

## Electrical Signaling

Electrical protective signaling systems are configurations of components used to produce alarm signals indicative of fire, smoke, sprinkler waterflow or other emergency and to produce supervisory signals indicative of conditions needing attention with respect to protection equipment or watch service. System configurations are classified according to where and how the signals are received. The categories are commonly designated as local, municipal, remote station, proprietary, emergency voice/alarm communication, emergency communication, and central station. Auxiliary systems are either local or proprietary systems interconnected with a municipal system.

This category presents the major system component categories and the integrated system configurations. The selection of components to form a hybrid system should be made only by those skilled in system design. Also, the suitability of any system application should be judged on the basis of the hazard(s) being protected.

## Alarm Signal Initiating Devices

Alarm signals are initiated either automatically or manually. Automatic detectors respond to changes in characteristic phenomena associated with fire or other emergency conditions.

### Fire Detection, Heat-Actuated

*Heat sensitive devices may be either "spot" or "line" type and operate at a fixed temperature or on a rapid increase in temperature (rate-of-rise). Some detectors combine the fixed and rate sensitive principles.*

*The spacing guides listed are indicative of each detector's relative sensitivity and, in each case, the spacing guide is the maximum recommended separation between detectors for smooth-ceiling installations. For a given temperature rating, a fixed-temperature detector which has a 30 ft (9 m) listing and one which has a 15 ft (5 m) listing will both respond at approximately the same time to a geometrically growing fire if each is installed at its listed spacing. FM Approved rate-of-rise detectors all have 30 ft (9 m) listed spacings, the maximum separation recommended by FM Approvals.*

*Installation of heat detectors at less than maximum spacing is necessary: to achieve earlier response; to compensate for ceiling obstructions such as beams and joists; and to compensate for ceiling heights greater than 15 ft (5 m). Proper location and use of heat detectors involves consideration of ceiling construction, the location of partitions, the maximum normal room temperature, heat produced by the occupancy, and whether detector function is to warn occupants or to automatically actuate protection equipment. Refer to Standard 72-1993 of the National Fire Protection Association and design specifications published by jurisdictional authorities, as appropriate.*

### ACA-V

The Model ACA-V Multi-Criteria addressable photoelectric smoke and fixed temperature heat detector. To be used with compatible Approved fire alarm control panels FireNET 2127/4127 2 Loop, 4 Loop models only. Up to 127 devices are permitted on each panel's signaling line loop. Uses models YBN-NSA-4, HSB-NSA-6 and ASB detector bases. Fixed temperature heat detector operating range from 135°F (57°C) to 150°F (65°C) is being programmed from the control panel. RTI classification for detector is QUICK with 20 x 20 ft (6.1 x 6.1 m) spacing. Operating voltage range of 17 to 41V dc, with the standby current at 450 µA and alarm current at 8 mA. Suitable for indoor use only (unheated, but not refrigerated areas) with temperatures from 14°F to 122°F (-10° to 50°C). (See FireNET 2127/4127 2 Loop, 4 Loop Fire Alarm Control Panels listings under Local Protective Signaling).

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<b>New/Updated Product Listing:</b>	No
<b>Listing Country:</b>	United States of America
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### ATG-EA

The Model ATG-EA Analog addressable fixed temperature heat detector. To be used with compatible Approved fire alarm control panels FireNET 2127/4127 2 Loop, 4 Loop models only. Up to 127 devices are permitted on each panel's signaling line loop. Uses models YBN-NSA-4, HSB-NSA-6 detector bases. Fixed temperature heat detector operating range from 135°F (57°C) to 150°F (65°C) is being programmed from the control panel. RTI classification is FAST with a 25 x 25 ft (8 x 8 m) spacing. Operating voltage range of 17 to 41V dc, with the standby current at 350 µA and alarm current at 500 µA. Suitable for indoor use only (unheated, but not refrigerated areas) with temperatures from 32°F to 115°F (0° to 47°C). (See FireNET 2127/4127 2 Loop, 4 Loop Fire Alarm Control Panels listings under Local Protective Signaling).

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### Combination Rate-of-Rise, Fixed Temperature Detectors

Combination Rate-of-Rise, Fixed Temperature Detectors. Models DCD-135 and DCD-190 factory set to operate at 135°F (58°C) and 190°F (88°C), respectively. Operating voltage range of 15 to 30 V dc. RTI classification for Model DCD-135 is FAST with a 25 x 25 ft (8 x 8 m) spacing. RTI classification for Model DCD-190 is QUICK with a 20 x 20 ft (6.1 x 6.1 m) spacing. To be used with NS4-100, -220, -221, and -224 4 in. bases, NS6-100, -220, -221, and -224 6 in. bases, HSC-220R, HSC-224R, HSC-221R and HSC-4R.

