Project Name: Jefferson ES-12 Classroom Bldg

DSA No: A#:03-114361 , File#:19-41

District PO No:

District Contract No: 113-15/16

TRANSMITTAL

To: Tony Barrios

From: Chalmers Construction Services Inc.

TR No. 10

Date: 03/15/16

We are Sending You:

- ☑ Submittals
- ☐ Prints
- ☐ Tracings
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- ☐ Samples
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Review is for general conformance with the design concept and Contract Documents. If any deviations from the Contract Documents are included herein, such deviations shall be presumed by the Contractor as not having been reviewed, except where specific attention is called to the change as a deviation. Markings or comments shall not be construed as relieving the Contractor from compliance with the project plans and specifications. The Contractor is responsible for details and accuracy; confirming and correlating all quantities and dimensions; fabrication processes and techniques of construction; coordination of this work with that of all other trades and the satisfactory performance of this work.

NAC | ARCHITECTURE

By Teagan Castellon   Apr 07, 2016

Issued By: Ara Baghdasarians

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☒ NO EXCEPTION TAKEN   ☐ REJECTED
☐ SEE NOTATIONS   ☐ SUBMIT SPECIFIED ITEM
☐ RETURNED WITHOUT REVIEW ☐ REVISE AND RESUBMIT

REVIEW IS ONLY FOR GENERAL CONFORMANCE OF THE SUBMITTAL WITH INFORMATION GIVEN AND THE DESIGN CONCEPT EXPRESSED IN THE CONTRACT DOCUMENTS. COMMENTS MADE DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THOSE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES, DIMENSIONS, SITE CONDITIONS, CONSTRUCTION MEANS, METHODS, SEQUENCES, PROCEDURES AND THE COORDINATION OF ALL TRADES.

BREEN ENGINEERING, INC.

BY _____   DATE 4/7/2016

Thomas Jefferson Elementary School
1540 Fifth St.
Glendale, Ca 91210

Fire Alarm System Submittal
PCSI Job# 2016XXX

FIRE ALARM SYSTEM

MFG.	MODEL#	DESCRIPTION	CSFM#
[NETWORK SYSTEMS]			
NOTIFIER	NCM-W	Network Communications Module	(same as FACP)
[CONTROL PANELS]			
NOTIFIER	NFS2-3030	Fire Alarm Control Panel	7165-0028:0224
NOTIFIER	DAA2-5025	Digital Audio Amplifier (50w, 25Vrms)	7165-0028:0224
NOTIFIER	DAA2-5070	Digital Audio Amplifier (50w, 70.7vrms)	7165-0028:0224
NOTIFIER	DVC-EM	Digital Audio Processor	7170-0028:0224
NOTIFIER	DVC-KD	Digital Voice Keypad	7170-0028:0224
NOTIFIER	DVC-AO	Digital Voice Analog Output	7170-0028:0224
[AUXILIARY POWER SUPPLIES]			
NOTIFIER	FCPS-24S8	8.0 Amp Sync. Aux. Power Supply	7315-0028:0225
[BATTERIES]			
NOTIFIER	BAT-12260	Battery-26 AH	N/A
NOTIFIER	BAT-12550	Battery-55 AH	N/A
[DETECTORS]			
NOTIFIER	FST-851	Intelligent Thermal (Heat) Detector	7270-0028:0196
NOTIFIER	FSP-851	Low-Profile Intelligent Smoke Det.	7272-0028:0206

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NORTHERN CA REGIONAL OFFICE   ▪ 10966 BIGGE STREET ▪ SAN LEANDRO, CA 94577   (510) 632-1208
SAN DIEGO REGIONAL OFFICE   ▪ 5115 AVENIDA ENCINAS, SUITE G ▪ CARLSBAD, CA 92008   (760) 930-6014

[SIGNALING DEVICES]

| GENTEX | GEC3-24 | Multi-Candela Fire Alarm Horn/Strobe | 7125-0569:0122 |
| GENTEX | WSSPKR | Weatherproof Speaker | 7320-0569:0141 |

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NCM-W, NCM-F

ONYX® Series
Network Communications Modules

NOTIFIER®
by Honeywell

General

The **Network Communications Module** (**NCM**) provides NOTIFIER Intelligent Fire Alarm Control Panels, and **NCA** and **NCA-2** Network Control Annunciators with a means to connect to **NOTI•FIRE•NET**™. Two types of NCM are available: **NCM-W** for connecting nodes with twisted-pair wire, and **NCM-F** for connecting nodes with fiber-optic cable.

NOTE: *Do not mix NCM and High Speed (HS) NCM on the same system.*

NCM-W Features

- Supports twisted-pair wire medium.
- NFPA Style 4 (Class B) operation or NFPA Style 7 (Class A) operation.
- Two programmable data thresholds.
- Transformer coupling provides electrical isolation between nodes.
- Pluggable terminal wiring with strain relief.
- Pluggable service connector (feeds signal directly through) in the event that power must be removed from a node.
- 312.5 Kbaud transmission rate.
- Data is regenerated at each node.
- Two network ports to allow simultaneous connection to fire alarm control panel and to programming computer.
- Enables software and database upload/download over **NOTI•FIRE•NET**™.
- Repeaters are available to increase signal.
- Repeaters may be utilized to switch media type.
- Up to 3,000 feet (914.4 m) between nodes in a point-to-point fashion (actual distance varies with wire quality).

NCM-W Interconnections: When wiring consecutive NCM-W boards, wiring may enter or exit at Port A or Port B. NCM-W port-to-port wiring is not polarity sensitive; use of Port A or Port B is arbitrary. An NCM-W may be connected to any of the following devices: **MIB-W**, **MIB-WF**, **NAM-232W**, **NCM-W** (in another panel), **NCS-W** network connection, **RPT-W**, **RPT-WF**.

NCM-W Switch Functions: The NCM-W provides two sets of switches to simplify network setup. Enable *ground fault detection* by setting "ON" switch SW103 (Channel A); switch SW101 (Channel B). Activate *on-board end-of-line resistors* by setting "ON" switch SW100 (Channel A); switch 102 (Channel B). *NOTE: Correct configuration is dependent on network design; refer to the* **NOTI•FIRE•NET**™ *manual.*

For further information and diagrams, refer to the *NCM Installation Document*, 51533.

NCM-F Features

- Supports fiber-optic medium.
- NFPA Style 4 (Class B) or Style 7 (Class A) operation.
- Data is immune to all environmental noise.
- Optical isolation prevents ground loops.
- **NOTI•FIRE•NET**™ fiber-optic medium.
- Fiber type: 62.5/125 micrometers (multimode); or 50/125 micrometers (multimode).

6861NCMWPCB.JPG
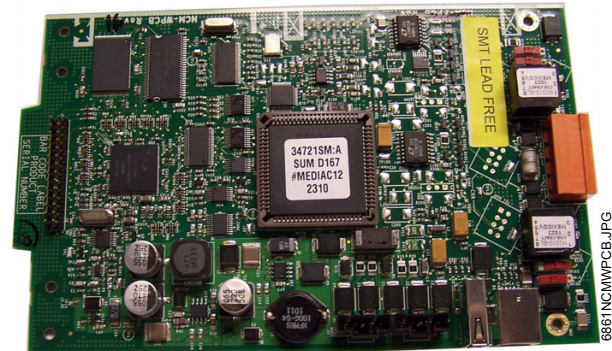
NCM-W

- Maximum attenuation is 8 dB with 62.5/125 µm fiber and 4.2 dB with 50/125 µm fiber.
- Wavelength (1): 820 nanometers (use standard 850 nm fiber).
- Connectors: ST® style.
- 312.5 Kbaud transmission rate.
- Data is regenerated at each node.
- Two network ports to allow simultaneous connection to fire alarm control panel and to programming computer.
- Enables software and database upload/download over **NOTI•FIRE•NET**™.
- Repeaters are available to increase signal.
- Repeaters may be utilized to switch media type.
- Up to 3,000 feet (914.4 m) between nodes in a point-to-point fashion (actual distance varies with wire quality).

NCM-F Interconnections: When wiring consecutive nodes/repeaters, fiber cable must exit one board on Transmit (TX) and enter the next node/repeater on Receive (RX). The fiber-optic pair (RX, TX) from Port A of one node/repeater may be connected to either Port A or Port B of another node/repeater. An NCM-F may be connected to any of the following devices: **MIB-F**, **MIB-WF**, **NAM-232F**, another **NCM-F**, **NCS-F** network connection, **RPT-F**, **RPT-WF**.

Common Specifications

Temperature and humidity ranges: This system meets NFPA requirements for operation at 0°C to 49°C (32°F to 120°F); and at a relative humidity (noncondensing) of 85% at 30°C (86°F) per NFPA, and 93% ± 2% at 32°C ± 2°C (89.6°F ± 1.1°F) per ULC. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and all peripherals be installed in an environment with a nominal room temperature of 15°C to 27°C (60°F to 80°F).

Power supply: 24 VDC @ 110 mA.

Mixing Wire and Fiber on the Same Network

In some networks, it may be necessary to mix twisted-pair wire and fiber-optic cable. There are two solutions:

- **In any network**, an RPT-WF may be used as an interface between wire and fiber.
- **In a network that uses an AFP1010 or AM2020**, a MIB-WF may be used as the interface between wire and fiber.

Mounting

Both NCM-W and NCM-F can be installed in any standard chassis such as the CHS-4L, CHS-M2, CHS-M3 or CHS-4N *(see panel sheets)*. Additionally, the NCM-W can be door-mounted on the ADP-4B dress panel on a single-space blank plate (BMP-1) for mounting in an CAB-4 Series cabinet.

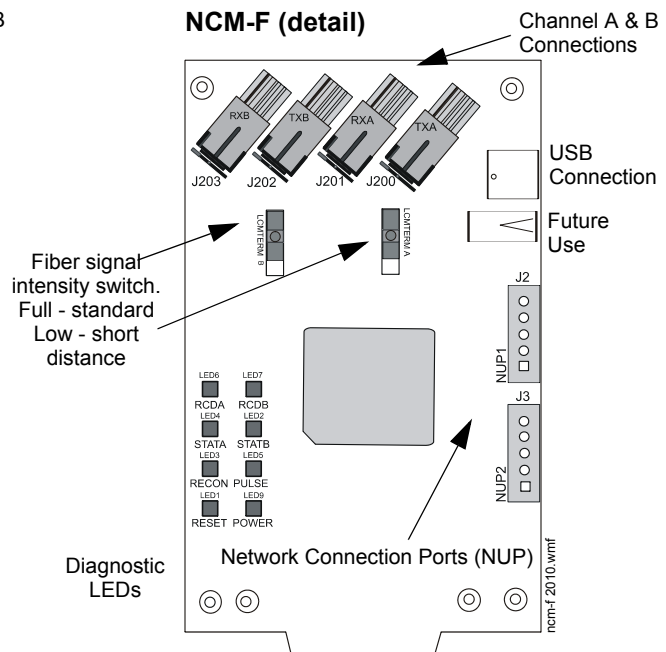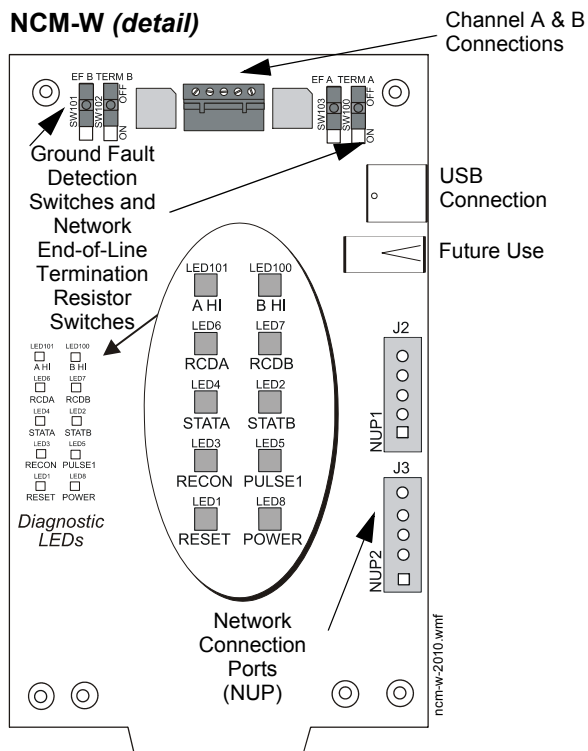## Agency Listings and Approvals

The following listings and approvals apply to the NCM. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL Listed:** S635
- **ULC Listed:** S635
- **CSFM:** 7165-0028:0214, 7165-0028:0224, 7165-0028:0243
- **FM approved**
- **MEA** approved
- **FDNY:** COA#6061, COA#6065

Product Line Information

NCM-W: Network Communications Module, twisted-pair wire interface.

NCM-F: Network Communications Module, fiber-optic cable interface.

Diagnostic LED Indicators

A HI *(green):* Illuminates to indicate the NCM-W Port A is set for high threshold *(NCM-W only)*. **B HI** *(green):* Illuminates to indicate the NCM-W Port B is set for high threshold *(NCM-W only)*. **RCD A** *(green)*: Illuminates when the NCM is receiving data from **NOTI•FIRE•NET**™ on Port A. **RCD B** *(green)*: Illuminates when the NCM is receiving data from **NOTI•FIRE•NET**™ on Port B. **STATA** *(yellow)*: Illuminates when the NCM has not received valid data from **NOTI•FIRE•NET**™ on Port A for at least 16 seconds. **STATB** *(yellow)*: Illuminates when the NCM has not received valid data from **NOTI•FIRE•NET**™ on Port B for at least 16 seconds. **RECON** *(yellow)*: Illuminates when a reconfiguration on **NOTI•FIRE•NET**™ is in progress. **PULSE** *(green)*: Illuminates when the NCM is transmitting **NOTI•FIRE•NET**™ is in progress. **RESET** *(yellow)*: Illuminates when the microcontroller fails. **POWER** *(green)*: Illuminates when +5 VDC is available.

NCM-W *(detail)*

Channel A & B Connections

Ground Fault Detection Switches and Network End-of-Line Termination Resistor Switches

USB Connection

Future Use

Diagnostic LEDs

LED101 LED100
A HI   B HI
LED6   LED7
RCDA   RCDB
LED4   LED2
STATA   STATB
LED3   LED5
RECON   PULSE1
LED1   LED8
RESET   POWER

Network Connection Ports (NUP)

ncm-w-2010.wmf

NCM-F (detail)

Channel A & B Connections

USB Connection

Future Use

Fiber signal intensity switch. Full - standard Low - short distance

Diagnostic LEDs

LED6   LED7
RCDA   RCDB
LED4   LED2
STATA   STATB
LED3   LED5
RECON   PULSE
LED1
RESET   POWER

Network Connection Ports (NUP)

ncm-f 2010.wmf

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NFS2-3030

Intelligent Addressable Fire Alarm System

NOTIFIER®
by Honeywell

Intelligent Fire Alarm Control Panels

General

The NFS2-3030 is an intelligent Fire Alarm Control Panel designed for medium- to large-scale facilities. Fire emergency detection and evacuation are extremely critical to life safety, and the NFS2-3030 is ideally suited for these applications. The NFS2-3030 is part of the ONYX® Series of products from NOTIFIER. The NFS2-3030 is ideal for virtually any application because it features a modular design that is configured per project requirements. With one to ten Signaling Line Circuits (SLCs), the NFS2-3030 supports up to 3,180 intelligent addressable devices.

Information is critical to fire evacuation personnel, and the NFS2-3030's large 640-character Liquid Crystal Display (LCD) presents vital information to operators concerning a fire situation, fire progression, and evacuation details.

A host of other options are available, including single- or multi-channel voice; firefighters telephone; LED, LCD, or PC-based graphic annunciators; fire or integration networking; advanced detection products for challenging environments, and many additional options.

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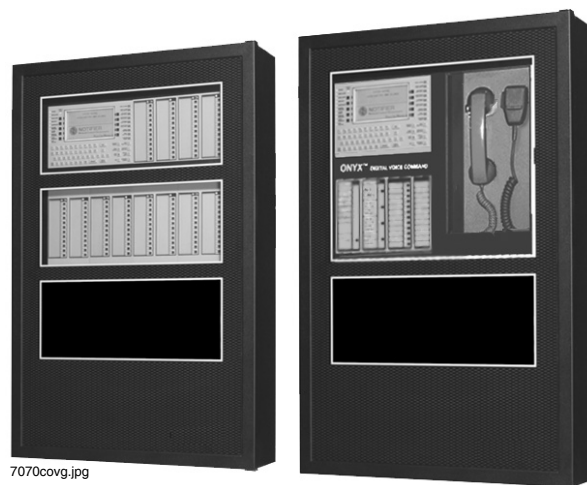
NFS2-3030s, DVC audio option at right

Features

- Certified for seismic applications when used with the appropriate seismic mounting kit.
- One to ten isolated intelligent Signaling Line Circuits (SLC) Style 4, 6 or 7.
- Up to 159 detectors and 159 modules per SLC, 318 devices per loop/3,180 per FACP or network node. Detectors can be any mix of ion, photo, laser photo, thermal, or multi-sensor detectors; modules can be addressable pull stations, normally open contact devices, two-wire smoke, notification, or relay modules.
- Large 640-character LCD backlit display (16 lines x 40 characters) or display-less (a node on a network).
- Network options:
  – High-speed network for up to 200 nodes (NFS2-3030, NFS2-640, NFS-320(C), NFS-320SYS, NCA-2, DVC, ONYXWorks, NFS-3030, NFS-640, and NCA).
  – Standard network for up to 103 nodes (NFS2-3030, NFS2-640, NFS-320(C), NFS-320SYS, NCA-2, DVC, ONYXWorks, NCS, NFS-3030, NFS-640, NCA, AFP-200, AFP-300/400, AFP-1010, and AM2020). Up to 54 nodes when DVC is used in network paging.
- Built-in Alarm, Trouble, Security, and Supervisory relays.
- VeriFire® Tools online/offline program option.
- Application code is saved in Flash memory.
- With built-in Degraded Mode operation, the system is capable of general alarm if a fire alarm condition is present even if the CPU fails.
- Weekly Occupancy Schedules allow changing sensitivity by time of day and day of week.
- EIA-485 annunciators, including custom graphics.
- History file with 4000-event capacity in nonvolatile memory, plus separate 1000-event alarm-only file.
- Advanced history filters allow sorting by event, time, date, or address.
- Alarm Verification selection per point, with tally.

- Autoprogramming and Walk Test reports.
- Multiple central station communication options:
  – Standard UDACT
  – Internet
  – Internet/GSM
- Positive Alarm Sequence (PAS) Presignal.
- Silence Inhibit and Auto Silence timer options.
- Field-programmable on panel or on PC, with VeriFire Tools program, also check, compare.
- Non-alarm points for lower priority functions.
- Remote ACK/Signal Silence/System Reset/Drill via monitor modules.
- Up to 1000 powerful Boolean logic equations.
- Supports SCS Series smoke control system in both HVAC or FSCS modes.
- FM6320 approved Gas Detection System with FMM-4-20 module and any FM listed gas detector.
- EIA-232 printer port.
- EIA-485 annunciator port.

640-CHARACTER DISPLAY FEATURES

- Backlit, 640-character display.
- Program keypad: full QWERTY keypad.
- Up to nine users, each with a password and selectable access levels.
- **11 LED indicators:** Power; Fire Alarm; Pre-Alarm; Security; Supervisory; System Trouble; Other Event; Signals Silenced; Point Disabled; CPU Failure; Controls Active.
- **Membrane Switch Controls:** Acknowledge; Signal Silence; Drill; System Reset; Lamp Test.
- **LCD Display:** 640 characters (16 x 40) with long-life LED backlight.

FLASHSCAN™ INTELLIGENT FEATURES

- Poll up to 318 devices on each loop in less than two seconds.
- Activate up to 159 outputs in less than five seconds.
- Multicolor LEDs blink device address during Walk Test.
- Fully digital, high-precision protocol (U.S. Patent 5,539,389).
- Manual sensitivity adjustment — nine levels.
- Pre-alarm ONYX intelligent sensing — nine levels.
- Sensitivity levels:
  - **Ion** – 0.5 to 2.5%/foot obscuration.
  - **Photo** – 0.5 to 2.35%/foot obscuration.
  - **Laser (VIEW®)** – 0.02 to 2.0%/foot obscuration.
  - **Acclimate Plus™** – 0.5 to 4.0%/foot obscuration.
  - **IntelliQuad** – 1.0 to 4.0%/foot obscuration.
  - **IntelliQuad™ PLUS** – 1.0 to 4.0%/foot obscuration
- Drift compensation (U.S. Patent 5,764,142).
- Multi-detector algorithm involves nearby detectors in alarm decision (U.S. Patent 5,627,515).
- Automatic detector sensitivity testing (NFPA-72 compliant).
- Maintenance alert (two levels).
- Self-optimizing pre-alarm.
- Programmable activation of sounder/relay bases during alarm or pre-alarm.
- Read Status displays the level of detector cleanliness.

