

## Model DM 700

Toxic gas sensors



Scrolling Full Message/Text Display



(shown as PN 967-505094-100 in SS junction box)



### Applications

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

### Description

Model 700 Series Sensors are a non-intrusive “Smart” sensors designed to detect and monitor oxygen and Toxic Gases in air using electrochemical sensor technology.

The intelligent plug-in, field replaceable cell provides automatic recognition of gas type and range, and features over-sized gold-plated connections that help prevent corrosion.

The Model 700’s rugged framework includes an intrinsically safe electro-polished 316 stainless steel housing with fully encapsulated electronics and dual layer surge protection.

This innovative design virtually eliminates sensor failure due to water ingress, corrosion, vibration, and transient spikes.

A primary feature of the Model 700 is embedded intuitive software that simplifies operator interface by guiding the user through routine calibration, configuration, and fault diagnostic functions using a built-in alpha/numeric display.

The Model 700 is equipped with standard analog 4-20mA, and Modbus™ RS-485 outputs. Among its unique features is a wireless option that can be used with Detcon’s SmartWireless® product line. Additional integration options include a Remote Alarm Module (RAM) and HART.

Detcon’s toxic gas and oxygen sensors have a long shelf life and are supported by an industry-leading warranty.

### Features

#### Failsafe User-Friendly Interface

- LED Display (With Antiglare Cover)
- Full Text Display Method
- Non-intrusive Interface
- Auto Zero/Auto Span
- Pre-emptive Fault Diagnostics

#### Environmentally Bulletproof

- Electropolished 316SS Construction
- 100% Epoxy Encapsulated Circuitry
- Bulletproof I/O Protection
- Water-proof, Corrosion-Proof, Vibration-Proof

#### Modular and Serviceable

- Modular Design
- Plug and Play Components
- Quick Thread Release Sensor Endcap (Allen Wrench only required)
- Integral Calibration Port



# Model DM 700

## Toxic gas sensors

Gas	Part Number	Warranty	Measuring Accuracy	Response Time	Operating Temp	Storage Temp	Operating Humidity
Acetylene (* See Note)	967-12EG91-100	2 years	0-100 ppm ±2% FS	T90≤140 seconds	-4 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Ammonia	967-505091-100	2 years	0-100 ppm ±2% FS	T90≤90 seconds	-40 to 122°F/-40 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Arsine	967-191991-001	1.5 years	0-1 ppm ±2% FS	T90≤60 seconds	-4 to 104°F/-20 to 40°C	-31 to 131°F/-35 to 55°C	20-95% RH non-condensing
Bromine	967-747591-005	2 years	0-5 ppm ±2% FS	T90≤60 seconds	-4 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-95% RH non-condensing
Butadiene	967-12EB91-100	2 years	0-100 ppm ±2% FS	T90≤140 seconds	-4 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Carbon Monoxide	967-444491-100	3 years	0-100 ppm ±2% FS	T50≤10 sec./ T90≤30 sec.	-40 to 122°F/-40 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Chlorine	967-747491-010	2 years	0-10 ppm ±2% FS	T90≤60 seconds	-4 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Chlorine Dioxide 700	967-747691-050	2 years	0-50 ppm ±2% FS	T90≤120 seconds	-4 to 104°F/-20 to 40°C	-31 to 131°F/-35 to 55°C	10-95% RH non-condensing
Chlorine Dioxide 701	967-777791-001	2 years	0-1 ppm ±2% FS	T90≤60 seconds	-4 to 104°F/-20 to 40°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Diborane	967-192191-005	1.5 years	0-5 ppm ±2% FS	T90≤60 seconds	-4 to 104°F/-20 to 40°C	-31 to 131°F/-35 to 55°C	20-95% RH non-condensing
Ethanol	967-12EO91-100	2 years	0-100 ppm ±2% FS	T90≤140 seconds	-4 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Ethylene (* See Note 2)	967-12ED91-100	2 years	0-100 ppm ±2% FS	T90≤140 seconds	-4 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Ethylene Oxide	967-12EI91-100	2 years	0-100 ppm ±2% FS	T90≤140 seconds	-4 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Fluorine	967-272791-001	1.5 years	0-1 ppm ±2% FS	T90≤80 seconds	14 to 104°F/-10 to 40°C	-31 to 131°F/-35 to 55°C	10-95% RH non-condensing
Formaldehyde	967-12EP91-100	2 years	0-100 ppm ±2% FS	T90≤140 seconds	-40 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Germane	967-232591-002	1.5 years	0-2 ppm ±2% FS	T90≤60 seconds	-40 to 104°F/-20 to 40°C	-31 to 131°F/-35 to 55°C	20-95% RH non-condensing
Hydrogen (1%)	967-070791-01P	2 years	0-1% volume ±2% FS	T90≤60 seconds	-4 to 104°F/-40 to 40°C	-31 to 131°F/-35 to 55°C	5-90% RH non-condensing
Hydrogen (4%)	967-050591-04P	2 years	0-4% ±2% FS	T90≤60 seconds	-4 to 104°F/-40 to 40°C	-31 to 131°F/-35 to 55°C	5-95% RH non-condensing
Hydrogen PPM	967-848491-100	2 years	0-100 ppm ±2% FS	T90≤30 seconds	-40 to 122°F/-20 to 50°C	-31 to 131°F/-35 to 55°C	15-90% RH non-condensing
Hydrogen Bromide	967-090891-030	1.5 years	0-30 ppm ±2% FS	T90≤70 seconds	-4 to 104°F/-20 to 40°C	-31 to 131°F/-35 to 55°C	10-95% RH non-condensing
Hydrogen Chloride	967-090991-030	1.5 years	0-30 ppm ±2% FS	T90≤70 seconds	-4 to 104°F/-20 to 40°C	-31 to 131°F/-35 to 55°C	10-95% RH non-condensing
Hydrogen Cyanide	967-131391-030	2 years	0-30 ppm ±2% FS	T90≤40 seconds	-40 to 104°F/-40 to 40°C	-31 to 131°F/-35 to 55°C	5-95% RH non-condensing
Hydrogen Fluoride	967-333391-010	1.5 years	0-10 ppm ±2% FS	T90≤90 seconds	-4 to 95°F/-20 to 35°C	-31 to 131°F/-35 to 55°C	10-80% RH non-condensing
Hydrogen Sulfide	967-242491-100	2 years	0-100 ppm ±2% FS	T50≤10 sec./ T80≤30 sec.	-40 to 122°F/-40 to 50°C	-31 to 131°F/-35 to 55°C	5-90% RH non-condensing
Hydrogen Sulfide (DC)*	967-303091-100	2 years	0-100 ppm ±10% applied gas concentration or ±3 ppm, whichever is greater	T20 ≤ 20sec	-40 to +131 °F/-40 to +55 °C	-31 to +131 °F/-35 to +55 °C	5-90% RH non-condensing
	967-303091-050			T50 ≤ 45 sec			
	967-303091-025			T90 ≤ 60 sec			
Methanol	967-12EE91-100	2 years	0-100 ppm ±2% FS	T90≤140 seconds	-4 to 122°F/-20 to 50°C	-31 to +131°F/-35 to 55°C	15-90% RH non-condensing
Methyl Mercaptan	967-12EK91-100	2 years	0-100 ppm ±2% FS	T90≤45 seconds	-40 to 122°F/-40 to 50°C	-31 to +131°F/-35 to 55°C	15-90% RH non-condensing
Nitric Oxide	967-949491-100	3 years	0-100 ppm ±2% FS	T90≤10 seconds	-4 to 122°F/-20 to 50°C	-31 to +131°F/-35 to 55°C	15-90% RH non-condensing
Nitrogen Dioxide	967-646491-010	2 years	0-10 ppm ±2% FS	T90≤40 seconds	-4 to 122°F/-20 to 50°C	-31 to +131°F/-35 to 55°C	15-90% RH non-condensing
Oxygen	967-341520-025	2 years	0-25% volume ±1% FS	T90≤10 seconds	-4 to 122°F/-20 to 50°C	-40 to 122°F/-40 to 50°C	15-90% RH non-condensing
Ozone	967-393991-001	2 years	0-1 ppm ±2% FS	T90≤120 seconds	14 to 104°F/-10 to 40°C	-31 to +131°F/-35 to 55°C	10-95% RH non-condensing
Phosphine	967-192091-005	1.5 years	0-5 ppm ±2% FS	T90≤30 seconds	-4 to 104°F/-20 to 40°C	-31 to +131°F/-35 to +55°C	20-95% RH non-condensing
Silane	967-232391-050	1.5 years	0-50 ppm ±2% FS	T90≤60 seconds	-4 to 104°F/-20 to 40°C	-31 to 131°F/-35 to +55°C	20-95% RH non-condensing
Sulfur Dioxide	967-555591-020	2 years	0-20 ppm ±2% FS	T90≤20 seconds	-4 to 122°F/-20 to 50°C	-31 to +131°F/-35 to +55°C	15-90% RH non-condensing

