

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- A. Section 07 84 00 - Firestopping.
- B. Section 08 71 00 - Door Hardware: Electrically-operated locks and electromagnetic door holders for interface with fire alarm system.
- C. Section 26 05 26 - Grounding and Bonding.
- D. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.2 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. FM (AG) - FM Approval Guide; Current Edition.
- C. ISO 9001 - Quality Management Systems — Requirements; 2015, with Amendment (2024).
- D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

NFPA 72 - National Fire Alarm and Signaling Code; Most Recent Edition Cited by Referring Code or Reference Standard.
- E. UL 38 - Standard for Manual Signaling Boxes for Fire Alarm Systems; Current Edition, Including All Revisions.
- F. UL 268 - Standard for Smoke Detectors for Fire Alarm Systems; Current Edition, Including All Revisions.
- G. UL 268A - Standard for Smoke Detectors for Duct Application; Current Edition, Including All Revisions.
- H. UL 464 - Standard for Audible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories; Current Edition, Including All Revisions.

UL 864 - Control Units and Accessories for Fire Alarm Systems; Current Edition, Including All Revisions.

- I. UL 1449 - Standard for Surge Protective Devices; Current Edition, Including All Revisions.
- J. UL 1971 - Standard for Signaling Devices for the Hearing Impaired; Current Edition, Including All Revisions.
- K. UL 2572 - Mass Notification Systems; Current Edition, Including All Revisions.
- L. UL 521 - Standard for Heat Detectors for Fire Protective Signaling Systems; Current Edition, Including All Revisions.

1.3 SUBMITTALS

- A. See Section 01 33 00 - Submittal Procedures for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for products, including ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.
- C. Manufacturer's qualification statement.
- D. Manufacturer's certification that products meet or exceed specified requirements.
- E. Inspection and Test Reports:
 - 1. Installer to submit inspection and test plan prior to closeout demonstration.
 - 2. Installer to submit NFPA 72 "Record of Inspection and Testing" forms, filled out by installer.
- F. Installer to submit NFPA 72 "Record of Completion" forms, filled out completely by installer and signed by Owner and authorized representative of AHJ.
- G. Operation and Maintenance Data:
 - 1. Include detailed information on system operation, equipment programming and setup.
 - 2. Include manufacturer's preventive maintenance recommendations.
 - 3. Other data as defined in NFPA 72 chapter "Inspection, Testing, and Maintenance."
- H. Project Record Documents:

1. Submit complete project record drawings within 14 calendar days after acceptance test.
2. Provide record drawings similar to shop drawings, but revised to reflect changes made during construction.

1.4 QUALITY ASSURANCE

A. Comply with the following:

1. California State Fire Marshal (CSFM) and Requirements of AHJ.
2. Applicable local codes.
3. ADA Standards.
4. NFPA 70.
5. NFPA 72.

B. Manufacturer Qualifications: Certified for compliance with ISO 9001.

C. Installer Qualifications:

1. Company with minimum three years documented experience with similar fire alarm systems and providing contract maintenance service as regular part of their business.
2. Familiar with products to be installed through documented manufacturer training, authorization, or equivalent demonstrated experience.
 - a. Gamewell-FCI Basis of Design System: Specialized training as provided by Gamewell-FCI Premier representative.
3. Installer Personnel: At least three years experience installing fire alarm systems.
4. Supervisor: State licensed and NICET Level III certified fire alarm technician.
5. Licensed electrical or systems contractor in the State in which the Project is located.

D. Product Evaluation and Listing Organization Qualifications: All Fire Alarm devices must hold current CSFM Listing.

2.1 MANUFACTURERS

- A. Fire Alarm Control Unit and Accessory Equipment - Basis of Design: Gamewell-FCI E3 Series by Honeywell; <https://buildings.honeywell.com/us/en/brands/our-brands/gamewell-fci/#sle>.
- B. Source Limitations: Where possible, furnish system components and accessories produced by one manufacturer and obtained from one supplier.