FSL-751 VIEW® (VERY INTELLIGENT EARLY WARNING) SMOKE DETECTION TECHNOLOGY

- Revolutionary spot laser design.
- Advanced ONYX intelligent sensing algorithms differentiate between smoke and non-smoke signals (U.S. Patent 5,831,524).
- Addressable operation pinpoints the fire location.
- No moving parts to fail or filters to change.
- Early warning performance comparable to the best aspiration systems at a fraction of the lifetime cost.

FAPT-851 ACCLIMATE PLUS™ LOW-PROFILE INTELLIGENT MULTI-SENSOR

- Detector automatically adjusts sensitivity levels without operator intervention or programming. Sensitivity increases with heat.
- Microprocessor-based technology; combination photo and thermal technology.
- Low-temperature signal at 40°F ± 5°F (4.44°C ± 2.77°C).

FSC-851 INTELLIQUAD ADVANCED MULTI-CRITERIA DETECTOR

- Detects all four major elements of a fire (smoke, heat, CO, and flame).
- Automatic drift compensation of smoke sensor and CO cell.
- High nuisance-alarm immunity.
- Six sensitivity levels.

Sample System Options

NFS2-3030
Shown in CAB-C4 with display
DVC audio in CA-1 in second tier
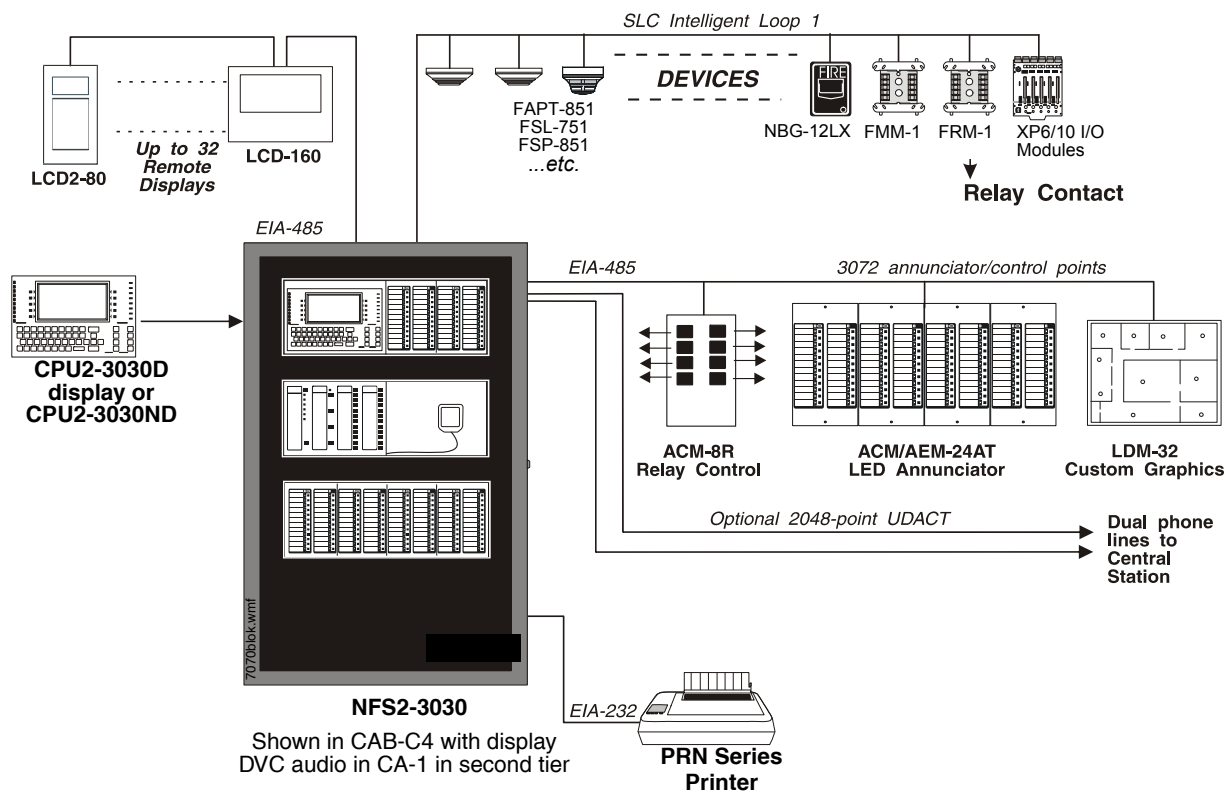
NOTE: CPU2-3030 firmware version 14.0 (and higher) can support LCD-160 on the RDP port, or LCD2-80/LCD-80 in terminal mode, but not both at the same time.

FCO-851 INTELLIQUAD™ PLUS
ADVANCED MULTI-CRITERIA FIRE/CO DETECTOR

- Detects all four major elements of a fire.
- Separate signal for life-safety CO detection.
- Optional addressable sounder base for Temp-3 (fire) or Temp-4(CO) tone.
- Automatic drift compensation of smoke sensor and CO cell.
- High nuisance-alarm immunity.
- Six sensitivity levels.

FMM-4-20 GAS DETECTION MODULE

- Interface to industry-standard linear scale 4-20 mA sensors.
- Five programmable thresholds.
- FM Approved, Class 6320 (Stationary Gas Sensors/Detectors).

RELEASING FEATURES

- Ten independent hazards.
- Sophisticated cross-zone (three options).
- Delay timer and Discharge timers (adjustable).
- Abort (four options).

VOICE AND TELEPHONE FEATURES

- Up to eight channels of digital audio.
- 35 watt, 50 watt, 75 watt, and 100/125 watt digital amplifiers (DAA2/DAX series and DS series)
- Solid state message generation.
- Hard-wired voice control module options.
- Firefighter telephone option.
- 30- to 120-watt analog amplifiers (AA Series).
- Backup tone generator and amplifier option.

FlashScan® Exclusive World-Leading Detector Protocol

At the heart of the NFS2-3030 is a set of detection devices and device protocol — FlashScan (U.S. Patent 5,539,389). FlashScan is an all-digital protocol that gives superior precision and high noise immunity.

As well as giving quick identification of an active input device, this new protocol can also activate many output devices in a fraction of the time required by competitive protocols. This high speed also allows the NFS2-3030 to have the largest device per loop capacity in the industry — 318 points — yet every input and output device is sampled in less than two seconds. The microprocessor-based FlashScan® detectors have bicolor LEDs that can be coded to provide diagnostic information, such as device address during Walk Test.

ONYX Intelligent Sensing

ONYX Intelligent Sensing is a set of software algorithms that provide the NFS2-3030 with industry-leading smoke detection capability. These complex algorithms require many calculations on each reading of each detector, and are made possible by the very high-speed microcomputer used by the NFS2-3030.

Drift Compensation and Smoothing. Drift compensation allows the detector to retain its original ability to detect actual smoke, and resist false alarms, even as dirt accumulates. It reduces maintenance requirements by allowing the system to automatically perform the periodic sensitivity measurements required by NFPA 72. Smoothing filters are also provided by software to remove transient noise signals, usually caused by electrical interference.

Maintenance Warnings. When the drift compensation performed for a detector reaches a certain level, the performance of the detector may be compromised, and special warnings are given. There are three warning levels: (1) Low Chamber value; (2) Maintenance Alert, indicative of dust accumulation that is near but below the allowed limit; (3) Maintenance Urgent, indicative of dust accumulation above the allowed limit.

Sensitivity Adjust. Nine sensitivity levels are provided for alarm detection. These levels can be set manually, or can change automatically between day and night. Nine levels of pre-alarm sensitivity can also be selected, based on predetermined levels of alarm. Pre-alarm operation can be latching or self-restoring, and can be used to activate special control functions.

Self-Optimizing Pre-Alarm. Each detector may be set for "Self-Optimizing" pre-alarm. In this special mode, the detector "learns" its normal environment, measuring the peak analog readings over a long period of time, and setting the pre-alarm level just above these normal peaks.

Cooperating Multi-Detector Sensing. A patented feature of ONYX Intelligent Sensing is the ability of a smoke sensor to consider readings from nearby sensors in making alarm or pre-alarm decisions. Without statistical sacrifice in the ability to resist false alarms, it allows a sensor to increase its sensitivity to actual smoke by a factor of almost two to one.

Field Programming Options

Autoprogram. This timesaving feature is a special software route. The FACP "learns" what devices are physically connected and automatically loads them in the program with default values for all parameters. Requiring less than one minute to run, this routine allows the user to have almost immediate fire protection in a new installation, even if only a portion of the detectors are installed.

Keypad Program Edit. The NFS2-3030, like all NOTIFIER intelligent panels, has the exclusive feature of program creation and editing capability from the front panel keypad, while continuing to provide fire protection. The architecture of the NFS2-3030 software is such that each point entry carries its own program, including control-by-event links to other points. This allows the program to be entered with independent per-point segments, while the NFS2-3030 simultaneously monitors other (already installed) points for alarm conditions.

VeriFire® Tools
VeriFire® Tools is an offline programming and test utility that can greatly reduce installation programming time, and increase confidence in the site-specific software. It is Windows® based and provides technologically advanced capabilities to aid the installer. The installer may create the entire program for the NFS2-3030 in the comfort of the office, test it, store a backup file, then bring it to the site and download from a laptop into the panel.

Product Line Information

- "Configuration Guidelines" on page 4
- "Networking Options" on page 4
- "Auxiliary Power Supplies and Batteries" on page 4
- "Audio Options" on page 4
- "Compatible Devices, EIA-232 Ports" on page 5
- "Compatible Devices, EIA-485 Ports" on page 5
- "Compatible Intelligent Devices" on page 5
- "Enclosures, Chassis, and Dress Plates" on page 6
- "Other Options" on page 6

CONFIGURATION GUIDELINES

Stand-alone and network systems require a main display. On single-CPU systems (one NFS2-3030D), the display option is the CPU2-3030D. On network systems (two or more networked fire panel nodes), at least one NCA-2, NCS, or ONYX-Works annunciation device is required. Options listed as follows.

CPU2-3030D: NFS2-3030 Primary Display. CPU2-3030D ships with keypad/display installed; includes 640-character backlit LCD display, QWERTY programming and control keypad. CPU2-3030 is a central processing unit and requires an **AMPS-24(E)** power supply.

CPU2-3030ND: CPU2-3030 without display.

LCM-320: Loop Control Module. Adds SLCs to 3030; 3030 supports up to 5 LCM-320s and 5 LEM-320s. *See DN-6881.*

LEM-320: Loop Expander Module. Expands each LCM used on the 3030. *See DN-6881.*

SAMPLE SYSTEM: *Four-loop NFS2-3030 with display: CPU2-3030D, DP-DISP, two BMP-1s, CHS-M3, two LCM-320s, two LEM-320s, AMPS-24, SBB-A4, DR-A4, BP2-4, BB-100, batteries.*

NETWORKING OPTIONS

NCA-2: Network Control Annunciator, 640 characters. An alternate primary display for CPU2-3030 can be provided by the NCA-2, NCS, or ONYXWorks. Using NCA-2 as primary display enables non-English languages. On network systems (two or more networked fire panel nodes), one network display (either NCA-2, NCS, or ONYXWorks) is required for every system. On network systems, the NCA-2 connects (and requires) a standard Network Control Module or High-Speed Network Control Module. Mounts in a row of FACP node or in two annunciator positions. Mounting options include the DP-DISP, ADP-4B, or in an annunciator box, such as the ABS-2D. In CAB-4 top-row applications, a DP-DISP and two BMP-1 blank modules are required for mounting. *See DN-6858.*

NCM-W, NCM-F: Standard Network Communications Modules. Wire and multi-mode fiber versions available. *See DN-6861.*

HS-NCM-W/MF/SF/WMF/WSF/MFSF: High-speed network communications modules that can connect to two nodes. Wire, single-mode fiber, multi-mode fiber, and media conversion models are available. *See DN-60454.*

RPT-W, RPT-F, RPT-WF: Standard-network repeater board with wire connection (RPT-W), fiber connection (RPT-F), or allowing a change in media type between wire and fiber (RPT-WF). Not used with high-speed networks. *See DN-6971.*

ONYXWorks: UL-listed graphics PC workstation, ONYXWorks GUI software, and computer hardware. *See DN-7048 for specific part numbers.*

NFN-GW-EM, NFN-GW-EM-3: NFN Gateway, embedded. *See DN-60499.*

AUXILIARY POWER SUPPLIES AND BATTERIES

AMPS-24(E): One required for each NFS2-3030. Addressable power supply and battery charger with two 24 VDC outputs. Addressable by any FlashScan® or CLIP mode FACP. Charges 7 to 200 AH batteries. Occupies up to four addresses on an SLC, depending on configuration. Primary input power for panel. *See DN-6883.*

APS2-6R: Auxiliary Power Supply. Provides up to 6.0 amperes of power for peripheral devices. Includes battery input and transfer relay, and overcurrent protection. Mounts on two of four positions on a CHS-4L or CHS-4 chassis. *See DN-5952.*

ACPS-610: 6.0 A or 10 A addressable charging power supply. *See DN-60244.*

FCPS-24S6/-24S8: Remote 6 A and 8 A power supplies with battery charger. *See DN-6927.*

BAT Series: Batteries. AMPS-24 uses two 12 volt, 7 to 200 AH batteries. *See DN-6933*.

AUDIO OPTIONS

NOTE: *See "Enclosures, Chassis, and Dress Plates" on page 6 for mounting hardware.*

DVC-EM: Digital Voice Command, digital audio processor with message storage for up to 32 minutes of standard quality (4 minutes at high quality) digital audio. *See DN-7045.*

DVC-RPU: Digital Voice Command Remote Paging Unit for use with DVC-EM. Includes the keypad/display. *See DN-60726.*

DS-DB: Digital Series Distribution Board, provides bulk amplification capabilities to the DVC while retaining digital audio distribuition capabilities. Can be configured with up to four DS-AMPs, supplying high-level risers spread throughout an installation. *See DN-60565.*

DVC-KD: Keypad for local annunciation and controls; status LEDs and 24 user-programmable buttons. *See DN-7045.*

DS-AMP/E: 125W, 25 VRMS, or 100W, 70VRMS. 70VRMS requires DS-XF70V step-up transformer. Digital Series Amplifier, part of the DS-DB system. *See DN-60663.*

DS-RFM, DS-FM, DS-SFM: Fiber conversion modules for DVC, DS-DB distribution board, and DAX/DAA2 Series amplifiers. *See DN-60633.*

DAA2-5025(E): 50W, 25 Vrms Digital Audio Amplifier assembly with power supply; includes chassis. *See DN-60556.*

DAA2-5070(E): 50W, 70.7 Vrms Digital Audio Amplifier assembly with power supply; includes chassis. *See DN-60556.*

DAA2-7525(E): 75W, 25 Vrms digital audio amplifier assembly with power supply; includes chassis. *See DN-60556.*

DAX-3525(E): 35W, 25 Vrms Digital Audio Amplifier assembly with power supply, includes chassis. *See DN-60561.*

DAX-3570(E): 35W, 70.7 Vrms Digital Audio Amplifier assembly with power supply, includes chassis. *See DN-60561.*

DAX-5025(E): 50W, 25 Vrms Digital Audio Amplifier assembly with power supply, includes chassis. *See DN-60561.*

DAX-5070(E): 50W, 70.7 Vrms Digital Audio Amplifier assembly with power supply, includes chassis. *See DN-60561.*

TELH-1: Firefighter's Telephone Handset for use with the DVC when mounted in the CA-2 chassis. *See DN-7045.*

CMIC-1: Microphone us gved with DVC/DVC-EM. Included with CA-2 chassis assembly. *See DN-7045.*

RM-1/RM-1SA: Remote microphone assemblies, mount on ADP-4 (RM-1) dress panel or CAB-RM/-RMR (RM-1SA) stand-alone cabinets. *See DN-6728.*

FTM-1: Firephone Control Module connects a remote firefighter telephone to a centralized telephone console. Reports status to panel. Wiring to jacks and handsets is supervised. *See DN-6989.*

AA-30: Audio Amplifier, 30 watts. Switch-mode power. Includes amplifier and audio input supervision, backup input, and automatic switchover, power supply, cables. *See DN-3224.*

AA-120/AA-100: Audio Amplifier provides up to 120 watts of 25 Vrms audio power. The amplifier contains an integral chassis for mounting to a CAB-B4, -C4, or -D4 backbox (consumes one row). Switch-mode power. Includes audio input and amplified output supervision, backup input, and automatic switchover to backup tone. Order the AA-100 for 70.7 Vrms systems and 100 watts of power. *See DN-3224.*

DAA Series Digital Audio Amplifiers: Legacy DAA Series amplifiers are compatible with DVC systems running SR4.0. For specific information on DAA-50 series amplifiers, refer to DN-7046. For information on DAA-7525 Series, refer to DN-60257.

COMPATIBLE DEVICES, EIA-232 PORTS

PRN-6: 80-column printer. *See DN-6956.*

VS4095/5: Printer, 40-column, 24 V. Order from Keltron, Inc. *See DN-3260.*

DPI-232: Direct Panel Interface, specialized modem for extending serial data links to remotely located FACPs and/or peripherals. *See DN-6870.*

COMPATIBLE DEVICES, EIA-485 PORTS

ACM-24AT: ONYX® Series ACS annunciator – up to 96 points of annunciation with Alarm or Active LED, Trouble LED, and switch per circuit. Active/Alarm LEDs can be programmed (by powered-up switch selection) by point to be red, green, or yellow; the Trouble LED is always yellow. *See DN-6862.*

AEM-24AT: Same LED and switch capabilities as ACM-24AT; expands the ACM-24AT to 48, 72, or 96 points*See DN-6862.*

ACM-48A: ONYX® Series ACS annunciator – up to 96 points of annunciation with Alarm or Active LED per circuit. Active/Alarm LEDs can be programmed (by powered-up switch selection) in groups of 24 to be red, green, or yellow. Expandable to 96 points with one AEM-48A. *See DN-6862.*

AEM-48A: Same LED capabilities as ACM-48A; expands the ACM-48A to 96 points. *See DN-6862.*

ACM-8R: Remote Relay Module with eight Form-C contacts. Can be located up to 6,000 ft. (1828.8 m) from panel on four wires. *See DN-3558.*

LCD-160: Liquid Crystal Display annunciator, 160-character backlit. Can store character sets for multiple languages. Supports Canadian requirements. *See DN-6940*

LCD-80: ACS mode. 80-character, backlit LCD display. Mounts up to 6,000 ft. (1828.8 m) from panel. Up to 32 per FACP. *See DN-3198.*

LCD2-80: Terminal mode. 80-character, backlit LCD display. Mounts up to 6,000 ft. (1828.8 m) from panel. Up to 32 per FACP. *See LCD2-80 (DN-60548).*

SCS Series: Smoke control station; eight (expandable to 16) circuits. *See DN-4818.*

TM-4: Transmitter Module. Includes three reverse-polarity circuits and one municipal box circuit. Mounts in panel module position (as in single-address mode applications) or in CHS-M3 position. *See DN-6860.*

UDACT: Universal Digital Alarm Communicator Transmitter, 636 channel *See DN-4867.*

UDACT-2: Universal Digital Alarm Communicator Transmitter, 636 channel. *See DN-60686.*

UZC-256: Programmable Universal Zone Coder provides positive non-interfering successive zone coding. Microprocessor-controlled, field-programmable from IBM®-compatible PCs *(requires optional programming kit)*. Mounts on a CHS-4 series chassis within NFS2-3030.