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### Fire Detection, Smoke-Actuated

*FM Approved smoke actuated devices respond to airborne particulate products of combustion.*

*The photoelectric principle is based on the change in current which accompanies a change in light intensity on a photoelectric cell as a result of smoke entering the detector.*

*The beam type version has the light source and photoelectric cell separated in the protected area.*

*The ionization type detector ionizes the air in special chambers within the detector.*

*Particles entering the exposed chamber decrease the normal ionization current.*

*Air-sampling detectors have ambient air drawn from the protected area into a chamber containing the sensing element.*

*Air duct smoke detectors are for the primary purpose of controlling blowers and dampers of air conditioning and ventilating systems to prevent distribution of smoke and gaseous products; they should not be used as a substitute for open area detection.*

*Unless otherwise indicated in the listing, the permissible air velocity range for duct type detectors is 250 to 1500 ft/min (75 to 455 m/min) and up to 300 ft/min (90 m/min) for open area detectors.*

*A "smoke switch" is fail-safe in that loss of power to the device causes the same switching operation as when smoke is detected. Average coverage should not exceed 900 ft<sup>2</sup> (84 m<sup>2</sup>) per detector. Reduced coverage is recommended beneath high ceilings and for high air flow areas such as computer rooms.*

*These devices are suitable for use in ambients of 32°-100°F (0°-38°C) unless otherwise indicated in the listing. Installation, testing, and maintenance by trained personnel are recommended.*

## Fire Detectors-Smoke

### Photoelectric Type Duct Smoke Detector, Models DH-98-P, -HVP

Photoelectric Type Duct Smoke Detector models DH-98-P and DH-98-HVP. Four-wire operation rated 24V dc. Suitable for use in air velocities from 400-4000 ft/min (122-1220 m/min). The SLR-24 detector head responds to smoke levels corresponding to 1.5 to 3.5 %/ft (0.2 to 0.5 dB/m) obscuration.

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The heart of a signaling system consists of a control unit to which are connected the initiating and signal indicating circuits. The control unit is usually in a separate enclosure, provides power to its external circuits, and often is of modular design to enable flexibility in obtaining multiple functions. In a coded signaling system, transmitters may be either separate from or integral to a control; they transmit to the control or from a control to remote receiving equipment. The equipment listed below, in conjunction with peripheral devices, may be used to form a complete system or a portion of a multizone system.

### Fire Net Plus

Fire Net Plus Series Fire alarm Control Panels. Control uses firmware revision 07.xxxx. Uses 12AH to 18AH batteries for inside the panel mount and up to 60AH for remote cabinet mount. Below see the table for model number breakdown for the Fire Net Plus Series Fire alarm Control Panels:

<i>Fire Net Plus Model Number</i>	<i>Component Description</i>
FNP-1127-R	FNP-1127 FIRENET PLUS 1 LOOP NOT EXPANDABLE, RED
FNP-1127-C	FNP-1127 FIRENET PLUS 1 LOOP NOT EXPANDABLE, CHARCOAL
FNP-1127D-R	FNP-1127D FIRENET PLUS 1 LOOP W/INTEGRATED DIALER, NOT EXPANDABLE, RED
FNP-1127D-C	FNP-1127D FIRENET PLUS 1 LOOP W/INTEGRATED DIALER, NOT EXPANDABLE, CHARCOAL
FNP-1127E-R	FNP-1127E FIRENET PLUS 1 LOOP EXPANDABLE, RED
FNP-1127E-C	FNP-1127E FIRENET PLUS 1 LOOP EXPANDABLE, CHARCOAL
FNP-1127DE-R	FNP-1127DE FIRENET PLUS 1 LOOP W/INTEGRATED DIALER, EXPANDABLE, RED
FNP-1127DE-C	FNP-1127DE FIRENET PLUS 1 LOOP W/INTEGRATED DIALER, EXPANDABLE, CHARCOAL
FNP-1127-BO	FNP-1127 FIRENET PLUS CONTROL BOARD ONLY NOT EXPANDABLE (D1090)
FNP-1127E-BO	FNP-1127 FIRENET PLUS CONTROL BOARD ONLY EXPANDABLE (D1090)
FNP-1127D-BO	FNP-1127 FIRENET PLUS CONTROL BOARD ONLY WITH DIALER, NOT EXPANDABLE (D1090)
FNP-1127DE-BO	FNP-1127 FIRENET PLUS CONRTOL BOARD ONLY WITH DIALER EXPANDABLE (D1090)

The Fire Net Plus Series Fire alarm Control Panels compatible components and modules are listed in the table below:

<i>Model</i>	<i>Interface Board</i>	<i>Embedded dialer</i>	<i>VesNet Compatible</i>	<i>eNet Compatible</i>	<i>FireNet Network Compatible</i>
FNP-1127	None	No	No	No	No
FNP-1127D	None	Yes	No	No	No

FNP-1127E	FNP-1127-SLC loop expander board	No	No	No	FN-4127-NIC network card
FNP-1127DE	FNP-1127-SLC loop expander board	Yes	No	No	FN-4127-NIC network card

pThe Fire Net Plus Series Fire alarm Control Panels are compatible with the following devices:

<i>Description</i>	<i>Hochiki part #</i>	<i>VES part #</i>
Ionization Smoke Detector	AIE-EA	VF2001-00
Photoelectric Smoke Detector	ALG-V	VF2002-00
Heat Detector	ATG-EA	VF2003-00
Base, 4"	YBN-NSA-4	VF7001-00
Base, 6"	HSB-NSA-6	VF7002-00
Dual Input Monitor Module	DIMM	VF6007-00
Fast Response Contact Module w/ Pigtails	FRCME-P	VF6001-00
Fast Response Contact Module w/ screw terminals	FRCME-S	VF6002-00
Fast Response Contact Module, 4" sq box.	FRCME-4	VF6013-00
Analog Addressable Duct Detector	DH-98A	VF5001-00
Analog Addressable Duct Detector w/ relay	DH-98AR	VF5002-00
Short Circuit Isolator	SCI	VF6003-00
Dual Relay Module	R2M	VF6005-00
Analog Sounder Base	ASB	VF7008-00
Supervised Output Module	SOM	VF6004-00
Solenoid Releasing Module	SRM	VF6006-00
Conventional Zone Module	CZM	VF6011-00
Fast Response Contact Module, Class A	FRCMA	VF6020-00
Fast Response Contact Module, Class A w/ Short Circuit Isolators	FRCMA-I	VF6021-00
Fast Response Contact Module, Class A w/ Pigtails	FRCMA-P	VF6022-00
Fast Response Contact Module, Class A w/ Pigtails & Short Circuit Isolators	FRCMA-PI	VF6023-00
Dual Relay Module, 1 Amp	DCP-R2ML	VF6030-00
Dual Relay Module, 8 Amp	DCP-R2MH	VF6031-00
Dual Relay Module, 1 Amp w/ Short Circuit Isolators	DCP-R2ML-I	VF6032-00
Dual Relay Module, 8 Amp w/ Short Circuit Isolators	DCP-R2MH-I	VF6033-00
Supervised Output Module, Class A	SOM-A	VF6040-00
Supervised Output Module, Class A w/ Short Circuit Isolators	SOM-AI	VF6041-00
Addressable Manual PullStation, Single Action	AMS-KL	VF3031-00

Addressable Manual Pull Station, Dual Action		VF3032-00
Analog Photoelectric Smoke Sensor	ALK-V	VF2005-00
Multi-Sensor	ACD	
Remote Test Station for Duct Detectors – Alarm LED	MS-RA	VF5020-00
Remote Test Station for Duct Detectors – Alarm LED w/ Reset Button	MS-RA/R	VF5021-00
Remote Test Station for Duct Detectors – Alarm LED w/ Reset Key Switch	MS-KA/R	VF5023-00

Each of the models in the Matrix listed as “FireNet Compatible” will be capable of interfacing with:

- FireNet Interface FN-4127-NIC

Each of the models in the Matrix will be capable of interfacing with:

- FireNet LED FNP-LED-XX-yyy
- FN-LCD-S
- FNP-4127-IO

(See also CENTRAL STATION SIGNALING SYSTEMS, AUTOMATIC RELEASES FOR EXTINGUISHING SYSTEMS AND OTHER FIRE PROTECTION EQUIPMENT and AUTOMATIC RELEASES FOR PREACTION AND DELUGE SPRINKLER SYSTEMS.)

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### FireNET 2127 / 4127 2 Loop, 4 Loop Fire Alarm Control Panels

FireNET 2127 / 4127 (2 loop and 4 loop) Fire Alarm Control Panels. Control uses firmware revision 4.0XX. Basic system consists of a 4 Amp power supply module (P/N FN-PS4), Control Unit Board (P/N FN-4127-BO), batteries (12AH to 17AH for inside the panel mount and up to 26AH for the remote cabinet mount) and Panel Annunciator Board (FN-4127-CPA-BO). The panel provides connections for either two or four signaling line circuit (SLC) loop monitoring (four SLC loop capability in the expanded version of the FireNET 4127 panel requires installation of model FN-4127-SLC loop expansion module). Each SLC loop can be wired either in Class A, Style 6 or Style 7 configuration, or in Class B, Style 4 configuration. The panel provides connections for four Class B, Style Y notification appliance circuits. To enable the network capabilities model FN-4127-NIC Network Interface Card ("NIC") slave card is used. The FireNET 2127 / 4127 can contain a maximum configuration of 64 FireNET 2127 / 4127 panels. Compatible addressable detectors and bases are: model AIE-EA ionization smoke detector, model ALG-V photoelectric smoke detector, model ATG-EA heat detector, models DH-98-A, DH-98-AR and ALK-D duct smoke detectors, ALK-V/-V2/-VW smoke detectors, model ACA-V/-VW multi-criteria photoelectric smoke and fixed temperature heat detector, models HSB-NSA-6/-6W and YBN-NSA-4/-4W 6 in and 4 in bases. Model ASB/-W analog sounder base can be used with models AIE-EA, ALG-V, ALK-V/ALK-V2/ALK-VW and ATG-EA/ATG-EAW and ACA-V/ACA-VW detectors. Compatible addressable modules are: models DCP-FRCME-M, FRCMA, FRCMA-I, FRCME-4-10K, FRCME-S-10K and FRCME-P monitor modules; DIMM dual input monitor module with two independent Class B (Style B) initiating device circuits (IDCs); models R2ML, R2ML-I, R2MH, and R2MH-I dual relay modules, model R2M relay module; model SRM solenoid releasing module; model DCP-SOM-R output release module with model SOM-R-DS disable key switch; CZM conventional zone module with Class A (Style D) or Class B (Style B) initiating device circuits (IDCs); models SOM-AI and SOM-A supervised output Class A modules, DCP-AMS, DCP-AMS-LP, DCP-AMS-KL, DCP-AMS-KL-LP addressable manual pull stations and model SOM signal output module. CZM conventional zone module compatible with: SLK-24F, SLR-24H, SLR-24V, SLR-835 SLR-835W, SLR-835H, SLR-835HW, SLR-835B-2, SLR-835BH-2, SLV-24, SLV-24N, SLV-24V/SLV-24NW photoelectric type smoke detectors; SIH-24F, SIJ-24 ionization type smoke detectors; DCD-135/DCD-135W, DCD-190/DCD-190W combination rate-of-rise fixed temperature detectors. Standby batteries provide 24 hour standby operation.

