



# Gas & Flame Detection



## 3M™ Detcon™ Model PI-700 Universal VOC Gas Sensor

### Description

Detcon Model PI-700 is a non-intrusive “Smart” sensor that use photo-ionization detector technology to monitor VOC gases over ranges from 0-10 ppm to 0-5,000 ppm. There is also a special 0-500 ppb version available. In the PI-700 sensor design, Detcon has successfully converted the sensitive laboratory style PID technology into a rugged, environmentally insensitive, and long-life industrial gas sensor. The plug-in, field replaceable detector features over-sized gold-plated connections that help prevent corrosion. The PI-700’s rugged framework includes an 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 PI-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 PI-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 PID sensors have a long shelf life and are supported by an industry leading warranty.

### Scrolling Full Message/Text Display

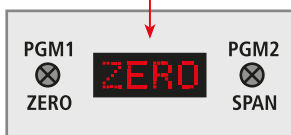


Photo Ionization Detector (PID)  
(shown as PN 967-P14520-010 in SS junction box)



### 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

- Pharmaceutical industry
- Power plants
- Chemical industry
- Air quality
- Refineries and petrochemical plants
- Solvent recovery systems
- Waste water treatment plants
- Marine and off-shore oil wells
- Pulp and paper industry
- Painting and coating operations



# 3M™ Detcon™ Model PI-700

## Universal VOC Gas Sensor

### System Specifications

#### Sensor Type

- Continuous diffusion/adsorption
- Photo Ionization Detector (PID)
- Plug-in replaceable intelligent type (with replacement lamp)

#### Sensor Life

2 years typical

#### Measurement Range

- Gas Dependent, ranges as low as 0-10 ppm or as high as 0-5,000ppm (consult Detcon)
- Special Low Range 0-500 ppb

#### Accuracy/Repeatability

±10% of reading or ±2% of range (greater of )

#### Response Time

T50 <30 seconds; T90 <60 seconds

#### Outputs

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

#### Electrical Classification

- Explosion proof
- cCSAus
- Class I, Division 1, Groups B, C, D (Tamb = -20°C to +50°C)
- Class I, Zone 1, Group IIB+H2
- ATEX
- II 2 G Ex d ib IIB + H2 T4 Gb (Tamb = -20°C to +50°C)

#### Ingress Protection

NEMA 4X, IP66

#### Safety Approvals

- cCSAus
- ATEX
- CE Marking

#### Warranty

- PLUG-IN DETECTOR - 1 YEAR
- TRANSMITTER - 2 YEARS

### Environmental Specifications

#### Operating Temperature Range

-4°F to +122°F; -20°C to +50°C

#### Storage Temperature Range

-4°F to +122°F; -20°C to +50°C

#### Operating Humidity Range

0-100% RH non-condensing

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

Maximum = 65mA (1.6 watts)

#### Inrush Current

1.67A @ 24V

#### 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,
- Zero, Missing Sensor,
- 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-P15520-010	PI-700-VOC Sensor Assembly (no junction box)
PN 967-P11520-010	PI-700-VOC Sensor Assembly with Aluminum Junction Box
PN 967-P14520-010	PI-700-VOC Sensor Assembly with 316 SS Junction Box
PN 967-P25520-01K	PI-701-VOC Sensor Assembly (no junction box)
PN 967-P21520-01K	PI-701-VOC Sensor Assembly with Aluminum Junction Box
PN 967-P24520-01K	PI-701-VOC Sensor Assembly with 316 SS Junction Box
PN 967-P15520-0X5	PI-700-VOC Special Low Range Sensor Assembly with 316 SS Junction 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)

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