PO Box 8067
The Woodlands, TX 77387
888-367-4286 (toll free)
281-367-4100
281-292-2860 (fax)
sales@detcon.com

detcon

Model Series 10

SINGLE SENSOR CONTROL CARD

Gas Detection Alarm & Control Systems

detcon inc.

www.detcon.com

ISO 9001: 2000 • Certified

Catalog #10-1204

Model Series 10 Control Systems

Description

Detcon Model Series 10 gas detection and alarm systems consist of single sensor control cards that can be integrated into one system design to create multi-function monitoring and control of a wide range of field devices. Field devices include gas detection sensors, flame and fire detection devices and process sensors. Each control card is capable of supervising a single field device, displaying current status of that device and providing alarm relay outputs once user-configured limits are detected. Gas detection control modules display the real time concentration of a wide range of toxic gases, combustible gas, and oxygen sensors that output a 4-20 milliamp signal. The flame detection module displays the real time status of any flame detector with a 4-20 milliamp output signal. The alarm annunciator module can be used to monitor smoke and thermal detectors, pull stations, and any dry contact closure device.

Model Series 10 single sensor control cards feature three alarm relays. Two relays are used as active alarm control outputs and the third relay is a fault condition relay. Alarm relays can be user-configured as latching, non-latching, normally energized or normally de-energized via simple onboard programming jumpers. Front panel indicators include alarm status LEDs and a 7-segment LED digital display of the real time concentration of a field device when applicable. Each module is addressable via RS-485 serial communication.

Detcon manufactures a variety of pre-engineered Model 10 Series mainframe hardware assemblies including NEMA 1 panel mount, standard 19" rack mount, NEMA 4X weather-proof and NEMA 7 explosion-proof. Engineering services for high density integrated fire, gas and process control systems are available from the factory.

Typical Applications

- Oil and Gas Drilling and Production
- Oil and Gas Treating Plants
- Refining Chemical and Petrochemical Plants
- Automotive Industry
- Food and Beverage Processing
- Power Generation Plants
- Pulp and Paper Mills
- Underground Mining
- Water and Wastewater Treatment

Monitoring and Control Options

Gas Detection Sensor Technology

- **Combustible Gas**
  Catalytic & Infrared
- **Hydrogen Sulfide Gas**
  Solid State MOS & Electrochemical
- **Toxic Gas**
  Electrochemical & Photo Ionization
- **Oxygen Deficiency/Enrichment**
  Air Battery Electrochemical

Process Controls

- Pressure
- Temperature
- Humidity
- Flow
- Level

Safety Controls

- Intrusion
- Thermal
- Smoke
- Flame

Anatomy of a Model 10 Series

Single Sensor Control Card

Locking Hardware
Secures modular Model 10 to control enclosure card cage

Color Banding Label
Yellow-H2S, Orange-LEL, Blue-Toxic, Green-O2, Red-Flame

LED Indicator
Flashes in Over-range

Alarm & Fault LEDs

Alarm Reset Switch

Program Menu Switch
Range, Alarm Set Points, RS-485 ID, Activates Test Function

Actual Size

3 Digit Indicator Version
For oxygen and ranges above 100 ppm/%

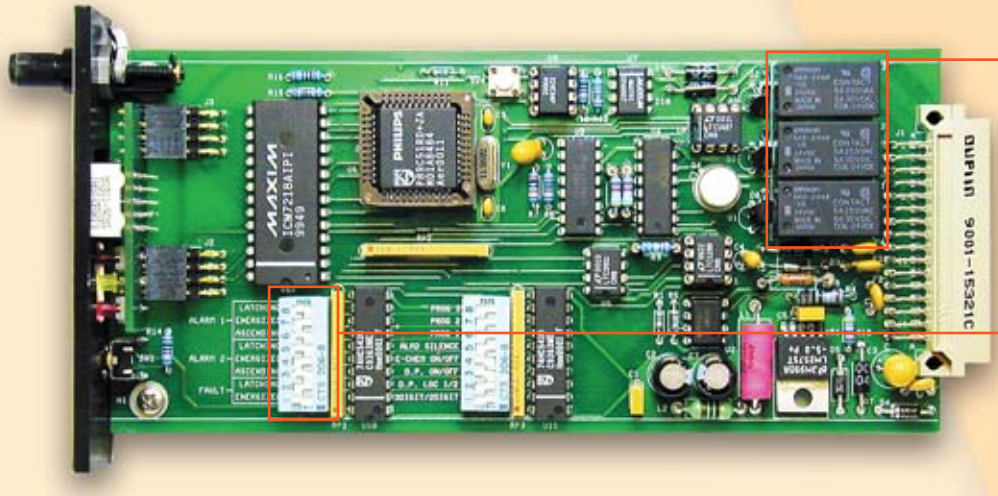
Design Features

Single Sensor Control Cards

- Modular Front Panel Plug-in Design
- Standard Outputs: 4-20mA, RS-485 Modbus
- Programmable Relay Outputs: 2 Alarms plus Fault
- Control Module Status Accessible via RS-485
- Alarm Reset & Alarm Silence
- Alarm Disable for Calibration
- Full Diagnostics for Sensor Inputs & Field Wiring
- Test Function Simulation for Verifying Operation
- Five Year Fixed-Fee Service Policy