2.2 FIRE ALARM SYSTEM

- A. Provide new fire alarm system consisting of required components (e.g., equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, and system programming) as necessary for complete operating system that provides functional intent indicated.
- B. Programming and Configuration:
 - 1. Capable of processing Boolean logic including AND, OR, XOR, NOT, TIMING, COUNT, SCHEDULE functions to provide complete programming flexibility.
 - 2. Capability of being programmed off-line using Windows-based software utilized by fire alarm system manufacturer. Capability of being downloaded by connecting laptop computer into any other node in system.
 - 3. Capability to accept firmware upgrades via connection with laptop computer, without requirement of replacing microchips.
 - 4. Customizable: Ability to software modify bit-logic for writable system instructions by use of Boolean logic for altered system functions.
- C. Fire Alarm System Network:
 - 1. Network Communications Circuit Serving Network Nodes: Interconnected using wire (twisted pair copper) media and single-mode fiber optic media.
 - 2. On loss of primary command and control location, each remaining node will continue to communicate with remainder of system, including all SLC and control functions.
 - 3. Capable of each network node being grouped with any number of additional nodes to produce region within network ring, allowing that group of nodes to act as one, while retaining peer-to-peer functionality.

4. Provide control panel display capable of annunciating all events within its region or annunciating all events from entire network on panel display without additional equipment.
 5. Network Nodes communicate in peer-to-peer fashion with all other panels in system. All Loop Interface Modules incorporate dedicated programming, log functions, central processor unit, and control-by-event (CBE) programming. If any loop becomes disabled, each remaining loop driver continues to communicate with remainder of network and maintain normal operation.
 6. Provide system capable of four channels of audio, network communications, and firefighter's telephone transmitted over single pair of wires or fiber optic cable.
- D. Products: Listed, classified, and labeled as suitable for purpose intended.
- E. Power Sources:
1. Primary: Dedicated branch circuits from facility power distribution system.
 2. Secondary: Storage batteries with capacity to operate system for period specified by NFPA 72.
- F. Spare Circuit Capacity:
1. SLCs: Minimum 25 percent spare capacity.
 2. NACs: Minimum 25 percent spare capacity.
- G. Exterior Notification: In addition to required occupant notification, provide notification appliances on exterior of building.
- H. General Wiring Methods:
1. Pathway class designations and pathway survivability are as defined in NFPA 72.
 2. Pathway Class Designations:
 - a. Unless otherwise indicated or required, pathways to meet the following requirements:
 - 1) SLCs: Class B.
 - 2) IDCs: Class B.

3) NACs: Class B.

I. Fire Alarm System Interfaces:

1. UL 864 listed unless otherwise indicated.
2. Descriptions below are intended to provide means for interface. See project sequence of operations, narrative, and input/output matrix for execution requirements.
3. Provide addressable monitor modules as indicated or as required for connection to addressable FACU. Unless devices are explicitly permitted to be connected together as one zone, provide separate addressable monitoring points for each device to be individually identifiable by addressable FACU.
4. Provide addressable relay module as indicated or as required to perform necessary functions via dry-contact interface. Where load exceeds module contact rating, provide accessory power isolation relays suitable for load as required.
5. Fire Sprinkler Systems:
 - a. Waterflow Switches: Provide minimum of one monitoring point input per switch, unless switches are grouped together.
 - b. Control Valve Supervisory (Tamper) Switches: Provide minimum of one monitoring point input per switch, unless switches are grouped together.
 - c. PIV (Post Indicator Valve) or Main Gate Valves: Provide minimum of one monitoring point input per switch.
6. Fire Suppression Systems:
 - a. Releasing Service by Separate Panel (Not by FACU):
 - 1) Kitchen Hood Suppression Systems: Provide minimum of one monitoring point input per system.
7. Fire and Smoke Doors/Shutters/Curtains:
 - a. Electromagnetic Door Holder Release:
 - 1) Provide output signal for release of electromagnetic door holders via addressable relay module and power isolation relay.

- 2) Door holders powered via 24 VDC unless otherwise indicated.

