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# ***SUBMITTAL PACKAGE***

**Project:** MMC Brighton Campus

**System:** Fire Alarm System

**Submitted  
By:** Norris Inc.  
2257 West Broadway  
South Portland, Maine 04106  
Telephone: (800) 370-3473

**Date:** December 20, 2013

**Norris Inc**  
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**313420R1**  
**Equipment List :**  
Page: 1

**MAINE MEDICAL CENTER - BRIGHTON CAMPUS**  
RICHARD SPICER  
A/P DEPARTMENT  
22 BRAMHALL ST  
PORTLAND, ME 04101  
**MAICAN** 207-662-8006 Fax:207-879-8014

**MMC Brighton Campus Fire Alarm**

**Description**

NOTIFIER-HPP31076, Class A Adapter HPFF8/HPFF12

NOTIFIER-STR, Strb, R, Wall, 2 wire, 12/24V, multi-Cd  
NOTIFIER-NBG-12LX, Address NBG-12L Pull Station;w/FlashScan.  
NOTIFIER-SB-I/O, IN/OD BB for NBG-12 Series; except NBG-12LRA  
NOTIFIER-NFS-3030, Addressable Fire Alarm Control Panel  
NOTIFIER-CPU2-3030D, NFS-3030 with Display  
NOTIFIER-CHS-M3, Mounting Chassis,  
NOTIFIER-DP-DISP, Dress plate, display, black.  
NOTIFIER-BMP-1, Blank module dress plate  
NOTIFIER-BP2-4, Battery Dress Panel for CAB-4 Series  
NOTIFIER-LCM-320, Loop Control Module  
NOTIFIER-LEM-320, Loop Expander Module  
NOTIFIER-CHS-4L, Chassis, low profile, for mounting LEM and LCM  
NOTIFIER-AMPS-24, Addressable power Supply, 120 VAC  
NOTIFIER-DR-D4, Door, lock & keys. Accepts 4 chassis, black.  
NOTIFIER-SBB-D4, Backbox, 4 chassis, black.  
ADI-IM-12550NB, 12V 55 AH Battery  
NOTIFIER-NFS-LBB, NFS Large Battery Backbox, black.  
CDW-3051151, Epson LX 350 - printer - monochrome - dot-matrix  
NOTIFIER-UDACT-2, Universal Digital Alarm Communicator Transmitter-2  
ADI-R5-804R2, SILVER SATIN 2' PLUG - PLUG  
ADI-R5-RJ31X, UL 8P8C RJ31X JACK  
NOTIFIER-LCD-160, 160 character display annunciator;  
NOTIFIER-ABS-2D, Surface (or semi-flush) mount backbox, black.  
NOTIFIER-DVC-EM, Digital Voice Command, Extended Memory  
NOTIFIER-HPFF8-CM, 8A 24VDC UL Listed Fire Alarm Power Supply, chas mnt,  
120 VAC  
ADI-IM-1270, 12V 7AH Battery

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**MMC Brighton Campus Fire Alarm****Description**

