

# Overwatch FDS

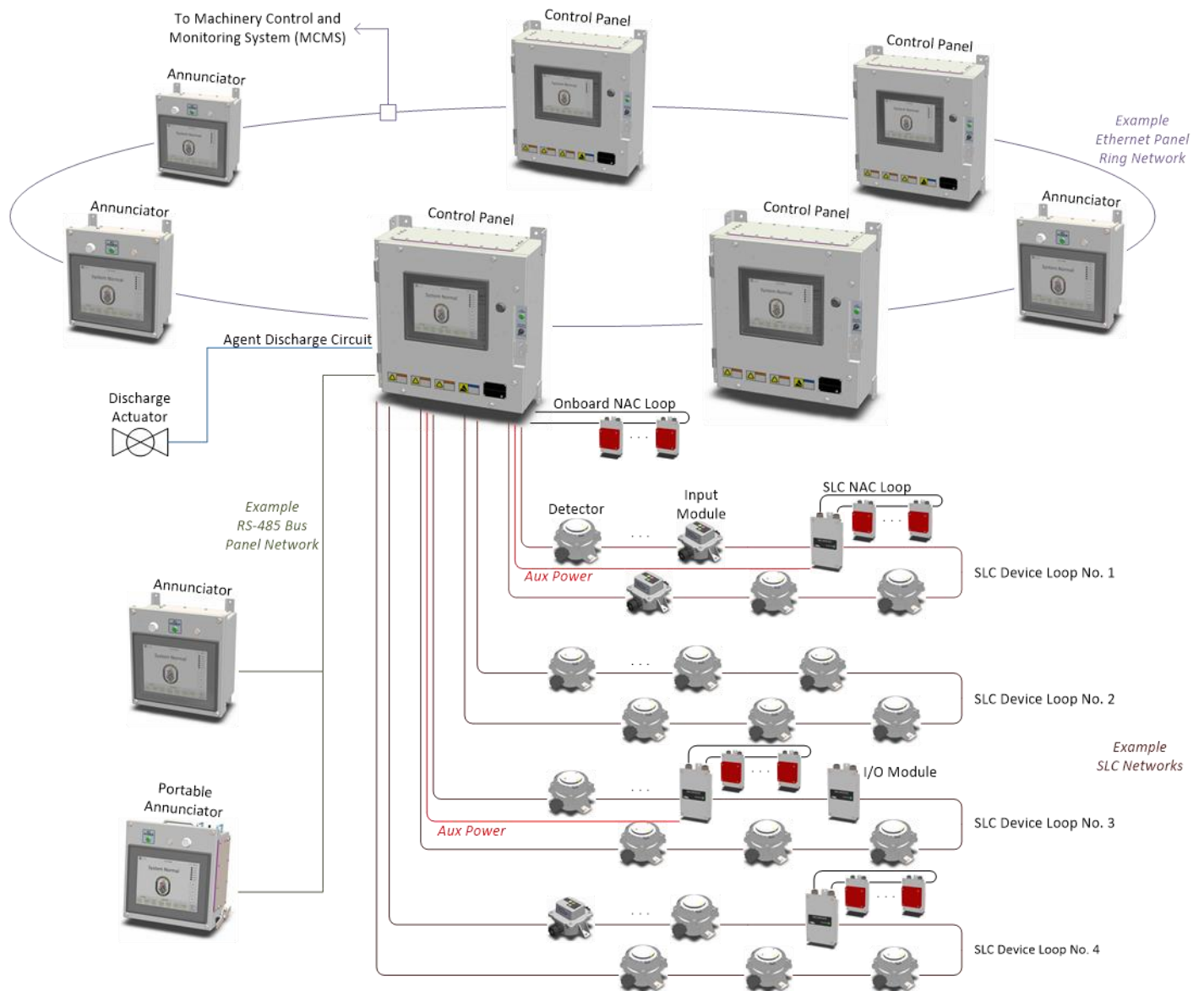


## A Fire Detection, Monitoring, and Response System for Extreme Environments

### FIRE DETECTION SYSTEM (FDS)

The example system diagram below shows a collection of components which join together to form the FDS. At heart of the system are Control, Annunciator, and Portable Annunciator Panels. These panels gather and exchange information over communication networks to provide a system-wide view of the protected areas while simultaneously executing the fire detection, notification, and suppression agent discharge logic.

