A DET-TRONICS®

SPECIFICATION DATA

Eagle Quantum[™] Premier
Fire and Gas
Detection / Releasing System

APPLICATION

Eagle Quantum™ Premier is a configurable, distributed, intelligent safety system providing flame and/or gas detection, along with alarm signaling, notification, extinguishing agent release, and/or deluge operation. All system components are integrated together on a fault tolerant digital communication network. The system is ideally suited for harsh industrial applications that require a hazardous location rated protection system. Typical applications include:

- Refineries and chemical plants
- Offshore platforms
- Pipelines and liquid gas storage
- Automotive applications
- Turbines / generators / compressors
- Aircraft / vehicle maintenance facilities
- Hazardous manufacturing processes
- Alternative fuel bus facilities.





FEATURES

- Hazardous location certification, including ATEX, for field devices
- Fire detection and alarm
- Fire suppression control
- Gas detection and alarm
- Distributed architecture
- Extensive diagnostics
- Device calibration data and event logging
- Programmable logic
- Real time clock
- Four-line, 20 character alphanumeric display
- LED status indicators
- Fault tolerant communication loop
- Up to 60* intelligent addressable field devices
- NFPA/CEC/CENELEC/CE Approvals pending
- Designed in accordance with ANSI/NFPA 72 National Fire Alarm Code.





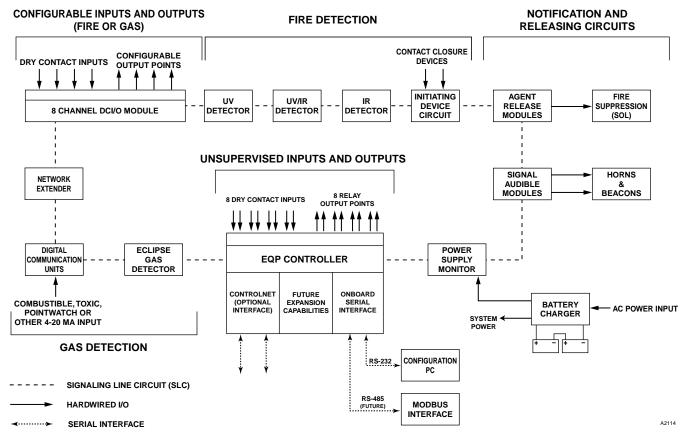


Figure 1—Block Diagram of the Eagle Quantum Premier System

SYSTEM DESCRIPTION

The Eagle Quantum Premier system is a third generation hazard protection system that is designed for fire and gas detection and initiation of alarm/trouble notification and suppression. The system utilizes modularized field devices on a digital communication loop. All the detection, re-action, and notification activities are coordinated through a centralized Controller. See Figure 1.

The Eagle Quantum Premier system has the flexibility to utilize any combination of Eagle Quantum Premier field devices. The system can be a total gas detection system, a total fire detection system, or a combination of both fire and gas detection. All devices and operating parameters are configured through the Controller.

Third party devices can be integrated into the system either through dry contact closure inputs (using IDCs/DCIOs) or through 4 to 20 mA inputs (using DCUs).

Through its centralized control unit, the Eagle Quantum Premier system provides an open architecture in which systems can be tied together to share information. PLC, DCS and human/machine interface (HMI) systems can communicate directly with the Eagle Quantum Premier system through supported communication protocols. The controller supports up to two optional communication boards, along with a built-in RS-485 Modbus interface. An optional two port ControlNet board is also available.

The Eagle Quantum Premier Controller displays current information about the system. Twelve LEDs are provided to indicate when an alarm or fault condition exists. The four line 20-character vacuum florescent display (VFD) shows the current status of the system. Alarm and trouble conditions are easily identified, along with the associated device tagname.

The Eagle Quantum Premier system provides operational flexibility through custom designed user logic programs in the controller. Over 50 different types of logic gates are available to allow the system to be optimized for nearly any application.

Eagle Quantum Premier Controller



The microprocessor-based Controller continuously monitors the field devices on the Signaling Line Circuit (SLC) and performs the logic functions needed to generate the appropriate output(s). The Controller performs both fixed and user programmable logic operations. Fixed logic controls the faceplate displays and relay outputs (alarm, trouble and supervisory) per ANSI/NFPA 72. Fixed logic also activates built-in annunciation circuits, consisting of both visible and audible alarms.