NOTIFIER-DAA2-7525, Digital Amplifier 75W, 25V, 120 VAC  
 ADI-IM-12120, 12 Volt 12 AH Battery  
 NOTIFIER-DAA2-5025, Digital Amplifier, 50W, 25V, 120 VAC  
 ADI-IM-12120, 12 Volt 12 AH Battery  
 NOTIFIER-DR-D4, Door, lock & keys. Accepts 4 chassis, black.  
 NOTIFIER-SBB-D4, BB, 4 chassis, black.  
 NOTIFIER-HPFF12CM, 12A 24VDC F/A NPS, chassis120V  
 ADI-IM-1270, 12V 7AH Battery  
 NOTIFIER-DAA2-7525, Digital Amplifier 75W, 25V, 120 VAC  
 ADI-IM-12120, 12 Volt 12 AH Battery  
 NOTIFIER-DAA2-5025, Digital Amplifier, 50W, 25V, 120 VAC  
 ADI-IM-12120, 12 Volt 12 AH Battery  
 NOTIFIER-DR-D4B, Blank Door, lock & keys. Accepts 4 chassis, black.  
 NOTIFIER-SBB-D4, BB, 4 chassis, black.  
 NOTIFIER-HPFF8-CM, 8A 24VDC UL Listed Fire Alarm PS chassis mnt,120 VAC  
 ADI-IM-1270, 12V 7AH Battery  
 NOTIFIER-DAA2-7525, Digital Amplifier 75W, 25V, 120 VAC  
 ADI-IM-12120, 12 Volt 12 AH Battery  
 NOTIFIER-DAA2-5025, Digital Amplifier, 50W, 25V, 120 VAC  
 ADI-IM-1270, 12V 7AH Battery  
 NOTIFIER-DR-D4B, Blank Door, lock & keys. Accepts 4 chassis, black.  
 NOTIFIER-SBB-D4, BB, 4 chassis, black.  
 NOTIFIER-HPFF8-CM, 8A 24VDC UL Listed Fire Alarm Power Supply, chas mnt,  
 120 VAC  
 ADI-IM-1270, 12V 7AH Battery  
 NOTIFIER-DAA2-7525, Digital Amplifier 75W, 25V, 120 VAC  
 ADI-IM-12120, 12 Volt 12 AH Battery  
 NOTIFIER-DR-D4B, Blank Door, lock & keys. Accepts 4 chassis, black.  
 NOTIFIER-SBB-D4, BB, 4 chassis, black.  
 NOTIFIER-HPFF12CM, 12A 24VDC F/A NPS, chassis120V  
 ADI-IM-1270, 12V 7AH Battery

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**MMC Brighton Campus Fire Alarm**

**Description**

NOTIFIER-DAA2-7525, Digital Amplifier 75W, 25V, 120 VAC  
ADI-IM-12120, 12 Volt 12 AH Battery  
NOTIFIER-DR-D4B, Blank Door, lock & keys. Accepts 4 chassis, black.  
NOTIFIER-SBB-D4, BB, 4 chassis, black.  
NOTIFIER-DVC-KD, Digital Voice Command, Keypad  
NOTIFIER-CMIC-1, Chassis with Paging Microphone  
NOTIFIER-CA-1, Chassis, DVC,  
NOTIFIER-DPA-1, Dress Plate, DVC,  
NOTIFIER-RM-1SA, Microphone assembly for mounting in an CAB-RM.  
NOTIFIER-CAB-RMR, Remote cabinet, Red color.  
NOTIFIER-NBG-12LX, Addressable Pull Station; with FlashScan.  
NOTIFIER-STI3150, Weatherproof Cover, Pull Station  
NOTIFIER-FSP-851, Intelligent Addressable Photo detector.  
NOTIFIER-FST-851, Intelligent Addressable Thermal detector.  
NOTIFIER-B210LPBP, Intelligent/Conventional 2Wire Flanged Mounting Base;  
Pkg.of10  
NOTIFIER-B210LP, Conventional Flanged Mounting Base  
NOTIFIER-302-ET-135, 135 °F (57° C) vertical mount, I/D or O/D use  
NOTIFIER-FMM-101, Addressable Mini Mod.w/FlashScan (WP Heat Detector)  
NOTIFIER-DNR, Intelligent duct detector, non-relay  
NOTIFIER-FSP-851R, Remote test capable Intelligent Photo detector with FlashScan  
NOTIFIER-RTS151, Remote test station; with switch  
NOTIFIER-DST3, InnovairFlex sampling tube, steel, 3' with holes  
NOTIFIER-FRM-1, Intelligent Addressable Relay Module (ducts)  
NOTIFIER-FMM-101, Addressable Mini Mod.w/FlashScan (sprinkler)  
NOTIFIER-FMM-101, Addressable Mini Mod.w/FlashScan (transfer switch)  
NOTIFIER-FMM-101, Addressable Mini Mod.w/FlashScan (med gas alarm)  
NOTIFIER-FMM-101, Addressable Mini Mod.w/FlashScan (ansul)  
NOTIFIER-FMM-101, Addressable Mini Mod.w/FlashScan (generator room)  
NOTIFIER-FMM-101, Addressable Mini Mod.w/FlashScan (dry chemical panel)  
NOTIFIER-FMM-101, Addressable Mini Mod.w/FlashScan (storage rooms)