8. HVAC Systems:

a. Air Handling Units (AHUs) and Roof Top Units (RTUs):

- 1) Provide connection to duct smoke detector (supplied by Mechanical contractor) on supply side of air stream for units over 2,000 cfm.
- 2) Provide remote test station for each duct smoke detector unless explicitly indicated as not required.
- 3) Provide output signal to shut down units with at least one duct smoke detector via addressable relay module.
- 4) Where fire/smoke dampers are located downstream of unit, provide monitoring point input to determine that unit is not operational and subsequently provide output signal to close such dampers via addressable relay module and power isolation relay.

9. Fire/Smoke Dampers:

- a. Provide output signal to close fire/smoke damper via addressable relay module and power isolation relay.

2.3 FIRE ALARM CONTROL UNIT AND RELATED EQUIPMENT

A. Provide FACU listed and labeled as complying with agency listings and approval requirements as follows:

1. UL 864 (Control Units and Accessories for Fire Alarm Systems).
 - a. UUKL (smoke control).
2. UL 2572 (Mass Notification Systems).
3. FM (AG) (FM approved).
4. City of Chicago: Class 1 high rise and Class 2 high rise.
5. City of Denver Approved.
6. MEA Fire Department of New York (FDNY).

7. California State Fire Marshall (CSFM).
- B. Provide fire alarm related equipment that is listed and labeled as complying with UL 864.
- C. Provide cabinets and enclosures as indicated or as required to house system components.
- D. Provide fire alarm system motherboard with the following features:
 1. Microprocessor monitoring system events and performing system programs for control-by-event (CBE) functions.
 2. RS-232C Serial Output: Supervised RS-232C serial port provided to operate remote printers and video terminals, accept downloaded program from portable computer, or provide 80-column readout of all alarms, troubles, location descriptions, time, and date. Standard ASCII communication and code operating from 1,200 to 115,200 baud rate.
 3. Redundant History Log: Capacity for 8,100 event history log supporting local and network functions. If main processor or network node is lost, entire log is accessible at any other Loop Interface board. Capable of test by removing power from INCC command center followed by extraction of history log from any loop driver location, including INCC command center or transponder.
 4. Auto Programming: System provides preprogramming into system for SLC devices on SLC loops. Upon activation of auto programming, only devices that are present activate. This allows for system commissioning in phases without need of additional downloads.
 5. Include two integrated SLC loops. Each SLC loop with capacity for 159 addressable detectors and 159 addressable modules.
 - a. Capability for each node containing SLC loops to store its entire program at one time while allowing installer to activate only devices that are installed during construction.
 - b. Smoke detector alarm verification as standard option that also allows other devices such as manual stations and sprinkler flow to create immediate alarm. Feature is selectable for smoke sensors that are installed in environments prone to nuisance or unwanted alarms.
 - c. Alarm Signals: Alarm signals automatically latched or "locked in" at control panel until operated device is returned to normal and control

panel is manually reset. When used for sprinkler flow, "SIGNAL SILENCE" switch may be bypassed, if required by AHJ.

- d. Drift Compensation – Analog Smoke Sensors: System software automatically adjusts each analog smoke sensor approximately once each week for changes in sensitivity due to effects of component aging or environment, including dust. Each sensor maintains its actual sensitivity under adverse conditions to respond to alarm conditions while ignoring factors which generally contribute to nuisance alarms. System trouble circuitry activates, display "DIRTY DETECTOR" and "VERY DIRTY DETECTOR" indications and identify individual unit that requires maintenance.
- e. Environmental Drift Compensation: System provides for setting environmental drift compensation by device. When detector accumulates dust in chamber and reaches unacceptable level but yet still below allowed limit, control panel indicates maintenance alert warning. When detector accumulates dust in chamber above allowed limit, control panel indicates maintenance urgent warning.
- f. Analog Smoke Sensor Test: System software automatically tests each analog smoke sensor minimum of three times daily. Recognize functional test of each photocell (analog photoelectric sensors) and ionization chamber (analog ionization sensors) as required annually by NFPA 72. Failure of sensor activates system trouble circuitry, displays "Test Failed" indication, and identifies failed device.
- g. NON-FIRE Alarm Module Reporting: Non-reporting type ID available for use for energy management or other non-fire situations. NON-FIRE point operation does not affect control panel operation nor display message at panel LDC. Activation of NON-FIRE point activates control by event logic, but does not cause indication on control panel.
- h. Unique 40-character identifier available for each device. Capability to poll 10 devices at once with maximum polling time of two seconds when both SLCs are fully loaded.
- i. Combination and Multi-Criteria Detectors: Utilize one address per detector while programming independently based on criteria without additional addressing, mapping, or hardware.

