DET-TRONICS

PRODUCT UPGRADE BULLETIN

Product upgrade — R-Series to EQP

For over 45 years, Det-Tronics has provided flame detection systems, offering listed detectors and systems that provide approved solutions for meeting worldwide codes and standards. This bulletin documents the product lifecycle status of the R-Series controllers and C-Series flame detectors, while also providing information on the Eagle Quantum Premier® (EQP) control system and X-Series flame detectors.

1 R-Series controller and C-Series flame detector — product lifecycle

The R7300, R7301, R7302, R7303, R7404, R7404, R7405, R7494 and R7495 flame controllers and C7050, C7051 and C7052 controller-based flame detectors were introduced in the '70s and '80s. Many of the components used to manufacture these products have since become obsolete. Additionally, third-party approval standards have changed and these products no longer meet current standards. Therefore, the R-Series controllers and C-Series detectors will not be manufactured in 2020.

Enclosure containing R7404 controller, R1425 detonator, R6006 relay module

R7303 controller

C7050 UV flame detector

2 Maintaining life safety system functionality

It is important that a flame detection safety system be maintained properly. Even well-maintained systems can annunciate a fault condition. When a fault condition on a flame detection safety system occurs, it typically requires immediate attention and resolution. If left unresolved, system processes are typically required to be shut down, or in worst-case scenarios, the processes may be left unprotected.

Due to the evolution of codes and standards, circuit board technologies and component availability, fire safety systems need periodic replacement. Det-Tronics recommends a review of current codes and standards when considering an update to your flame detection system.

Det-Tronics offers replacements for C7050, C7051 and C7052 flame detectors and R7300, R7301, R7302, R7303, R7404, R7404, R7405, R7494 and R7495 controllers. Our latest line of detectors and controllers meet current codes and standards, and can be implemented in a staged approach to minimize system downtime. Some of these options are outlined on the following pages.

3 X-Series flame detectors

The X3301 Multispectrum Infrared (MIR), X3302 MIR, X5200 Ultraviolet Infrared (UVIR), X9800 Single Frequency Infrared (IR) and X2200 Ultra Violet (UV) flame detectors make up the X-Series flame detector product line. These flame detectors are well suited for a variety of applications including petroleum production, refining and storage, munitions manufacturing, aircraft hangars, painting, industrial manufacturing and electrical substations. The flame detection performance of the X-Series flame detectors — as defined by FM 3260 — meets or exceeds that of the C-Series flame detectors. In some cases, replacing the C7050 UV flame detectors with a different technology (IR, UVIR, or MIR) may provide improved false alarm resistance for your application.

All X-Series detectors have optional Relay, 0-20mA, LON, HART and RS-485 Modbus outputs. Approvals include FM Approvals, EN54-10, CSA, SIL2, IECEx, ATEX, DNV-GL and other regional certifications. Each detector includes the self-testing Optical Integrity (Oi) feature. Onboard calibrated test lamps test the detectors automatically to evaluate optical clarity and sensor function. The Oi lamps can also be activated manually to simulate fire alarm conditions, so the fire alarm system function can be tested per local codes and regulations.

X-Series flame detectors can be custom configured with the Flame Inspector software. This software can be used to determine the detector's status, access and export stored event logs and calibrate the 0-20mA output and Oi system.

X3301 Multispectrum IR

X5200 Ultraviolet Infrared (UVIR)

X9800 Single Frequency IR

X2200 Ultraviolet (UV)