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**MMC Brighton Campus Fire Alarm**

**Description**

NOTIFIER-FRM-1, Intelligent Addressable Relay Module (elevator)  
NOTIFIER-FRM-1, Intelligent Addressable Relay Module (fire shutter)  
NOTIFIER-FRM-1, Intelligent Addressable Relay Module (door holders)  
NOTIFIER-FRM-1, Intelligent Addressable Relay Module (security system)  
NOTIFIER-FRM-1, Addressable Relay Mod.w/FlashScan (secure doors)  
NOTIFIER-FRM-1, Addressable Relay Mod.w/FlashScan (Liebert Dry Chemical)  
NOTIFIER-ET70-24MCW-FR, 8W Speaker Strobe, Wall, Red, Multi Cd  
NOTIFIER-ET70WP-2475W-FR, Spkr Strb,24Vdc, 75cd,WP (Requires IOB), W/P R.w/mnt  
NOTIFIER-IOB-R, Surface Mount Back Box, Red, WP Speaker Strobe  
NOTIFIER-STR, Strobe, Red, Wall, Multi Cd  
NOTIFIER-SRK-P, Red Outdoor Strobe  
NOTIFIER-LENS-R, Wall Strb Lens Attachment, Red  
Space Age-SSU00686, Fire Alarm Records Cabinet  
SPAAGEELE-IE0091, Notifier Lock  
SPECIAL-AES, Radio Masterbox--  
AES-7788F, UL FIRE 8 ZONE RED CASE W/2.5 DB ANTENNA  
ADI-EK-TRG1640, Transformer  
AES-7210-5-UM, 5dB Omni directional UHF Antenna  
AES-13-0346, Cable Assembly; 18# RG-58 Used to connect RG-8 with N male to  
AES-7230, Standard Coaxial Surge Protector, N female N female  
NOTIFIER-R-10T, Relay, SPDT, Multivolt, Track mount  
NOTIFIER-FRM-1, Intelligent Addressable Relay Module (masterbox)  
NOTIFIER-FMM-101, Addressable Mini Module with FlashScan (masterbox)  
ADI-GI-TSW01, Tamper Box w/ Shunt  
Disconnect Switch  
SPECIAL-KNOXR, Knox Box--4100 Series  
SPECIAL-KNOXR-SURFACE, Surface Mount Knox Box  
SPECIAL-KNOXR-LIFTCOVER, Lift Cover for Knox Box  
SPECIAL-KNOXR-BLACK, Black Knox Box Color

# Wheelock® Exceder™

## Horns and Strobes



### Audio/Visual Devices

#### General

The Wheelock® Exceder™ Series of notification appliances feature a sleek modern design and numerous features including eight candela options in one appliance, low current draw, no tools needed for setting changes, 12/24 VDC operation, universal mounting base and multiple mounting options.

Models with an audible feature 3 sound settings (90, 95, 99 dB). All switches to change settings can be set without the use of a tool and are located behind the appliance to prevent tampering. Wall models feature voltage test points to take readings with a voltage meter for troubleshooting and AHJ inspection.