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## Auxiliary Power Supplies, Battery Chargers and Notification Appliance Circuit Boosters for Fire Protective Signaling Systems

These optional products with secondary power supply having sufficient capacity to operate the product for 24 hours under maximum normal load are intended to extend a conventional fire alarm panel's signaling capacity. Products listed in this category either interface the booster power supply through dry contact interface to the Fire Alarm Control Panel (FACP) or connect to the NAC [notification appliance circuit]. Products that can only communicate via signal line circuit are listed with the FM Approved controls.

### Models FN-642-ULADA, FN-842-ULADA, FN-1042-ULADA

Models FN-642-ULADA-R, FN-642-ULADA-G, FN-642-ULADA-C, FN-642-ULADA-B, FN-842-ULADA-R, FN-842-ULADA-G, FN-842-ULADA-C, FN-842-ULADA-B, FN-1042-ULADA-R, FN-1042-ULADA-G, FN-1042-ULADA-C and FN-1042-ULADA-B, notification appliance boosters/battery chargers with two input circuits rated 9-30 V dc (5.0 mA minimum per input) connecting to an FM Approved fire alarm control to extend the control's signaling capacity: to 6.5 A with two separate 1 A auxiliary outputs for FN-642-ULADA-R, FN-642-ULADA-G, FN-642-ULADA-C and FN-642-ULADA-B; to 8 A with two separate 1A auxiliary outputs for FN-842-ULADA-R, FN-842-ULADA-G, FN-842-ULADA-C, FN-842-ULADA-B; and to 10A with two separate 1A auxiliary outputs for FN-1042-ULADA-R, FN-1042-ULADA-G, FN-1042-ULADA-C and FN-1042-ULADA-B. Each booster power supply requires 120 V ac primary power with a 24 V dc secondary power provided by two 12V batteries with up to 36 AH capacity, charged by a 0.7 A maximum internal current. The models FN-642-ULADA-R, FN-642-ULADA-G, FN-642-ULADA-C, FN-642-ULADA-B, FN-842-ULADA-R, FN-842-ULADA-G, FN-842-ULADA-C, FN-842-ULADA-B, FN-1042-ULADA-R, FN-1042-ULADA-G, FN-1042-ULADA-C, FN-1042-ULADA-B each have four (Class B) Style Y notification appliance circuits (NAC) which may be wired for four (Class A) Style Z circuits, or two (Class B) Style Y circuits in addition to two (Class A) Style Z circuits. Each power supply has two form C trouble relays rated 2 amps at 28 V dc.

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## Auxiliary Power Supplies, Battery Chargers and Notification Appliance Circuit Boosters for Fire Protective Signaling Systems

These optional products with secondary power supply having sufficient capacity to operate the product for 24 hours under maximum normal load are intended to extend a conventional fire alarm panel's signaling capacity. Products listed in this category either interface the booster power supply through dry contact interface to the Fire Alarm Control Panel (FACP) or connect to the NAC [notification appliance circuit]. Products that can only communicate via signal line circuit are listed with the FM Approved controls.

### Models FN-400ULX, FN-600ULX, FN-1024ULX

Models FN-400ULX-G, FN-400ULX-R, FN-400ULX-C, FN-400ULX-B, FN-600ULX-G, FN-600ULX-R, FN-600ULX-C, FN-600ULX-B, FN-1024ULX-G, FN-1024ULX-R, FN-1024ULX-C and FN-1024ULX-B auxiliary power supplies/battery chargers. The FN-400ULX-G, FN-400ULX-R, FN-400ULX-C and FN-400ULX-B have a selectable 12 V dc or 24 V dc power limited output rated at 4 amps when 12 V dc output is selected and at 3 amps when 24 V dc output is selected. Maximum battery charge current is 0.7 amps. The FN-600ULX-G, FN-600ULX-R, FN-600ULX-C and FN-600ULX-B have a selectable 12 V dc or 24 V dc non-power limited output rated at 6 amps. Maximum battery charge current at 0.7 amps enclosure accommodates two 7 AH batteries. The FN-1024ULX-G, FN-1024ULX-R, FN-1024ULX-C and FN-1024ULX-B have a 24 V dc non-power limited output rated at 10 amps during an alarm and at 8 amps at standby. Maximum battery charge current 3.6 amps. Each power supply accommodates two 12 AH batteries within the enclosure. Maximum size of the batteries is 40 AH for FN-400ULX-G, FN-400ULX-R, FN-400ULX-C, FN-400ULX-B, FN-600ULX-G, FN-600ULX-R, FN-600ULX-C and FN-600ULX-B units, and 65 AH for FN-1024ULX-G, FN-1024ULX-R, FN-1024ULX-C and FN-1024ULX-B. Each power supply has two form C trouble relays rated 2 amps at 28 V dc.