COMPATIBLE INTELLIGENT DEVICES

BEAMHK: Heating kit for transmitter/receiver unit of FSB-200(S) below. *See DN-6985.*

BEAMHKR: Heating kit for use with the reflector of FSB-200(S) below. *See DN-6985.*

BEAMLRK: Long-range accessory kit, FSB-200(S) below. *See DN-6985.*

BEAMMRK: Multi-mount kit, FSB-200(S) below. *See DN-6985.*

BEAMSMK: Surface-mount kit, FSB-200(S) below. *See DN-6985.*

FSB-200: Intelligent beam smoke detector. *See DN-6985.*

FSB-200S: Intelligent beam smoke detector with integral sensitivity test. *See DN-6985.*

FSC-851: FlashScan IntelliQuad Advanced Multi-Criteria Detector. *See DN-60412.*

FCO-851: FlashScan IntelliQuad PLUS Advanced Multi-Criteria Fire/CO Detector. *See DN-60689.*

FSI-851: Low-profile FlashScan ionization detector. *See DN-6985.*

FSP-851: Low-profile FlashScan photoelectric detector. *See DN-6935.*

FSP-851R: Low-profile intelligent photoelectric sensor, remote test capable. For use with DNR(W). *See DN-6935.*

FSP-851T: Low-profile FlashScan photoelectric detector with 135°F (57°C) thermal. *See DN-6935.*

FST-851: FlashScan thermal detector 135°F (57°C). *See DN-6936.*

FST-851R: FlashScan thermal detector 135°F (57°C) with rate-of-rise. *See DN-6936.*

FST-851H: FlashScan 190°F (88°C) high-temperature thermal detector. *See DN-6936.*

FAPT-851: FlashScan Acclimate Plus™ low-profile multi-sensor detector. *See DN-6937.*

FSL-751: FlashScan VIEW® laser photo detector. *See DN-6886.*

DNR: InnovairFlex low-flow non-relay duct-detector housing (order FSP-851 separately). Replaces FSD-751PL/FSD-751RPL. *See DN-60429.*

DNRW: Same as above with NEMA-4 rating, watertight. *See DN-60429.*

B224RB: Low-profile relay base. *See DN-60054.*

B224BI: Isolator base for low-profile detectors. *See DN-60054.*

B210LP: Low-profile base. Standard U.S. style. Replaces B710LP. *See DN-60054.*

B501: European-style, 4" (10.16 cm) base. *See DN-60054.*

B200S: Intelligent programmable sounder base, capable of producing a variety of tone patterns including ANSI Temporal 3. Compatible with sychronization protocol. *See DN-60054.*

B200SR: Sounder base, Temporal 3 or Continuous tone. *See DN-60054.*

FMM-1: FlashScan monitor module. *See DN-6720.*

FDM-1: FlashScan dual monitor module. *See DN-6720.*

FZM-1: FlashScan two-wire detector monitor module. *See DN-6720.*

FMM-101: FlashScan miniature monitor module. *See DN-6720.*

FMM-4-20: FlashScan 4-20 mA protocol monitor module. *See DN-60411.*

FCM-1: FlashScan NAC control module. *See DN-6724.*

FCM-1-REL: FlashScan releasing control module. *See DN-60390.*

FRM-1: FlashScan relay module. *See DN-6724.*

FDRM-1: FlashScan dual monitor/dual relay module. *See DN-60709.*

NBG-12LX: Manual pull station, addressable. *See DN-6726.*

ISO-X: Isolator module. *See DN-2243.*

XP6-C: FlashScan six-circuit supervised control module. *See DN-6924.*

XP6-MA: FlashScan six-zone interface module; connects intelligent alarm system to two-wire conventional detection zone. *See DN-6925.*

XP6-R: FlashScan six-relay (Form-C) control module. *See DN-6926.*

XP10-M: FlashScan ten-input monitor module. *See DN-6923.*

ENCLOSURES, CHASSIS, AND DRESS PLATES

CAB-4 Series Enclosure: NFS2-3030 mounts in a standard CAB-4 Series enclosure (available in four sizes, "A" through "D"). Backbox and door ordered seperately; requires BP2-4 battery plate. A trim ring option is available for semi-flush mounting. *See DN-6857.*

EQ Series Cabinets: EQ series cabinets will house amplifiers, power supplies, battery chargers and control modules. EQ cabinets are available in three sizes, "B" through "D". *See DN-60229.*

CHS-M3: Mounting chassis for CPU2-3030. One required for each CPU2-3030D/3030ND.

CA-2: Chassis for CPU when DVC is used with firefighter's telephone. Mounts in the top two rows of a CAB-4 series enclosure.

DP-DISP: Dress panel for top row in cabinet with CPU2-3030D installed.

DP-1B: Blank dress panel. Provides dead-front panel for unused tiers; covers DAA2-series or AA-series amplifier. *See DN-7046.*

CHS-BH1: Battery chassis; holds two 12.0 AH batteries. Mounts on the left side of DAA2 chassis. *See DN-7046.*

CA-1: Chassis, occupies one tier of a CAB-4 Series enclosure. The left side accommodates one DVC and a DVC-KD (optional); and the right side houses a CMIC-1 microphone and its well (optional). *See DN-7045.*

CA-2: Chassis assembly, occupies two tiers of a CAB-4 Series enclosure. The left side accommodates one DVC mounted on a half-chassis and one NFS2-3030 or NCA-2 mounted on a half-chassis. The right side houses a microphone/handset well. The CA-2 assembly includes CMIC-1 microphone. ADDR Series doors with two-tier visibility are available for use with the CA-2 configuration: ADDR-B4, ADDR-C4, ADDR-D4 (below).

ADDR-B4: Two-tier-sized door designed for use with the CA-2 chassis configuration. ADDR Series doors are similar to CAB-4 Series "DR" doors, but a clear window space exposes the top two tiers of the CAB-4 enclosure. Use an SBB-B4 backbox with the ADDR-B4. *See DN-7045, DN-6857.*

ADDR-C4: Three-tier-sized door designed for use with the CA-2 chassis configuration. ADDR Series doors are similar to CAB-4 Series "DR" doors, but a clear window space exposes the top two tiers of the CAB-4 enclosure. Use an SBB-C4 backbox with the ADDR-C4. *See DN-7045, DN-6857.*

ADDR-D4: Four-tier-sized door designed for use with the CA-2 chassis configuration. ADDR Series doors are similar to CAB-4 Series "DR" doors, but a clear window space exposes the top two tiers of the CAB-4 enclosure. Use an SBB-D4 backbox with the ADDR-D4. *See DN-7045, DN-6857.*

DPA-1: Dress panel, used with the CA-1 chassis when configured with a DVC, DVC-KD, and CMIC-1. *See DN-7045.*

DPA-2: Dress Panel used with the CA-2 chassis assembly.

DPA-1A4: Dress panel, used with the CA-1 chassis when the CMIC-1 is not used. Provides mounting options on right two bays for two ACS annunciators, or for blank plates. *See DN-7045.*

ADP-4B: Annunciator dress plate. Mounts in rows 2, 3 or 4 of a CAB-4 series enclosure. Used with ACS series annunciators.

BMP-1: Blank module for unused module positions.

DP-1B: Blank dress panel. Provides dead-front panel for unused tiers; covers DAA2-series or AA-series amplifier.

BP2-4: Battery plate, required.

CHS-4L: Low-profile four-position Chassis. Mounts two AA-30 amplifiers.

CHS-4N: Chassis for mounting up to four APS-6Rs.

CHS-6: Chassis used with the XP6 and XP10 Multi-Modules. Mounts up to six modules in any CAB-4 series row.

BB-100: Backbox for batteries and power supplies. The BB-100 is used to mount up to two 100-AH batteries and power supply, if needed. 30" (76.20 cm) wide x 25" (63.50 cm) high x 7.5" (19.05 cm) deep; depth includes door.

BB-200: Backbox for batteries and power supplies. Holds the AMPS-24(E) power supply when AMPS-24(E) is used as a charger for 200 AH batteries. Holds up to four 100 AH batteries and power supply. 30" (76.20 cm) wide x 36" (91.44 cm) high x 7.5" (19.05 cm) deep; depth includes door.

NFS-LBB: Battery Box. The NFS-LBB is used to mount up to two 55-AH batteries. Dimensions: Box: 24" (610 mm) wide x 14" (356 mm) high x 7.75" (197 mm) deep. Door: 24.125" (613 mm) wide x 14.25" (362 mm) high; door adds 0.0625" (approx. 1.6 mm) to depth.

BB-UZC: Backbox for housing the UZC-256 for applications where the UZC will not fit in panel enclosure. Black; for red, order BB-UZC-R. *See DN-3404.*

SEISKIT-CAB: Seismic mounting kit. Required for seismic-certified applications with NFS2-3030 and other equipment mounted in CAB-4 Series Enclosures. Includes battery bracket for two batteries up to 26 AH.

SEISKIT-320/B26: Seismic mounting kit. Required for seismic-certified applications with BB-26. Includes battery bracket for two 26 AH batteries.

SEISKIT-LBB: Seismic kit for the NFS-LBB. Includes battery bracket for two 55 AH batteries.

SEISKIT-PS/2/4: Seismic mounting kit for the FCPS-24S6/S8 and CAB-PS1. Includes battery bracket for two 7 AH or 12 AH batteries.

OTHER OPTIONS

411: Slave digital alarm communicator. *See DN-6619.*

411UDAC: Digital alarm communicator. *See DN-6746.*

IPDACT-2, IPDACT Internet Monitoring Module: Connects to primary and secondary DACT telephone output ports for internet communications over customer-provided ethernet connection. Requires compatible Teldat VisorALARM Central Station Receiver. Can use DHCP or static IP. *See DN-60408.*

IPCHSKIT: IP Communicator Chassis Mounting Kit. For mounting an IPDACT-2/2UD onto the panel chassis or CHS-4 series chassis. Use IPENC for external mounting applications.

IPSPLT: Y-adaptor option allow connection of both panel dialer outputs to one IPDACT-2/2UD cable input.

IPENC: External enclosure for IPDACT, includes IPBRKT mounting bracket; Red; for black, order IPENC-B.

IPGSM-DP: Internet and Digital Cellular Fire Alarm Communicator. Provides selectable configurable paths: cellular only, IP only, or IP primary with cellular backup. Connects to the primary and secondary ports of a DACT. Replaces IPGSM-COM. *See DH-60695.*

NOTE: *For other options including compatibility with retrofit equipment, refer to the panel's installation manual, the SLC manual, and the Device Compatibility Document.*

SYSTEM SPECIFICATIONS

System Capacity

- Intelligent Signaling Line Circuits ....1 expandable to 10
- Intelligent detectors .... 159 per loop
- Addressable monitor/control modules .... 159 per loop
- Programmable software zones............................ over 2000
- ACS annunciators
  per CPU2-3030 ....32 address x 64 or 96 points
  NOTE: The CPU2-3030 can support up to 96 annunciator address points per ACM-24/-48.

Specifications

- **Primary input power**:
  – **AMPS-24:** 110-120 VAC, 50/60 Hz, 4.5 A maximum.
  – **AMPS-24E:** 240 VAC, 50/60 Hz, 2.25 A maximum.
- **DC output:**
  – Main 24 VDC: Up to 5.0 A
  – Aux 24 VDC: Up to 5.0 A
  – 5 VDC: Up to 0.15 A.
  NOTE: For details of DC output values, see manual 51907.
- **Battery charger range:** 7 AH – 200 AH. Use separate cabinet for batteries over 26 AH.
- **Float Rate:** 27.6 V.

Shipping Weight

– CPU2-3030D: 5.95 lb (2.70 kg).
– CPU2-3030ND: 2.90 lb (1.32 kg).

Temperature and Humidity Ranges

This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93% ± 2% RH (noncondensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15 – 27°C/60 – 80°F.

Agency Listings and Approvals

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL Listed:** S635.
- **ULC Listed:** S635.
- **MEA:** 232-06-E.
- **FDNY:** COA#6114.
- **CSFM:** 7165-0028:0224 (Commercial).
- **FM Approved.**
- **FM6320 Approved.** Class 6320 for Gas Detection.
- **City of Chicago.**
- **City of Denver.**
- **PSB Corporation.**
- **CCCF listed.**
- **Fire Services Department (Hong Kong).**

Standards

The NFS2-3030 complies with the following UL Standards and NFPA 72, IBC, and CBC Fire Alarm Systems requirements:

- **UL 864** (Fire).
- **UL 1076** (Burglary).
- **LOCAL** (Automatic, Manual, Waterflow and Sprinkler Supervisory).
- **AUXILIARY** (Automatic, Manual and Waterflow) (requires TM-4).
- **REMOTE STATION** (Automatic, Manual, Waterflow and Sprinkler Supervisory) (requires TM-4).
- **PROPRIETARY** (Automatic, Manual, Waterflow and Sprinkler Supervisory). *Not applicable for FM.*
- **EMERGENCY VOICE/ALARM**.
- **OT, PSDN** (Other Technologies, Packet-switched Data Network).
- **IBC 2000, IBC 2003, IBC 2006, IBC2009** (Seismic).
- **CBC 2007** (Seismic).

4.1.2 Calculation for Main Supply Current

AMPS-24 *Terminal Blocks:*	Quantities TB1 (MAIN 24)*	Quantities TB3 (AUX 24)	Calculation Column 1 Primary, Non-Fire Alarm Current (amps) X [current draw]=	Total on: TB1 (MAIN 24)	Total on: TB3 (AUX 24)	Calculation Column 2 Primary, Fire Alarm Current (amps) X [current draw]=	Total on: TB1 (MAIN 24)	Total on: TB3 (AUX 24)	Calculation Column 3 Secondary, Non-Fire Alarm Current (amps) X [current draw]=	Total on: TB1 (MAIN 24)	Total on: TB3 (AUX 24)
CPU-3030, CPU2-3030	1	N/A	x [0.120]=	0.12	0	x [0.120]=	0.12	0	x [0.120]=	0.12	0
Keyboard/Display Option	1	N/A	x [0.220]=	0.22	0	x [0.220]=	0.22	0	x [0.220]=	0	0
LCM-320 (refer to Doc. 51330,52544)	[ ]	N/A	x [0.130]=		0	x [0.130]=		0	x [0.130]=		0
LEM-320 (refer to Doc. 51330,52544)	[ ]	N/A	x [0.100]=		0	x [0.100]=		0	x [0.100]=		0
SLC Loop†	[ ]	N/A	x [0.200]=		0	x [0.200]=		0	x [0.200]=		0
NCA, NCA-2 (Backlight ON)	[ ]	[ ]	x [0.400]=			x [0.400]=			x [0.400]=		
NCA, NCA-2 (Backlight OFF)	[ ]	[ ]	x [0.200]=			x [0.200]=			x [0.200]=		
NCM-W, NCM-F	[ ]	[ ]	x [0.110]=			x [0.110]=			x [0.110]=		
HS-NCM-W/MF/SF/MFSF/WMF/WSF	[ ]	[ ]	x [0.400]=			x [0.400]=			x [0.400]=		
DPI-232‡	[ ]	[ ]	x [ ]			x [ ]=			x [ ]=		
DVC components (Refer to DVC manual)	[ ] [ ]	[ ] [ ]	x [ ]= x [ ]=			x [ ]= x [ ]=			x [ ]= x [ ]=		
DS-DB (Refer to the DS-DB manual)	[ ]	[ ]	x [ ]=			x [ ]			x [ ]=		
ICM-4RK, CRM-4RK	[ ]	N/A	x [0.007]=		0	x [0.072]=		0	x [0.007]=		0
ICE-4	[ ]	N/A	x [0.001]=		0	x [0.065]=		0	x [0.001]=		0
CRE-4	[ ]	N/A	N/A		0	x [0.065]=		0	N/A		0
DCM-4RK	[ ]	N/A	x [0.008]=		0	x [0.080]=		0	x [0.008]=		0
VCE-4	[ ]	N/A	x [0.001]=		0	x [0.040]=		0	x [0.001]=		0
VCM-4RK	[ ]	N/A	x [0.007]=		0	x [0.040]=		0	x [0.007]=		0
IZM-8RK	[ ]	N/A	x [0.047]=		0	x [0.047]=		0	x [0.047]=		0
IZE-A	[ ]	N/A	x [0.004]=		0	x [0.003]=		0	x [0.004]=		0
ARM-4 Auxiliary Relay	[ ]	[ ]				x [0.146]=					
FSD-751RPL (Duct Detector)	[ ]	[ ]	x [0.025]=			x [0.087]=			x [0.025]=		
ACM-24AT	[ ]	[ ]	x [0.016]=			x [0.070]=			x [0.016]=		
ACM-48A	[ ]	[ ]	x [0.016]=			x [0.070]=			x [0.016]=		
AEM-24AT	[ ]	[ ]	x [0.002]=			x [0.056]=			x [0.002]=		
AEM-48A	[ ]	[ ]	x [0.002]=			x [0.056]=			x [0.002]=		
Maximum number of LEDs illuminated on these annunciators during non-fire conditions:	[ ]	[ ]	x [0.0054]=						x [0.0054]=		
AFM-16AT, AFM-32A	[ ]	[ ]	x [0.040]=			x [0.056]=			x [0.040]=		
ACM-16AT, ACM-32A	[ ]	[ ]	x [0.040]=			x [0.056]=			x [0.040]=		
AEM-16AT, AEM-32A	[ ]	[ ]	x [0.002]=			x [0.018]=			x [0.002]=		
TM-4	[ ]	[ ]	x [0.110]=			x [0.175]=			x [0.110]=		
SCS-8 (refer to Doc. 15712)	[ ]	[ ]	x [ ]=			x [ ]=			x [ ]=		
AFM-16A	[ ]	[ ]	x [0.025]=			x [0.065]=			x [0.025]=		
LCD-80	[ ]	[ ]	x [0.100]=			x [0.100]=			x [0.050]=		
ACM-8R (refer to Doc. 15342)	[ ]	[ ]	x [ ]=			x [ ]=			x [ ]=		
LDM (refer to Doc. 15885)	[ ]	[ ]	x [ ]=			x [ ]=			x [ ]=		
UZC-256	[ ]	[ ]	x [0.035]=			x [0.085]=			x [0.035]=		
AMG-1, AMG-E, ATG-2	[ ]	[ ]	x [0.060]=			x [0.060]=			x [0.060]=		
FFT-7, FFT-7S	[ ]	[ ]	x [0.060]=			x [0.120]=			x [0.060]=		
RM-1	[ ]	[ ]	x [0.020]=			x [0.020]=			x [0.020]=		
FZM-1, MMX-2	[ ]	[ ]	x [0.0094]=			x [0.090]=			x [0.0094]=		
XPIQ (Refer to Doc. 51013)	[ ]	[ ]	x [ ]=			x [ ]=			x [ ]=		
RPT-W, RPT-WF, RPT-F	[ ]	[ ]	x [0.017]=			x [0.017]=			x [0.017]=		
RPT-485W, RPT-485WF	[ ]	[ ]	x [0.049]=			x [0.049]=			x [0.049]=		
RFX	[ ]	[ ]	x [ ]=			x [ ]=			x [ ]=		
UDACT Communicator	[ ]	[ ]	x [0.040]=			x [0.100]=			x [0.040]=		
VEC-25/50	[ ]	N/A	x [0.215]=			x [1.215]=			x [0.215]=		
with optional FC-AAM25	[ ]	N/A	x [0.245]=			x [2.215]=			x [0.245]=		
Four-Wire Smoke Detectors	[ ] [ ]	[ ] [ ]	x [ ]= x [ ]=			x [ ]= x [ ]=			x [ ]= x [ ]=		
Power Supervision Relay (EOLR-1)	[ ]	[ ]	x [0.020]=			x [0.020]=			x [0.020]=		
Compatible Devices not listed above**	[ ] [ ]	[ ] [ ]	x [ ]= x [ ]=			x [ ]= x [ ]=			x [ ]= x [ ]=		
Main Output (MAIN 24, TB1) Sub-totals ††			Primary, non-alarm:			Primary, alarm:			Secondary, non-alarm:		
AUX Output (AUX 24, TB3) Sub-totals ††			Primary, non-alarm:			Primary, alarm:			Secondary, non-alarm:		
AMPS-24									[ ] x [0.13]=		
Accessories Output (TB2 on CPS-24). Enter 0.5 A in all white boxes if TB2 is in use. Leave blank if not in use.											
Local Energy Municipal Box						[ ]x [ ]=					
Sum each column for totals			Primary, non-alarm:			Primary, alarm:			Secondary, non-alarm:		

Table 4.1 System Draw Current Calculations

* Devices powered by the Main Output (MAIN 24, TB1) draw current through the fire panel's connection to the power supply.
† Value represents an SLC's maximum current draw. Refer to device datasheets for individual current draws. Total device current cannot exceed 200mA.
‡ Current consumption of the DPI-232 is dependent upon the baud rate selection (via slide switch on the DPI-232). See DPI-232 manual for details.
** Refer to manual and/or Device Compatibility Document.
†† Refer to Table 1.1, "Output Current for Each Configuration," on page 8 to determine the maximum current for your configuration.

