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
- Power plants
- 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 246 intelligent addressable field devices
- FM/CSA/CENELEC/CE
- Certified to ANSI/NFPA 72 National Fire Alarm Code.

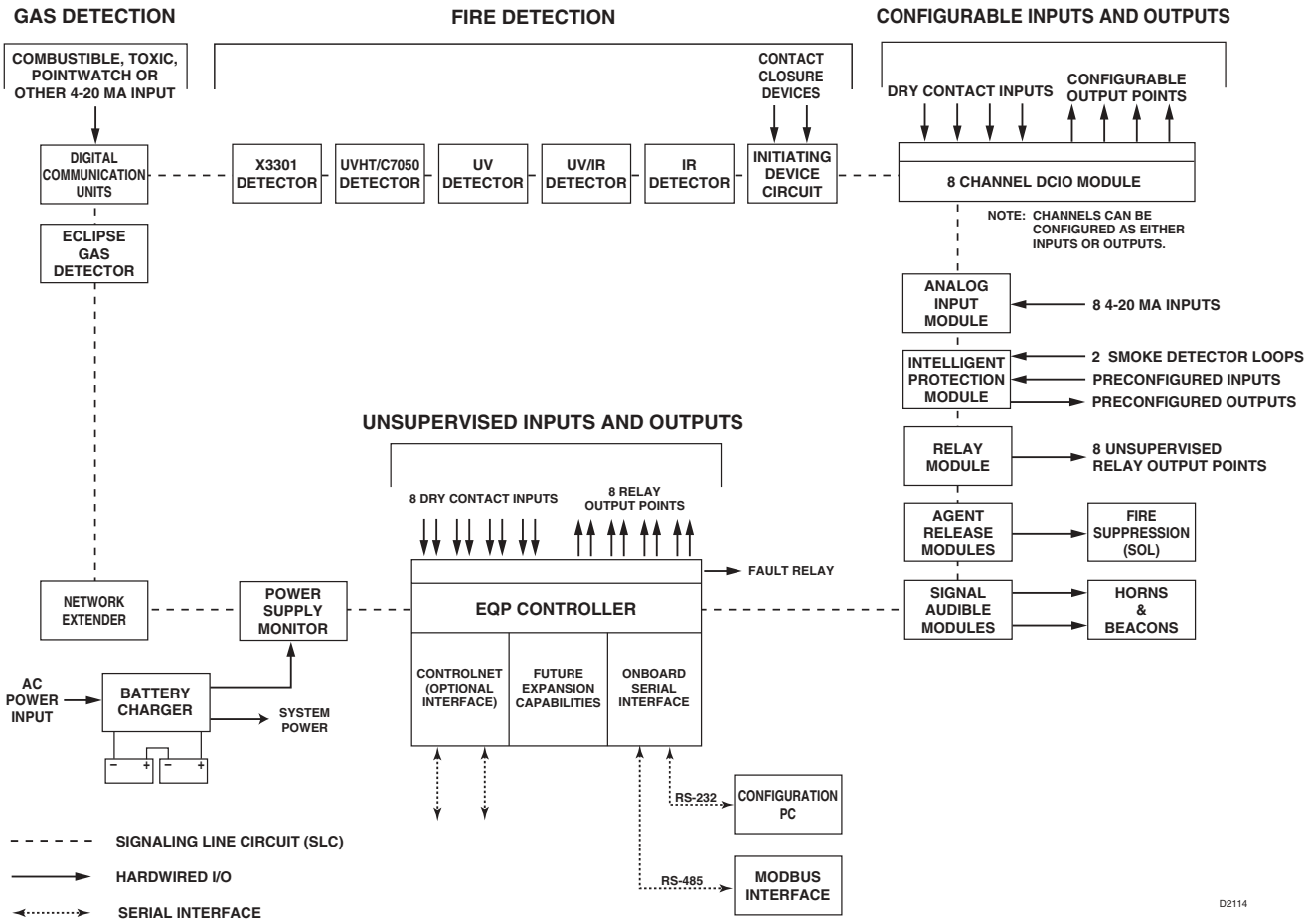


Figure 1—Block Diagram of the Eagle Quantum Premier System

SYSTEM DESCRIPTION

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

The system has the flexibility to utilize any combination of Eagle Quantum Premier field devices. It can be configured as 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/Analog Input Modules).