6. Additional Fire Alarm System Motherboard-Only Features:

- a. RS-485 Serial Bus: Via ribbon harness or four-wire quick connector for communications with up to 16 panel interface modules up to 3,000 feet from enclosure. See "RS-485 Panel Bus Modules" below.
 - b. Two independent notification appliance circuits, Class A or Class B, rated at 2 A per circuits with integrated synchronization for System Sensor, Wheelock, or Gentex notification appliances.
 - c. 24 V auxiliary power, resettable and non-resettable.
- 7. Basis of Design Products:
 - a. Gamewell-FCI Model ILI-MB-E3, fire alarm system motherboard.
- E. Network Repeater:
 - 1. Provide interconnection and protection of network nodes.
 - 2. Regenerate network signal and condition token passing.
 - 3. Network Interface: Configurable with any combination of wire and/or fiber (see "Fiber Optic Media Converters" below) topologies and interfaces with up to 64 nodes in peer-to-peer fashion.
 - 4. Integrated status LEDs to display status.
 - 5. Integrated ground fault detector for wire segments.
 - 6. Capable of configuration for wire or fiber media via media converters.
 - 7. Basis of Design Products:
 - a. Gamewell-FCI Model RPT-E3-UTP, network repeater.
- F. Fiber Optic Media Converters:
 - 1. Provide fiber optic media converters for network segments as required.
 - 2. Compatible with network repeaters, voice control transponders, remote voice transponders, and fire alarm system motherboard.
 - 3. Provide LC-style connector with maximum attenuation of 30 dB with 9/125 micron single-mode fiber optic media.
 - 4. Basis of Design Products:
 - a. Gamewell-FCI Model FSL-E3, single-mode fiber optic media converter.

G. User Interface Displays:

1. Displays events in assigned region or all events in system.
2. Provide power from FACU or UL 864 listed 24 VDC remote power supply with standby capacity equal to or greater than FACU.
3. Outdoor Locations: Provide weatherproof heated enclosure with external thumb lock; requires separate 12 VAC power source for heater.
4. Network Graphic Display:
 - a. Multipurpose programmable touchscreen.
 - b. Store up to 512 user-defined instructional messages.
 - 1) Each message up to 77 characters in length and have individually selectable color and font.
 - c. Capable of storing custom bit-mapped graphic for display in normal system condition.
 - d. Provide RS-232 interface.
 - e. Display only information pertaining to even during abnormal system condition.
 - 1) Display only acknowledge and reset functions in trouble condition.
 - 2) Display acknowledge, silence, and reset functions in alarm condition.
5. Panel LCD Keypad Display:
 - a. Include 80-character liquid crystal type (LCD) textual annunciator with capability for local or remote mounting.
 - b. Provide four functional keys: Alarm acknowledge, trouble acknowledge, signal silence, and reset.
 - c. Provide dedicated LEDs for the following:
 - 1) AC Power ON: Green.
 - 2) Alarm: Red.
 - 3) Supervisory: Yellow.

- 4) System Trouble: Yellow.
- 5) Power Fault: Yellow.
- 6) Ground Fault: Yellow.
- 7) System Silenced: Yellow.

6. Basis of Design Products:

- a. Network Graphic Display: Gamewell-FCI Model NGA, network graphic annunciator with VGA color touchscreen display.
- b. Panel LCD Keypad Display: Gamewell-FCI Model LCD-E3, 80-character LCD display.