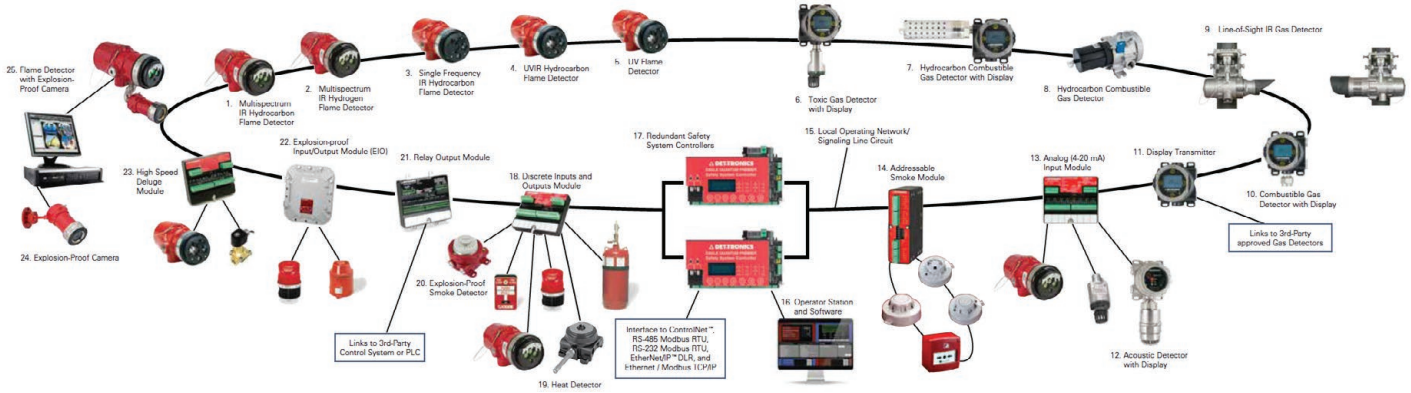
4 Eagle Quantum Premier® (EQP) system

The EQP fire and gas safety system is a hazard protection system 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 EQP controller. The system has the flexibility to utilize a combination of EQP field devices. It can be configured as a gas detection system, a fire detection system, or a combination of both fire and gas detection. All addressable devices and operating parameters are configured through the EQP controller. Third-party devices can be integrated into the system either through dry contact closure inputs (using input/output devices) or through 4 to 20 mA inputs (using DCUs/Analog Input Modules). The system is also ultra-high-speed capable when using the high-speed deluge module (HSDM).

Through its centralized control unit, the EQP system provides an open architecture in which systems can be networked to share information. PLC, DCS and human/machine interface (HMI) systems can communicate directly with the EQP system through supported communication protocols. The controller supports up to five serial ports, utilizing Modbus RTU master/slave protocol and Safety System Software (S3) for configuring the EQP system. An optional redundant media ControlNet™ or EtherNet/IP™ DLR board is also available.

The EQP controller displays current information regarding system status. Twelve LEDs indicate when an alarm or fault condition exists. A four-line, 20-character vacuum fluorescent display (VFD), controlled by front panel membrane buttons, displays a variety of status and diagnostic information. Alarm and trouble conditions are easily identified as well as associated device tag names.

The EQP system provides operational flexibility through custom designed user logic programs in the controller. Over 50 types of logic functions are available, providing system optimization for a range of fire and gas applications.



Through its centralized control unit, the EQP system provides an open architecture in which systems can be networked together to share information.

Key features of the EQP

- Approved to current standards including FM 3010
- Programmed via logic using the Safety System Software (S3) for the PC
- Scalable capacity to meets virtually any demand
- Fire and gas controller
- Redundant controller capable
- Communications options include relay, Modbus, Ethernet, Serial and ControlNet
- Capable of fully integrating with most process control systems and building fire panels
- SIL2 level diagnostics
- Loop wiring topology saves on wiring costs (point-to-point capable for retrofit installations)
- DNV-GL approved levels of electromagnetic compatibility (EMC) protection

Ultra-high-speed capable EQP

New for 2019, is the addition of the high-speed deluge module (HSDM). This device was specifically designed to expand the capability of the Det-Tronics EQP System by providing the capability to activate ultra-high-speed suppression systems for hazardous applications such as munitions manufacturing.

The HSDM provides up to six (6) configurable input channels and up to six (6) configurable output channels that can be programmed for supervised or unsupervised operation. Typical initiating devices include optical flame detectors, heat detectors and manual pull stations. Output channels are designed to activate FM Approved solenoids. Solenoids activated by the HSDM are typically used to initiate pilot-actuated deluge valves.