DAA2 Series

Digital Audio Amplifiers

NOTIFIER®
by Honeywell

Voice Control Systems

General

The DAA2 Series Amplifiers are multi-featured amplifiers with digital audio functionality. Each DAA2 is capable of accessing and processing one of up to eight audio channels on the DVC audio loop, amplifying the signal, and distributing it via four Class B or two Class A outputs. A DAA2 is capable of mounting an optional BDA Digital amplifier, which can be used to provide one-to-one amplifier backup, or to support two-channel operation.

The DAA2 has two wire digital audio ports to connect to wire DAL (digital audio loop) segments. Either or both ports may be converted to fiber using fiber option modules.

Up to 32 devices, such as DAA2 amplifiers, can be connected to the DAL on one DVC Digital Voice Command unit. DAA2 amplifiers may be mixed with DAX and DAA series amplifiers on the same DAL.

An optional Firefighter telephone riser on the DAA2 supports local and network FFT communications. A DAA2 also supports use of an RM-1 remote microphone.

DAA2 amplifiers can store backup alarm and trouble messages, and provide an adjustable background music input.

Features

- Listed to UL Standard 864, 9th edition.
- 50 W total output power at 25 V_{RMS} (all DAA2-5025 models) or 70 V_{RMS} (all DAA2-5070 models).
- 75 W total output power at 25 V_{RMS} (all DAA2-7525 models).
- Supports two Class A high-level audio outputs; or four Class B outputs.
- An optional BDA will provide either one-to-one amplifier backup or two-channel operation.
- Supports one-to-many amplifier backup applications using the same model DAA2.
- Firefighter telephone riser supports 7 active firefighter telephones. Release 3.0 and higher supports optional configurations: direct connection for up to 7 firefighter telephones, or connection to multiple FTM-1 modules.
- Remote microphone paging option with RM-1.
- Audio output activation via network control-by-event equations resident within the DVC.
- Two wire digital audio ports that can be converted to fiber using fiber option modules. Support Style 4 or 7 configurations.
- Auxiliary input for 1 V_{RMS}, to be used for background music input, an interface with a telephone paging source, or other compatible audio sources. Audio levels can be adjusted by end user. Optional supervision through programming.
- Isolated alarm bus input, to be used for backup activation of alarm messages when normal digital communication is lost.
- Programmable through **VeriFire® Tools**.
- Up to 106 seconds of backup digital message storage for use in the event of communication loss (from the **VeriFire® Tools** message library, or created by the installer).
- Battery charger disable provides battery sharing option for up to four DAA2s.
- Disconnect of deeply-discharged battery (low battery disconnect).

Installation

The DAA2 arrives from the factory already installed on its chassis. The DAA2 mounts in one row of any EQ or CAB-4 Series cabinet: The CAB-4 row can be covered using a DP-1B dress panel, ordered separately.

One or two fiber option modules will plug directly onto a DAA2 for simple installation. A BDA backup amplifier mounts directly onto a DAA2.

Specifications

CPS-24 POWER SUPPLY BOARD

AC power (TB1): 120 VAC, 60 Hz input;
- DAA2-5025 - 4.68A max.
- DAA2-5070 - 4.69A max.
- DAA2-7525 - 4.68A max.

"E" versions, 220-240 VAC, 50/60 Hz input:
- DAA2-5025E - 2.68A max.
- DAA2-5070E - 2.68A max.
- DAA2-7525E - 2.68A max.

Recommended wiring: 12 to 14 AWG (1.6 mm O.D.) with 600 VAC insulation.

Secondary Power 5V and 24V AUX Outputs (TB2):
24 V AUX: Power-limited, 24V @ 0.5A, utilizes wire sizes 12-18 AWG (3.31 mm² - 2.08 mm².
5 V: Future Use.

Battery Connections: Supplied cable connections to batteries.

Battery Charger: Current-limited sealed lead acid battery charger which charges two 12 volt batteries in series, up to 200 AH.

	Charge Batteries Less Than 26 AH	Charge 26 AH to < 50 AH Batteries	Charge 50 AH to 200 AH Batteries
DAA2-5025 DAA2-5070	Yes	Yes	Yes
DAA2-7525	Yes	Yes	No
DAA2-5025 or DAA-5070 w/BDA in Group 2 of *VeriFire® Tools*.	No	No	No

Battery Charging Capabilities

DAA2 BOARDS

Digital Audio Ports, wire media, A and B (TB2, TB3): Maximum distance per segment is 1900 feet (579.12 m) on Belden 5320UJ (18AWG, TP) FPL cable: 18 AWG (0.821 mm^2) twisted-pair, unshielded, power-limited. For approved cable types, see wiring documentation, P/N 52916ADD: C *Approved Wire Cables for Digital Audio Loops*.

Digital Audio Ports, fiber media, fiber option modules: Digital audio loop connectors support single- and multi-mode fiber with the use of fiber option modules. Refer to the Fiber Option Module datasheet for fiber specifications.

Alarm Bus: Power-limited, supervised by source. Recommended wiring: 14-18 AWG twisted-pair. Requires 16VDC minimum @ 20mA across the terminals to activate. Nominal 24VDC.

Remote Microphone Interface: RMI power: +24VDC, power-limited @ 100mA. Supervised. Recommended wiring: 14-18 AWG twisted-pair, Max. 14 AWG. Nominal AC signal strength $2.5V_{RMS}$, $3V_{RMS}$ Max. Maximum distance between remote microphone and DAA2: 100 ft (304.8 m).

FFT Riser: Power-limited output, supervised. Class A or Class B operation. Class B 2-wire connections require a 3.9k ohm 1/2 watt resistor (P/N R-3.9K). Max. wiring resistance (including individual telephone zone to last handset) permitted is 50 ohms, 10,000 ft (3048 m) max. wiring distance at 14 AWG to last handset.

Auxiliary Input: Signal strength from low-level analog audio input (such as background music or telephone paging): $1V_{p-p}$ max. Optional supervision through programming. Recommended wiring: 14-18 AWG, twisted-pair. Auxiliary input source must be within 25 ft. (7.6 m) of the DAA2, and within the same room.

Speaker circuits: Power-limited outputs (exception: a DAA2-5070 speaker circuit used with any Canadian Room Isolator module is non-power limited. Speaker circuit 1 (TB10) can not be used.). Supervision determined by programming. DAA2-5025/70, Each circuit rated up to 50 watts*. DAA2-7525, each circuit rated up to 75 watts*. Recommended wiring: 12-18 AWG twisted-pair (shielded recommended). Class B or Class A: Class B requires 20k end-of-line resistors (included, P/N ELR-20K). Class A requires 10k end-of-line resistors (included, P/N R-10K) on the return.
*total wattage may vary per configuration.

Backup: High-level audio input: $25V_{RMS}$ (DAA2-5025 and DAA2-7525). $70 V_{RMS}$ (DAA2-5070). Recommended wiring: 14-18 AWG. Not supervised when inactive. Supervised by backup source when active. Must be in same room or enclosure.

Standards and Codes

The DAA2 Series Digital Audio Amplifiers comply with the following standards:

- NFPA 72 2007 National Fire Alarm Code
- Underwriter Laboratories Standard UL 864

- Underwriter Laboratories of Canada (ULC) ULC-S527-99 Standard of Control Units for Fire Alarm Systems.
- Part 15 Class A conducted and radiated emissions as required by the FCC.

Listings and Approvals

These listings and approvals apply to the basic DAA2 Series Digital Audio Amplifiers. In some cases, certain modules may not be listed by certain agencies, or listing may be in process. Consult factory for latest listing status.

- UL Listed: file S635
- ULC Listed: file S635

Product Line Information

50 WATT DAA2 AMPLIFIERS

Shipped mounted to the chassis.

DAA2-5025: 120 VAC Digital Audio Amplifier (50 W, 25 V_{RMS}).

DAA2-5070: 120 VAC Digital Audio Amplifier (50 W, 70 V_{RMS}).

DAA2-5025E: 220-240 VAC Digital Audio Amplifier (50 W, 25 V_{RMS}).

DAA2-5070E: 220-240 VAC Digital Audio Amplifier (50 W, 70 V_{RMS}).

75 WATT DAA2 AMPLIFIERS

Shipped mounted to the chassis.

DAA2-7525: 120 VAC Digital Audio Amplifier (75 W, 25 V_{RMS}).

DAA2-7525E: 220-240 VAC Digital Audio Amplifier (75 W, 25 V_{RMS}).

BDA BACKUP DIGITAL AMPLIFIERS

BDA-25V: Backup Digital Amplifier (25 V_{RMS}), switch settings for 75, 50, and 35 W operation. Provides a second audio channel when programmed as a primary amplifier.

BDA-70V: Backup Digital Amplifier (70 V_{RMS}), switch settings for 50 and 35 W operation. Provides a second audio channel when programmed as a primary amplifier.

FIBER OPTION MODULES

DS-FM: Fiber option module for multi-mode fiber. Converts a wire DAP (digital audio port) to a multi-mode fiber port.

DS-SFM: Fiber option module for single-mode fiber. Converts a wire DAP (digital audio port) to a single-mode fiber port.

DS-RFM: Fiber option module for multi-mode fiber. Used exclusively for compatibility with multi-mode fiber DVC or DAA.

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We try to keep our product information up-to-date and accurate.
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DVC Series

Digital Voice Command
DVC-EM

®

NOTIFIER
by Honeywell

Voice Control Systems

General

The DVC is the heart of an integrated, full-featured Audio Command Center. The DVC Digital Voice Command combines the capabilities of a powerful digital audio processor, an event-driven audio message generator, and a router. Designed for use with Digital Audio Loop (DAL) devices such as DAA2, DAX and DAA series digital amplifiers as well as the DS-DB, each DVC supports a dedicated audio network with up to eight channels of audio, five channels of firefighter telephone communications, and control and supervision for up to 32 DAL devices. The DVC has two wire digital audio ports to connect to wire DAL segments. Either or both ports may be converted to multi-mode fiber or single-mode fiber using fiber option modules. Larger audio systems incorporating hundreds of amplifiers can be created by networking additional DVC units via **NOTI·FIRE·NET™**.

The DVC may be networked with ONYX® Series panels via **NOTI·FIRE·NET** with an NCA-2, or with an NFS2-3030 (running in network monitor mode). A DVC can be connected directly with a single NFS2-640 or NFS2-3030 Fire Alarm Control Panel (FACP) to create a standalone integrated audio solution as well. Refer to the DVC manual for details.

When used as an Audio Command Center with Emergency Paging capability, the optional DVC-KD Keypad Display is required.

NOTE: Unless otherwise noted, the term "DVC" refers to the DVC-EM.

Features

- Programmable from NUP port using *VeriFire® Tools*.
- Up to 32 minutes of standard quality or 4 minutes of high quality digital audio storage of user-selected/created messages and tones. Supports twisted-pair wire media. Supports single- and multi-mode fiber-optic media when used with fiber option modules.
- 4-channel analog audio supported with optional DVC-AO
- Up to 1000 audio sequences.
- Message prioritization.
- Equations support flexible programming for distribution of messages.
- Electrically isolated digital audio ports for direct connection with up to 32 Digital Audio Loop (DAL) devices. Style 4 or 7 configurations supported.
- Optional DS-RFM, DS-FM, and DS-SFM fiber modules may be used to convert one or both Digital Audio Ports for operation with single-mode or multi-mode fiber.
- DCC (Display and Control Center) capabilities when used with optional DVC-KD.
- Firefighters' Telephone Communications to local FFT riser on DVC, 32 local DAL device FFT risers, and FFT communication to additional command stations via **NOTI·FIRE·NET**.
- Local paging microphone option.
- Remote microphone options.
- Broad All-Call functionality when used with DVC-KD (DVC-Keyboard Display): All Call, Page Active Evac Areas, Page Active Alert Areas, Page Inactive Areas.

DVC
Shown using CA-2 mounting option,
SBB-C4, and ADDR-C4 door.

- Auxiliary input for 12 V_{p-p} analog low-level audio sources. Includes user audio level adjustment feature.
- Auxiliary input accepts external audio sources such as telephone paging or background music. High impedance input accepts 600 ohm, line level, 1.0 VRMS, or 1.41 V_{p-p} low level audio. Selectable AGC, user control of audio level, and audio supervision are supported.
- Associated NCA-2, or NFS2-3030 (programmed for network monitor mode) supports **NOTI·FIRE·NET** applications.
- Multiple audio command centers supported via **NOTI·FIRE·NET**.
- Distribution of one channel of standard-level paging audio on **NOTI·FIRE·NET**.
- Three standalone, non-network mode options:
  – NFS2-3030 (NUP to NUP) digital and analog.
  – NFS2-640 (NUP to NUP) analog audio only.
  – NFS2-640 with NCA-2 (NUP to NUP to NUP) digital and analog.
- Push-to-talk relay, or logic argument.
- Isolated alarm bus input, to be used for backup activation of alarm messages in the event network communication is lost.

Installation Options

The DVC provides flexible configurations based on one-row or two-row chassis options that mount into size "B", "C", or "D" CAB-4 Series cabinets.

The CA-2 supports a DVC, paging microphone, optional FFT telephone, and mounting location for an NCA-2 or NFS2-3030D CPU. The ADDR audio door series can be used when a CA-2 is mounted in the top two rows. The CA-1 supports a

DVC and an optional microphone in a single row. For firefighters' telephone applications with a CA-1, the CFFT-1 can be mounted in the row below the CA-1.

NOTE: For NFS2-640/DVC applications using DAL devices, an NCA-2 is required to annunciate DAL device events.
Refer to the DVC System Audio Product Application Guide (part number M-AG-DVC) for more details on DVC applications).

Specifications

- **24 VDC power (TB1)**: 24 VDC, 1.0 A, non-resettable, power-limited by the source. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair.

- **Digital audio ports, wire media, A and B (TB2, TB3)**: Maximum distance per segment is 1900 feet (579.12 m) on Belden 5320UJ (18 AWG, TP) FPL cable: 18 AWG (0.821 mm²) twisted-pair, foil-shielded, power-limited. Consult wiring documentation provided in document P/N 52916ADD:C *Addendum to DVC and DAA Manuals*.

- **Digital audio ports, single- and multi-mode fiber-optic media**:
  - **DS-FM and DS-SFM fiber option module (no direct DAA connection)**: Maximum attenuation is 6.5dB for multimode with 50/125 micrometer cable @ 1310 nm; 10dB for multi-mode with 62.5/125 micrometer cable @ 1310 nm; 30dB for single-mode with 9/125 micrometer cable @ 1310 nm.
  - **DS-SFM: attenuation for single-mode fiber DAA connection***

    Maximum attenuation:

    – 17dB for single-mode with 9/125 micrometer cable at 1310 nm going **from** the DS-SFM **to** the fiber DAA.
    – 4dB for single-mode with 9/125 micrometer cable going **from** the fiber DAA **to** the DS-SFM. Minimum attenuation: 12dB going **from** the DS-SFM **to** the fiber DAA.

    Minimum *attenuation*:

    – 2 dB going from the DS-SFM to the fiber DAA.
  - **DS-RFM: attenuation for multi-mode fiber DAA connection***

    Attenuation going **from** the fiber DAA **to** the DS-RFM:

    – 2dB maximum for multi-mode with 50/125 micrometer cable @ 850 nm for the DS-RFM.
    – 4dB maximum for multi-mode with 62/5/125 micrometer cable @ 850 nm for the DS-RFM.

    Attenuation going **from** the fiber DS-RFM **to** the fiber DAA:

    – 12dB minimum, 16dB for both cable types.

      (If the length of the fiber run results in an attenuation of less than 12dB, a suitable attenuator must be used.)

    * ST® Style connection required at DAA end.

- **Auxiliary input A (AUX A, TB4)**: Signal strength from low-level analog audio input: maximum 1.0 VRMS, or 1.41 V_{p-p}. Optional supervision is selectable through programming. Recommended wiring: 18 AWG (0.821 mm²) twisted-pair; max. 14 AWG (2.08 mm²). Auxiliary input must be in the same room as the DVC.

- **Auxiliary input B (AUX B, TB14)**: Signal strength from low-level analog audio input: 12 V_{p-p} nominal, 15 V_{p-p} maximum. Optional supervision is selected through programming. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair.

- **Remote microphone interface (TB9)**: Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair. Power-limited. Maximum distance between remote microphone and DVC: 1000 feet (300 m).

- **Push-to-talk interface (TB10)**: Dry contact. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair.

- **Alarm bus (TB12)**: Power-limited by source. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair.

- **FFT riser (TB13)**: Power-limited output. Class A (Style Z) or Class B (Style Y) operation. Style Y two-wire connections require a 3.9K ohm, 1/2 watt resistor (P/N K-3.9K). Maximum wiring resistance (including individual telephone zone to last handset) permitted is 50 ohms, 10,000 feet (3048 m) maximum wiring distance at 12 AWG (3.31 mm²) to last handset.

- **Optional DVC-AO analog audio output circuits (TB5, TB6, TB7, and TB8)**: Supervised, power-limited outputs. Signal strength: +12 V_{p-p} nominal, +15 V_{p-p} maximum. Recommended wiring: 18 AWG (0.821 mm²) twisted-pair; max. 14 AWG (2.08 mm²). Maximum impedance: 66 ohms.

Standards and Codes

The Digital Voice Command DVC and DVC-EM comply with the following standards:

- NFPA 72 2002 National Fire Alarm Code.
- Underwriters Laboratories Standard UL 864, 9th edition.
- Underwriters Laboratories of Canada (ULC) ULC-S527-99 Standard of Control Units for Fire Alarm Systems.

Listings and Approvals

The listings and approvals below apply to the DVC and DVC-EM Digital Voice Command. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL Listed**: S635.
- **ULC Listed**: S635.
- **FM Approved.**
- **CSFM**: 7165-0028:0224 (NFS2-3030); 7165-0028:0243 (NFS2-640).
- **FDNY:** COA#6065 (NFS2-3030): COA#6085 (NFS2-640).
- **City of Chicago** approved: High Rise, Class 1, Class 2 (NFS2-3030, NFS2-640, NCA-2).
- **City of Denver** approved (NFS2-3030).
- **PSB Corporation** approved *(Singapore) (NFS2-3030)*.

Product Line Information

DVC-EM: Digital Voice Command, digital audio processor with message storage for up to 32 minutes of standard quality (4 minutes at high quality) digital audio. Supports twisted-pair wire media. Options: DS Fiber modules.

DVC-KD: Keypad for local annunciation and controls; status LEDs and 24 user-programmable buttons.

DVC-AO: Optional DVC Analog Output board provides four analog output circuits for use with AA or XPIQ Series amplifiers. Four-channel operation supported.

CA-1: Chassis, occupies one tier of a CAB-4 Series enclosure. The left side accommodates one DVC and a DVC-KD *(optional)*; and the right side houses a CMIC-1 microphone and its well *(optional)*.

CMIC-1: Optional microphone and microphone well assembly used with the CA-1 chassis.

CFFT-1: The CFFT-1 Chassis for Firefighters' Telephone mounts in the row directly under a DVC that is mounted in a CA-1 single row chassis. The CFFT-1 includes one FFT handset. The DP-CFFT Dress Plate (separately ordered, required) has one open position for mounting an ACS annunciator or a BMP-1 Blank Module Plate.

CA-2: Chassis assembly, occupies two tiers of a CAB-4 Series enclosure. The left side accommodates one DVC mounted on a half-chassis and one NFS2-3030 or NCA-2 mounted on a half-chassis. The right side houses a microphone/handset well. The CA-2 assembly includes a microphone. DPA-2B dress plate is required *(below)*; the VP-2B Vent Plate is also required for top row configurations. ADDR Series doors with two-tier visibility are available for use with the CA-2 configuration: ADDR-B4, ADDR-C4, ADDR-D4 *(below)*.

DPA-2B: Dress plate required for CA-2 chassis assembly.

VP-2B: Vent plate required for cabinet configurations where the DPA-2B is used for the top two row position.

TELH-1: Firefighters' Telephone Handset for use with the DVC when mounted in the CA-2 chassis. Order separately.

ADDR-B4: Two-tier-sized door designed for use with a CA-2 chassis mounted in the top rows. ADDR Series doors are similar to CAB-4 Series "DR" doors, but a clear window space exposes the top two tiers of the CAB-4 enclosure. Use an SBB-B4 backbox with the ADDR-B4. *See DN-6857.*

ADDR-C4: Three-tier-sized door designed for use with a CA-2 chassis mounted in the top rows. ADDR Series doors are similar to CAB-4 Series "DR" doors, but a clear window space exposes the top two tiers of the CAB-4 enclosure. Use an SBB-C4 backbox with the ADDR-C4. *See DN-6857.*

ADDR-D4: Four-tier-sized door designed for use with a CA-2 chassis mounted in the top rows. ADDR Series doors are similar to CAB-4 Series "DR" doors, but a clear window space exposes the top two tiers of the CAB-4 enclosure. Use an SBB-D4 backbox with the ADDR-D4. *See DN-6857.*

DPA-1: Dress panel, can be used with the CA-1 chassis when configured with a DVC, DVC-KD, and CMIC-1.