H. RS-485 Panel Bus Modules:

- 1. Provide addressable manual switch modules as required with the following features:
 - a. Include 16 individually programmable pushbutton switches capable of controlling speaker, firefighter's telephone, or other addressable control points.
 - b. Three status LEDs (red, yellow, and green) per programmable pushbutton switch
 - c. Insertable labels to identify function of each switch and LED combination.
- 2. Basis of Design Products:
 - a. Gamewell-FCI Part 100-0455 (ASM-16), auxiliary switch module.

I. Power Supply Module:

- 1. Incorporate switching technology without use of step-down transformers.
- 2. Supply 9 A continuous-rated output to supply all required power under normal and emergency conditions.
- 3. Integrated battery charger with capacity to charge up to 55 AH batteries while under full load.
- 4. Basis of Design Products:

- a. Gamewell-FCI Model PM-9, 9 A power supply with integrated battery charger.

J. Alarm Transmission and Integration:

1. Integrated Gateway:

- a. California State Fire Marshal (CSFM) listed.
- b. FCC compliant.
- c. Provide gateway for connection to fire system panel or panel network, serving as interface between FACU, supervising/central station, cloud services and peripheral devices.
- d. Able to read connected device system database for individual FACU or network of panels and automated report creation for supervising/central station.
- e. Reduce transfer times to supervising/central stations, dispatch centers, and emergency responders by eliminating need for additional transmission equipment (e.g., alarm-capture devices, and dialers) and associated processing delays while increasing reliability and accuracy of alarm transmission.
- f. Enable detailed context sharing directly with first responders upon fire event to improve emergency response efficiency.
- g. Capable of alarm transmission over Ethernet or Wi-Fi networks.
- h. Enable integration directly to private radio communicator via Ethernet connection.
- i. Enable supplementary transmission of real-time data from fire alarm system to cloud service to enable remote monitoring of events via web application or mobile device application.
- j. Provide lockable plastic cabinet which is keyed identical to FACU.

2. Private Radio/IP Communicator:

- a. Communicate directly to FACU via integrated gateway via Ethernet connection.

3. Basis of Design Products:

- a. Integrated Gateway: Honeywell Model HON-CGW-MBB (CLSS gateway with enclosure) with Model 50160636-001 (keylock and cable kit) with support for monitoring via any supervising/central station.

- 1) Integration with Private Radio/IP Communicator: AES Model 7707, AES-IntelliNet 2.0 Fire Subscriber Series.

K. Notification Appliance Circuit (NAC) Expansion:

- 1. Where NAC requirements exceed capacity of FACU, provide accessories as required for expansion.
- 2. Cabinet-mounted with capacity for providing 6 A, 24 VDC notification appliance power and 5 Class B NAC outputs.
 - a. Include self-contained, lockable cabinet capable of storing 7 or 18 AH batteries.
 - b. Battery charger capacity capable of charging 7 AH to 33 AH sealed lead acid batteries.
 - c. Provide two activation inputs which allow for synchronization pass-through and can be associated with any combination of NAC outputs.
- 3. Provide integral synchronization of both audio and visual circuits to match protocol assigned by FACU.
- 4. Basis of Design Products:
 - a. Gamewell-FCI Model HPF-PS6, 6 A notification power expander with five 24 VDC individually configurable outputs, red metal enclosure.

L. Electromagnetic Door Holders: See Section 08 71 00.

2.4 FIRE ALARM SYSTEM INITIATING DEVICES

A. General Requirements:

- 1. Addressable Devices: Individually identifiable by addressable FACU; suitable for connection to FACU SLCs. Provide address-setting means on device using rotary switches with simple numerical indicators. Devices which require proprietary tools or dip switches to address device will not be accepted.
- 2. Conventional (Nonaddressable) Devices: Provide addressable monitor modules or two-wire detector zone modules (See "Addressable Interface

Modules" article for Basis of Design Products) as indicated or as required for connection to addressable FACU. Unless devices are explicitly permitted to be connected together as one zone, provide separate addressable monitoring point for each device in order to be individually identifiable by addressable FACU.