The Wheelock® Exceder™ Series of wall and ceiling notification appliances feature a Universal Mounting Base (UMB) designed to simplify the installation and testing of horns, strobes, and combination horn strobes. The separate universal mounting base can be pre-wired to allow full testing of circuit wiring before the appliance is installed and the surface is finished. It comes complete with a contact cover for protection against dirt, dust, paint and damage to the contacts. The contact cover also acts as a shunting device to allow pre-wire testing for common wiring issues.

The contact cover is polarized to prevent it from being installed incorrectly and prevents the appliance from being installed while it is on the UMB. When the contact cover is removed the circuit will show an open until the appliance is installed. The UMB allows for consistent installation and easy replacement of appliances if required. Wall models provide an optional locking screw for extra secure installation, while the ceiling models provide a captive screw to prevent the screw from falling during installation.

#### Features

- Multiple voltages
- Voltage test points for quick troubleshooting and easy spot-checking (wall models only)
- 3 audible settings (90, 95, 99 dB)
- 8 Candela settings
  - Wall - 15/1575/30/75/95/110/135/185
  - Ceiling - 15, 30, 60, 75, 95, 115, 150, 177
- Finger-slide switches
- Sleek modern aesthetics
- Common base for wall and ceiling with 5 mounting options:
  - 1-gang
  - 2-gang
  - 4 inch square
  - 3.5 inch octagonal
  - 4 inch octagonal

#### Compatibility and Requirements

- Synchronize using Wheelock Sync Modules, or panels with built-in Wheelock patented sync protocol.
- Compatible with UL “Regulated Voltage” using filtered VDC or unfiltered VRMS input voltage
- Strobes produce one flash per second over the Regulated Voltage range.



Wall



Ceiling



#### General Notes

- All candela ratings represent minimum effective strobe intensity based on UL Standard 1971.
- Series Exceder Strobe products are Listed under UL Standards 1971 and 464 for indoor use with a temperature range of 32°F to 120°F (0°C to 49°C) and maximum humidity of 93% (± 2%) UL 464 (85% UL 1971).
- Series Exceder horns are under UL Standard 464 for audible signal appliances (Indoor use only).
- Product naming conventions: The Exceder line's model codes break down into easy-to-remember codes. HN = Horn, ST = Strobe, HS = Horn-strobe, C = Ceiling Mount, W = White, and R = Red. So “STRC” can be read as “Strobe, Red, Ceiling-mount.”, and “HSW” is “Horn-strobe, white, wall-mount.”
- Refer to your fire alarm panel or power supply manual when calculating the number of devices allowed per circuit.

#### Architects/Engineers Specifications

The notification appliances shall be Wheelock Exceder Series HS Audible Strobe appliances, Series ST Visual Strobe appliances and Series HN Audible appliances or approved equals. The Series HS and ST Strobes shall be listed for UL Standard 1971 (Emergency Devices for the Hearing-Impaired) for Indoor Fire Protection Service. The Series HS and HN Audibles shall be UL Listed under Standard 464 (Fire Protective Signaling). All Series shall meet the requirements of FCC Part 15 Class B. All inputs shall be compatible with standard reverse polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP) with the ability to operate from 8 to 33 VDC. Indoor wall models shall incorporate voltage test points for easy voltage inspection.

The Series HS Audible Strobe and ST Strobe appliances shall produce a flash rate of one flash per second over the Regulated Voltage Range and shall incorporate a Xenon flashtube enclosed in a rugged Lexan® lens. The Series shall be of low current design. Where Multi-Candela appliances are specified, the strobe intensity shall have 8 field selectable settings at 15,

15/75, 30, 75, 95, 110, 135, 185 candela for wall mount and 15, 30, 60, 75, 95, 115, 150, 177 candela for ceiling mount. The selector switch for selecting the candela shall be tamper resistant. The 15/75 candela strobe shall be specified when 15 candela UL Standard 1971 Listing with 75 candela on-axis is required (e.g. ADA compliance). Appliances with candela settings shall show the candela selection in a visible location at all times when installed.

The audible shall have a minimum of three field selectable settings for dBA levels and shall have a choice of continuous or temporal (Code 3) audible outputs.