Det-Tronics high-speed deluge module for EQP controller

5 Upgrade considerations

What codes and approval standards must the system adhere to?

- Performance requirements
- Hazardous location

Is installed wiring suitable for reuse?

- Age
- Condition
- Gauge size
- Number of conductors

Is the 24Vdc power supply suitably sized?

- Age
- Condition
- Capacity
- Backup batteries/power
- Approvals

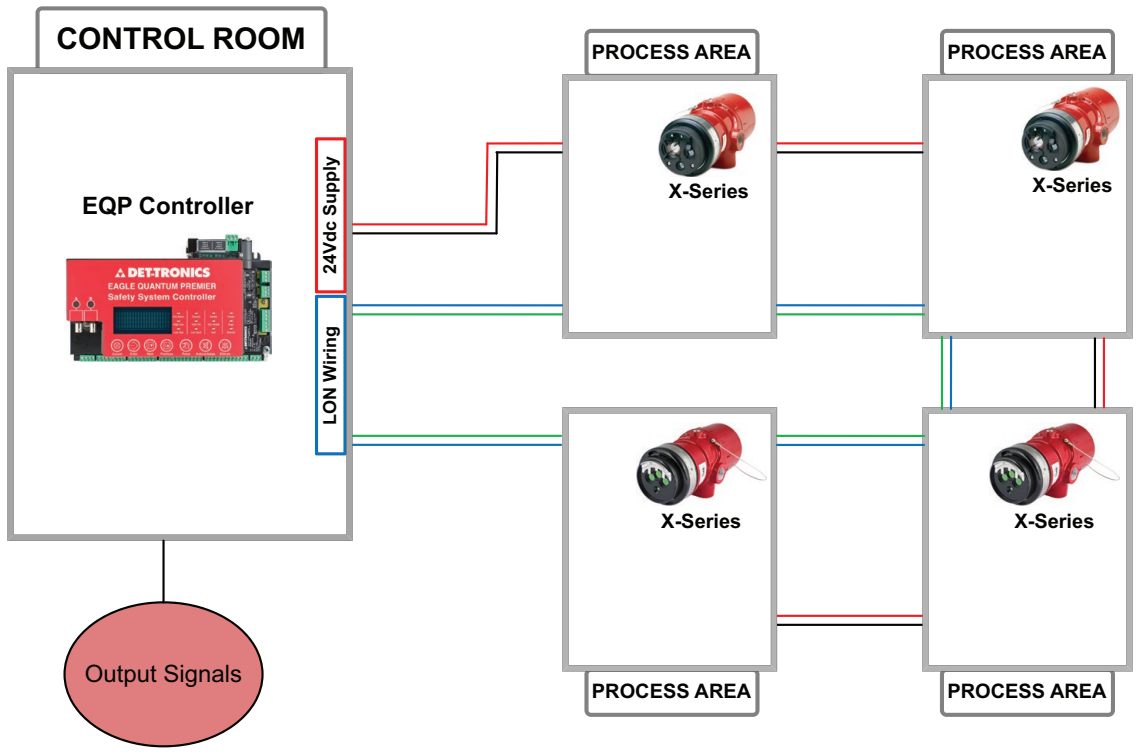
Is the fire detection system design current?

- New codes or regulations
- Fire size and fuel source performance data
- Detection technology
- Defined speed of response requirements
- Detector locations
- Physical and operational changes since the initial design