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 two built-in serial ports — one provides an RS-485 Modbus interface and the other is a dedicated RS-232 port for the safety system software (S^3). An optional redundant media 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. A four line 20-character vacuum fluorescent display (VFD), controlled by front panel membrane buttons, can display a variety of status and diagnostic information. 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 functions 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 Local Operating Network / Signaling Line Circuit (LON/SLC) and performs the logic functions needed to generate the appropriate output(s). The Controller performs both static and user programmable logic operations. Static logic controls the faceplate displays and relay outputs (alarm, trouble and supervisory) per ANSI/NFPA 72. Static 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 Safety System Software (S^3), the Controller can be programmed to implement any cross-zone monitoring, voting, or timed operations that might be needed in a system.

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

- Approved annunciation and releasing device per NFPA 72
- Meets FM/CSA guidelines in an approved gas system
- Programmable logic
- Two electrically isolated serial ports
- Transformer isolation of network ports
- Utilizes MODBUS and Allen Bradley ControlNet protocols
- ControlNet interface (optional)
- Safety System Software
- Eight programmable relay outputs
- Eight digital inputs
- Enhanced display and control functions
- Four-line, 20 character alphanumeric display
- LED status indicators
- Fault tolerant communication loop
- Extensive built-in diagnostics
- Real time clock
- Supports up to 246 field devices
- FM/CSA/CENELEC/CE

(For more information refer to Spec Sheet # 90-1148.)

EQ3700DCIO INPUT/OUTPUT MODULE (DCIO)

The 8 Channel DCIO Module is specially designed to expand the input and output capability of the Det-Tronics Eagle Quantum Premier System. The unit provides continuous and automated fire/gas protection, while ensuring reliable system operation through continuous supervision of system Inputs/Outputs on the LON/SLC. The DCIO module provides eight channels of configurable input or output points that can be programmed for supervised or unsupervised operation.

Each input point can accept dry contact fire detection devices such as heat, smoke, or unitized flame detectors. Each output point can be configured for unsupervised, signaling or releasing output operation. Each channel on the module is provided with individual indicators for active and fault conditions.

- Monitors eight independent I/O channels
- Individual channels are configurable as an Input or Output
- Individual point style is configurable as supervised or unsupervised
- Individual point type is configurable for alarm/gas/supervisory/other input styles, notification/releasing/unsupervised output
- Meets the requirements of NFPA 72
- Panel or DIN rail mounting

(For more information refer to Spec Sheet # 90-1149.)

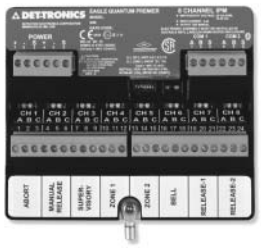
EQ3710AIM 8 CHANNEL ANALOG INPUT MODULE

The 8 Channel Analog Input Module provides a means of connecting devices with a calibrated 4-20 mA output signal to the Eagle Quantum Premier System.

The Analog Input Module (AIM) provides 8 configurable channels that can be set for either combustible gas mode or universal mode. The combustible gas mode provides a number of automatically programmed settings, and alarm thresholds that are limited to approval body requirements. The universal mode is used for generic devices where control over all configuration parameters is required.

- Monitors eight independent analog channels
- Individual channels are configurable as combustible gas sensor or universal sensor
- Individual channel LEDs indicate Active and Fault status

(For more information refer to Spec Sheet # 90-1183.)



