Years

Environmental Specifications

Operating Temperature Range
-4°F to +104°F; -20°C to +40°C

Storage Temperature Range
-31°F to +131°F; -35°C to +55°C (typical)

Operating Humidity Range
10% to 95% RH non-condensing (continuous)
5%-100% RH (intermittent)

Operating Pressure Range
Atmospheric ±10%

Specifications subject to change without notice

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)
Mechanical Connection:
3/4" male NPT threaded connection with locking nut
Electrical Connection:
Four 18 gauge wire leads - 5.5" long
Mounting holes (with J-box) 5.5" (140mm) center to center

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

Electrical Specifications

Power Input
10-28 VDC

Power Consumption
Normal operation = 4mA (0.1 watts @ 24VDC)
Maximum = 20mA (0.5 watts @ 24VDC; 0.23 watts @ 11.5VDC)

RFI/EMI Protection
Complies with EN61362

Analog Output
Linear 4-20mA DC (750 ohms max loop load @ 24VDC)

1.2mA	All Fault Diagnostics (without display)
3mA	All Fault Diagnostics (with display)
4-20mA	0-100% full-scale
22mA	Over-range condition

Serial RS-485 Output (optional)
RS-485 Modbus™ RTU

Baud Rate (optional)
9600 BPS (9600,N,8,1 Half Duplex)

Status Indicators
4-digit LED display with gas concentration & fault (optional)

Faults Monitored
Missing Sensor, Zero,
Calibration, Temperature

Cable Requirements
Power/Analog
2-wire shielded cable
Maximum distance is 13,300 feet with 14 AWG
Serial Output (optional)
2-wire twisted-pair shielded cable specifically for use with RS-485 installations
Maximum distance is 4,000 feet to last sensor

I/O Protection
Over-voltage, Miswiring, EMI/RFI Immunity

Order Guide

961-080025-030	DM-100-HBr (no junction box)
961-080021-030	DM-100-HBr with aluminum j-box
961-080023-030	DM-100-HBr with 316 SS j-box
961-080022-030	DM-100-HBr with alum j-box & loop powered display
961-080024-030	DM-100-HBr with 316 SS j-box & loop powered display

Accessories

Junction Box (aluminum or 316-SS with Transient Protection Terminal Board)
Loop Powered Digital Display (Provides a Direct Display of Sensor Readings)
Remote Alarm Module (Remote Operation and 2 Alarm Relays plus Fault)
Hart Integration Module (Hart Communication Protocol version 7.0, HART Registered)
Current to RS-485 Converter (Modbus RTU)
Wireless Communications (Detcon Model RXT-320 SmartWireless® Transceivers)

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