



# Model DM-700-PH3 Phosphine Sensor

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

## Description

Detcon Model DM-700-PH3 is a non-intrusive “Smart” sensor designed to detect and monitor Phosphine in air over the range of 0-5 ppm 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), HART, and Foundation Fieldbus. Detcon’s toxic gas sensors have a long shelf life and are supported by an industry-leading warranty.

## Electrochemical Fuel Cell

(shown as PN 967-192094-005 in SS junction box)



## 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 (For Sensor Replacement)
- ▶ Integral Calibration Port

## Applications

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

Scrolling Full Message/Text Display



## System Specifications

### Sensor Type

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

### Measurement Range

0-5 ppm, Other ranges available

### Accuracy/Repeatability

±2% FS

### Response/Clearing Time

T90 <30 seconds

### Span Drift

<1% signal loss per month

### Outputs

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

### Electrical Classification

Explosion proof  
CSA and US (NRTL)  
Class I, Division 1, Groups B, C, D (Tamb = -40°C to +50°C)  
Class I, Zone 1, Group IIC  
ATEX  
II 2 G Ex d ib IIC T4 Gb (Tamb = -40°C to +50°C)

### Ingress Protection

NEMA 4X, IP66

### Safety Approvals

cCSAus  
ATEX  
CE Marking  
SIL2 Certified to IEC 61508

### 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

20% to 95% RH non-condensing

### 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)  
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 (<0.75 watt)  
Maximum = 50mA (1.2 watts)

### Inrush Current

500mA @ 24V (typical)

### RFI/EMI Protection

Complies with EN61000

### 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 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

 Specify junction box options (below)

PN 967-192090-005 DM-700-PH3 Sensor Assembly (no junction box)  
PN 967-192091-005 DM-700-PH3 Sensor Assembly with Aluminum J-Box  
PN 967-192094-005 DM-700-PH3 Sensor Assembly with 316 SS J-Box

## Integration Options

Remote Alarm Module (Remote Operation and 2 Alarm Relays plus Fault)  
Hart Integration Module (Hart Communication Protocol version 7.0, HART Registered)  
Foundation Fieldbus Integration Module (Foundation Fieldbus version 5.01)  
Wireless Integration Module (Detcon Model RXT-320 SmartWireless® Transceivers)

Houston

Odessa

Shanghai

Dammam

Del Carmen



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