3. Provide devices and associated accessories suitable for intended application and location to be installed. Unless otherwise indicated, use addressable devices and addressable monitor modules only in clean, dry, indoor, nonhazardous locations.
4. Surface-Mounted Devices: Provide manufacturer's accessory surface mount backboxes or suitable outlet/device box.
5. Devices for Outdoor and Damp/Wet Locations: Weatherproof, suitable for outdoor use; provide manufacturer's accessory backboxes and enclosures in accordance with product listing.
6. Devices for Hazardous (Classified) Locations: Listed and labeled as suitable for classification of installed location.

B. Manual Fire Alarm Boxes (Pull Stations):

1. Description: Noncoded manual signaling boxes listed and labeled as complying with UL 38.
2. Alarm Initiation: Configured for general alarm initiation unless otherwise indicated; presignal stations (where indicated) require use of key to initiate general alarm.
3. Operation: Dual-action unless otherwise indicated; first requires pushing in then pulling down of lever.
4. Color: Red, in accordance with NFPA 72.
5. Station Reset: Requires use of key or tool.
6. Basis of Design Products:
 - a. Manual Pull Stations:
 - 1) Gamewell-FCI Model MS-7AF addressable manual pull station, indoor rated, dual-action, key lock.

C. Spot-Type Detectors:

1. Addressable Detectors:

- a. Comply with "General Requirements for Addressable Devices."
 - b. Provide LED indication of normal operation/regular communication with FACU condition.
 - c. Furnished with output for remote LED alarm indicator.
 - d. Utilizes plug-in mounting to separate base with tamper-resistant feature; compatible with available sounder, relay, and isolator bases; provide base as indicated or as required.
 - e. Addressable Smoke Detectors: Capable of providing data to FACU representing analog levels detected.
2. Smoke Detectors:
 - a. Listed and labeled as complying with UL 268.
 - b. Use photoelectric (light-scattering) principal to measure smoke density.
3. Thermal (Heat) Detectors:
 - a. Listed and labeled as complying with UL 521.
 - b. Provide fixed thermal sensor which activates at 190 degrees F (88 degrees C).
4. Detector/Base Color: White, unless otherwise indicated.
5. Basis of Design Products:
 - a. Smoke Detectors:
 - 1) Gamewell-FCI Model ASD-PL3 addressable smoke detector, indoor rated, photoelectric, integral drift compensation, self-diagnostics, transient rejection, local test via application of external magnet.
 - b. Thermal (Heat) Detectors:
 - 1) Gamewell-FCI Model ATD-L3H addressable thermal detector, indoor rated, fixed temperature, 190 degrees F (88 degrees C), RTI rating of QUICK or better, local test via application of external magnet.
 - c. Bases for Addressable Detectors:

1) Gamewell-FCI Model B300-6 Series standard base, flanged low-profile.

2) WIRELESS DETECTOR BASES----->

D. Duct Smoke Detectors:

1. Listed and labeled as complying with UL 268A.
2. Sampling Tubes: Select as required for installation in duct to be monitored.
3. Remote Test Stations: Provide remote test station for each duct smoke detector unless explicitly indicated as not required. Unless otherwise indicated, use remote test stations only in clean, dry, indoor, nonhazardous locations.
4. Basis of Design Products: Provided by Mechanical Contractor. Coordinate as required.

2.5 FIRE ALARM SYSTEM INTERFACE MODULES

- A. Fire alarm system accessory equipment listed and labeled as complying with UL 864.
- B. Provide addressable interface modules as indicated or required for fire alarm and nonfire alarm interfaced systems.
- C. Individually identifiable by addressable FACU; suitable for connection to FACU SLCs. Provide address-setting means on device using rotary switches with simple numerical indicators. Devices which require proprietary tools or dip switches to address device will not be accepted.
- D. Provide addressable modules suitable for connection to FACU SLCs.
- E. Unless otherwise indicated, use addressable modules only in clean, dry, indoor, nonhazardous locations.
- F. Addressable Monitor Modules: Unless devices are explicitly permitted to be connected together as one zone, provide separate addressable monitor module for each conventional dry-contact input device in order to be individually identifiable by addressable FACU.
- G. Addressable Control Modules: Provide as indicated or as required for selective control of notification appliances.