Each Control Panel interfaces with a variety of detectors, modules, notification appliances, and discharge actuators. The FDS also supports interfacing with remote systems (such as a machinery control and monitoring system) using a variety of common industrial communication protocols and/or custom messages.



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### FIRE ALARM CONTROL PANEL

Fire Alarm Control Panels (FACPs) form the information hubs for a Fire Detection System. They provide a modern user interface, signaling loops for detectors/modules, notification circuit, discharge circuit, auxiliary and backup power, and network interfaces in a secure, rugged package. They can be used as a stand-alone panel or in conjunction with other Fire Alarm Control Panels



#### PRIMARY FEATURES:

- Four digital signaling line circuits (SLCs). Each connects up to 254 intelligent devices (total of 1016 SLC devices per panel)
- Detectors support pre-programmed activation modes and custom activation thresholds
- Provides a user interface to visually and audibly interact with an operator
- Notification Alarm Circuit (NAC) with synchronization
- Suppression Discharge / Releasing Actuation Circuit (RAC) with actuator health monitoring
- Comprehensive Zone support including pre-alarm, alarm, and discharge with timers, grouping, and cross-zone functionality
- Monitors itself, the devices on the SLC loops, NAC, RAC, and remote panels for event signals and zone activation
- Records all events in a system log
- Retransmits warning or alarm signals to the other devices in the system with panel collaboration groups
- Panel-to-panel communication over dual-port Ethernet (copper or fiber) with rapid spanning tree rings and RS-485
- All-digital communication between components installed as Class A, B, or X
- 3<sup>rd</sup> party data exchange (for example to MCMS). Supports custom and common industrial protocols
- Provides 42Ah, 28Ah, or 13Ah battery back-up power to attached devices in the event of a loss of primary power
- Diverse security and information assurance capability
  - Enclosure physical entry lock hasp with intrusion detection
  - Role based user authentication access control with event logging (includes remote log support for shipboard IDS)
  - Data encryption, data wipe, and secure boot
  - Security trust zone: System hardware and software validated with restore to trusted state capability
- Provides maintenance and administrative functions
- Powerful graphical configuration and programming environment
- Fully Sealed (IP67 Protection)
- Temperature Range: -30°C to +60°C (32°F to +140°F) Operating, -30°C to +80°C (-22°F to +176°F) Storage
- UL-864 Listed (pending)
- MIL-STD-901D for High Impact Shock (pending)
- MIL-STD-167B for Vibration (pending)
- MIL-STD-461E for Electro-Magnetic Interference (pending)
- MIL-STD-1399 300 I/O Compliant (pending)

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**PORTABLE  
ANNUNCIATOR  
PANEL**



**ANNUNCIATOR  
PANEL**



The Annunciator Panels allow a remote operator to monitor and interact with any part of the FDS over an Ethernet or RS-485 network. They incorporate all the user interface capability of an FACP (including security) in a compact rugged package. The Portable Annunciator allows connection of a temporary monitoring station (for example, a guard shack on the dock or ship's quarterdeck when in port) that can be removed when no longer needed.

## USER INTERFACE SETS A NEW STANDARD FOR FIRE PANEL DISPLAYS

The Fairmount FDS user interface found on all control and annunciator panels features a large color graphical display that provides the canvas for our screens. The example Active Events Screen shown below demonstrates the situational awareness capability and includes scrollable/selectable event list, event details, and system diagrams with location-based event overlay. The display has an intuitive modern interface similar to a smart phone or tablet with familiar multi-touch gestures including tap to select, swipe to scroll, and pinch to zoom. The advanced PCAP touch panel supports manipulation from a gloved hand and is resilient to water.