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<b>New/Updated Product Listing:</b>	No
<b>Listing Country:</b>	United States of America
<b>Certification Type:</b>	FM Approved

## Electrical Signaling

Electrical protective signaling systems are configurations of components used to produce alarm signals indicative of fire, smoke, sprinkler waterflow or other emergency and to produce supervisory signals indicative of conditions needing attention with respect to protection equipment or watch service. System configurations are classified according to where and how the signals are received. The categories are commonly designated as local, municipal, remote station, proprietary, emergency voice/alarm communication, emergency communication, and central station. Auxiliary systems are either local or proprietary systems interconnected with a municipal system.

This category presents the major system component categories and the integrated system configurations. The selection of components to form a hybrid system should be made only by those skilled in system design. Also, the suitability of any system application should be judged on the basis of the hazard(s) being protected.

## Automatic Releases for Extinguishing Systems and Other Fire Protection Equipment

The function of a release system is to cause, mechanically or electrically, a desired operation to be performed in case of fire. The releases listed are actuated automatically by FM Approved fire detection devices. If electrically operated for extinguishing system release, provision for at least 24 hours of standby power is required and means for manual operation should also be provided.

FM Approved releases are also used to operate fire protection equipment such as fire doors, ventilation and blower systems, hatches, dip tank covers and drain valves, motor stops, dampers and valves controlling hazardous liquids

See AUTOMATIC RELEASES FOR PREACTION AND DELUGE SPRINKLER SYSTEMS.

### HCVR-3

HCVR-3 Fire Alarm Control Panel and Release is a three zone conventional control panel. (See descriptions under LOCAL PROTECTIVE SIGNALING). The releasing devices are to be connected to the following panel Class B releasing terminals: "Mode Select", "Man. Release", "Abort", "Rel Press Switch", "Exting" and "Low P Switch". Each releasing output is supervised via an end of line resistor. The solenoid release circuit ("Exting" terminal) is rated 1 Amp. The HCVR Abort Switch (model HCVR-AS-R) is required for the agent release operation: it connects to the "Abort" terminals of the release. A Sequential Activator HCVR-SQA(up to 20) may be connected to the solenoid releasing circuit for canister activation.

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## Electrical Signaling

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This category presents the major system component categories and the integrated system configurations. The selection of components to form a hybrid system should be made only by those skilled in system design. Also, the suitability of any system application should be judged on the basis of the hazard(s) being protected.

## Alarm Signal Initiating Devices

Alarm signals are initiated either automatically or manually. Automatic detectors respond to changes in characteristic phenomena associated with fire or other emergency conditions.

### Fire Detection, Smoke-Actuated

*FM Approved smoke actuated devices respond to airborne particulate products of combustion.*

*The photoelectric principle is based on the change in current which accompanies a change in light intensity on a photoelectric cell as a result of smoke entering the detector.*

*The beam type version has the light source and photoelectric cell separated in the protected area.*

*The ionization type detector ionizes the air in special chambers within the detector.*

*Particles entering the exposed chamber decrease the normal ionization current.*

*Air-sampling detectors have ambient air drawn from the protected area into a chamber containing the sensing element.*

*Air duct smoke detectors are for the primary purpose of controlling blowers and dampers of air conditioning and ventilating systems to prevent distribution of smoke and gaseous products;*

*they should not be used as a substitute for open area detection.*

*Unless otherwise indicated in the listing, the permissible air velocity range for duct type detectors is 250 to 1500 ft/min (75 to 455 m/min) and up to 300 ft/min (90 m/min) for open area detectors.*

*A "smoke switch" is fail-safe in that loss of power to the device causes the same switching operation as when smoke is detected.*

*Average coverage should not exceed 900 ft<sup>2</sup> (84 m<sup>2</sup>) per detector. Reduced coverage is recommended beneath high ceilings and for high air flow areas such as computer rooms.*

*These devices are suitable for use in ambients of 32°-100°F (0°-38°C) unless otherwise indicated in the listing. Installation, testing, and maintenance by trained personnel are recommended.*

## Fire Detectors-Smoke

### Photoelectric Type Smoke Detector, SLR-24, SLR-24H, SLR-24 V

Photoelectric Type Smoke Detector. SLR-24, SLR-24H, or SLR-24 V used with NS4-100, -220, -221 and -224 4 in. bases, NS6-100, -220, -221 and -224 6 in. bases, HSC-220R, HSC-224R, HSC-221R and HSC-4R bases. Rated voltage for the 2-wire detectors is 15 to 33V dc. Rated Voltage for the 4-wire detectors is 17.7 to 30.0V dc. The SLR-24 responds to smoke levels corresponding to 1.50 to 3.50%/ft (0.21 to 0.49 dB/m) obscuration. The SLR-24V responds to smoke levels corresponding to 1.50 to 3.20%/ft (0.21 to 0.47 dB/M) obscuration.