EQ3740IPM INTELLIGENT PROTECTION MODULE

The Intelligent Protection Module (IPM) is specially designed to monitor, supervise and control one fire suppression hazard.

The IPM is designed to provide continuous and automated local area fire protection, while monitoring system operation through continuous supervision of its Inputs/Outputs and Local Operating Network/Signalling Line Circuit (LON/SLC) connection to the EQP controller.

- Individual channels have the pre-assigned functions necessary to deliver a single hazard protection solution
- Supports two conventional “two-wire” smoke/heat zones including the ability to reset latched zones. Does not require the use of “relay bases”

(For more information refer to Spec Sheet # 90-1184.)

EQ3720RM EIGHT CHANNEL RELAY MODULE

The 8 Channel Relay Module is specially designed to expand the Output capability of the Det-Tronics Eagle Quantum Premier™ System.

The unit is designed to provide eight relay output channels for use with non-supervised devices (PLCs, fans, dampers, etc.).

- Expands the output capabilities of the Det-Tronics Eagle Quantum Premier™ system
- Provides eight independent relay output channels
- Individual channel LEDs indicate Active and Fault status
- Provides remote output capabilities via LON/SLC
- Panel or DIN rail mounting
- Power LED display
- Plug-in wiring connectors
- Immune to RFI and EMI (CE Marked)

(For more information refer to Spec Sheet # 90-1181.)

X3301 MULTISPECTRUM INFRARED FLAME DETECTOR

The X3301 establishes a new benchmark in area of coverage, multiple-fuel fire detection performance and false alarm rejection. The detector utilizes advanced signal processing algorithms supported by an embedded 32-bit microprocessor to provide continuous protection in the presence of false alarm sources and in environments with infrared radiation present. The Long Range version has a detection range of 210 feet to a 1 square foot n-Heptane fire, and is recommended for any indoor/outdoor application. The Medium Range version has a detection range of 100 feet to a 1 square foot n-Heptane fire, and is recommended for outdoor applications such as offshore oil/gas platforms where flares or other friendly fires are present. The detector is available in aluminum or 316 stainless steel.

- Increased sensitivity — certified performance to multiple fuel types
- MTBF of 145,000 hours (over 16 years)
- New standard set for cone of vision, 100 feet on and off axis for methane
- Microprocessor controlled heated optics enable optimal performance in adverse environments
- Data logger for event time and date stamping
- Integral LON/SLC interface
- Automatic optical integrity (**oi**) check on each sensor
- Calibrated magnetic manual testing — no test lamp required
- FM, CSA, CENELEC, CE, ATEX , DNV
- Patent number: 5,995,008; 5,804,825; 5,850,182
- Class A, Style 7 wiring per NFPA-72

(For more information refer to Spec Sheet # 90-1143.)

X5200 UVIR FLAME DETECTOR

The X5200 meets the most stringent requirements worldwide with advanced detection capabilities and immunity to extraneous sources, combined with a superior mechanical design. The detector is equipped with both automatic and manual optical integrity (**oi**) test capability. The mounting arrangement allows the UV and IR sensors to monitor the same hazardous location with a 90 degree cone of vision. When both sensors simultaneously detect the presence of a flame, an alarm signal is generated. The detector has Division and Zone explosion-proof ratings and is suitable for use in indoor and outdoor applications. A tri-color LED on the detector faceplate indicates detector status condition.

The X5200 housing is available in aluminum or stainless steel, with NEMA 4X and IP66 rating. Typical applications include hangars, munitions, petrochemical applications and turbines.

- New patented signal processing, TDSA, Arc rejection
- A new level of false alarm rejection
- Responds to a fire in the presence of modulated blackbody radiation (i.e. heaters, ovens, turbines) without false alarm
- High speed capability
- Microprocessor controlled heated optics for increased resistance to moisture and ice
- Automatic or manual optical integrity (**oi**) testing
- Calibrated magnetic manual testing — no test lamp required
- Tricolor LED indicates normal operation, fire and fault conditions
- Mounting swivel allows easy sighting
- Integral wiring compartment for ease of installation
- Class A, Style 7 wiring per NFPA-72
- EMI, RFI, EMC Directive Compliant
- FM, CSA, CENELEC, CE
- Built-in data logging / event monitoring

(For more information refer to Spec Sheet # 90-1156.)