The screenshot displays the 'Fire Panel' interface. At the top, it shows 'Current User: LAST' and the time '08:41 6/14/2020'. The main area is titled 'Fire: Fire Alarm9' and shows a list of events on the left and details on the right. The event list includes 'Fire Alarm10', 'Fire Alarm9', 'Pre Alarm8', 'Pre Alarm7', 'Trouble6', 'Trouble5', and 'Supervisory4'. The details for 'Fire Alarm9' show 'Test Zone9' and 'Aft Repair, SLC 2, Addr. 44 Fire Alarm Manual Pull Station Fire Released'. Below the details are two diagrams of a ship: a side view and a top-down view, with colored dots indicating alarm locations. At the bottom, there are three sections: 'ALARMS' with a 'Fire Alarm' button, 'WARNINGS' with 'Release Warning Normal', 'Supervisy Warning', and 'Trouble Warning' buttons, and 'SYSTEM' with a 'Notification Active' button and a 'System Reset' button.

Operator Event List

Operator Event Detail

Graphical System Detail

Alarms, Warnings, and Reset

# Overwatch FDS



## A Fire Detection, Monitoring, and Response System for Extreme Environments

### INTELLIGENT DETECTORS

All detectors include on-board processing capability that distributes the fire detection processing load throughout the system. They are capable of sampling temperature or smoke levels, maintaining drift compensation, determining pre-alarm/alarm conditions and reporting status, troubles and/or alarms, to the attached control panel over the digital SLC network. Their PCBs are conformal coated and include LEDs showing power, network isolation, polling activity, and alarm state. Detectors also feature custom thresholding capabilities which provide tailored protection of your space.

Detector housings are augmented by a strengthened enclosure that provides a junction box with cable glands and a supporting clamp to protect the detectors during high shock and vibration. Contact Fairmount Automation for more information.

#### PHOTOELECTRIC SMOKE DETECTOR



- Incorporates an IR (infrared) LED and photo diode
- Ideal for slow burning or smoldering fires (particles >.3 microns)
- Multiple sensitivity settings

#### IONIZATION SMOKE DETECTOR



- Incorporates an ionization chamber design using Americium 241
- Ideal for fast burning, high energy, flaming fires (particles <0.01 microns)
- Multiple sensitivity settings

#### MULTI-SENSOR (SMOKE & HEAT)



- Contains both an IR sensor and thermal sensor
- Used as a general-purpose sensor that responds well to a wide range of smoke/fire types
- Provides numerical temperature readings

#### HEAT DETECTOR



- Incorporates a single open air thermistor bead
- 135° to 200°F static/rate of rise sensor
- Multiple sensitivity settings

#### OPTICAL FLAME DETECTOR



- Sensitive to low-frequency, flickering infra-red radiation emitted by flames during combustion
- Three IR sensors that respond to different IR wavelengths
- False alarm prevention filtering & advanced signal processing
- Stainless steel housing

#### FIXED HEAT DETECTOR



- Ideal environments that are dirty or smoky under normal conditions
- Fixed temp range
- High reliability
- Rugged
- Self -restoring

#### DETECTOR BASE



- Detector locking mechanism
- Contains no electrical parts or circuits
- Easy to wire
- Contains an earth connector
- One way fit to promote ease of installation

#### ISOLATING BASE



- Minimizes disruption from short circuits
- Up to 20 detectors or their equivalent load, may be installed between isolating bases
- LED notification of short condition

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### INTRINSICALLY SAFE DETECTORS

Detector feature all the benefits of the standard detectors, but are developed specifically for use in hazardous areas where intrinsically safe requirements apply.