Control Enclosures

- 4 to 16 Channel Packaging
- Motherboard has External Common Reset Switch
- Relays Programmable for Discrete, Common or Zoned



Alarm Relays
Provide discrete form "C" contacts.

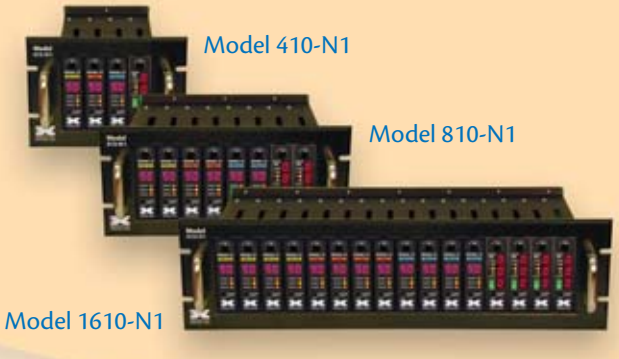
Alarm Relays
Can be programmed for normally energized or normally de-energized; latching or non-latching.

Alarms 1 & 2
Can be programmed to operate as ascending or descending alarms.

Pre-Engineered System Packaging

Detcon Model 10 single sensor control cards can be used with a number of pre-engineered system packages consisting of mainframe hardware assemblies that accommodate from 4 up to 16 control cards. Each mainframe hardware assembly consists of a ruggedly constructed card cage, and motherboard with all I/O terminal strips and alarm zoning jumpers.

NEMA-1 Panel and Rack Mount Assemblies



Model 410-N1

Model 810-N1

Model 1610-N1

NEMA 4X Weatherproof Enclosures

Model 610-N4X

Model 1010-N4X

Model 1610-N4X

Model 810SS-N4X

NEMA 7X Weatherproof Explosion Proof Enclosures

Model 610-N7

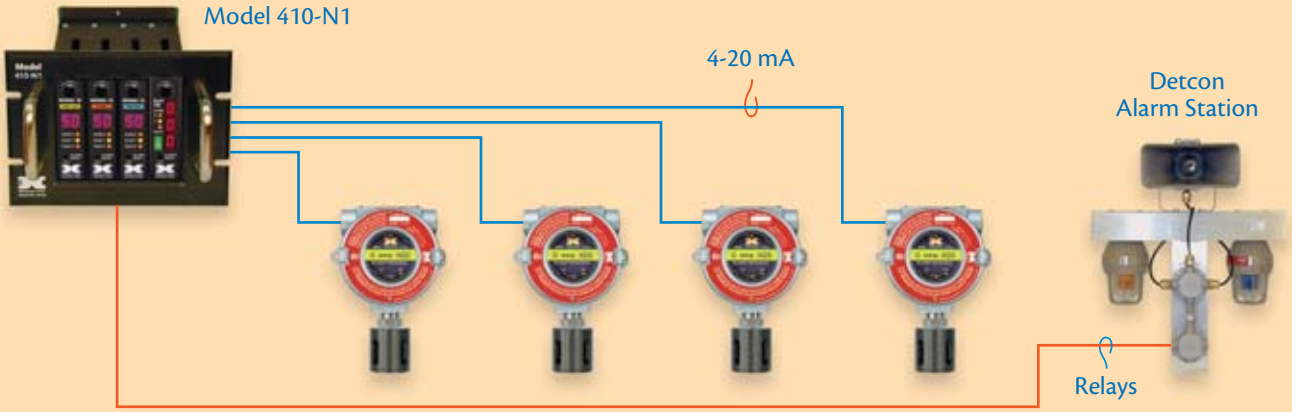
Project Specific Engineered Systems

- Hardwire & PLC based Systems
- Addressable & PC MMI Systems
- Field device selection and location
- Installation drawings and details
- Cabinet design and manufacture
- System start-up, training & after sale support