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<b>New/Updated Product Listing:</b>	No
<b>Listing Country:</b>	United States of America
<b>Certification Type:</b>	FM Approved

## Electrical Signaling

Electrical protective signaling systems are configurations of components used to produce alarm signals indicative of fire, smoke, sprinkler waterflow or other emergency and to produce supervisory signals indicative of conditions needing attention with respect to protection equipment or watch service. System configurations are classified according to where and how the signals are received. The categories are commonly designated as local, municipal, remote station, proprietary, emergency voice/alarm communication, emergency communication, and central station. Auxiliary systems are either local or proprietary systems interconnected with a municipal system.

This category presents the major system component categories and the integrated system configurations. The selection of components to form a hybrid system should be made only by those skilled in system design. Also, the suitability of any system application should be judged on the basis of the hazard(s) being protected.

## Alarm Signal Initiating Devices

Alarm signals are initiated either automatically or manually. Automatic detectors respond to changes in characteristic phenomena associated with fire or other emergency conditions.

### Fire Detection, Smoke-Actuated

*FM Approved smoke actuated devices respond to airborne particulate products of combustion.*

*The photoelectric principle is based on the change in current which accompanies a change in light intensity on a photoelectric cell as a result of smoke entering the detector.*

*The beam type version has the light source and photoelectric cell separated in the protected area.*

*The ionization type detector ionizes the air in special chambers within the detector.*

*Particles entering the exposed chamber decrease the normal ionization current.*

*Air-sampling detectors have ambient air drawn from the protected area into a chamber containing the sensing element.*

*Air duct smoke detectors are for the primary purpose of controlling blowers and dampers of air conditioning and ventilating systems to prevent distribution of smoke and gaseous products; they should not be used as a substitute for open area detection.*

*Unless otherwise indicated in the listing, the permissible air velocity range for duct type detectors is 250 to 1500 ft/min (75 to 455 m/min) and up to 300 ft/min (90 m/min) for open area detectors.*

*A "smoke switch" is fail-safe in that loss of power to the device causes the same switching operation as when smoke is detected. Average coverage should not exceed 900 ft<sup>2</sup> (84 m<sup>2</sup>) per detector. Reduced coverage is recommended beneath high ceilings and for high air flow areas such as computer rooms.*

*These devices are suitable for use in ambients of 32°-100°F (0°-38°C) unless otherwise indicated in the listing. Installation, testing, and maintenance by trained personnel are recommended.*

## Fire Detectors-Smoke

### Photoelectric Type Smoke Detector, Models SLR-835, -835H, -835B-2, -835BH-2, -835B-4, -835BH-4

Photoelectric Type Smoke Detector. Models SLR-835, SLR-835H, SLR-835B-2, SLR-835BH-2, SLR-835B-4, SLR-835BH-4. "W" suffix indicates white color. Model SLR-835 and SLR-835H used with NS4-100, -220, -221, and -224 4-inch bases, NS6-100, -220, -221, and -224 6-inch bases, HSC-220R, HSC-224R, HSC-221R, and HSC-4R bases. Model SLR-835B-2 and SLR-835BH-2 used with FM Approved compatible control panels capable of providing power via the detection circuit. Rated voltage is 8 to 35V dc. The SLR-835 and SLR-835H responds to smoke levels corresponding to 1.50 to 3.50%/ft (0.21 to 0.49 dB/m) obscuration. Suffix h indicates supplemental 135°F (57°C) heat detecting thermostat.

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<b>New/Updated Product Listing:</b>	No
<b>Listing Country:</b>	United States of America
<b>Certification Type:</b>	FM Approved

## Electrical Signaling

Electrical protective signaling systems are configurations of components used to produce alarm signals indicative of fire, smoke, sprinkler waterflow or other emergency and to produce supervisory signals indicative of conditions needing attention with respect to protection equipment or watch service. System configurations are classified according to where and how the signals are received. The categories are commonly designated as local, municipal, remote station, proprietary, emergency voice/alarm communication, emergency communication, and central station. Auxiliary systems are either local or proprietary systems interconnected with a municipal system.

This category presents the major system component categories and the integrated system configurations. The selection of components to form a hybrid system should be made only by those skilled in system design. Also, the suitability of any system application should be judged on the basis of the hazard(s) being protected.

## Alarm Signal Initiating Devices

Alarm signals are initiated either automatically or manually. Automatic detectors respond to changes in characteristic phenomena associated with fire or other emergency conditions.