X9800 IR FLAME DETECTOR

The X9800 is the most advanced single frequency infrared flame detector with dual signal processing capability for high speed response. The detector is equipped with both automatic and manual optical integrity (**oi**) test capability. The detector has Division and Zone explosion-proof ratings and is suitable for use in indoor and outdoor applications. A tri-color LED on the detector faceplate indicates detector status condition.

The X9800 housing is available in aluminum or stainless steel, with NEMA 4X and IP66 rating. Typical applications include turbines, petrochemical applications, automotive applications and dirty environments.

- Unequaled false alarm rejection, TDSA
- Responds to a fire in the presence of modulated blackbody radiation (i.e. heaters, ovens, turbines) without false alarm
- High speed capability
- Microprocessor controlled heated optics for increased resistance to moisture and ice
- Automatic or manual optical integrity (**oi**) testing
- Calibrated magnetic manual testing — no test lamp required
- Tricolor LED indicates normal operation, fire and fault conditions
- Operates under adverse weather conditions and in dirty environments
- Mounting swivel allows easy sighting
- Integral wiring compartment for ease of installation
- Class A, Style 7 wiring per NFPA-72
- Built-in data logging / event monitoring
- FM, CSA, CENELEC, CE

(For more information refer to Spec Sheet # 90-1160.)

X2200 UV FLAME DETECTOR

The X2200 offers the highest false alarm rejection in a UV detector, meeting the most stringent requirements worldwide with advanced detection capabilities and immunity to extraneous sources, combined with a superior mechanical design. The detector is equipped with both automatic and manual optical integrity (**oi**) test capability. The detector has Division and Zone explosion-proof ratings and is suitable for use in a variety of applications. A tri-color LED on the detector faceplate indicates detector status condition.

Housings are available in aluminum or stainless steel, with NEMA 4X and IP66 rating. Typical applications include hydrogen storage, munitions, and silane storage.

- Advanced signal processing
- Unequaled false alarm rejection, Arc rejection
- Responds to a fire in the presence of modulated blackbody radiation (i.e. heaters, ovens, turbines) without false alarm
- High speed capability
- Automatic or manual optical integrity (**oi**) testing
- Calibrated magnetic manual testing — no test lamp required
- Tricolor LED indicates normal operation, fire and fault conditions
- Mounting swivel allows easy sighting
- Integral wiring compartment for ease of installation
- Class A, Style 7 wiring per NFPA-72
- EMI, RFI, EMC Directive Compliant
- FM, CSA, CENELEC, CE
- Built-in data logging / event monitoring

(For more information refer to Spec Sheet # 90-1157.)

POINTWATCH ECLIPSE PIRECL GAS DETECTOR

The PIRECL is a stainless steel point IR gas detector, providing detection of flammable hydrocarbon gases in the lower explosive limit (LEL) range. Integral LON/SLC interface as well as a HART interrogation port are provided. A tri-color LED provides visual display of operating status. The weather protection baffle design offers exceptional protection along with easy twist-lock removal and installation. The detector is ATEX 94/9/EC certified for global certification compliance.

- Internal wiring compartment saves money and time
- Heated optics
- One person non-intrusive calibration
- HART hand-held communication capability
- EExd, EExe, EExib protection designs
- Versions available with FM/CSA and CENELEC/CE certifications
- Integral LON/SLC interface
- Alarm setpoints adjustable via network
- Active fault isolation
- Alarm history stored in non-volatile memory
- Self-diagnostics

(For more information refer to Spec Sheet # 90-1138.)