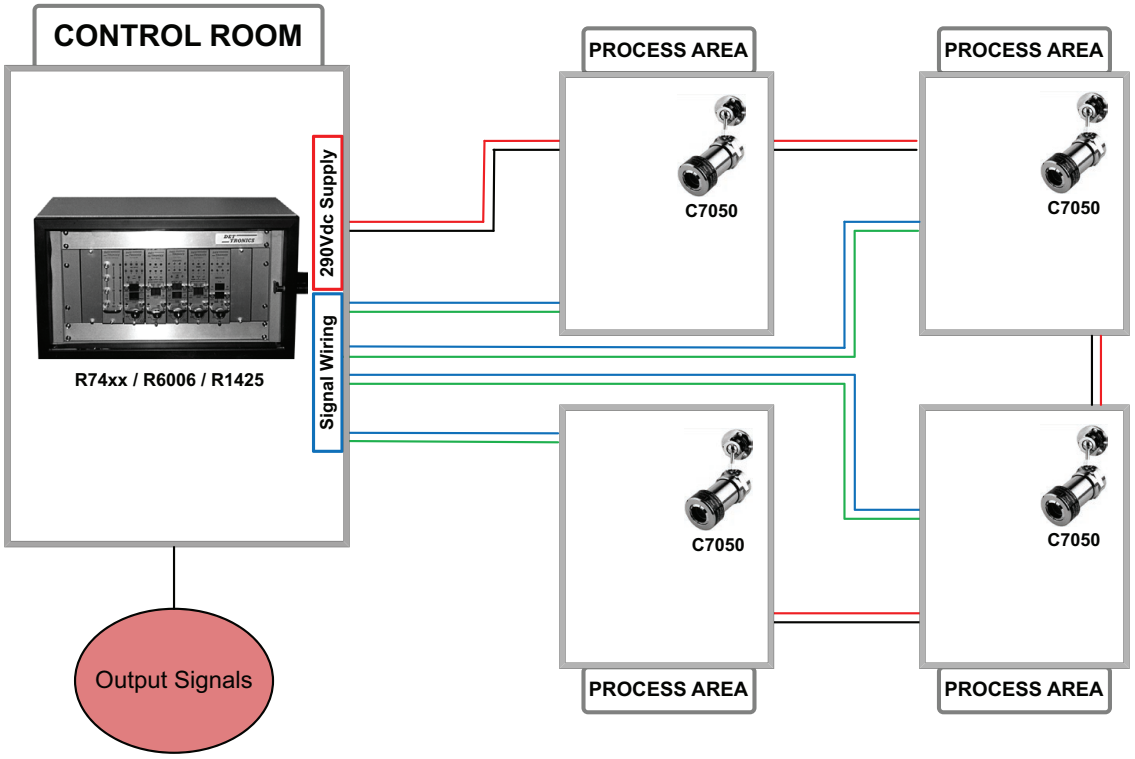
6 Wiring topology

The EQP system uses a 2-wire loop topology to communicate with its input/output (I/O) modules and field devices. In new installations, the I/O modules are typically distributed in the field to minimize wiring costs and complexity. R-Series controllers do not use a loop wiring topology, however, the EQP system can be adapted to use the installed field wiring. The following figures demonstrate wiring topologies for the R-Series and EQP systems.