Programmable logic allows the Controller to be customized to perform a variety of complex logic operations. Using Det-Tronics S3 Software, the Controller can be programmed using logic gates to implement crosszone monitoring, voting, or timed operations that might be needed in a fire suppression system.

The Controller also has provisions for communications with external devices and software. An optional ControlNet™ board is available for monitoring Eagle Quantum Premier's system status.

INPUT VOLTAGE—

24 vdc nominal, 18 to 30 Vdc. 10% overvoltage will not cause damage to the equipment.

UNSUPERVISED OUTPUTS (8 Relays)-

Dry Contact Rating: 1 ampere at 30 Vdc maximum. SPDT normally open/normally closed contact, configurable for normally energized or de-energized (de-energized is the default mode).

TROUBLE OUTPUT-

SPDT normally open/normally closed contact. Non-configurable, normally energized only.

RELAY RESPONSE TIME—

Output relays actuate in <0.1 second after acknowledging an alarm command message.

UNSUPERVISED INPUTS (8 Channels)-

Two state input (on/off).

User selectable normally open or normally closed contact (N.O. is the default).

TEMPERATURE RANGE—

Operating: -40°F to +185°F (-40°C to +85°C). Storage: -40°F to +185°F (-40°C to +85°C). Excluding communication port optional modules.

HUMIDITY RANGE—

0 to 95% RH, non-condensing.

DIMENSIONS—

L: 10.75 inches W: 5.25 inches D: 2.15 inches.

MOUNTING-

DIN rail or panel mount.

Signaling Line Circuit (SLC) Devices

The SLC is a fault tolerant, two wire, digital communication network, arranged in a loop that starts and ends at the Controller. In its base configuration, the SLC supports up to 60 intelligent field devices spread over a distance of up to 2000 meters (up to 10,000 meters using Network Extenders). Devices on the network can consist of a variety of flame and gas detectors, as well as other input and output devices.

Each device on the SLC contains both the hardware and software necessary to isolate and re-route communication in the event of a network wiring fault. When a problem occurs somewhere within the network wiring, the Controller annunciates the fault, while the fault isolation circuitry in the affected nodes isolates the section of the network where the fault has occurred. Communication is thereby ensured and will continue over the network. See Figure 2.

A single open or short on the SLC will not affect system communication between the field devices and the Controller. System communication to all field devices will continue until the wiring problem can be repaired.

SLC OUTPUT—

Digital communication, transformer isolated (78.5 kbps).

CONDUIT ENTRIES—

All SLC devices are available with 3/4 inch NPT or M25/M20 conduit entries.

SLC DEVICES-

Can consist of any combination of the following: DC I/O Module, X3301 IR Flame Detector, UVIR Flame Detector, UV Flame Detector, Initiating Device Circuit, PointWatch Eclipse, Digital Communication Unit, Agent Release Module, Signal Audible Module, Network Extender, Power Supply Monitor.

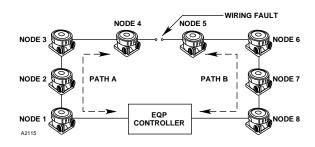


Figure 2—Communication with a Wiring Fault on the SLC

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8 Channel Digital Communication Input/Output (DC I/O) Module



The DC I/O module provides 8 channels that are configurable as either digital inputs or outputs, with or without supervision.

When configured as an input, a channel can accept fire detection devices such as heat detectors, unitized flame detectors, or any "dry contact" closure input device.

When configured as an output, a channel can initiate notification devices (horns and strobes) or release suppression agents (or deluge).

INPUT VOLTAGE—

24 vdc nominal, 18 to 30 Vdc. 10% overvoltage will not cause damage to the equipment.

TEMPERATURE RANGE—

Operating: -40°F to +185°F (-40°C to +85°C). Storage: -67°F to +185°F (-55°C to +85°C).

HUMIDITY RANGE—

0 to 95% RH, non-condensing.

DIMENSIONS-

DIN Rail Mount:
L: 5.2 inches
W: 4.5 inches
D: 2.1 inches.