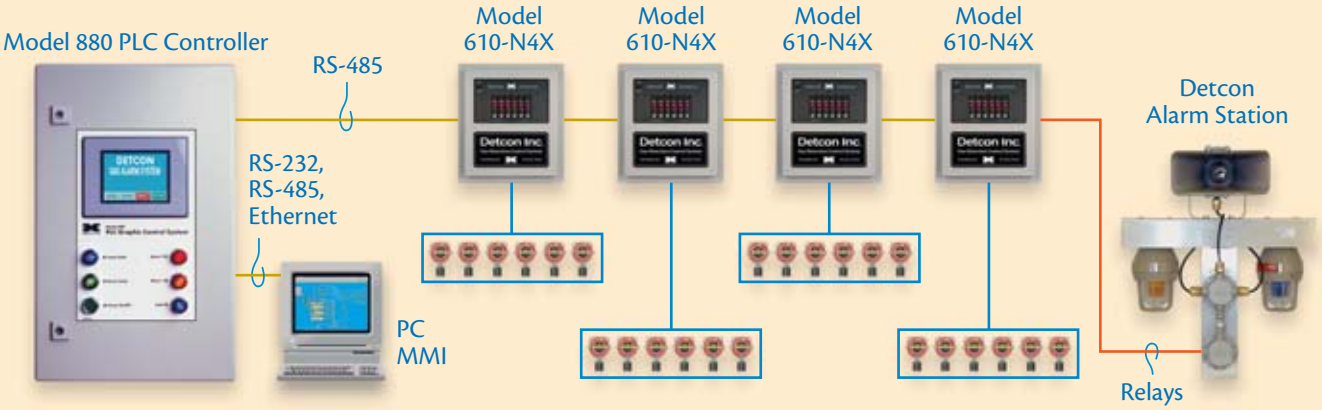
Installation & Integration Options

Model 10 Series control systems integrate directly with hardwire 4-20 mA inputs from field devices. All models offer discrete relay outputs for each sensor and provide the ability for relays to be set up as zoned or common. The RS-485 serial output can be connected to any DCS, PLC or SCADA host control device. The RS-485 serial output is also used to drive optional remote Read-Only Displays. Typical integration configurations are shown below.