DPA-1A4: Dress panel, used with the CA-1 chassis when the CMIC-1 is not used. Provides mounting options on right two bays for two ACS annunciators, or for blank plates.

ACT-4: Audio-coupling transformer. Used to electronically isolate DVC-AO analog risers.

ACT-25, ACT-70: Audio-coupling transformers for 25V and 70V high-level audio. Used to isolate and convert high-level audio to low-level, supporting applications with large numbers of analog amplifiers.

DAX-3525(E)/DAX-3570(E): 35W, 25 or 70.7VRMS. Digital audio amplifiers with charging power supply and 2 Class B or 1 Class A output, shipped mounted on chassis. Options: BDA-25/70 backup amplifier, DS Fiber modules.

DAX-5025(E)/DAX-5070(E): 50W, 25 or 70.7VRMS. Digital audio amplifiers with power supply and 2 Class B or 1 Class A output, shipped mounted on chassis. Options: BDA-25/70 backup amplifier, DS Fiber modules.

DAA2-5025(E)/DAA2-5070(E): 50W, 25 or 70.7VRMS. Digital audio amplifiers with charging power supply and 4 Class B or 2 Class A outputs, shipped mounted on chassis. RM-1 port, FFT port, Aux audio port. Supports optional BDA for backup amplifier or 2-channel operation, and DS Fiber modules.

DAA2-7525(E): 75W, 25VRMS. Digital audio amplifiers with power supply and 4 Class B or 2 Class A outputs, shipped mounted on chassis. RM-1 port, FFT port, Aux audio port. Supports optional BDA for backup amplifier or 2-channel operation, and DS Fiber modules.

DS-DB: Digital Series Distribution Board, provides bulk amplification capabilities to the DVC while retaining digital audio distribuition capabilities. Can be configured with up to four DS-AMPs, supplying high-level risers spread throughout an installation. *See DN-60565.*

DS-AMP/E: 125W, 25 VRMS, or 100W, 70VRMS. 70VRMS requires DS-XF70V step-up transformer. Digital Series Amplifier, part of the DS-DB system. *See DN-60663.*

DS-BDA: Digital Series Backup Digital Amplifier, 25 or 70VRMS, can be configured to act as a one-to-one backup for DS-AMP/E amplifiers. Can also be programmed to provide a second audio channel for a DS-AMP. *See DN-60663.*

BDA-25, BDA-70: Backup Digital Amplifier, 25 or 70.7VRMS, can be configured to act as a one-to-one backup for DAX and DAA2 series amplifiers. For DAA2 Series only, supports alternative second channel operation.

DS-RFM, DS-FM, DS-SFM: Fiber conversion modules for DVC, DS-DB distribution board, and DAX and DAA2 Series amplifiers. *See DN-60633.*

DAA Series Digital Audio Amplifiers: Legacy DAA Series amplifiers are compatible with DVC systems running SR4.0. For DAA-50 series amplifiers, see DN-7046. For DAA-7525 Series, see DN-60257.

- **DAA-5025**: 50W, 25Vrms Digital Audio Amplifier assembly with DAA-PS power supply board, shipped mounted to its chassis. Supports twisted-pair wire media. *(For multi-mode fiber-optic media order DAA-5025F. For single-mode fiber-optic media order DAA-5025SF.)*
- **DAA-5070:** 50W, 70.7Vrms Digital Audio Amplifier assembly with DAA-PS power supply board, shipped mounted to its chassis. Supports twisted-pair wire media. *(For multi-mode fiber-optic media order DAA-5070F. For single-mode fiber-optic media order DAA-5070SF.)*
- **DAA-7525:** 75W, 25Vrms Digital Audio Amplifier assembly with DAA-PS power supply board. Shipped mounted to its chassis (no battery charger on DAA-7525 power supply board). Supports twisted-pair wire media. *(For multi-mode fiber-optic media order DAA-7525F. For single-mode fiber-optic media order DAA-7525SF.)*

SEISKIT-CAB: Seismic kit for CAB-4 series cabinets. Includes battery bracket for two 26AH Power Sonic batteries and TELH-1 telephone handset strap. See document 53829.

SEISKIT-DAA: Seismic kit for DAA, DAA2 and DAX series amplifiers, required when using CHS-BH1 chassis. Includes battery bracket for two 12AH Power Sonic batteries. See document 53851.

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LISTING SERVICE

LISTING No.	7165-0028:0224	Page 1 of 4

CATEGORY: 7165 -- FIRE ALARM CONTROL UNIT (COMMERCIAL)

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Contact: Vladimir Kireyev (203) 484-6277 Fax (203) 484-7309
Email: vladimir.kireyev@honeywell.com

DESIGN: Model NFS-3030, NFS-3030E, NFS2-3030, NFS2-3030E fire alarm control units. Local, auxiliary, remote station (PPU), proprietary (PPU), central station (PPU), automatic, manual, waterflow and sprinkler supervisory services. Suitable for use as a releasing service, Emergency Voice/Alarm Communication System and Process/Energy Management Equipment. Refer to listee's data sheet for detailed product description and operational considerations. System components:

AA-30/-100/-120; Amplifiers
ACM-8R/-16AT/-24AT/-32A/-48A; Annunciator Control Modules
ACPS-610; Addressable/Charger Power Supply
ACPS-2406; Addressable Charger/Power Supply
ACT-1/-2/-4/-25/-70; Audio Coupling Transformer
ADDR-B4/-B4R/-C4/-C4R/-D4/-D4R; Doors
AEM-16AT/-24AT/-32A/-48A; Annunciator Expander Modules
AFM-16A/-16AT/-32A; Annunciator Fixed Modules
AKS-1B; Annunciator Key Switch
AMG-1/-E; Audio Message Generator
AMPS-24, CPS-24; Addressable Main Power Supply
APS-6R, APS2-6R; Auxiliary Power Supply
ARM-4; Auxiliary Relay Module
BDA-25V/-70V; Backup Digital Audio Amplifiers
BGRA-SCS, BGRB-SCS, CEF-SCS, RSA-SCS, RSB-SCS, RSC-SCS, RSD-SCS, RSE-SCS; Smoke Control Station
BB-17/-25/-100/-200; Battery Box
BMP-1; Blank Module
BP-4; Battery Panel
BP2-4; Dress Panel
CA-1/-2; Chassis
CAB-3/4 Series, EQ Series; Enclosures
*CAB-RP, CAB-RPR; Cabinets
CHG-120; Battery Charger
CHS-4L/-4MB/-4N/-6/-M3/-PS/-BH1; Chassis
CMIC-1, CMIC-RP*; Microphone Assembly
CPU2-3030D/CPU2-3030ND; CPU Board

*Rev. 05-08-12 gt

Date Issued: **July 01, 2015**	*Listing Expires* **June 30, 2016**
Authorized By: ***JAMES PARSEGIAN,*** *Program Coordinator*	
Fire Engineering Division	

CRE-4; Control Relay Expander
CRM-4RK; Control Relay Module
CRT-2; Display Terminal
DAA-5025/-5070; Digital Audio Amplifiers
DAA-5025F/DAA-5025SF; Digital Audio Amplifiers, Fiber Mode
DAA-5070F/DAA-5070SF; Digital Audio Amplifiers, Fiber Mode
DAA2-5025/-5070/-7525; Digital Audio Amplifiers
DAA-7525, DAA-7525F, DAA-7525SF Series; Digital Audio Amplifiers
DAA-PS; Power Supply
DAX-3525/-3570/-5025/-5070; Digital Audio Amplifiers
DCM-4RK; Dual Channel Module
DP-1B; Blank Panel
DP-DISP; Display Dress Panel
DR-A4, DR-A4B, DR-A4BR, DR-A4R; Door Assembly
DR-AA4, DR-AA4B, DR-AA4BR, DR-AA4R; Door Assembly
DR-B3F; Door Assembly
DR-B4, DR-B4B, DR-B4BR, DR-B4R; Door Assembly
DR-C4, DR-C4B, DR-C4BR, DR-C4R; Door Assembly
DR-D4, DR-D4B, DR-D4BR, DR-D4R; Door Assembly
DS-AMP/E; Digital Series Audio Amplifier
DS-BDA; Digital Series Backup Amplifier
DS-DB; Digital Series Distribution Board
DS-FM, DS-RFM, DS-SFM; Digital Series Fiber Module
DPDW-1B, DPSW-1B, XPDP; Dress Panels
VP-2B, DPA-1/-1A4/-2; Dress Panels
DPI-232; Direct Panel Interface
DVC-AO; Digital Voice Command
DVC-EM; Extended Memory
DVC-EMF/DVC-EMSF; Digital Voice Command/Ext Memory
DVC-KD; Keypad Board
*DVC-RPU; Remote Paging Unit
EQBB-B4, EQBB-C4, EQBB-D4; Backbox Assembly
EQDR-B4, EQDR-C4, EQDR-D4; Door Assembly
FCM-1-REL; Releasing Control Module
FCPS-24S6/S8; Field Charger/Power Supply
FFT-7/-7S; Fire Fighter's Telephones
FIRSTVISION-LCD; Interactive Firefighters' Display
FIRSTVISION-ENC; FirstVision Backbox Enclosure and Door
FMM-4-20; Analog Input Module
FHS; Fireman's Handset
FCM-1; Addressable control module
FDM-1; Dual monitor module
FDRM-1*; Dual Relay/Monitor Module
FMM-1; Monitor module
FMM-101; Miniature monitor module

*Rev. 05-08-12 gt

Date Issued: **July 01, 2015**   *Listing Expires*   **June 30, 2016**

Authorized By: *JAMES PARSEGIAN, Program Coordinator*

Fire Engineering Division

FRM-1; Addressable relay module
FTM-1; Firephone Control Module
FPJ; Fireman's Phone Jack
FZM-1; Two-wire detector monitor module
HS-NCM-W/-MF/SF/-WMF/-WSF/-MFSF; High Speed Network Control Modules
ICE-4; Indicating Control Expander
ICM-4RK; Indicating Circuit Module
IPDACT-2/-2UD/IPENC; IP Digital Alarm Communicator
ISO-X; Isolator Module
IZE-A; Initiating Zone Expander
IZM-8RK; Initiating Zone Module
LCD-80, -160; Liquid Crystal Display Module
LCD2-80; Liquid Crystal Display
LCM-320; Loop Control Module
LDM-32/-E32/-R32; Lamp Driver Module
LEM-320; Loop Expander Module
MP-1B; Blank Panel
MPS-24B; Power Supply Module
NBG-12; Series Addressable Manual Pull Station
NBG-12LX; Manual pull station, addressable. See DN-6726
NCA/NCA-2; Network Control Annunciator
NCM-W/-F; Network Control Module
NCS4-W-ONYX, NCS4-F-ONYX; Network Control Station, Wire/Fiber
NCS5-W-ONYX, NCS5-F-ONYX; Network Control Station, Wire/Fiber
ONYXWorks-EW/-NW/NF/-HNW/-HNMF/-HNSF/-TS/-EW-TS/-NF-TS/-HW-TS/-HNMFT/-HNS
FT/- HNWT; Graphics PC workstation for NOTI-FIRE-NET Wire/Fiber/with Touch-screen
monitors
N-ELR; End of Line Resistors
NFS-LBB/-LBBR; Battery Box
PRN-6; Printer
R-120/-2.2K/-27K/-470/-47K; End of Line Resistors
RA-400/-400Z; Remote Annunciators
RKS-S; Remote Security Keyswitch
RM-1/-1SA; Remote Microphone
RPJ-1; Remote Paging Jack
RPT-W/-F/-485W/-485WF; Repeater
SBB-A3F; Backbox Assembly
SBB-A4, SBB-A4R, SBB-AA4, SBB-AA4R; Backbox Assembly
SBB-B4, SBB-B4R-L8, SBB-C4, SBB-C4R; Backbox Assembly
SBB-D4, SBB-D4R; Backbox Assembly
SCS-8; Smoke Control Station
SCS-8L; Smoke Control Lamp Driver Station
SCE-8; Smoke Control Expander
SCE-8L; Smoke Control Expander Lamp
STS-1; Security Tamper Switch

*Rev. 05-08-12 gt

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Authorized By: *JAMES PARSEGIAN, Program Coordinator*

Fire Engineering Division

TM-4; Transmitter Module
TR-A4/-B3N/-B4/-C4/-D3N/-D4; Trim Ring
UDACT, UDACT-2; Universal DACT
UZC-256/BB--UZC; Universal Zone Coder/Backbox
VCE-4; Voice Control Expander
VCM-4RK; Voice Control Module
VS4095/5; Keltron Remote Printer
XP5-C/-M; Transponder
XPC-8; Transponder Control Module
XPIQ; Transponder Quad Intelligent Audio Module
XPM-8/-8L; Transponder Monitor Modules
XPP-1; Transponder Processor
XPR-8; Transponder Relay Module

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating and UL label.

APPROVAL: Listed as fire alarm control units suitable for high rise applications for use with separately listed compatible initiating and indicating devices. This control unit can generate the temporal code pattern fire alarm signal as required per NFPA 72, 2002 Edition. Refer to listee's Installation Instructions Manual for details.
This control unit meets the requirements of UL Standard 864, 9th Edition.

NOTE: 1. For Fire Alarm Verification feature (delay of fire alarm signal), the maximum Retard/Reset/Restart period shall not exceed 30 seconds.

2. Combined with Listing No. 7170-0028:223

*Rev. 05-08-12 gt

Date Issued: **July 01, 2015**   Listing Expires **June 30, 2016**

Authorized By: **JAMES PARSEGIAN**, *Program Coordinator*

Fire Engineering Division

FCPS-24S6(C/E) & FCPS-24S8(C/E)

6- & 8-Amp 24-Volt
Remote Power Supplies

NOTIFIER®
by Honeywell

Power Supplies

General

The FCPS-24S6E (6-amp) and FCPS-24S8E (8-amp) are remote power supplies with battery charger. The FCPS-24S6/-24S8 may be connected to any 12 or 24 volt fire alarm control panel (FACP) or may be used as stand-alone supplies. Primary applications include notification appliance (bell) circuit (NAC) expansion (to support ADA requirements and NAC synchronization) or auxiliary power to support 24 volt system accessories. The FCPS-24S6/-24S8 provides regulated and filtered 24 VDC power to four notification appliance circuits configured as either four Class B (Style Y) or Class A (Style Z, with ZNAC-4 option module). Alternately, the four outputs may be configured as all non-resettable, all resettable or two non-resettable and two resettable. The FCPS-24S6/-24S8 also contains a battery charger capable of charging up to 18 AH batteries. FCPS-24S6C & FCPS-24S8C are ULC-listed.

NOTE: *Unless otherwise specified, the terms FCPS-24S6 and FCPS-24S8 used in this document refers to the standard FCPS-24S6 and FCPS-24S8, FCPS-24S6C and FCPS-24S8C, the FCPS-24S6E and FCPS-24S8E*

Features

- UL-Listed NAC synchronization using System Sensor, Wheelock, or Gentex "Commander[2]" appliances.
- Operates as a "sync-follower" or as a "sync-generator" (default). *See note on page 2.*
- Contains two fully-isolated input/control circuits - triggered from FACP NAC (NAC expander mode) or jumped permanently "ON" (stand-alone mode).
- Four Class B (Style Y) or four Class A (Style Z, with ZNAC-4 module) NACs.
- 6-amp (FCPS-24S6) or 8-amp (FCPS-24S8) full load output, with 3 amps maximum/circuit, in NAC expander mode (UL 864).
- 4-amp (FCPS-24S6) or 6-amp (FCPS-24S8) continuous output in stand-alone mode (UL 1481).
- Compatible with coded inputs; signals passed through.
- Optional power-supervision relay (EOLR-1).
- In stand-alone mode, output power circuits may be configured as: resettable, (reset line from FACP required), non-resettable, or a mix of two and two.
- Fully regulated and filtered power output - optimal for powering four-wire smoke detectors, annunciators, and other system peripherals requiring regulated/filtered power.
- Power-limiting technology meets UL power-limiting requirements.
- Form-C normally-closed trouble relay.
- Fully supervised power supply, battery, and NACs.
- Selectable earth fault detection.
- AC trouble report selectable for immediate 2-hour delay.
- Works with virtually any UL 864 fire alarm control which utilizes an industry-standard reverse-polarity notification circuit (including unfiltered and unregulated bell power).
- Requires input trigger voltage of 9 - 32 VDC.
- Self-contained in compact, locking cabinet - 15"H x 14.5"W x 2.75"D (cm: 38.1H x 36.83W x 6.985D).
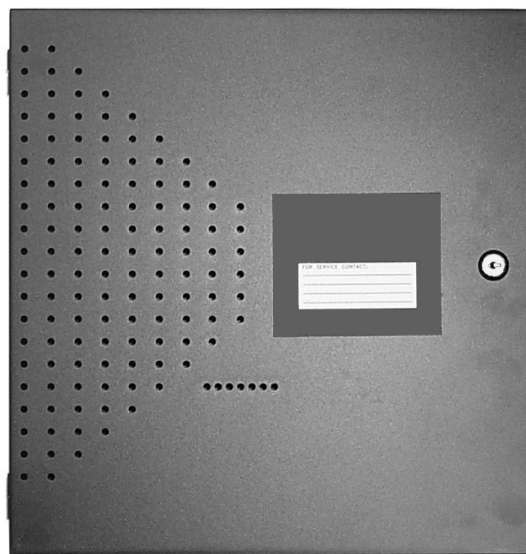
6927pho1.jpg

- Includes integral battery charger capable of charging up to 18 AH batteries. Cabinet capable of housing 7.0 AH batteries.
- Battery charger may be disabled via DIP switch for applications requiring larger batteries.
- Fixed, clamp-type terminal blocks accommodate up to 12 AWG (3.1mm^2) wire.

Specifications

Primary (AC) Power:

- FCPS-24S6C/-24S8C: 120 VAC, 60 Hz, 3.2A maximum.
- FCPS-24S6E/-24S8E: 240 VAC, 50 Hz, 1.6A maximum.
- Wire Size: minimum #14 AWG (2.0mm^2) with 600 V insulation.

Control Input Circuit:

- **Trigger Input Voltage:** 9 to 32 VDC.
- **Trigger Current:** 2.0 mA (16 - 32 V); Per Input: 1.0 mA (9 - 16 V).

Trouble Contact Rating: 5 A at 24 VDC.

Auxiliary Power Output: Specific application power 500 mA maximum.

Output Circuits:

- +24 VDC filtered, regulated.
- 3.0 A maximum for any one circuit.
- Total continuous current for all outputs (stand-alone mode):
  – FCPS-24S6: 4.0 A maximum.
  – FCPS-24S8: 6.0 A maximum.
- Total short-term current for all outputs (NAC expander mode):
  – FCPS-24S6: 6.0 A maximum.
  – FCPS-24S8: 8.0 A maximum.

Secondary Power (Battery) Charging Circuit:

- Supports lead-acid batteries only.
- Float-charge voltage: 27.6 VDC.

- Maximum current charge: 1.5 A.
- Maximum battery capacity: 18 AH.

Applications

Example 1: Expand notification appliance power an additional 6.0 A (FCPS-24S6) or 8.0 A (FCPS-24S8). Use up to four Class B (Style Y) outputs or four Class A (Style Z) outputs (using ZNAC-4). For example, the FACP notification appliance circuits will activate the FCPS when reverse-polarity activation occurs. Trouble conditions on the FCPS are sensed by the FACP through the notification appliance circuit.

Example 2: Use the FCPS to expand auxiliary regulated 24-volt system power up to 4.0 A (FCPS-24S6) or up to 6.0 A (FCPS-24S8). Both resettable and non-resettable power options are available. Resettable outputs are created by connecting the resettable output from the FACP to one or both of the FCPS inputs.

Example 3: Use addressable control modules to activate the FCPS instead of activating it through the FACP notification appliance circuits. This typically allows for mounting the FCPS at greater distances* away from the FACP while expanding system architecture in various applications.

For example, an addressable control module is used to activate the FCPS, and an addressable monitor module is used to sense FCPS trouble conditions. Local auxiliary power output from the FCPS provides power to the addressable control module.