- H. Addressable Relay Modules: Provide as indicated or as required to perform necessary functions via dry-contact interface. Where load exceeds module contact rating, provide accessory power isolation relays suitable for load as required.
- I. Addressable Signaling Line Circuit (SLC) Isolating Modules: Provide as indicated or as required to automatically isolate short circuits on connected sections of SLC loops and allow other sections to continue to function normally. Provide automatic reset upon correction of short circuit.
- J. Basis of Design Products:
 - 1. Addressable Monitor Modules:
 - a. Gamewell-FCI Model AMM-4F addressable monitor module; single monitoring point, supervises one Class A or Class B circuit of conventional dry-contact input devices; uses single module address on SLC; mounts to nominal 4-inch (102 mm) square or 2-gang box, includes white finish cover.
 - 2. Addressable Control Modules:
 - a. Gamewell-FCI Model AOM-2SF addressable control module; single supervised control output, Class A or Class B, suitable for controlling 24 VDC NAC and speakers up to 70.7 Vrms; requires separate power; uses single module address on SLC; mounts to nominal 4-inch (102 mm) square or 2-gang box, includes white finish cover.
 - 3. Addressable Relay Modules:
 - a. Gamewell-FCI Model AOM-2RF addressable relay module; two Form C dry contacts that switch together; uses single module address on SLC; mounts to nominal 4-inch (102 mm) square or 2-gang box, includes white finish cover.
 - 4. Addressable Signaling Line Circuit (SLC) Isolating Modules:
 - a. Gamewell-FCI Model M500X addressable signaling loop circuit (SLC) isolating module; does not use any module addresses on SLC; mounts to nominal 4-inch (102 mm) square or 2-gang box, includes white finish cover.

2.6 FIRE ALARM SYSTEM NOTIFICATION APPLIANCES

- A. Notification Appliances - General Requirements:

1. Provide signaling devices listed for fire-protective service and intended operating mode (public or private); suitable for connection to FACU notification NAC.
 2. Provide addressable control modules as indicated or as required for selective control of notification appliances.
 3. Provide notification appliances and associated accessories suitable for intended application and location to be installed. Use notification appliances only according to listed mounting (i.e., ceiling or wall mounted).
 4. Surface-Mounted Notification Appliances: Provide manufacturer's accessory surface mount backboxes or suitable outlet/device box.
 5. Notification Appliances for Outdoor and Damp/Wet Locations: Weatherproof, suitable for outdoor use; provide manufacturer's accessory backboxes and enclosures in accordance with product listing.
 6. Notification Appliance Derating: Account for device derating adjustments in accordance with listing where applicable, including but not limited to the following.
 - a. Where accessory protective guards, and enclosures are utilized.
 - b. Where required by field conditions (e.g., ambient temperature).
 7. Notification Appliances Colors:
 - a. See mounting configuration indicated by floor plan drawing symbols.
 - b. Wall-Mounted: Red.
 - c. Ceiling-Mounted: White.
- B. Visible Notification Appliances:
1. Public Mode Operation: Listed and labeled as complying with UL 1971.
 2. Strobes: Clear or nominal white lens with flash rate of 1 Hz unless otherwise indicated or required; xenon light source with maximum pulse duration of 0.2 seconds; candela rating as indicated.
- C. Audible Notification Appliances:
1. Listed and labeled as complying with UL 464.