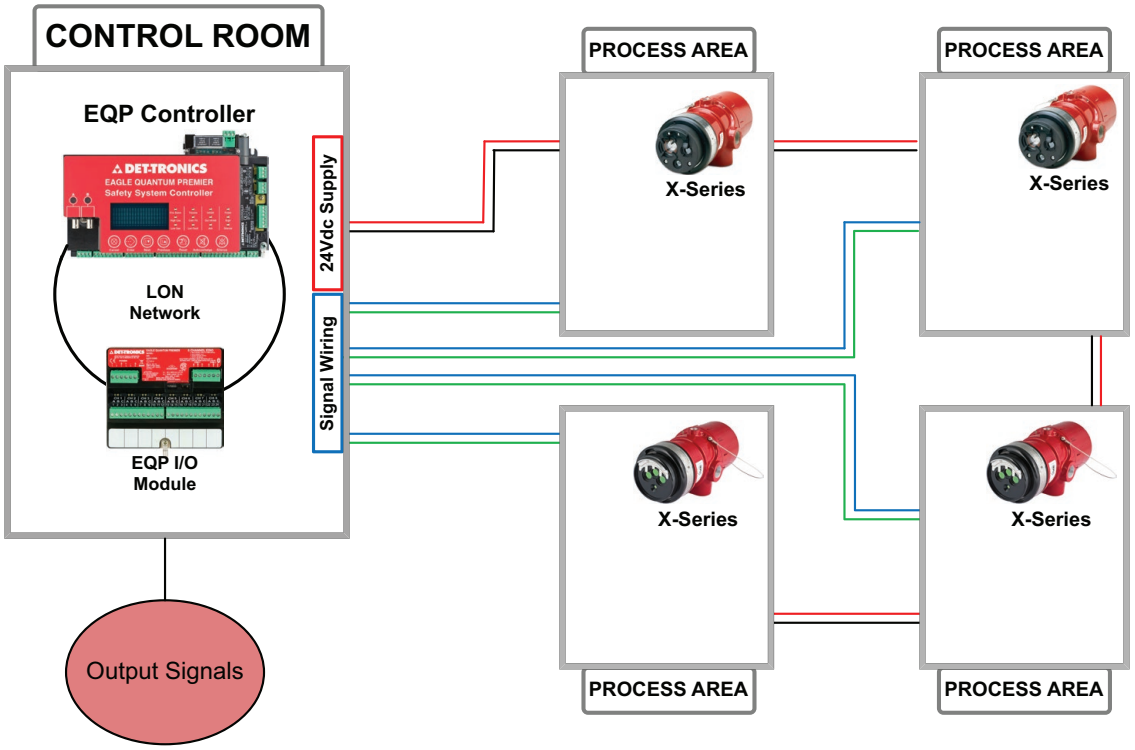
EQP — DISTRIBUTED WIRING TOPOLOGY



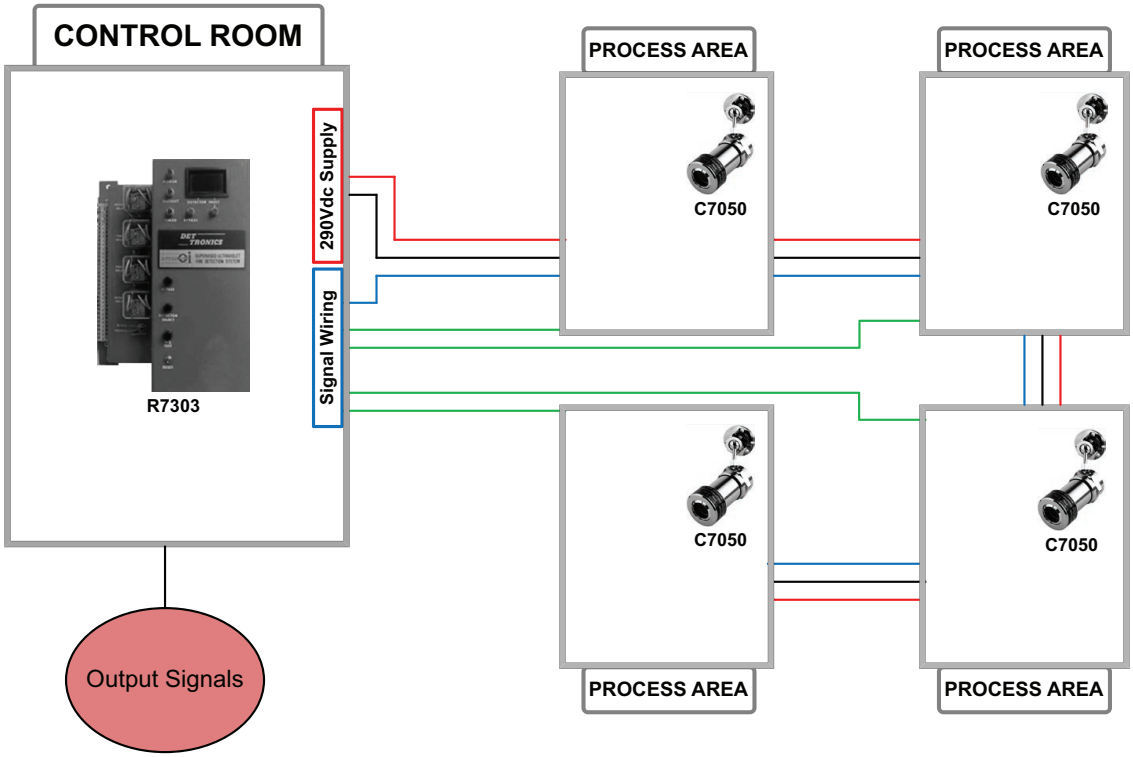
R74XX / R6006 / R1425 — WIRING TOPOLOGY



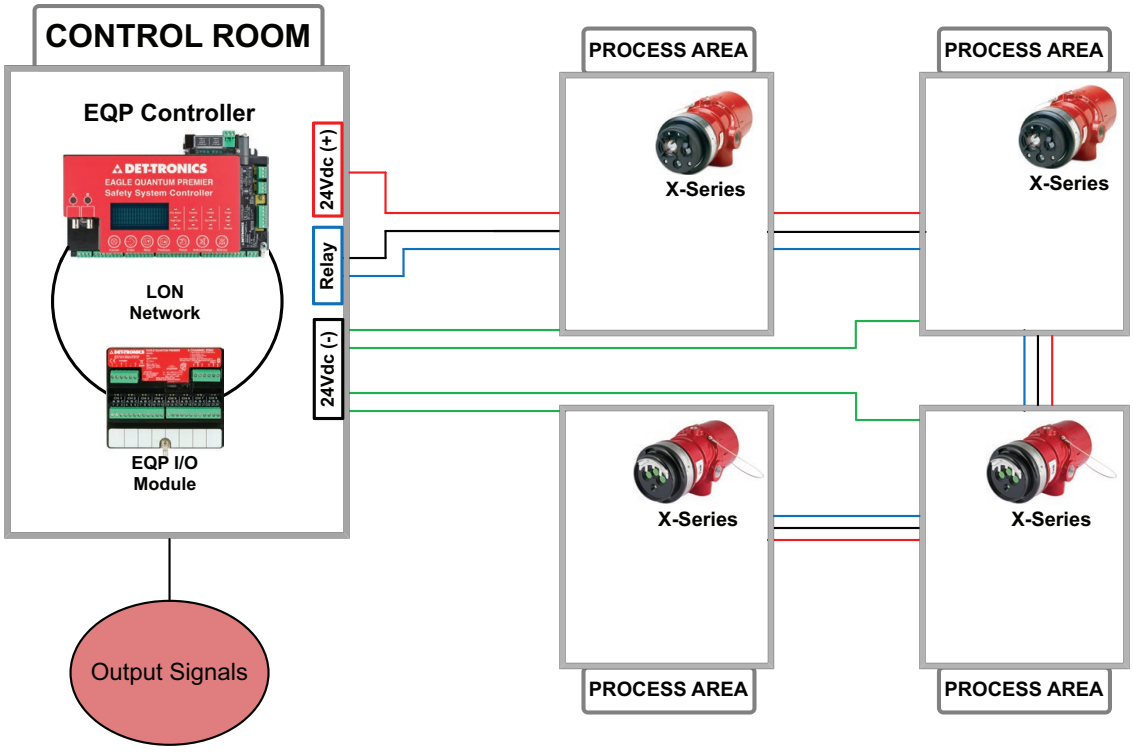
EQP — R74XX SERIES REPLACEMENT WIRING TOPOLOGY



R730X — WIRING TOPOLOGY



EQP — R730X REPLACEMENT WIRING TOPOLOGY



For more information

As a global leader in fire and gas safety systems, Det-Tronics offers the latest technologies and innovations in flame detection and controls. We design and manufacture listed fire protection systems for customers worldwide.

For help with your fire protection systems, contact us anytime.

Disclaimer

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About Det-Tronics

Det-Tronics is a global leader in fire and gas safety systems, providing premium flame and gas detection and hazard mitigation systems for high-risk processes and industrial operations. The company designs, builds, tests and commissions SIL 2 Capable flame and gas safety products ranging from conventional panels to fault-tolerant, addressable systems that are globally certified. Det-Tronics is a part of Carrier, a leading global provider of innovative HVAC, refrigeration, fire, security and building automation technologies.

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