Panel Mount:

L: 5.2 inches W: 4.5 inches D: 1.8 inches.

X3301 Multispectrum IR Flame Detector



The X3301 detects the presence of fire by monitoring three different frequencies of the IR spectrum. The X3301 provides unsurpassed detection of fires from light to heavy hydrocarbon fuels combined with the highest degree of false alarm rejection. When a fire is detected, a fire alarm message is immediately sent to the Controller.

The device is equipped with both automatic and manual optical integrity (**oi**) test capability. Status is indicated by a multi-colored LED that is visible on the detector's faceplate.

OPERATING VOLTAGE—

24 volts dc nominal (18 Vdc minimum, 32 Vdc maximum).

TEMPERATURE RANGE—

Operating: $-40^{\circ}F$ to $+167^{\circ}F$ ($-40^{\circ}C$ to $+75^{\circ}C$). Storage: $-67^{\circ}F$ to $+185^{\circ}F$ ($-55^{\circ}C$ to $+85^{\circ}C$).

Hazardous location ratings from –55°C to +125°C available on extended temperature model.

CERTIFICATION—

Class I, Div. 1, Groups B, C and D; Class II, Div. 1, Groups E, F, and G; Class I, Div. 2, Groups A, B, C and D (T4); Class II, Div. 2, Groups F and G (T4); Class III. NEMA/Type 4X.

CENELEC: Standard Temperature Model

CE: 0539 ऒ II 2 GD EEx de IIC T5–T6

DEMKO 01 ATEX 130204

T6 (Tamb = -55° C to $+60^{\circ}$ C). T5 (Tamb = -55° C to $+75^{\circ}$ C).

IP66.

Extended Temperature Model

0539 🐼 II 2 GD EEx d IIC T4-T6

DEMKO 01 ATEX 130204 T6 (Tamb = -55°C to +60°C). T5 (Tamb = -55°C to +75°C).

T4 (Tamb = -55° C to $+125^{\circ}$ C).

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ENCLOSURE—

Aluminum or Stainless Steel.

UV/IR Flame Detector



The EQ2200UVIR** Flame Detector provides reliable fire protection in applications where the use of either UV or IR detectors alone can result in false alarms. The device combines both a UV and an IR sensor in a single detector and requires simultaneous response of both sensors to generate a fire alarm. This enables it to respond to a real fire while ignoring potential false alarm sources such as arc welding, x-rays, or hot vibrating objects.

The microprocessor based detector is equipped with advanced fault detection and diagnostic capabilities. status indicator LEDs, and software selectable options.

INPUT VOLTAGE—

24 Vdc nominal, 18 to 30 Vdc. 10% overvoltage will not cause damage to the equipment.

TEMPERATURE RANGE—

Operating: -40° F to $+167^{\circ}$ F (-40° C to $+75^{\circ}$ C). -40° F to $+185^{\circ}$ F (-40° C to $+85^{\circ}$ C).

CERTIFICATION—

Class I, Division 1, Groups B, C, & D. Class I, Division 2, Groups A, B, C and D. Class II, Division 1, Groups E, F, & G. Class II, Division 2, Groups F and G. Class III.

NEMA Type 4X.

CENELEC: Standard Temperature Version —

EEx d IIB +H2 T6 (Tamb = -40° C to +75°C). EEx d IIB +H2 T5 (Tamb = -40°C to +90°C).

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Extended Temperature Version —

EEx d IIB +H2 T4 (Tamb = -55° C to +125°C)

ENCLOSURE—

Aluminum or Stainless Steel.

UV Flame Detector and High Temperature UV Flame Detector





The EQ2200UV** UV Flame Detector utilizes the UV spectrum to detect the presence of fire, and is equipped with both automatic and manual optical integrity (oi) test capability. The detector is equipped with a special arc rejection feature that enables it to prevent nuisance fire alarms caused by UV from shortduration electrical arcs or electrostatic discharge, while maintaining the ability to reliably detect the UV given off by a flame. Typical applications that benefit from arc rejection logic include electrostatic coating processes and uncontrolled environments where transient UV sources can be present, such as many typical outdoor applications.