*NOTE: Addressable FACPs are capable of locating control and monitor modules at distances of up to 12,500 feet (3,810 meters).

Sync Follower/Generator Note

In some installations, it is necessary to synchronize the flash timing of all strobes in the system for ADA compliance. Strobes accomplish this by monitoring very short timing pulses on the NAC power which are created by the FACP. When installed at the end of a NAC wire run, the FCPS-24S6/-24S8 can track (i.e. "follow") the strobe synchronization timing pulses on the existing NAC wire run. This maintains the overall system flash timing of the additional strobes attaches to the FCPS.

When the FCPS-24S6/-24S8 is configured (via DIP switch settings) as a "sync follower," the FCPS's NAC outputs track the strobe synchronization pulses present at the FCPS's sync input terminal. The pulses originate from an upstream FACP or other power supply.

When the FCPS-24S6/-24S8 are configured (via DIP switch settings) as a "sync generator," the FCPS's sync input terminals are not used. Rather, the FCPS is the originator of the strobe synchronization pulses on the FCPS's NAC outputs. In "sync generator" mode, the sync type (System Sensor, Wheelock, or Gentex) is selectable via DIP switch settings.

Standards and Codes

The FCPS-24S6 and FCPS-24S8 comply with the following standards:
- **NFPA 72** National Fire Alarm Code.
- **UL 864** Standard for Control Units for Fire Alarm Systems (NAC expander mode).
- **UL 1481** Power Supplies for Fire Alarm Systems.

Agency Listings and Approvals

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.
- **UL Listed:** S635, S674
- **ULC Listed:** S635 (FCPS-24S6C & FCPS-24S8C)
- **CSFM Approved:** 7315-0028:225
- **MEA:** 299-02-E
- **FM Approved**

Ordering Information

FCPS-24S6: 6.0 A, 120 VAC remote charger power supply. Includes main printed circuit board, transformers, enclosure (15"H x 14.5"W x 2.75"D [cm: 38.1H x 36.83W x 6.985D]), and installation instructions.

FCPS-24S6C: Same as above, ULC-listed.

FCPS-24S6R: Same as FCPS-24S6 with red enclosure.

FCPS-24S6E: 6.0 A, 240 VAC remote charger power supply. Includes main printed circuit board, transformers, enclosure (15"H x 14.5"W x 2.75"D [cm: 38.1H x 36.83W x 6.985D]), and installation instructions.

FCPS-24S8: 8.0 A, 120 VAC remote charger power supply. Includes main printed circuit board, transformers, enclosure (15"H x 14.5"W x 2.75"D [cm: 38.1H x 36.83W x 6.985D]), and installation instructions.

FCPS-24S8C Same as above, ULC-listed.

FCPS-24S8R: Same as FCPS-24S8 with red enclosure.

FCPS-24S8E: 8.0 A, 240 VAC remote charger power supply. Includes main printed circuit board, transformers, enclosure (15"H x 14.5"W x 2.75"D [cm: 38.1H x 36.83W x 6.985D]), and installation instructions.

ZNAC-4: Class A (Style Y) NAC option module.

EOLR-1: 12/24 VDC end-of-line relay for monitoring four-wire smoke detector power.

BAT-1270: Battery, 12-volt, 7.0 AH (two required, see BAT Series data sheet DN-6933).

PS-1270: Battery, 12-volt, 7.0 AH (two required, see PS Series data sheet DN-1109)

ISO 9001
CERTIFIED
ENGINEERING & MANUFACTURING
QUALITY SYSTEMS

This document is not intended to be used for installation purposes.
We try to keep our product information up-to-date and accurate.
We cannot cover all specific applications or anticipate all requirements.
All specifications are subject to change without notice.

Made in the U.S. A.

For more information, contact Notifier. Phone: (203) 484-7161, FAX: (203) 484-7118.
www.notifier.com

Table 6.3 contains three columns for calculating current draws. For each column, calculate the current and enter the total (in amperes) in the bottom row. When finished, copy the totals from Calculation Column 2 and Calculation Column 3 to Table 6.4 on page 41.

Table 6.3 System Current Draw Calculations

Device Type	Calculate Column 1 Primary, Non-Fire Alarm Current (amps)			Calculate Column 2 Primary, Fire Alarm Current (amps)			Calculation Column 3 Secondary, Non-Fire Alarm Current (amps)		
	Qty	X (current draw) =	Total	Qty	X (current draw) =	Total	Qty	X (current draw) =	Total
Main Circuit Board	1	X [0.091] =		1	X [0.145] =		1	X [0.065] =	
Power Supervision Relay	[ ]	X [0.025] =		[ ]	X [0.025] =		[ ]	X [0.025] =	
NAC/Output #1				[ ]	X [ ] =				
NAC/Output #2				[ ]	X [ ] =				
NAC/Output #3				[ ]	X [ ] =				
NAC/Output #4				[ ]	X [ ] =				
Current Draw from TB4 Terminals 9 & 10		[ ] =			[ ] =			[ ] =	
Sum each column for totals	**Primary Non-Alarm =**			**Primary Alarm =**			**Secondary Alarm =**		

LISTING SERVICE

LISTING No.	7315-0028:0225	Page 1 of 1
CATEGORY:	7315 -- POWER UNITS	

LISTEE: NotifierOne Fire-Lite Place, Northford, CT 06472-1653
Contact: Vladimir Kireyev (203) 484-6277 Fax (203) 484-7309
Email: vladimir.kireyev@honeywell.com

DESIGN: Models FCPS-24S6 and FCPS-24S8 are power limited power supply/battery chargers used for supervision and expanded power driving capability of up to four Notification Appliance Circuits (FACP Fire Circuits, Signaling Devices) or resettable/non resettable outputs. Model ZNAC-4 Class A converter. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING: 120 VAC, 24 VDC

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating and UL label.

APPROVAL: Listed as a Power Supply/Battery Charger for use with separately listed compatible fire alarm control units.

XLF: 7315-0075:0206

1-24-03KK

This listing is based upon technical data submitted by the applicant.   CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other

Date Issued: **July 01, 2015**   *Listing Expires* **June 30, 2016**

Authorized By: ***JAMES PARSEGIAN***, *Program Coordinator*

Fire Engineering Division

BAT Series Batteries

Sealed Lead-Acid

NOTIFIER®

by Honeywell

General

BAT Series Batteries are Power Sonic brand batteries. BAT Series (or Power Sonic brand) batteries are recommended for secondary power or backup power for all NOTIFIER fire alarm control equipment.

Features

- Provide secondary power for control panels.
- Sealed and maintenance-free.
- Overcharge protected.
- Easy handling with leakproof construction.
- Ruggedly constructed, high-impact case (ABS, polystyrene, or polypropylene, depending on models).
- Long service life.
- Compact design.

6933cov.jpg

Ordering Information

BAT-1250-BP: 10-unit bulk pack of BAT-1250 (12 V 5 AH)

BAT-1270-BP: 5-unit bulk pack of BAT-1270 (12 V 7 AH)

BAT-12120-BP: 4-unit bulk pack of BAT-12120 (12V 12 AH)

BAT-12180-BP: 2-unit bulk pack of BAT-12180 (12 V 18 AH)

BAT-12260-BP: 2-unit bulk pack of BAT-12260 (12 V 26 AH)

BAT-12550: single battery (12 V 55 AH)

BAT-121000: single battery (12 V 100 AH)

Agency Listings and Approvals

The listings and approvals below apply to BAT Series Batteries. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL Recognized Components**: MH20845 *(Power-Sonic)*

Part Number Reference & Specifications

Part Number	Power Sonic Part Number	Battery Description			DIMENSIONS									
		Nominal Voltage V	Nominal Capacity @ 20 hr. rate A.H.		Width		Depth		Height		Height over terminal		Weight	
					in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg.
BAT-1250	PS-1250	12	5	sealed	3.54	90	2.76	70	4.02	102	4.21	107	4.1	1.9
BAT-1270	PS-1270	12	7	sealed	5.95	151	2.56	65	3.7	94	3.86	98	4.8	2.18
BAT-12120	PS-12120	12	12	sealed	5.95	151	3.86	98	3.7	94	3.94	100	7.92	3.59
BAT-12180	PS-12180	12	18	sealed	7.13	181	2.99	76	6.57	167	6.57	167	12.6	5.8
BAT-12260	PS-12260	12	26	sealed	6.56	167	6.97	177	4.92	125	4.92	125	17	7.71
BAT-12550	PS-12250	12	55	sealed	9.04	230	654	138	8.2	208	8.98	228	36	16.33
BAT-121000	PS-121000	12	100	sealed	12	305	6.6	168	8.2	208	8.98	228	68	30.84

Characteristic Discharge Curves

Battery Voltage (V)

1.0C
0.5C
0.175C
0.25C
0.6C

3C 2C 1C

minutes — hours

Discharge Time @ 20°C (68°F)

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Effect of Temperature on Capacity

Capacity Ratio

0.5 C
0.1 C
0.25 C
0.6 C
1 C
2 C

Temperature (Degrees C.)

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Capacity Retention Ratio

Charging is NOT necessary *unless* 100% of capacity is required.

5°C (41°F)

Charging before use is necessary to help recover full capacity.

40°C (104°F) 30°C (86°F) 20°C (68°F)

Charge may fail to restore full capacity. DO NOT let batteries reach this state.

Standing Period (Months)

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at left:
PS-121000 Shelf-Life and Storage

Ambient Temperature 20°C (68°F)

Terminal Voltage

5.0A
10A
20A
50A
100A
200A

Final Voltage

MINUTES — HOURS

Discharge Time

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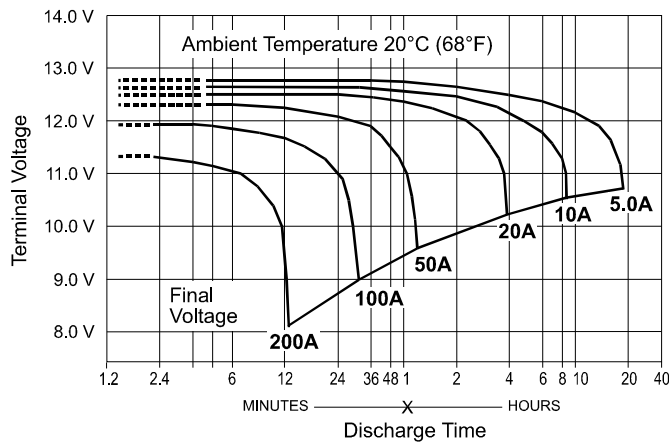
at left:
PS-121000 Discharge Characteristics

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Batteries display trademarks of the manufacturer.
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FST-851(A) Series

Intelligent Thermal (Heat) Detectors with FlashScan®

NOTIFIER®
by Honeywell

Intelligent / Addressable Devices

General

Notifier FST-851(A) Series intelligent plug-in thermal detectors with integral communication has features that surpass conventional detectors. Point ID capability allows each detector's address to be set with rotary, decimal address switches, providing exact detector locations. FST-851(A) Series thermal detectors use an innovative thermistor sensing circuit to produce 135°F/57°C fixed-temperature (FST-851/A) and rate-of-rise thermal detection (FST-851R/A) in a low-profile package. FST-851H(A) provides fixed high-temperature detection at 190°F/88°C. These thermal detectors provide effective, intelligent property protection in a variety of applications. FST-851(A) Series detectors are compatible with Notifier Onyx and CLIP series Fire Alarm Control Panels (FACPs).

FlashScan® (U.S. Patent 5,539,389) is a communication protocol developed by Notifier Engineering that greatly enhances the speed of communication between analog intelligent devices and certain NOTIFIER systems. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel's CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Features

- Sleek, low-profile, stylish design.
- State-of-the-art thermistor technology for fast response.
- Rate-of-rise model (FST-851R/A), 15°F (8.3°C) per minute.
- Factory preset fixed temperature at 135°F (57°C); high-temperature model fixed at 190°F (88°C).
- Addressable by device.
- Compatible with FlashScan® and CLIP protocol systems.
- Rotary, decimal addressing (1-99 on CLIP systems, 1-159 on FlashScan systems).
- Two-wire SLC connection.
- Visible LEDs "blink" every time the unit is addressed.
- 360°-field viewing angle of the visual alarm indicators (two bi-color LEDs). LEDs blink green in Normal condition and turn on steady red in Alarm.
- Integral communications and built-in device-type identification.
- Remote test feature from the panel.
- Built-in functional test switch activated by external magnet.
- Walk test with address display (an address of 121 will blink the detector LED 12-(pause)-1).
- Low standby current.
- Backward-compatible.
- Built-in tamper-resistant feature.
- Designed for direct-surface or electrical-box mounting.
- Sealed against back pressure.
- Plugs into separate base for ease of installation and maintenance. Separate base allows interchange of photoelectric, ionization and thermal sensors.
- SEMS screws for wiring of the separate base.
- Constructed of off-white fire-resistant plastic, designed to commercial standards, and offers an attractive appearance.

FST-851(A) in B210LP(A) Base

B210-2251.jpg

- 94-5V plastic flammability rating.
- Remote LED output connection to optional RA100Z(A) remote LED annunciator.
- Optional sounder, relay, and isolator bases.
- Optional flanced surface mounting kit.

Specifications

Size: 2.1" (5.3 cm) high; base determines diameter.

- **– B210LP(A):** 6.1" (15.5 cm) diameter.
- **– B501(A):** 4.1" (10.4 cm) diameter.
- **– B200S(A):** 6.875" (17.46 cm) diameter.
- **– B200SR(A):** 6.875" (17.46 cm) diameter.
- **– B224RB(A):** 6.2" (15.748 cm) diameter.
- **– B224BI(A):** 6.2" (15.748 cm) diameter.

Shipping weight: 4.8 oz. (137 g).

Operating temperature range: FST-851(A) Series, FST-851R(A): –20°C to 38°C (–4°F to 100°F); FST-851H(A): –20°C to 66°C (–4°F to 150°F).

Detector spacing: UL approved for 50 ft. (15.24 m) center to center. FM approved for 25 x 25 ft. (7.62 x 7.62 m) spacing.

Relative humidity: 10% – 93% noncondensing.

Thermal ratings: fixed-temperature setpoint 135°F (57°C), rate-of-rise detection 15°F (8.3°C) per minute, high temperature heat 190°F (88°C).

ELECTRICAL SPECIFICATIONS

Voltage range: 15 - 32 volts DC peak.

Standby current (max. avg.): 300 µA @ 24 VDC (one communication every 5 seconds with LED enabled).

LED current (max.): 6.5 mA @ 24 VDC ("ON").

Applications

Use thermal detectors for protection of property. For further information, go to systemsensor.com for manual I56-407-00, Applications Manual for System Smoke Detectors, which provides detailed information on detector spacing, placement, zoning, wiring, and special applications.

Installation

The FST Series plug-in intelligent thermal detectors use a separate base to simplify installation, service, and maintenance. Installation instructions are shipped with each detector. A special tool allows maintenance personnel to plug in and remove detectors without using a ladder

Mount base (all base types) on an electrical backbox which is at least 1.5" (3.81 cm) deep. For a chart of compatible junction boxes, see *DN-60054*.

NOTE: 1) *Because of the inherent supervision provided by the SLC loop, end-of-line resistors are not required. Wiring "T-taps" or branches are permitted for Style 4 (Class "B") wiring.* **2)** *When using relay or sounder bases, consult the ISO-X(A) installation sheet I56-1380 for device limitations between isolator modules and isolator bases.*

Agency Listings and Approvals

These listings and approvals apply to the modules specified in this document.In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. *Consult factory for latest listing status.*

- **UL Listed:** S747.
- **ULC Listed:** S6978.
- **MEA Listed:** 383-02-E.
- **FM Approved.**
- **CSFM:** 7270-0028:0196.
- **BSMI:** CI313066760025.
- **CCCF:** Certif. # 2004081801000018.
- **U.S. Coast Guard:** 161.002/42/1 (NFS-640); 161.002/50/0 (NFS2-640/NFS-320/NFS-320C, excluding B210LP(A)).
- **Lloyd's Register:** 11/600013 (NFS2-640/NFS-320/NFS-320C, excluding B210LP(A)).

Product Line Information

NOTE: *"A" suffix indicates ULC Listed model.*

FST-851: Intelligent thermal detector. Must be mounted to one of the bases listed below.

FST-851A: Same as FST-851 but with ULC Listing.

FST-851R: Intelligent thermal detector with rate-of-rise feature.

FST-851RA: Same as FST-851R but with ULC Listing.

FST-851H: Intelligent high-temperature thermal detector.

FST-851HA: Same as FST-851H but with ULC Listing.

INTELLIGENT BASES

NOTE: *"A" suffix indicates ULC Listed model.*

NOTE: *For details about intelligent bases and their mounting, see DN-60054.*

B210LP(A): Standard U.S. flanged low-profile mounting base.

B210LPBP: Bulk pack of B210LP; package contains 10.

B501(A): Standard European flangeless mounting base.

B501BP: Bulk pack of B501; package contains 10.

B200S(A): Addressable Intelligent, programmable sounder base capable of producing sound output in high or low volume with ANSI Temporal 3, ANSI Temporal 4, continuous tone, marching tone, and custom tone.

B200SR(A): Intelligent sounder base capable of producing sound output with ANSI Temporal 3 or continuous tone. Replaces B501BH series bases in retrofit applications.

B224RB(A): Intelligent relay base. Screw terminals: up to 14 AWG (2.0 mm²). Relay type: Form-C. Rating: 2.0 A @ 30 VDC resistive; 0.3 A @ 110 VDC inductive; 1.0 A @ 30 VDC inductive.

B224BI(A): Intelligent isolator base. Isolates SLC from loop shorts. Maximum: 25 devices between isolator bases; see Note 2 under Installation.

ACCESSORIES

F110: Retrofit flange to convert B210LP(A) to match the B710LP(A) profile, or to convert older high-profile bases to low-profile.

F110BP: Bulk pack of F110; package contains 15.

F210: Replacement flange for B210LP(A) base.

RA100Z(A): Remote LED annunciator. 3 – 32 VDC. Fits U.S. single-gang electrical box. Supported by B210LP(A) and B501(A) bases only.

SMB600: Surface mounting kit, flanged.

M02-04-00: Test magnet.

M02-09-00: Test magnet with telescoping handle.

XR2B: Detector removal tool. Allows installation and/or removal of FlashScan® Series detector heads from base in high ceiling installations. Includes T55-127-010.

T55-127-010: Detector removal tool without pole.

XP-4: Extension pole for XR2B. Comes in three 5-foot (1.524 m) sections.

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This document is not intended to be used for installation purposes.
We try to keep our product information up-to-date and accurate.
We cannot cover all specific applications or anticipate all requirements.
All specifications are subject to change without notice.

Made in the U.S. A.

For more information, contact Notifier. Phone: (203) 484-7161, FAX: (203) 484-7118.
www.notifier.com

LISTING SERVICE

LISTING No.   7270-0028:0196   Page 1 of 1

CATEGORY: 7270 -- HEAT DETECTOR

LISTEE: NotifierOne Fire-Lite Place, Northford, CT 06472-1653
Contact: Vladimir Kireyev (203) 484-6277 Fax (203) 484-7309
Email: vladimir.kireyev@honeywell.com

DESIGN: Models FST-751, *-851, *-851R, *-851H (fixed temperature) and FST-751R (fixed temperature
with Rate-of-Rise) electronic heat detectors. Refer to listee's data sheet for additional
detailed product description and operational considerations.

RATING: *Models FST-751, -751R, -851, and -851R = 135°F fixed temperature
*Model FST-851H = 190°F fixed temperature

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances
and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical ratings, and UL label.

APPROVAL: Listed as heat detectors for use with Models B501 or B710LP base (CSFM Listing No.
7300-0028:173) and separately listed compatable fire alarm control units. Refer to listee's
Installation Instructions Manual for details.

*Rev. 2-04-2003KK

Date Issued: **July 01, 2015**   *Listing Expires*   **June 30, 2016**

Authorized By: ***JAMES PARSEGIAN**, Program Coordinator*

Fire Engineering Division

FSP-851(A) Series

Intelligent Plug-In Photoelectric Smoke Detectors with FlashScan®

NOTIFIER®
by Honeywell

General

Notifier FSP-851(A) Series intelligent plug-in smoke detectors with integral communication provide features that surpass conventional detectors. Detector sensitivity can be programmed in the control panel software. Sensitivity is continuously monitored and reported to the panel. Point ID capability allows each detector's address to be set with rotary, decimal address switches, providing exact detector location for selective maintenance when chamber contamination reaches an unacceptable level. The FSP-851(A) photoelectric detector's unique optical sensing chamber is engineered to sense smoke produced by a wide range of combustion sources. Dual electronic thermistors add 135°F (57°C) fixed-temperature thermal sensing on the FSP-851T(A). The FSP-851R(A) is a remote test capable detector for use with DNR(A)/DNRW duct detector housings. FSP-851(A) series detectors are compatible with Notifier Onyx and CLIP series Fire Alarm Control Panels (FACPs).