\*Note: Acetylene can only be used with a Group A enclosure.

\*Note2: This product is a safety device to detect hazardous conditions, and is not intended for process control application in fruit ripening operations.

\*Note3: DC=Desert Climate Sensors are 3rd-party test report to ISA 92.00.01 2010 standard

# Model DM 700

## Toxic gas sensors

### System specifications

#### Sensor Type

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

#### Outputs

Linear 4-20 mA DC  
RS-485 MODBUS-RTU

#### Electrical Classification

Explosion proof  
cCSA<sub>US</sub>  
Class I, Division 1, Groups B, C, D ()  
Class I, Zone 1, Group IIC

#### ATEX

II 2 G Ex d ib IIB + H2 T4 GB  
Ingress Protection  
NEMA 4X, IP66

#### Safety Approvals

cCSAus  
ATEX  
CE Marking  
SIL2 Certified to IEC 61508

\* Specifications subject to change without notice

### Order guide

PN 967 - \_\_\_ 090 - \_\_ z DM - 700 Sensor Assembly (no junction box)  
PN 967 - \_\_\_ 091 - \_\_ z DM - 700 Sensor Assembly with Aluminum J-Box  
PN 967 - \_\_\_ 094 - \_\_ z DM - 700 Sensor Assembly with 316 SS J-Box

\_ = Any character as shown in table on prior page  
z = Code for Regulatory Approval Required, C for CSA or A for ATEX, others available.

C for CSA or A for ATEX

### Integration options

The first three characters of the PN define the Integration options as follows:

PN 9R7 - Remote Alarm Module (Remote Operation and 2 Alarm Relays plus Fault)  
PN 9H7 - Hart Integration Module (Hart Communication Protocol version 7.0, HART Registered)  
PN 9K7 - Combination HART / Remote Alarm Module (Combines the features of both into one module)

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

### 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)

#### RFI/EMI Protection

Complies with EN50270

#### 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

#### Serial RS-485 Output

RS-485 Modbus™ RTU

#### Baud Rate

9600 BPS (9600, N, 8, 1 Half Duplex)

#### Status Indicators

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, EMI/RFI Immunity



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