The EQ2200UVHT High Temperature UV Flame Detector is rated for continuous duty high temperature applications, such as turbine compartments, enclosures, generator rooms, etc. where ambient temperatures can continuously exceed +75°C (+167°F), up to +125°C (+257°F). It consists of an electronic module that is used with a high temperature rated UV detector. The two devices are mounted in separate enclosures and can be separated up to 20 feet (6 meters) using high temperature rated shielded cable within conduit.

INPUT VOLTAGE—

24 Vdc nominal, 18 to 30 vdc. 10% overvoltage will not cause damage to the equipment.

TEMPERATURE RANGE—

EQ2200UV

-40°F to +167°F (-40°C to +75°C). -67°F to +185°F (-55°C to +85°C). Operating: Storage:

EQ2200UVHT

-40°F to +167°F (-40°C to +75°C). -40°F to +257°F (-40°C to +125°C). -67°F to +185°F (-55°C to +85°C). Electronic Module: UV Detector: Storage:

CERTIFICATION-

Class I, Division 1, Groups B, C, and D. Class I, Division 2, Groups A, B, C, and D. Class II, Division 1, Groups E, F, and G. Class II, Division 2, Groups F and G. Class III. NEMA Type 4X.

CENELEC: UV Flame Detector

Standard Temperature Version — EEx d IIB +H2 T6 ($T_{amb} = -40^{\circ}C$ to +75°C).

Extended Temperature Version —

EEx d IIB +H2 T4 ($T_{amb} = -40^{\circ}C$ to +125°C)

UVHT Detector Electronic Module -

CE 0539 W II 2 G EEx d IIC T4-T6 DEMKO 02 ATEX 131321X T6 (Tamb = -55° C to $+50^{\circ}$ C) T5 (Tamb = -55° C to $+65^{\circ}$ C) T4 (Tamb = -55° C to $+75^{\circ}$ C)

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UV Detector —

EEx d IIB +H2 T4 ($T_{amb} = -55^{\circ}C$ to +125°C) EEx d IIB +H2 T5 ($T_{amb} = -55^{\circ}C$ to +90°C) EEx d IIB +H2 T6 ($T_{amb} = -55^{\circ}C \text{ to } +75^{\circ}C$)

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ENCLOSURE—

Aluminum or Stainless Steel.

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EQ2200IDC Initiating Device Circuit and EQ2200IDCSC Initiating Device Circuit Short Circuit



The EQ2200IDC Initiating Device Circuit (IDC) accepts two dry contact inputs for use with devices such as relays, pushbuttons, key switches, etc. The IDC supports ANSI/NFPA 72 Class B Style B supervised input circuits. When an input is activated, an alarm message is immediately sent to the Controller.

The EQ2200IDCSC (IDCSC) Initiating Device Circuit Short Circuit is similar to the IDC, but supports ANSI/NFPA 72 Class B Style C supervised input circuits.

INPUT VOLTAGE—

24 Vdc nominal, 18 to 30 Vdc. 10% overvoltage will not cause damage to the equipment.

TEMPERATURE RANGE—Operating: -40°F to +167°F (-40°C to +75°C).
Storage: -67°F to +185°F (-55°C to +85°C).

CERTIFICATION-

Class I, Division 1, Groups B, C, and D. Class I, Division 2, Groups A, B, C, and D. Class II, Division 1, Groups E, F, and G. Class II, Division 2, Groups F and G. Class III. NEMA Type 4X.

CENELEC: CE 0539 ऒ I 2 G EEx d IIC T4-T6

DEMKO 02 ATEX 131321X T6 (Tamb = -55° C to $+50^{\circ}$ C) T5 (Tamb = -55° C to $+65^{\circ}$ C) T4 (Tamb = -55° C to $+75^{\circ}$ C)

ENCLOSURE—

Aluminum or Stainless Steel.

PointWatch Eclipse



The PointWatch Eclipse is a diffusion based, infrared combustible gas detector that provides continuous, fixed monitoring of flammable hydrocarbon gases, with programmable alarm setpoints from 5 to 60% Lower Explosive Limit (LEL). The Eclipse is capable of detecting hundreds of flammable hydrocarbon vapors.