#### I.S. OPTICAL SMOKE DETECTOR



- Incorporates an IR (infrared) LED and photo diode
- Ideal for slow burning or smoldering fires (particles >.3 microns)
- Multiple sensitivity settings

#### I.S. IONIZATION SMOKE DETECTOR



- Incorporates an ionization chamber design using Americium 241
- Ideal for fast burning, high energy, flaming fires (particles <0.01 microns)
- Multiple sensitivity settings

#### I.S. HEAT DETECTOR



- Incorporates a single open air thermistor bead
- low air-flow resistance case for better contact with surrounding air
- Multiple sensitivity settings

# Overwatch FDS

## A Fire Detection, Monitoring, and Response System for Extreme Environments



### I/O MODULES



#### Mini Monitor Module

- Contains no electrical parts or circuits
- Easy to wire
- Contains an earth connector
- One way fit to promote ease of installation



#### Ruggedized I/O Modules

- monitors set of switched contacts
- Communicates over SLC
- Local Poll, Alarm & Fault LED indications
- IP55 Enclosure



#### Manual Pull Station

- Push/Pull Action
- Single or Dual Action
- Rugged, but lightweight, die-cast metal alloy for increased performance and longevity installation

### NOTIFICATION



#### Alarm Sounder & Beacon

- Multiple tones and stages
- IP66 housing
- Low current consumption
- Corrosion proof, marine grade aluminum
- Sounder with integrated Xenon beacon



#### NAC Module

- Connects loop or bus of horns for synchronized notification
- Communicates over SLC
- Drive multiple notification appliances
- IP55 Enclosure



#### Sounder Beacon

- 15 tone pairs
- Group and global control for increased response time
- Sounder and Beacon independently configurable
- Tone synchronization



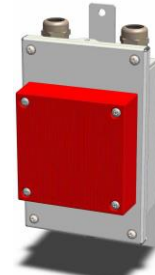
#### Horn/Strobe Module

- 185 candela visible strobe
- Multiple loudness settings
- Communicates over SLC
- Includes tamper seal aperture
- Up to 99 dBA audible alarm notifications



#### Alarm Horn Sounder

- 119dB(A) sounder
- IP66 housing
- Auto synchronization
- Corrosion proof, marine grade die cast enclosure
- Configurable for multiple tones and stages



#### Horn Module

- IP67 Metal enclosure
- Continuous or Code-3 sound up to 99dBA
- Includes tamper seal aperture
- Tone synchronization

### SUPPRESSION DISCHARGE

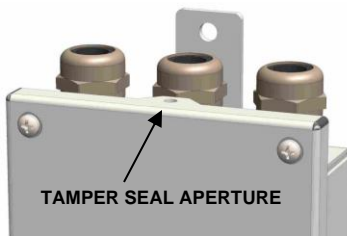
FACP Panels support UL-864 suppression discharge / releasing actuation circuit (RAC) with actuator health monitoring service (solenoids and valves supporting fire suppression are monitored for health status to ensure successful discharge upon request).

Discharge accessories available: Abort Switch / Disconnect Switch / Manual Activation Switch

### SECURITY AND INFORMATION ASSURANCE

All FDS components include features that enable a physical lock or security tamper seal to secure the housing.

Additionally, all panels include the ability to encrypt communications, use Role Base Authentication Control, and employ mechanisms to verify software authenticity, integrity, and confidentiality, disable unused communication ports, security logging, and data wipe.



The FACP panels also incorporate devices to sense, report and log any entry into an enclosure. Panels also include FIPS compliant mechanisms that can validate network attached panels are trusted members of the FDS.

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## A Fire Detection, Monitoring, and Response System for Extreme Environments

### MAGAZINE SPRINKLING SYSTEM

The example system diagram below shows a collection of components which join together to form a magazine sprinkling system. At the heart of the system are the Control and Annunciator panels, and fire detection sensors. These panels gather and exchange information over communication networks to provide a system-wide view of the protected areas while simultaneously executing the fire detection, notification, and suppression agent discharge logic.

Each Control Panel interfaces with a variety of detectors, modules, notification appliances, and discharge actuators. The system also supports interfacing with remote systems (such as a Machinery Control and Monitoring System) using a variety of common industrial communication protocols and/or custom messages.