EQ2200DCU SERIES DIGITAL COMMUNICATION UNIT

The DCU is approved for use with a variety of Det-Tronics sensors including Pointwatch IR gas detector and hydrogen sulfide (H_2S) electrochemical sensor. It also accepts any sensor/transmitter with a linear 4 to 20 mA output signal and allows for one person non-intrusive calibration. The DCU digitizes the analog signal and transmits the value to the system controller.

- Accepts 4 to 20 mA input from a variety of detection devices (Pointwatch, toxic sensors, pressure, flow, etc.)
- One person, non-intrusive calibration
- Alarm setpoints adjustable via network
- Alarm history stored in non-volatile memory
- Calibration history stored in non-volatile memory
- Active fault isolation
- Self diagnostics
- Detector can be close-coupled or separated

(For more information refer to Spec Sheet # 90-1118.)

EQ2500ARM SERIES AGENT RELEASE MODULE

The Agent Release Module (ARM) provides agent release capability for the Eagle Quantum System. The ARM is located on the LON and is controlled by programmable logic in the Controller. The ARM can be programmed for single, cross or counting zone style initiation. Optional time delay, abort and manual release sequences allow the output to be programmed for use in unique applications.

- Provides local control of releasing solenoids
- Capable of actuating a single solenoid or two solenoids simultaneously
- Provides up to 2 amperes at 24 vdc (for each output)
- Monitors wire and solenoid coil for opens
- Release simultaneously activates 2 output channels
- Each channel is supervised for open circuits
- Active fault isolation
- Self-diagnostics

(For more information refer to Spec Sheet # 90-1128.)

EQ2500SAM SERIES SIGNAL AUDIBLE MODULE

The Signal Audible Module (SAM) provides two Notification Appliance Circuits (NAC) for controlling UL Listed 24 vdc polarized audible/visual indicating appliances. The SAM is located on the system LON/SLC and is controlled by programmable logic in the Eagle Quantum Premier Controller. Each output circuit is independently programmable to allow annunciation of separate events. In release applications, signal outputs can be programmed to provide signaling for pre-release, release, or post-release.

- Provides two ANSI/NFPA 72 Class B Style Y output notification appliance circuits
- Each circuit is individually supervised for opens and shorts
- Each circuit is individually controlled by user logic
- Each circuit supports a variety of programmable blink/flash rates
- Current reversal on activation
- 2 output channels can be individually activated
- Each channel is supervised for open circuits
- Active fault isolation
- Self-diagnostics

(For more information refer to Spec Sheet # 90-1129.)

EQ2200IDC SERIES INITIATING DEVICE CIRCUIT

The IDC consists of a terminal wiring board and a communication module, mounted in an explosion-proof, water-tight enclosure. The IDC accepts two dry contact inputs for use with devices like relays, pushbuttons, and key switches.

- Accepts inputs from standard contact closure input devices such as manual call stations, heat detectors, keyswitches, and proof of agent release flow switches
- Provides two ANSI/NFPA 72 Class B Style B supervised input circuits
- Non-volatile alarm history memory
- Active fault isolation
- Each input programmable for fire, supervisory, trouble or normal service

(For more information refer to Spec Sheet # 90-1121.)

LOCAL OPERATING NETWORK / SIGNALING LINE CIRCUIT (LON/SLC) DEVICES

The LON/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 LON/SLC supports up to 246 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 LON/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 LON/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.

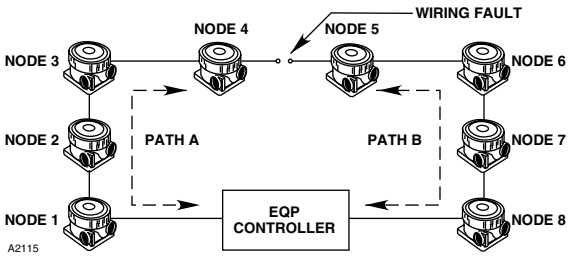


Figure 2—Communication with a Wiring Fault on the SLC

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