### Fire Detection, Smoke-Actuated

*FM Approved smoke actuated devices respond to airborne particulate products of combustion.*

*The photoelectric principle is based on the change in current which accompanies a change in light intensity on a photoelectric cell as a result of smoke entering the detector.*

*The beam type version has the light source and photoelectric cell separated in the protected area.*

*The ionization type detector ionizes the air in special chambers within the detector.*

*Particles entering the exposed chamber decrease the normal ionization current.*

*Air-sampling detectors have ambient air drawn from the protected area into a chamber containing the sensing element.*

*Air duct smoke detectors are for the primary purpose of controlling blowers and dampers of air conditioning and ventilating systems to prevent distribution of smoke and gaseous products;*

*they should not be used as a substitute for open area detection.*

*Unless otherwise indicated in the listing, the permissible air velocity range for duct type detectors is 250 to 1500 ft/min (75 to 455 m/min) and up to 300 ft/min (90 m/min) for open area detectors.*

*A "smoke switch" is fail-safe in that loss of power to the device causes the same switching operation as when smoke is detected.*

*Average coverage should not exceed 900 ft<sup>2</sup> (84 m<sup>2</sup>) per detector. Reduced coverage is recommended beneath high ceilings and for high air flow areas such as computer rooms.*

*These devices are suitable for use in ambients of 32°-100°F (0°-38°C) unless otherwise indicated in the listing. Installation, testing, and maintenance by trained personnel are recommended.*

## Fire Detectors-Smoke

### Photoelectric Type Smoke Detector, Models SLV-24, SLV-24N or SLV-24V

Photoelectric Type Smoke Detector. SLV-24, SLV-24N or SLV-24V used with NS6 series, NS4 series or HSC-Relay series 2-wire bases or HSC-4R 4-wire bases. Rated voltage is 15 to 33Vdc. The SLV-24 and SLV-24N respond to smoke levels corresponding to 0.5 to 3.8%/ft. (1.64 to 12.47%/m). The SLV-24V responds to smoke levels corresponding to 0.5 to 2.68%/ft. (1.64 to 8.79%/m) and is suitable for installation in air velocities up to 4000ft./min.

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<b>Listing Country:</b>	United States of America
<b>Certification Type:</b>	FM Approved

## Electrical Signaling

Electrical protective signaling systems are configurations of components used to produce alarm signals indicative of fire, smoke, sprinkler waterflow or other emergency and to produce supervisory signals indicative of conditions needing attention with respect to protection equipment or watch service. System configurations are classified according to where and how the signals are received. The categories are commonly designated as local, municipal, remote station, proprietary, emergency voice/alarm communication, emergency communication, and central station. Auxiliary systems are either local or proprietary systems interconnected with a municipal system.

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## Alarm Signal Initiating Devices

Alarm signals are initiated either automatically or manually. Automatic detectors respond to changes in characteristic phenomena associated with fire or other emergency conditions.

### Fire Detection, Smoke-Actuated

*FM Approved smoke actuated devices respond to airborne particulate products of combustion.*

*The photoelectric principle is based on the change in current which accompanies a change in light intensity on a photoelectric cell as a result of smoke entering the detector.*

*The beam type version has the light source and photoelectric cell separated in the protected area.*

*The ionization type detector ionizes the air in special chambers within the detector.*

*Particles entering the exposed chamber decrease the normal ionization current.*

*Air-sampling detectors have ambient air drawn from the protected area into a chamber containing the sensing element.*

*Air duct smoke detectors are for the primary purpose of controlling blowers and dampers of air conditioning and ventilating systems to prevent distribution of smoke and gaseous products; they should not be used as a substitute for open area detection.*

*Unless otherwise indicated in the listing, the permissible air velocity range for duct type detectors is 250 to 1500 ft/min (75 to 455 m/min) and up to 300 ft/min (90 m/min) for open area detectors.*

*A "smoke switch" is fail-safe in that loss of power to the device causes the same switching operation as when smoke is detected. Average coverage should not exceed 900 ft<sup>2</sup> (84 m<sup>2</sup>) per detector. Reduced coverage is recommended beneath high ceilings and for high air flow areas such as computer rooms.*

*These devices are suitable for use in ambients of 32°-100°F (0°-38°C) unless otherwise indicated in the listing. Installation, testing, and maintenance by trained personnel are recommended.*

## Fire Detectors-Smoke

### Model SPC-24 Projected Beam Smoke Detector

Model SPC-24 Projected Beam Smoke Detector. For area coverage where the beam length between emitter (transmitter) and receiver does not exceed 100 m (328 ft) but no less than 10 m (32.8 ft). Max lateral spacing is 18 m (60 ft). User selectable sensitivity levels are at 25%, 50% and 70% light obscuration (reduction in beam intensity). The microprocessor provides compensation for a change in received signal value, caused by gradual contamination of the optics. The SPC-24 operates between 19 and 33V dc (drawing 50 µA (Emitter) and 200 µA (Receiver) in standby; 25 mA in alarm or trouble), and may be used with any FM Approved control panel capable of supplying power separately from the detection circuit and maximum allowable line resistance 50 Ω or less. Alarm and trouble relay contacts rated 24V dc at 0.5 A.

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<b>New/Updated Product Listing:</b>	Yes
<b>Listing Country:</b>	Japan
<b>Certification Type:</b>	FM Approved

## Electrical Signaling

Electrical protective signaling systems are configurations of components used to produce alarm signals indicative of fire, smoke, sprinkler waterflow or other emergency and to produce supervisory signals indicative of conditions needing attention with respect to protection equipment or watch service. System configurations are classified according to where and how the signals are received. The categories are commonly designated as local, municipal, remote station, proprietary, emergency voice/alarm communication, emergency communication, and central station. Auxiliary systems are either local or proprietary systems interconnected with a municipal system.