2. Rated Sound Pressure Level: As required to achieve design sound pressure levels, but not less than 75 dB(A) at 10 feet (3.1 m) for public mode operation or 45 dB(A) at 10 feet (3.1 m) for private mode operation in accordance with UL 464.
 3. Horns: Selectable tone, including at minimum NFPA 72-compliant temporal 3 pattern and continuous; minimum of two selectable volume levels.
- D. Combination Notification Appliances: Comply with respective requirements for each signaling method.
- E. Exterior Notification:
- F. Basis of Design Products:
1. Strobes: System Sensor, as indicated on drawings.
 2. Horns: System Sensor, as indicated on drawings.
 3. Horn/Strobes: System Sensor, as indicated on drawings.

2.7 FIRE ALARM SYSTEM ACCESSORIES

- A. Cables for Network Connections:
1. Comply with manufacturer's minimum requirements.
- B. Fire Alarm System Documents and Software Cabinet:
1. Provide fire alarm document (FAD) cabinet with size as indicated or as required.
 2. Cabinet: Steel with red finish; permanently identified with text "FIRE ALARM SYSTEM DOCUMENTS"; keyed to match fire alarm system equipment; include fixed integral minimum 2 GB flash drive for electronic storage of system documents and system database program.
- C. Terminal Cabinets:
1. Provide terminal cabinets with quantity of termination points as indicated or as required for application.
 2. Cabinet: Steel, with red finish; permanently identified with text "FIRE ALARM TERMINAL CABINET"; keyed to match fire alarm system equipment.
 3. Terminal Strips: Rated for 20 A at 250 VAC; terminal points rated for 12 AWG conductors.

D. Surge Protection:

1. Line Voltage Surge Protection: UL 1449 listed; provide for each line voltage circuit that supplies operating power for fire alarm system control equipment (e.g., FACU, field booster panels, nodes, and transponders).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that areas and surfaces are ready to receive fire alarm system.
 1. Notify Architect of conditions that would adversely affect installation or subsequent use.
 2. Do not begin installation until unacceptable conditions are corrected.
- B. Verify that circuit wiring installation is completed, tested, and ready for connection to system where applicable per conductor requirements of NFPA 72 tables located in chapter "Inspection, Testing, and Maintenance."

3.2 INSTALLATION

- A. Install products in accordance with NFPA 72, NFPA 70, state and local codes, manufacturer's instructions, and as indicate on drawings.
- B. Install products in accordance with applicable requirements of NECA 1 (general workmanship).
- C. Adjust selectable candela strobes to rating indicated on design documents.
- D. Provide grounding and bonding in accordance with manufacturer's recommendations; see Section 26 05 26.
- E. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 07 84 00.
- F. Identify system wiring, components, and overcurrent protective devices for branch circuits serving fire alarm system; see Section 26 05 53.
- G. Conceal conduit, junction boxes, and conduit supports and hangers in finished areas. Conceal or expose conduit, junction boxes, and conduit supports and hangers in unfinished areas; maintain all code required access.
- H. Do not install smoke detectors before system programming and test period. If construction is ongoing during this period, take measures to protect smoke detectors from contamination and physical damage.

- I. Mount fire detection and alarm system devices, control panels, and remote annunciators flush or surface as indicated.
- J. Ensure installation locations of devices and notification appliances are in accordance with local codes, standards, and Ensure manual stations are suitable for surface mounting or semi-flush mounting as indicated on drawings. Install not less than 42-inches (1.07 m), nor more than 48-inches (1.22 m), above finished floor measured to operating handle.

3.3 FIELD QUALITY CONTROL

- A. See Section 01 43 20 - AHJ Construction Oversight for additional requirements.
- B. Perform initial and acceptance inspection and testing in accordance with NFPA 72 and requirements of AHJ; document each inspection and test.
- C. Correct defective work, adjust for proper operation, and retest until entire system complies with contract documents.
- D. Leave fire alarm system in working order and, without additional expense to Owner, replace defective materials and equipment provided within one year from date of final acceptance by Owner.

3.4 CLEANING

- A. See Section 01 74 00 - Cleaning for additional requirements.
- B. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.5 CLOSEOUT ACTIVITIES

- A. See Section 01 77 00 - Contract Closeout for closeout submittals.

END OF SECTION