INPUT VOLTAGE-

24 Vdc nominal. Operating range is 18 to 32 Vdc. Ripple cannot exceed 0.5 volts peak-to-peak.

TEMPERATURE RANGE—
Operating: -40°C to +75°C (-40°F to +167°F).
Storage: -55°C to +85°C (-67°F to +185°F).

CERTIFICATION-

Class I, Div. 1, Groups C & D (T4). Class I, Div. 2, Groups A, B, C & D (T4).

CENELEC: EEx d e [ib] IIC T6 (Tamb -40°C to +40°C) EEx d e [ib] IIC T5 (Tamb -40°C to +50°C) EEx d e [ib] IIC T4 $(Tamb - 40^{\circ}C to + 75^{\circ}C)$

ENCLOSURE-

Stainless Steel: Model PIRECLx4.

EQ2200DCU and EQ2200DCUEX Digital Communication Unit



The EQ2200DCU / EQ2200DCUEX Digital Communication Unit (DCU) digitizes a 4-20 mA analog signal and transmits the value as a process variable to the Controller. The DCU is approved for use with a variety of Det-Tronics sensors including catalytic combustible gas sensors, the PointWatch IR gas detector, and the H₂S electrochemical sensor. The DCU will also accept other sensors with a linear 4 to 20 mA output signal. Non-intrusive calibration can be performed by one person.

INPUT VOLTAGE—

24 Vdc nominal, 18 to 30 Vdc. 10% overvoltage will not cause damage to the equipment.

TEMPERATURE RANGE—

Operating: -40°F to +167°F (-40°C to +75°C). Storage: -67°F to +185°F (-55°C to +85°C).

CERTIFICATION-

Class I, Division 1, Groups B, C and D. Class I, Div. 2, Groups A, B, C, and D. Class II, Division 1, Groups E, F, and G. Class II, Div. 2, Groups F and G. Class III. NEMA Type 4X.

T6 (Tamb = -55° C to $+50^{\circ}$ C) T5 (Tamb = -55° C to $+65^{\circ}$ C) T4 (Tamb = -55° C to $+75^{\circ}$ C) IP66.

ENCLOSURE—

Aluminum or Stainless Steel.

EQ2500ARM Agent Release Module



The EQ2500ARM Agent Release Module (ARM) provides agent release capability to the Eagle Quantum Premier system. The device is located on the SLC and is controlled by programmable logic in the Controller. The agent release module is designed to monitor and control two output circuits, which are energized together. It is compatible with a variety of solenoid or initiator based suppression systems.

The release circuit (including the solenoid coil) is supervised for open circuit conditions. If an open circuit occurs, a trouble condition will be indicated.

RELEASE OUTPUT RATING-

2 amperes at 30 Vdc maximum.

INPUT VOLTAGE—

24 Vdc nominal.

TEMPERATURE RANGE—

Operating: $-40^{\circ}F$ to $+167^{\circ}F$ ($-40^{\circ}C$ to $+75^{\circ}C$). Storage: $-67^{\circ}F$ to $+185^{\circ}F$ ($-55^{\circ}C$ to $+85^{\circ}C$).

CERTIFICATION—

Class I, Division 1, Groups B, C, and D. Class I, Div. 2, Groups A, B, C, and D. Class II, Div. 1, Groups E, F, and G. Class II, Div. 2, Groups F and G.

Class III. NEMA Type 4X.

CENELEC: CE 0539 W II 2 G

EEx d IIC T4-T6

DEMKO 02 ATEX 131321X T6 (Tamb = -55°C to +50°C) T5 (Tamb = -55°C to +65°C) T4 (Tamb = -55°C to +75°C)

IP66.

ENCLOSURE—

Aluminum or Stainless Steel.

EQ2500SAM Signal Audible Module



The EQ2500SAM Signal Audible Module (SAM) provides two indicating circuits for controlling UL Listed 24 Vdc polarized audible/visual indicating appliances. Each output circuit is independently programmable to allow annunciation of separate events. The outputs operate in the reverse polarity fashion when activated. Each output delivers up to 2 amperes at 24 Vdc.

The Signal Audible Module is located on the SLC and is controlled by programmable logic in the Controller. Each output circuit is supervised for open and short circuit conditions. If a wiring fault occurs, a trouble condition will be indicated.

OUTPUT RATING—

2 amperes at 30 Vdc maximum.