This category presents the major system component categories and the integrated system configurations. The selection of components to form a hybrid system should be made only by those skilled in system design. Also, the suitability of any system application should be judged on the basis of the hazard(s) being protected.

## Alarm Signal Initiating Devices

Alarm signals are initiated either automatically or manually. Automatic detectors respond to changes in characteristic phenomena associated with fire or other emergency conditions.

### Fire Detection, Smoke-Actuated

*FM Approved smoke actuated devices respond to airborne particulate products of combustion.*

*The photoelectric principle is based on the change in current which accompanies a change in light intensity on a photoelectric cell as a result of smoke entering the detector.*

*The beam type version has the light source and photoelectric cell separated in the protected area.*

*The ionization type detector ionizes the air in special chambers within the detector.*

*Particles entering the exposed chamber decrease the normal ionization current.*

*Air-sampling detectors have ambient air drawn from the protected area into a chamber containing the sensing element.*

*Air duct smoke detectors are for the primary purpose of controlling blowers and dampers of air conditioning and ventilating systems to prevent distribution of smoke and gaseous products; they should not be used as a substitute for open area detection.*

*Unless otherwise indicated in the listing, the permissible air velocity range for duct type detectors is 250 to 1500 ft/min (75 to 455 m/min) and up to 300 ft/min (90 m/min) for open area detectors.*

*A "smoke switch" is fail-safe in that loss of power to the device causes the same switching operation as when smoke is detected. Average coverage should not exceed 900 ft<sup>2</sup> (84 m<sup>2</sup>) per detector. Reduced coverage is recommended beneath high ceilings and for high air flow areas such as computer rooms.*

*These devices are suitable for use in ambients of 32°-100°F (0°-38°C) unless otherwise indicated in the listing. Installation, testing, and maintenance by trained personnel are recommended.*

### Very Early Warning Fire Detection (VEWFD) Systems

Very Early Warning Fire Detection (VEWFD) Systems are high sensitivity smoke detectors (air-sampling or spot type) that are specifically designed and tested to detect low-energy fires before the fire conditions threaten data processing and/or telecommunications service. These devices have been tested in accordance with criteria outlined in National Fire Protection Association (NFPA) 76, Fire Protection of Telecommunications Facilities.

Design these fire detection systems to provide detection within the occupancy-specific recommendations described in FM Global Property Loss Prevention Data Sheet Numbers 5-14, Telecommunications and 5-32, Data Centers and Related Facilities

In addition, these detectors are intended to be installed in accordance with the manufacturer's installation instructions, ANSI/NFPA 72, The National Fire Alarm Code, NFPA 75 Fire Protection of Information Technology Equipment, NFPA 76, Fire Protection of Telecommunications Facilities and in a manner acceptable to the local Authority Having Jurisdiction. Other NFPA Standards may apply, such as those covering protection system applications.

The minimum sensitivity levels of a VEWFD systems (air-sampling or spot type) above ambient air-born levels shall be:

- Alert condition – 0.62%/m (0.2%/ft) obscuration (effective sensitivity at each port or spot)
- Alarm condition – 3.1%/m (1.0%/ft) obscuration (effective sensitivity at each port or spot)

High sensitivity detection also requires special detector spacing guidelines that differ from typical open area protection and outlined below:

- With a single level of protection, max. coverage are not to exceed 18.6m<sup>2</sup> (200ft<sup>2</sup>)
- With a double layer of protection (high and low), max. coverage are not to exceed 137.2m<sup>2</sup> (400ft<sup>2</sup>)

Other spacing restrictions might apply (e.g. return air, maximum air flow from ventilation, aisle containment systems, etc.). These devices are suitable for use in ambients of 32°-100°F (0°-38°C) unless otherwise indicated in the listing. Installation, testing, and maintenance by trained personnel are recommended.



## Model SZA-NA(FM) High Sensitivity Smoke Detection System

Model SZA-NA(FM) High Sensitivity Smoke Detection System (air sampling HSSD) for use with compatible Approved fire alarm controls having separate circuits for alarm signaling and for power. Software MCPU Version 1.1 and SCPU Version 1.0. The model SZA-NA(FM) detection system consists of a PVC plastic network connected with laser smoke detection unit, air flow sensor, air intake sampling fan, power supply, motherboard and programming board, 7 segment display, combination of metal and plastic enclosure. SZA-NA(FM) detection system operates from 19.4V dc to 29V dc input voltage, 0.5 Apm max current. The alarm sensitivity of the SZA-NA(FM) detection system ranges from 0.005%/m (0.0017%/ft) to 5%/m (1.67%/ft) within four sensitivity levels. The SZA-NA(FM) detection system is suitable for indoor use only in ambient temperatures of -10°C to 50°C (14°F to 122°F). The three alarm and one trouble NO/NC relays have 24V dc and 0.5 Amp contact ratings.

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<b>Certification Type:</b>	FM Approved