



# Model PI-700 Universal VOC Gas Sensor

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

## 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, Foundation Fieldbus, and Profibus. Detcon’s PID 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 (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

Photo Ionization Detector (PID)  
(shown as PN 967-P13520-010 in SS junction box)



Scrolling Full Message/Text Display



## 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 <10 seconds; T90 <30 seconds

### 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 +75°C)  
Class I, Zone 1, Group IIB+H2  
ATEX  
EEx d IIB+H2 T4 (Tamb = -40°C to +75°C)

### Ingress Protection

NEMA 4X, IP66

### Safety Approvals

cCSAus Performance to ISA 12.13.01-2000 and CSA 22.2 #152  
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

## 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

## 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 = 68mA (<1.7 watt)  
Maximum = 85mA (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,  
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

## 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 ■ Europe



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