INPUT VOLTAGE—

24 Vdc nominal.

TEMPERATURE RANGE—

Operating: -40°F to +167°F (-40°C to +75°C). Storage: -67°F to +185°F (-55°C to +85°C).

CERTIFICATION-

Class I, Division 1, Groups B, C, and D. Class I, Div. 2, Groups A, B, C, and D. Class II, Div. 1, Groups E, F, and G. Class II, Div. 2, Groups F and G.

Class III. NEMA Type 4X.

CENELEC: CE 0539 @ II 2 G

EEx d IIC T4-T6

DEMKO 02 ATEX 131321X T6 (Tamb = -55°C to +50°C) T5 (Tamb = -55°C to +65°C) T4 (Tamb = -55°C to +75°C)

IP66.

ENCLOSURE—

Aluminum or Stainless Steel.

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EQ2400NE Network Extender



The EQ2400NE Network Extender allows for expansion of the communication network. The base system can accommodate up to 60 nodes and up to 2,000 meters of wiring. By adding the appropriate number of network extenders, this can be increased to 246* network devices and up to 10,000 meters of wiring.

INPUT VOLTAGE— 18 to 30 Vdc.

TEMPERATURE RANGE—

Operating: -40°F to +167°F (-40°C to +75°C) Storage: -67°F to +185°F (-55°C to +85°C).

CERTIFICATION—

Class I, Division 1, Groups B, C, & D. Class I, Div. 2, Groups A, B, C and D. Class II, Div. 1, Groups E, F, & G. Class II, Div. 2, Groups F and G.

Class III.

NEMA / Type 4X.

CENELEC: CE 0539 & II 2 G

EEx d IIC T4-T6

DEMKO 02 ATEX 131321X T6 (Tamb = -55° C to $+50^{\circ}$ C) T5 (Tamb = -55° C to $+65^{\circ}$ C) T4 (Tamb = -55° C to $+75^{\circ}$ C)

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ENCLOSURE—

Aluminum or Stainless Steel.

EQ2100PSM Power Supply Monitor



The EQ2100PSM Power Supply Monitor supervises the system power supply and reports any detected power related trouble to the Controller.

EQ2200IDCGF Initiating Device Circuit Ground Fault



The EQ2200IDCGF Initiating Device Circuit Ground Fault module monitors for system ground faults.

EQ2110PS, EQ2130PS AND EQ2175PS POWER SUP-**PLIES**

INPUT VOLTAGE—

Selectable for 120, 208 or 240 Vac input power, ±10%.

INPUT FREQUENCY—

60 Hz ±5% standard, 50 Hz ±5% optional.

INPUT CURRENT—

EQ2110PS: 4 amps at 120 Vac (60 Hz)

EQ2130PS: 11 / 6 / 6 amps at 120 / 208 / 240 Vac* EQ2175PS: 24 / 15 / 12 amps at 120 / 208 / 240 Vac*.

*Specify 50 Hz or 60 Hz.

TEMPERATURE RANGE—

Operating: +32°F to +122°F (0°C to +50°C) Storage: -40°F to +185°F (-40°C to +85°C).

EQ2100PSM POWER SUPPLY MONITOR

INPUT VOLTAGE—

24 Vdc nominal, 18 to 30 Vdc.

TEMPERATURE RANGE—

Operating: +32°F to +122°F (0°C to +50°C) -67° F to $+185^{\circ}$ F (-55° C to $+85^{\circ}$ C). Storage:

EQ2200IDCGF IDC GROUND FAULT

Same as EQ2200IDC.

NOTES: *For the initial release only, the EQP system is limited to 60 field devices. All subsequent releases will support up to 246 field devices.

> ** EQ2200UV and EQ2200UVIR will be replaced by new UV and UV/IR Flame Detectors after 1/1/03.

For complete specification or certification information, refer to the Specification Data sheet for each individual device.

ControlNet™ is a trademark of ControlNet International.



Detector Electronics Corporation

6901 West 110th Street • Minneapolis, Minnesota 55438 USA

Operator: (952) 941-5665 or (800) 765-FIRE

Customer Service: (952) 946-6491 • Fax (952) 829-8750 http://www.detronics.com • E-mail: detronics@detronics.com