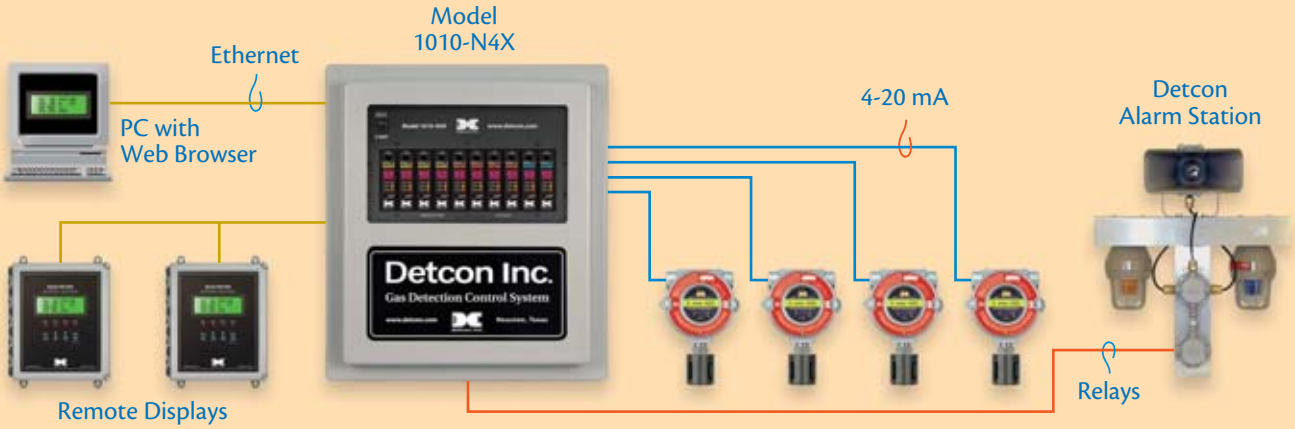
4-20 mA and Alarms



Serial Networking



Remote Display Capabilities



Ordering Information

Model 10 - Single Sensor Control Cards

Gas Type	Model Number	Standard Range*
Acetyldehyde	C2H3O-10	0-100 ppm
Acetylene	C2H2-10	0-100 ppm
Acrylonitrile	C3H3N-10	0-100 ppm
Ammonia	NH3-10	0-100 ppm
Arsine	AsH3-10	0-1 ppm
Bromine	Br2-10	0-5 ppm
Butadiene	C4H6-10	0-100 ppm
Carbon Dioxide	CO2-10	0-1 %
Carbon Monoxide	CO-10	0-100 ppm
Chlorine	Cl2-10	0-10 ppm
Chlorine Dioxide	ClO2-10	0-1 ppm
Combustible Gas	CG-10	0-100 % LEL
Diborane	B2H6-10	0-5 ppm
Ethanol	C2H5OH-10	0-100 ppm
Ethyl Mercaptan	C2H5SH-10	0-100 ppm
Ethylene	C2H4-10	0-100 ppm
Ethylene Oxide	C2H4O-10	0-100 ppm
Fluorine	F2-10	0-1 ppm
Formaldehyde	CH2O-10	0-100 ppm
Germane	GeH4-10	0-2 ppm
Hydrazine	N2H4-10	0-1 ppm
Hydrogen	H2-10	0-100 ppm
Hydrogen Bromide	HBr-10	0-30 ppm
Hydrogen Chloride	HCl-10	0-30 ppm
Hydrogen Cyanide	HCN-10	0-30 ppm
Hydrogen Fluoride	HF-10	0-10 ppm
Hydrogen Sulfide	H2S-10	0-100 ppm
Methanol	CH3OH-10	0-100 ppm
Methyl Mercaptan	CH3SH-10	0-100 ppm
Nitric Oxide	NO-10	0-100 ppm
Nitrogen Dioxide	NO2-10	0-10 ppm
Ozone	O3-10	0-1 ppm
Oxygen	O2-12-10	0-25%
Phosgene	COCl2-10	0-1 ppm
Phosphine	PH3-10	0-5 ppm
Silane	SiH4-10	0-50 ppm
Sulfur Dioxide	SO2-10	0-20 ppm
Vinyl Acetate	C4H6O2-10	0-100 ppm
Vinyl Chloride	C2H3Cl-10	0-100 ppm

*For measurement ranges other than standard, contact the factory.

Alarm Annunciator	A-10
Flame	FL-10

NEMA 1 Rack/Panel Mount Enclosures

Model Number	Description
410-N1-24VDC	4 Channel (requires external 24 VDC power supply)
810-N1-24VDC	8 Channel (requires external 24 VDC power supply)
1610-N1-24VDC	16 Channel (requires external 24 VDC power supply)

NEMA 4 Weatherproof Enclosures

610-N4X	6 Channel with Line Power Supply (in fiberglass enclosure)
1010-N4X	10 Channel with Line Power Supply (in fiberglass enclosure)
1610-N4X	16 Channel with Line Power Supply (in fiberglass enclosure)
410SS-N4X	4 Channel with Line Power Supply (in stainless steel enclosure)
810SS-N4X	8 Channel with Line Power Supply (in stainless steel enclosure)
1610SS-N4X	16 Channel with Line Power Supply (in stainless steel enclosure)

NEMA 7 Hazardous Environment Enclosures

Contact the factory for NEMA 7 enclosure specifications and availability.

Accessories

Description	Part No.
Model 10 Blank Plate	912-000008-003
PS-172 Rack Mount Power Supply (24 VDC, 172 Watt)	975-124172-110
PS-288 Rack Mount Power Supply (24 VDC, 288 Watt)	975-124288-110

Specifications

Single Sensor Control Cards

Range
Ranges can be set from 1 ppm/% up to 1000 ppm/% (in increments of 5 ppm/%)

Accuracy/Repeatablity
± 2% F.S.

Operating Temperature Range
-40°F to +167°F; -40°C to +75°C

Input Voltage
24 VDC standard, 12 VDC optional

Power Consumption (per channel)
<1 watt (normal), <2.5 watts (full alarm)

Outputs
Analog 4-20 mA DC
Serial RS-485 Modbus™

Relays
Alarm 1, Alarm 2, Fault
Form "C" (C, NO, NC)
Contacts rated for 5 amps @ 30 VDC, 250 VAC

Control Enclosures

Electrical Classification
NEMA 1 (410, 810, 1610-N1-24VDC)
NEMA 4X (610, 1010, 1610-N4X)
NEMA 4X (410, 810, 1610SS-N4X)
NEMA 7 (see order guide)

Dimensions
7"W x 5"H x 8"D (410-N1-24VDC)
11"W x 5"H x 8"D (810-N1-24VDC)
19"W x 5"H x 8"D (1610-N1-24VDC)
16"W x 18"H x 10 1/2"D (610, 1010-N4X)
25 1/2"W x 23"H x 10 1/2"D (1610-N4X)
NEMA 7 & SS NEMA 4X (consult factory)

Power Input
24VDC (410, 810, 1610-N1-24VDC)
220VAC/110VAC/24VDC (all others)

Power Consumption
<5 watts per channel (maximum load)
Includes gas sensor & control module

Outputs
Discrete analog 4-20 mA DC
Serial RS-485 Modbus™
Discrete or zoned alarm relays

Operating Temperature
–40° F to +167° F; –40° to +75° C

Warranty

Detcon Inc. warrants each new Model 10 Control Card and Control Enclosure to be free from defects in material and workmanship under intended normal use for a period of two years from the date of shipment to the original purchaser. All warranties are FOB the Detcon factory located in The Woodlands, Texas, USA.