FlashScan® (U.S. Patent 5,539,389) is a communication protocol developed by Notifier that greatly increases the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices in the group has new information, the panel's CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

Features

- Sleek, low-profile design.
- Addressable-analog communication.
- Stable communication technique with noise immunity.
- Low standby current.
- Two-wire SLC connection.
- Compatible with FlashScan® and CLIP protocol systems.
- Rotary, decimal addressing (1-99 on CLIP systems, 1-159 on FlashScan systems).
- Optional remote, single-gang LED accessory.
- Dual LED design provides 360° viewing angle.
- Visible bi-color LEDs blink green every time the detector is addressed, and illuminate steady red on alarm *(FlashScan systems only)*.
- Remote test feature from the panel.
- Walk test with address display (an address on 121 will blink the detector LED: 12-[pause]-1 *(FlashScan systems only)*.
- Built-in functional test switch activated by external magnet.
- Built-in tamper-resistant feature.
- Sealed against back pressure.
- Constructed of off-white fire-resistant plastic, designed to commercial standards, and offers an attractive appearance.
- 94-5V plastic flammability rating.
- SEMS screws for wiring of the separate base.
- Optional relay, isolator, and sounder bases.

Specifications

Sensitivity: 0.5% to 2.35% per foot obscuration

Size: 2.1" (5.3 cm) high; base determines diameter.

- **B210LP(A):** 6.1" (15.5 cm) diameter.
- **B501(A):** 4.1" (10.4 cm) diameter.
- **B200S(A):** 6.875" (17.46 cm) diameter.

FSP-851(A) in B210LP(A) Base

B210-2951.jpg

- **B200SR(A):** 6.875" (17.46 cm) diameter.
- **B224RB(A):** 6.2" (15.748 cm) diameter.
- **B224BI(A):** 6.2" (15.748 cm) diameter.

Shipping Weight: 5.2oz. (147g).

Operating Temperature range: FSP-851(A), 0°C to 49°C (32°F to 120°F). FSP-851T(A), 0°C to 38°C (32°F to 100°F). Low temperature signal for FSP-851T(A) at 45°F +/- 10°F (7.22°C +/- 5.54°C). FSP-851R(A) installed in a DNR(A)/DNRW, -20°C to 70°C (-4°F to 158°F).

UL/ULC Listed Velocity Range: 0-4000 ft/min. (1219.2 m/min.), suitable for installation in ducts.

Relative Humidity: 10%-93% noncondensing.

Thermal Ratings: Fixed-temperature setpoint 135°F (57°C).

DETECTOR SPACING AND APPLICATIONS

Notifier recommends spacing detectors in compliance with NFPA 72. In low airflow applications with smooth ceiling, space detectors 30 feet (9.144m) for ceiling heights 10 feet (3.148m) and higher. For specific information regarding detector spacing, placement, and special applications refer to NFPA 72. *System Smoke Detector Application Guide*, document A05-1003, is available at systemsensor.com

ELECTRICAL SPECIFICATIONS

Voltage Range: 15-32 volts DC peak.

Standby Current (max. avg.): 300µA @ 24VDC (one communication every five seconds with LED enabled).

LED Current (max.): 6.5mA @ 24 VDC ("ON").

Installation

FSP-851(A) plug-in detectors use a separate base to simplify installation, service, and maintenance. A special tool allows maintenance personnel to plug in and remove detectors without using a ladder.

Mount base (all base types) on an electrical backbox which is at least 1.5" (3.81 cm) deep. For a chart of compatible junction boxes, see *DN-60054.*

NOTE: *1) Because of inherent supervision provided by the SLC loop, end-of-line resistors are not required. Wiring "T-taps" or branches are permitted for Style 4 (Class "B") wiring. 2) When using relay or sounder bases, consult the ISO-X(A) installation*

sheet I56-1380 for device limitations between isolator modules and isolator bases.

Agency Listings and Approvals

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. *Consult factory for latest listing status.*

- **UL Listed:** S1115.
- **ULC Listed:** S1115 (FSP-851A, FSP-851RA, FSP-851TA).
- **MEA Listed:** 225-02-E .
- **FM Approved.**
- **CSFM:** 7272-0028:0206 .
- **Maryland State Fire Marshal:** Permit # 2122 **.**
- **BSMI:** CI313066760036.
- **CCCF:** Certif. # 2004081801000017 (FSP-851T)
  Certif. # 2004081801000016 (FSP-851).
- **U.S. Coast Guard:** 161.002/42/1 (NFS-640); 161.002/50/0 (NFS2-640/NFS-320/NFS-320C, excluding B210LP(A)).
- **Lloyd's Register:** 11/600013 (NFS2-640/NFS-320/NFS-320C, excluding B210LP(A)).

Product Line Information

NOTE: "A" suffix indicates ULC Listed model.

FSP-851: Low-profile intelligent photoelectric sensor. Must be mounted to one of the bases listed below.

FSP-851A: Same as FSP-851 but with ULC listing.

FSP-851T: Same as FSP-851 but includes a built-in 135°F (57°C) fixed-temperature thermal device.

FSP-851TA: Same as FSP-851T but with ULC listing.

FSP-851R: Low-profile intelligent photoelectric sensor, remote test capable. For use with DNRA/DNRW.

FSP-851RA: Same as FSP-851R but with ULC listing. For use with DNRA.

INTELLIGENT BASES

NOTE: "A" suffix indicates ULC Listed model.

NOTE: For details on intelligent bases, see DN-60054.

B210LP(A): Standard U.S. flanged low-profile mounting base.

B210LPBP: Bulk pack of B210LP; package contains 10.

B501(A): Standard European flangeless mounting base.

B501BP: Bulk pack of B501; package contains 10.

B200S(A): Intelligent, programmable sounder base capable of producing sound output in high or low volume with ANSI Temporal 3, ANSI Temporal 4, continuous tone, marching tone, and custom tone.

B200SR(A): Intelligent sounder base capable of producing sound output with ANSI Temporal 3 or continuous tone. Replaces B501BH series bases in retrofit applications.

B224RB(A): Plug-in System Sensor **relay** base. Screw terminals: up to 14 AWG (2.0 mm²). Relay type: Form-C. Rating: 2.0 A @ 30 VDC resistive; 0.3 A @ 110 VDC inductive; 1.0 A @ 30 VDC inductive.

B224BI(A): Plug-in System Sensor *isolator* detector base. Maximum 25 devices between isolator bases .

ACCESSORIES

F110: Retrofit flange to convert B210LP(A) to match the B710LP(A) profile, or to convert older high-profile bases to low-profile.

F110BP: Bulk pack of F110; package contains 15.

F210: Replacement flange for B210LP(A) base.

RA100Z(A): Remote LED annunciator. 3 – 32 VDC. Mounts to a U.S. single-gang electrical box. For use with B501(A) and B210LP(A) bases only.

SMB600: Surface mounting kit

M02-04-00: Test magnet.

M02-09-00: Test magnet with telescoping handle.

XR2B: Detector removal tool. Allows installation and/or removal of detector heads from bases in high ceiling applications.

XP-4: Extension pole for XR2B. Comes in three 5-foot (1.524 m) sections.

T55-127-010: Detector removal tool without pole.

BCK-200B: Black detector covers for use with FSP-851(A) only; box of 10.

WCK-200B: White detector covers for use with FSP-851(A) only; box of 10.

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LISTING SERVICE

LISTING No. 7272-0028:0206 Page 1 of 1

CATEGORY: 7272 -- SMOKE DETECTOR-SYSTEM TYPE-PHOTOELECTRIC

LISTEE: NotifierOne Fire-Lite Place, Northford, CT 06472-1653
Contact: Vladimir Kireyev (203) 484-6277 Fax (203) 484-7309
Email: vladimir.kireyev@honeywell.com

DESIGN: Models FSP-751, HPX-751, FSP-751T, FSH-751, FAPT-751, FAPT-851, FSP-851, FSP-851R* and FSP-851T photoelectric type smoke detectors. Models FSP-751T and FSP-851T employ a 135°F supplement integral heat sensor which only assists in a fire situation. This thermal circuitry is <u>NOT</u> approved for use in lieu of a required heat detector. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING: 24 VDC

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and in manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, product number, electrical rating and UL label.

APPROVAL: Listed as photoelectric type smoke detector for use with listee's separately listed compatible base and fire alarm control units. Models FSP-751, FSP-751T, FAPT-751, FAPT-851, FSP-851, FSP-851R*, FSP-851T are suitable for open areas and inside duct installation with air velocities between 0-4000 fpm. Model HPX-751 is suitable for open areas with air velocities between 0-300 fpm. Model FSH-751 is suitable for open areas with air velocity between 0-4000 fpm.

NOTE: Combined with 7272-0028:208

The photoelectric type detectors are generally more effective at detecting slow, smoldering fires that smolder for hours before bursting into flame. Sources of these fires may include cigarettes burning in couches or bedding. The ionization type detectors are generally more effective at detecting fast, flaming fires that consume combustible materials rapidly and spread quickly. Sources of these fires may include paper burning in a waste container or a grease fire in the kitchen.

*Rev. 01-07-2009 fm

Date Issued: **July 01, 2015** *Listing Expires* **June 30, 2016**

Authorized By: **JAMES PARSEGIAN**, *Program Coordinator*

Fire Engineering Division

GENTEX CORPORATION

Commander³ Series
Selectable Candela Evacuation Signals

GEC3/GES3 12 & 24 VDC SERIES

Applications

The Commander³ Series is a low profile strobe and horn/strobe combination that offers dependable audible and visual alarms and the absolute lowest current available.

The GE3 Series 24VDC offers tamperproof field selectable candela options of 15, 30, 60, 75, and 110 candela. The 12VDC offers tamperproof field selectable candela options of 15, 30, 60, and 75 candela.

The Commander³ Series horn offers a continuous or synchable temporal three in 2400Hz and mechanical tone, a chime and whoop tone. All tones are easy for the professional to change in the field by using switches.

The GE3 Series has a minimal operating current and has a minimum flash rate of 1Hz regardless of input voltage.

The Commander³ Series is shipped with a standard 4" metal mounting plate which incorporates the popular Super-Slide® feature that allows the installer to easily test for supervision. The product also features a locking mechanism which secures the product to the bracket without any screws showing.

The Commander³ also features the patented Checkmate® - Instant Voltage Verification feature which allows the installer to check the voltage drop draw and match it to the blueprint.

The GE3 Series appliances are ANSI/UL 464 and ANSI/UL 1971, listed for use with fire protective systems and are warranted for three years from date of purchase.

Standard Features
- Nominal voltage 12VDC and 24VDC
- 24VDC units have field selectable candela options of 15, 30, 60, 75 & 110
- 12VDC units have field selectable candela options of 15, 30, 60 & 75
- GEH horn is available in 12VDC or 24VDC
- Super-Slide® Bracket - Ease of Supervision Testing
- Checkmate® - Instant Voltage Verification
- Unit Dimensions: 5" (12.7 cm) high x 4.5" (11.43 cm) wide x 2.5" (6.35 cm) deep
- Synchronize strobe and/or horn with Gentex AVSM Control Module
- Prewire entire system, install mounting bracket, then install signals
- Documented lower installation and operating costs
- Input terminals accept 12 to 18 AWG
- Switch selection for high or low dBA
- Switch for chime, whoop, mechanical and 2400Hz tone
- Tamperproof re-entrant style grill
- Switch for continuous or temporal 3 tone (not available on whoop tone)
- Surface mount with the GSB (Gentex Surface Mount Box)
- Silence horn while strobes remain flashing
- Faceplate available in red or off-white

Product Listings

SIGNALING — UL LISTED — FM APPROVED — STATE FIRE MARSHAL LISTING SERVICE

GENTEX CORP 10985 CHICAGO DR. ZEELAND, MI 49464

- ANSI/UL 464 & ANSI/UL 1971 Listed
- FM Approved
- CSFM: 7135-0569:122 (GEC3-24 & GEH-24)
  7125-0569:123 (GES3-24)
  7125-0569:129 (GES3-12)
  7135-0569:130 (GEC3-12 & GEH-12)
- MEA: 285-91-E (GEC3-24 & GES3-24)
  580-06-E (GEC3-12 & GES3-12)

Patents
- 7,375,617 May 20, 2008

Product Compliance
- NFPA 72
- Americans with Disabilities Act (ADA)
- Quality Management System is certified to: ISO 9001:2008

NEMA MEMBER

ASSEMBLED IN THE USA

GEH 12VDC or 24VDC Low Profile Evacuation Horn

Model Number	Part Number	Nominal Voltage	Reverberant dBA @ 10ft., per ANSI/UL 464	In Anechoic Room dBA @10ft.
GEH12-R	904-1239-002	12VDC	62-82	100
GEH12-W	904-1241-002	12VDC	62-82	100
GEH24-R	904-1205-002	24VDC	62-82	100
GEH24-W	904-1207-002	24VDC	62-82	100

GES3 12VDC or 24VDC Selectable Candela, Low Profile Evacuation Strobe

Model Number	Part Number	Nominal Voltage	Candela (ANSI/UL 1971)
GES3-12WR	904-1235-002	12 VDC	15, 30, 60, 75
GES3-12WW	904-1237-002	12 VDC	15, 30, 60, 75
GES3-24WR	904-1321-002	24 VDC	15, 30, 60, 75, 110
GES3-24WW	904-1319-002	24 VDC	15, 30, 60, 75, 110

Model Designations:
W = Wall mount
R = Red Faceplate   W = White Faceplate

All units are available in plain (no lettering).
Plain units are non-returnable.

ALERT bezel available   AGENT bezel available

GEC3 12VDC or 24VDC Selectable Candela, Low Profile Evacuation Horn/Strobe

Model Number	Part Number	Nominal Voltage	Candela (ANSI/UL 1971)	Reverberant dBA @ 10ft., per ANSI/UL 464	In Anechoic Room dBA @ 10ft.
GEC3-12WR	904-1231-002	12 VDC	15, 30, 60, 75	62-82	100
GEC3-12WW	904-1233-002	12 VDC	15, 30, 60, 75	62-82	100
GEC3-24WR	904-1317-002	24 VDC	15, 30, 60, 75, 110	62-82	100
GEC3-24WW	904-1315-002	24 VDC	15, 30, 60, 75, 110	62-82	100

GE3 Product Strobe Current Ratings (mA)

	12VDC (8-17.5 Volts)		24VDC (16-33 Volts)	
Candela	12VDC	UL Max[1]	**24VDC**	UL Max[1]
15cd	106mA	92mA	**30mA**	42mA
30cd	131mA	141mA	**35mA**	58mA
60cd	186mA	260mA	**66mA**	97mA
75cd	237mA	312mA	**80mA**	116mA
110cd			**103mA**	161mA

UP TO **30%** CURRENT DRAW REDUCTION

GE3-12 Product Horn Current Ratings			
Horn Mode	Minimum dBA @ 10ft., per UL 464 (HIGH)	Minimum dBA @ 10ft., per UL 464 (LOW)	Regulated 12VDC Max. Operating @ High Setting (mA)
Temp 3 2400Hz	76	69*	29
Temp 3 Mechanical	75	68*	26
Temp 3 Chime	62*	60*	13
Continuous 2400Hz	79	74*	29
Continuous Mechanical	78	72*	26
Continuous Chime	63*	61*	13
Whoop	78	71*	55

GE3-24 Product Horn Current Ratings			
Horn Mode	Minimum dBA @ 10ft., per UL 464 (HIGH)	Minimum dBA @ 10ft., per UL 464 (LOW)	Regulated 24VDC Max. Operating @ High Setting (mA)
Temp 3 2400Hz	78	71*	28
Temp 3 Mechanical	76	70*	25
Temp 3 Chime	70*	66*	15
Continuous 2400Hz	81	74*	28
Continuous Mechanical	80	72*	25
Continuous Chime	70*	66*	15
Whoop	82	69*	56

NOTES:

• Operating temperature: 32° to 120°F (0° to 49°C). The GEC3 and GES3 Series is not listed for outdoor use.

  The sound output for the temporal 3 tone is rated lower since the time the horn is off is averaged into the sound output rating.   While the horn is producing a tone in the temporal 3 mode its sound pressure is the same as the continuous mode.

• For nominal and peak current across UL regulated voltage range for filtered DC power and unfiltered (FWR [Full Wave Rectified]) power, see installation manual. 12VDC models are DC only.

* Operating the horn in this mode at this voltage will result in not meeting the minimum ANSI/UL 464 reverberant sound level required for public mode fire protection service. These settings are acceptable only for private mode fire alarm use. Use the high dBA setting for public mode application (not applicable when using the chime tone. The chime tone is always private mode).

[1] RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33VDC for 24VDC units) (8-17VDC for 12VDC units). For strobes the UL max current is usually at the minimum listed voltage (16VDC for 24VDC units) (8VDC for 12VDC units). For audibles the max current is usually at the maximum listed voltage. For unfiltered FWR ratings, see installation manual.

Tone Switch Locations

TONE	SWITCH POSITION		
	3	4	5
Mechanical Temporal 3	ON	ON	ON
Mechanical - Continuous	OFF	ON	ON
2400Hz - Temporal 3	ON	OFF	ON
2400Hz - Continuous	OFF	OFF	ON
Chime - Temporal 3	ON	ON	OFF
Chime - Continuous	OFF	ON	OFF
Whoop	ON	OFF	OFF
Whoop	OFF	OFF	OFF
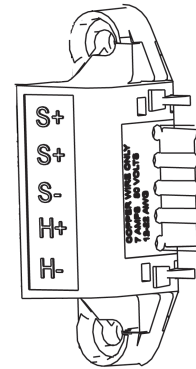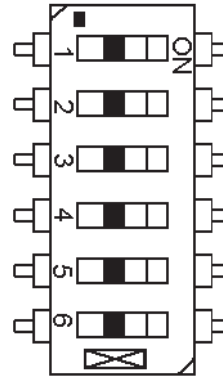
NOTE:
- Switch Positions 1 and 2 in the OFF position to select isolated horn and strobe power inputs
- Switch Position 6 ON = HIGH dBA
- Switch Position 6 OFF = LOW dBA

Gentex Super-Slide® Mounting Bracket

Allows the installer to pre-wire the system, test for system supervision, remove the signal head until occupancy, switch out Gentex signals without changing mounting brackets and has locking edge connector for snap-in-place installation.
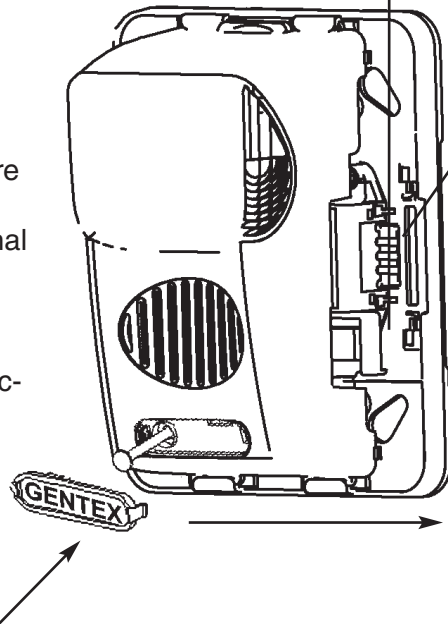
Gentex Checkmate® Instant Voltage Verification

It is often necessary to confirm the voltage drop along a line of devices. The access holes are provided in the back of the terminal block to allow the voltage to be measured directly without removing the device. Typically this would be done at the end of the line to confirm design criteria. Most measurements will be taken using the S+ and S- locations although access is provided to other locations.

NOTE: Care should be taken to not short the test probes.

Candela selection slider switch. Depress center and slide switch to desire brightness level.

Break off pin and insert into hole at the bottom of the selector to lock candela setting. Signal must be removed from bracket and pin pushed forward from backside out of hole to change candela.

