



# Model DM-700-F2 Fluorine Sensor

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

## Description

Detcon Model DM-700-F2 is a non-intrusive “Smart” sensor designed to detect and monitor Fluorine in air over the range of 0-1 ppm using electrochemical sensor technology. The intelligent plug-in, field replaceable cell provides automatic recognition of gas type and range, and features oversized 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, Foundation Fieldbus, and Profibus. Detcon’s toxic gas sensors have a long shelf life and are supported by an industry-leading warranty.

## Electrochemical Fuel Cell

(shown as PN 967-272794-001 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

0-1 ppm, Other ranges available

### Accuracy/Repeatability

±2% FS

### Response/Clearing Time

T90 <80 seconds

### Span Drift

<5% signal loss per year

### 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] ib IIC T4 (Tamb = -40°C to +50°C)

### Ingress Protection

NEMA 4X, IP66

### Safety Approvals

cCSAus  
ATEX  
CE Marking  
SIL2 FMEDA Rating

### Sensor Life/Warranty

Plug-in cell - 1 1/2 years; Transmitter - 2 Years

## Environmental Specifications

### Operating Temperature Range

+14°F to +104°F; -10°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

### 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

1.67A @ 24V

### 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 967-272790-001 DM-700-F2 Sensor Assembly (no junction box)  
PN 967-272791-001 DM-700-F2 Sensor Assembly with Aluminum J-Box  
PN 967-272794-001 DM-700-F2 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)  
Profibus Integration Module (Certified to Profibus DP Standard)  
Foundation Fieldbus Integration Module (Foundation Fieldbus version 5.01)  
Wireless Integration Module (Detcon Model RXT-320 SmartWireless® Transceivers)

Houston

Odessa

Shanghai

Dammam

Del Carmen



Tel: 713-559-9200  
Toll Free: 888-367-4286  
Fax: 281-292-2860  
Email: sales@detcon.com  
Web: www.detcon.com

ISO 9001: 2008  
Certified