MODEL SELECTION MARKER

15
30
60
75
110
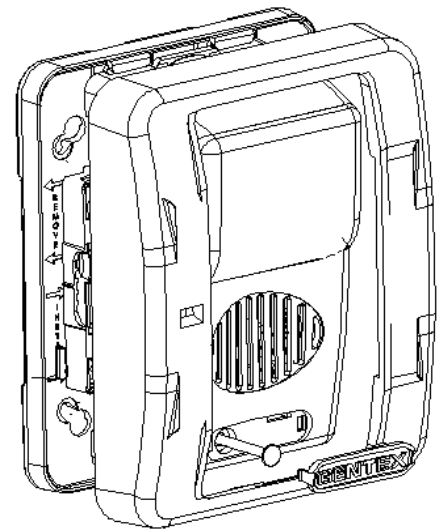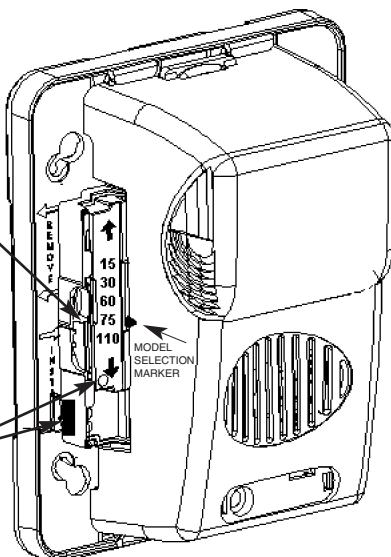
To remove bezel, grip both sides of bezel and pull in a downward and outward motion.

Conventional Wiring Diagrams for Emergency Notification Evacuation Series
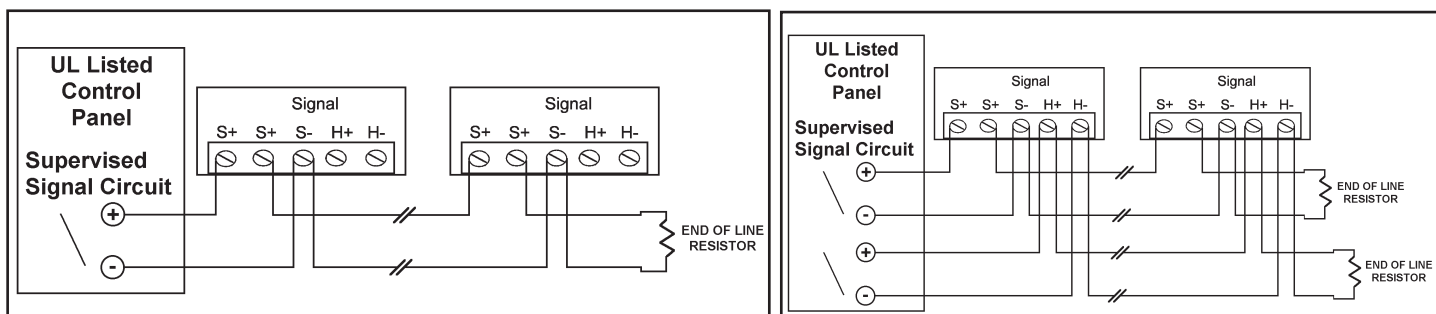
NOTES:

- All strobes are designed to flash as specified with continuous applied voltage. Strobes should not be used on coded or pulsing signaling circuits. However, use of the Gentex AVSM control module or Gentex synchronization protocal is permitted to synchronize the strobe, horn and/or mute the horn. See Technical Bulletin 014 for additional information.

- **FOR SYNCHRONIZATION WIRING INFORMATION, REFERENCE AVSM CONTROL MODULE DATA SHEET (551-0031) AND/OR AVSM CONTROL MODULE MANUAL (550-0284) FOR SYNCHRONIZATION MODULE WIRING DIAGRAMS. AVSM CONTROL MODULE DATA SHEET AND MANUAL CAN BE OBTAINED AT http://www.gentex.com OR CALL GENTEX CORPORATION AT 1-800-436-8391.**

- **When synchronizing the GE3 12VDC Series, the Gentex AVSM control module or Gentex synchronization protocal MUST be used.**

Architect & Engineering Specifications

The audible and/or visible signal shall be Gentex GEH, GES3, GEC3 Series or approved equal and shall be listed by Underwriters Laboratories, Inc. per ANSI/UL 1971 and/or ANSI/UL 464. The notification appliance shall also be listed with Factory Mutual Listing Service (FM), the California State Fire Marshal (CSFM) and the Bureau of Standards and Appeals (NYC).

The notification appliance (combination audible/visible) shall produce a peak sound output of 100dBA or greater at 12VDC or 24VDC as measured in an anechoic chamber. The signaling appliance shall also have the capability to silence the audible signal while leaving the visible signal energized with the use of a single pair of power wires. Additionally, the user shall be able to select either continuous or temporal tone output with the temporal signal having the ability to be synchronized.

Unit shall be capable of being installed so that any unauthorized attempt to change the candela setting will result in a trouble signal at the fire alarm control panel.

The audible/visible and visible signaling appliance shall also maintain a minimum flash rate of 1Hz or up to 2Hz regardless of power input voltage. The strobe appliance shall have an operating current of 42mA or less at 24VDC for the 15Cd strobe circuit and 92mA or less at 12VDC for the 15Cd strobe circuit.

The appliance shall be polarized to allow for electrical supervision of the system wiring. The unit shall be provided with a mounting bracket with terminals and barriers for input/output wiring and be able to mount to a single gang or double gang box or double workbox without the use of an adapter plate. The unit shall have an input voltage range of 16-33 volts with either direct current or full wave rectified power for 24VDC models or a voltage range of 8-17.5 volts for 12VDC models.

The appliance shall be capable of testing supervision without disconnecting wires, verify voltage without removing unit and be capable of mounting to a surface back box.

24 units per carton
28 pounds per carton

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING - BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.	7135-0569:0122

Page 1 of 1

CATEGORY: 7135 -- AUDIBLE DEVICES

LISTEE: Gentex Corporation10985 Chicago Drive, Zeeland, MI 49464
Contact: Keiffer Sestric (616) 392-7195 Fax (616) 392-4219
Email: keiffer.sestric@gentex.com

DESIGN: Model GEH24 horn and Models HS24-15, HS24-15/75, HS24-30, HS24-60, HS24-75, HS24-110, GEC24-15, GEC24-15/75, GEC24-30, GEC24-60, GEC24-75, GEC24-110, GEC24-177, GCC24-C, GEC3-24 and WGEC24 horn strobes. May be followed by -W (wall) and -W or -R (white or red) or -P plain. Models GCC24-C horn/strobe are ceiling mounted followed by -R (red), -W (white) or -P (plain). Refer to listee's data sheet for additional product description and operational considerations.

RATING: Electrical: 24 VDC

Candela: 15cd, 15/75cd, 30cd, 60cd, 75cd, 110cd, 177cd.
GCC24-C Ceiling: 15cd, 30cd, 75cd, 95cd, 115cd, 150cd* (selectable)
GEC3-24 Wall: 15cd, 30cd, 60cd, 75cd, 110cd (selectable)

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical ratings and UL label.

APPROVAL: Listed as horn and horn/strobes for use with separately listed compatible fire alarm control units. For indoor use only. Model WGEC24 is intended for outdoor use when used with Model GOE outdoor enclosure (CSFM Listing No. 7300-0569:124). Model WGEC24 is intended for private mode signaling use only and not approved for hearing impaired application.

The audible in Models GEH24, GEC24, GEC3-24, and WGEC24 may produce distinctive tones including: mechanical, 2400Hz and chime tones in continuous and temporal 3 settings as well as a whoop tone in either a high or low dBA setting.

The audible in Model HS24 may produce a horn piezo frequency of 3100Hz. Model GCC24 may produce distinctive tones including mechanical and 2400Hz. Both models are capable of continuous and temporal 3 settings.

*Rev. 09--26-14 jp

Date Issued: **July 01, 2015**

Listing Expires **June 30, 2016**

Authorized By: *JAMES PARSEGIAN, Program Coordinator*

Fire Engineering Division

# Outdoor Wall Mount Speaker and Speaker/Strobe

WSSPK SERIES

Applications

The Gentex WSSPK Series is an outdoor listed, wall mount, speaker and speaker/strobe designed to meet code requirements for audio, visual and voice communications. The WSSPK Series are quality speaker products that offer both dependable evacuation signaling and visual alarms, or a combination of both. The WSSPK24 speaker/strobe offers a fixed 15/75 candela.

Included with the WSSPK Series speaker and speaker/strobe is the GBLP outdoor listed back box. Using the GBLP back box with the WSSPK Series provides protection from weather related conditions and allows the necessary full candela output.

The WSSPK Series provides a 25 or 70.7 VRMS speaker with field selectable power taps of 1/8W, 1/4W, 1/2W, 1W, 2W or 4W. The WSSPK24 strobes can be synchronized by using the Gentex Synchronization Control Module, FACP's or power supplies that include the Gentex Synchronization Protocol.

The WSSPK Series grills are constructed of high impact textured plastic. The WSSPK is warranted for 3 years from the date of purchase. The WSSPK devices are ANSI/UL 1480 and ANSI/UL 1638 listed.
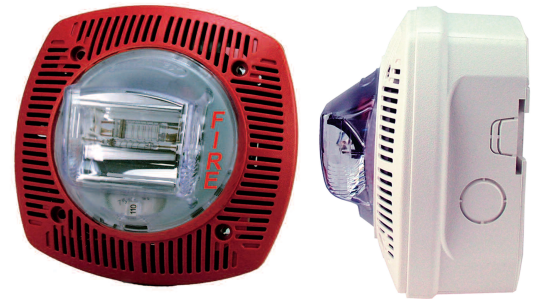
WSSPK24-15/75WR   **WSSPK24-15/75PWW**

WSSPK and WSSPK24 Shipped with the GBLP Outdoor Back Box

Product Listings

SIGNALING

UL® LISTED

GENTEX CORP.
10985 CHICAGO DR.
ZEELAND, MI 49464

• ANSI/UL1480 and ANSI/UL 1638 Listed
• CSFM # 7320-0569:0141

Product Compliance

NEMA MEMBER

ASSEMBLED IN THE USA

• Americans with Disabilities Act (ADA)
• NFPA 72 and NFPA 720
• IBC/IFC/IRC
• City & State Ordinances/Laws/Regulations
• Quality Management System is certified to: ISO 9001:2008

Standard Features

• 24VDC fixed 15/75 candela
• WSSPK speaker and WSSPK24 speaker/strobe shipped with GBLP outdoor listed back box
• Unit Dimension: WSSPK speaker 6.1" square X 3.19" deep
    WSSPK24 speaker/strobe 6.1" square X 4.0625" deep
• High quality dBA output (intelligible)
• Frequency range 400-4000Hz
• Screw terminals, separate in/out wiring (12-18 gauge)
• Field selectable power taps: 1/8W, 1/4W, 1/2W, 1W, 2W, 4W
• Speaker voltage 25 or 70.7 VRMS standard, field selectable
• To synchronize use the Gentex AVSM Control Module
• Tamperproof grill
• Faceplate available in red or off-white
• Xenon strobe maintains constant flash rate (1Hz) regardless of input voltage[1]

Outdoor Evacuation Speakers and Speaker/Strobes

Model Number	Description	Part Number
WSSPKR	Speaker	904-1437-002
WSSPKW	Speaker	904-1438-002
WSSPK24-15/75WR	Speaker/Strobe	904-1433-002
WSSPK24-15/75PWR	Speaker/Strobe	904-1434-002
WSSPK24-15/75WW	Speaker/Strobe	904-1435-002
WSSPK24-15/75PWW	Speaker/Strobe	904-1436-002
WSSPK24-15/75AWR	Speaker/Strobe	904-1431-002
WSSPK24-15/75AWW	Speaker/Strobe	904-1432-002

WSSPK24 Strobe Current Ratings

Candela	15/75cd
24 VDC	63mA
UL Max[1]	96mA

[1] RMS current ratings are per UL average RMS method. UL maximum current rating is the maximum RMS current within the listed voltage range (16-33VDC for 24VDC units) (8-17VDC for 12VDC units). For strobes the UL max current is usually at the minimum listed voltage (16VDC for 24VDC units) (8VDC for 12VDC units). For audibles the maximum current is usually at the maximum listed voltage. For unfiltered FWR ratings, see installation manual.

Low Profile Speaker dBA @ 10 feet

Input Watts	25 Volts	70.7 Volts
1/8	74.6 dBA	73.7 dBA
1/4	77.7 dBA	76.7 dBA
1/2	80.5 dBA	79.6 dBA
1	83.1 dBA	82.5 dBA
2	85.6 dBA	85.4 dBA
4	87.9 dBA	87.9 dBA

NOTES:
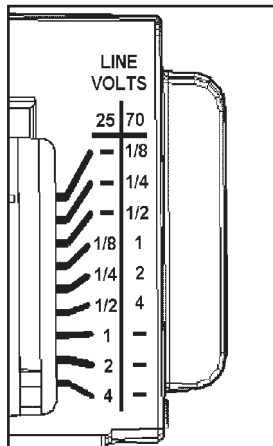
• The WSSPK Series is listed for outdoor use.
• Indoor Operating temperature: 32°to 120°F (0° to 49° C).
• Outdoor Operating temperature: -31°to 150°F (-35° to 66° C).
• Gentex does not recommend using a coded or pulsing signaling circuit with any of our strobe products (see technical bulletin 014).

R = Red Faceplate   W = White Faceplate
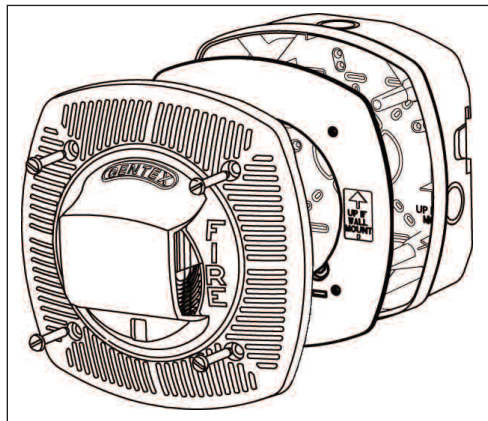A = ALERT Lettering (available on speaker/strobe only)

All units are available in plain (no lettering)
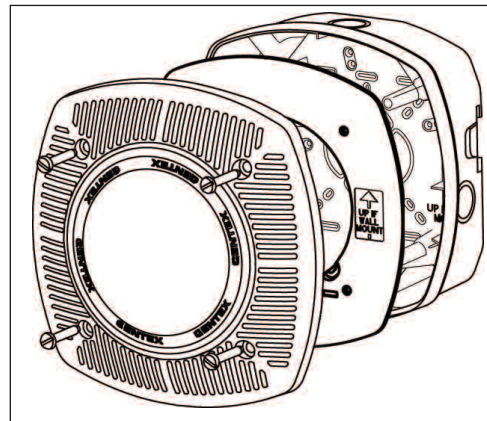**Plain units are non-returnable**
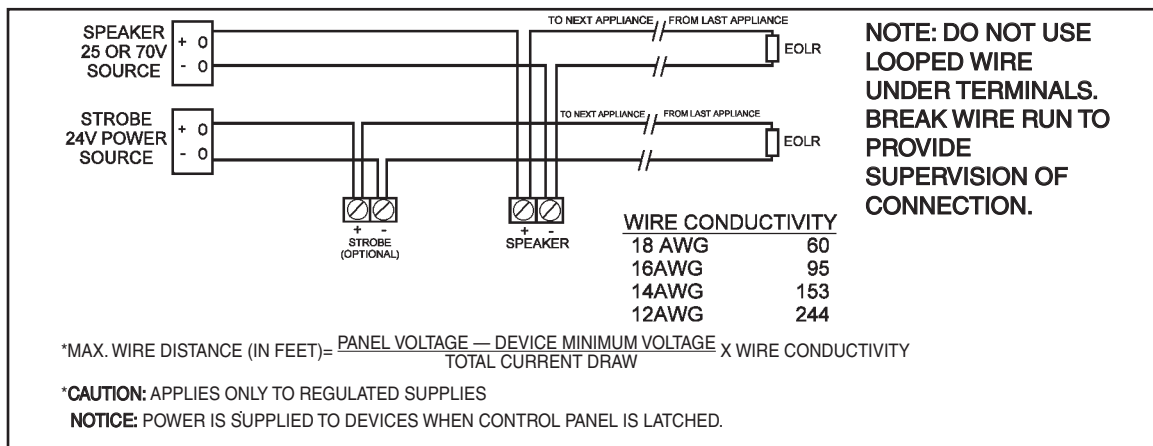
WSSPK SERIES

Power Tap

WSSPK Mounting Diagram

WSSPK24 Mounting Diagram

Wiring Diagram

SPEAKER 25 OR 70V SOURCE

STROBE 24V POWER SOURCE

TO NEXT APPLIANCE / FROM LAST APPLIANCE — EOLR

TO NEXT APPLIANCE / FROM LAST APPLIANCE — EOLR

+ − STROBE (OPTIONAL)

+ − SPEAKER

NOTE: DO NOT USE LOOPED WIRE UNDER TERMINALS. BREAK WIRE RUN TO PROVIDE SUPERVISION OF CONNECTION.

WIRE CONDUCTIVITY

AWG	
18 AWG	60
16 AWG	95
14 AWG	153
12 AWG	244

$$*\text{MAX. WIRE DISTANCE (IN FEET)}=\frac{\text{PANEL VOLTAGE} - \text{DEVICE MINIMUM VOLTAGE}}{\text{TOTAL CURRENT DRAW}} \times \text{WIRE CONDUCTIVITY}$$

***CAUTION:** APPLIES ONLY TO REGULATED SUPPLIES

NOTICE: POWER IS SUPPLIED TO DEVICES WHEN CONTROL PANEL IS LATCHED.

Architect & Engineering Specifications

The fire alarm speaker shall be Gentex WSSPK, WSSPK24 or equivalent. The speaker shall be capable of producing alarm tones or voice on all 25 or 70.7 VRMS audio systems. The speaker shall provide incremental tap settings of 1/8, 1/4, 1/2, 1, 2 or 4 watts. Minimum dBA ratings at 1/4 watt shall be 76.7 dBA and at 4 watts 87.9 dBA. Tap settings shall be adjustable with field selectable jumper pins. The speaker shall also have an optional visual signal capability.

The visual signal shall have a 1Hz flash rate regardless of input voltage. All field wiring connections shall be made via separate in-out terminal connections.

The appliance has extended temperature range of -31°to 150°F (-35° to 66° C). The appliance shall satisfy all outdoor and sever environment applications. The GBLP back box includes a gasket that must b inserted between the box and device. There are drain holes in the back box to allow for drainage, the seal on the GBLP is not water tight. The speaker or speaker/strobe shall be ANSI/UL and CSFM listed and comply with all local, state and federal fire alarm codes/standards.

1 unit per carton
2 pounds per carton

551-0072-02

LISTING SERVICE

LISTING No.	7320-0569:0141	Page 1 of 1
CATEGORY:	7320 -- SPEAKERS	

LISTEE: Gentex Corporation10985 Chicago Drive, Zeeland, MI 49464
Contact: Keiffer Sestric (616) 392-7195 Fax (616) 392-4219
Email: keiffer.sestric@gentex.com

DESIGN: Models WSSPK speaker, WSSPK24-15/75WLP speaker strobes and GBLP backbox.
Model WSSPK followed by R (red) or W (white). Model WSSPK, followed by A (amber), B (blue0, G (green), R (red) indicating, followed by 24-15/75, may be followed by - A (alert) , -P (plain), then followed by W (wall) and followed by R (red) or W (white). Suffix WLP indicates wall mount and low profile design. All models are intended for use with Model GBLP backbox for outdoor applications. Strobe is intended for non-fire applications. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING:

Speaker	25 Vrms and 70.7 Vrms
Strobe	24 VDC
Flash Rate	60 flashes per minute
Candela	15/75

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, ratings, and UL label.

APPROVAL: Listed as speakers and speaker strobes for use with separately listed compatible fire alarm control units. Model WSSPK24-15/75WLP is NOT suitable for the fire alarm notification for the hearing impaired applications. For indoor and outdoor applications. Refer to manufacturer's Installation Manual for details .

These devices do not generate a temporal pattern signal. If the distinctive three-pulse Temporal Pattern Fire Alarm Evacuation signal (for total evacuation) in accordance with NFPA 72, 2002 Edition is required, the appliance must be used with a fire alarm control unit that can generate the temporal pattern signal.

10-06-08 bh

Date Issued:	**July 01, 2015**	*Listing Expires*	**June 30, 2016**

Authorized By: ***JAMES PARSEGIAN**, Program Coordinator*

Fire Engineering Division