### MOUNTING OPTIONS

The Series HS Audible Strobe, ST Strobe and Series HN Audible shall incorporate a patented Universal Mounting Base that shall allow mounting to a single-gang, double-gang, 4" square, 3.5" octagonal, 4" octagonal or 100mm European type back boxes. Two wire appliance wiring shall be capable of directly connecting to the mounting base. Continuity checking of the entire NAC circuit prior to attaching any notification appliances shall be allowed. Product shall come with contact cover to protect contact springs. Removal of an appliance shall result in a supervision fault condition by the Fire Alarm Control Panel (FACP). The mounting base shall be the same base among all horn, strobe, horn strobe, wall and ceiling models. All notification appliances shall be backwards compatible.

### PHYSICAL SPECIFICATIONS

The Series HS and ST wall models shall have a low profile measuring 5.24" H x 4.58" W x 2.19" D. Series HN wall shall measure 5.24" H x 4.58" W x 1.6" D. The Series HSC and STC

shall be round and have a low profile with a diameter of 6.68" x 2.63" D. Series HNC ceiling shall have a diameter of 6.68" x 1.50" D.

### SYNCHRONIZATION

When synchronization is required, the appliance shall be compatible with Wheelock's SM, DSM Sync Modules, Wheelock® Power Supplies or other manufacturer's panels with built-in Wheelock® Patented Sync Protocol. The strobes shall not drift out of synchronization at any time during operation. If the sync protocol fails to operate, the strobe shall revert to a non-synchronized flash-rate and still maintain one flash per second over its Regulated Voltage Range. The appliance shall also be designed so that the audible signal may be silenced while maintaining strobe activation when used with Wheelock® synchronization protocol.

### Standards and Codes

Modules in this series comply with UL Standard 1971, UL Standard 464, California State Fire Marshal (CSFM), and ULC.

### Agency Listings

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:** S5391 (Strobes); E5946 (Horns, Horn/strobes).
- **ULC Listed**
- **CSFM Listed:** 7125-0785:168.

## Specification & Ordering Information

Model	Strobe Candela	12/24 VDC	Mounting Options
<b>Horn Strobes</b>			
HSR	15, 15/75, 30, 75, 95, 110, 135, 185	X	Universal Mounting Base
HSW	15, 15/75, 30, 75, 95, 110, 135, 185	X	Universal Mounting Base
HSRC	15, 30, 60, 75, 95, 115, 150, 177	X	Universal Mounting Base
HSWC	15, 30, 60, 75, 95, 115, 150, 177	X	Universal Mounting Base
<b>Strobes</b>			
STR	15, 15/75, 30, 75, 95, 110, 135, 185	X	Universal Mounting Base
STW	15, 15/75, 30, 75, 95, 110, 135, 185	X	Universal Mounting Base
STRC	15, 30, 60, 75, 95, 115, 150, 177	X	Universal Mounting Base
STWC	15, 30, 60, 75, 95, 115, 150, 177	X	Universal Mounting Base
<b>Horns</b>			
HNR	—	X	Universal Mounting Base
HNW	—	X	Universal Mounting Base
HNRC	—	X	Universal Mounting Base
HNWC	—	X	Universal Mounting Base
*12 VDC models feature 15 and 15/75 settings			
<b>NOTE:</b> Due to continuous development of Cooper Wheelock products, specifications and offerings are subject to change without notice in accordance with Cooper Wheelock Inc., dba Cooper Notification standard terms and conditions.			

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 Exceder is a trademark and Wheelock® is a registered trademark of Cooper Notification.  
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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.  
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# ➤ NBG-12LX

## Addressable Manual Pull Station



Intelligent/Addressable Devices

### General

The Notifier NBG-12LX is a state-of-the-art, dual-action (i.e., requires two motions to activate the station) pull station that includes an addressable interface for any Notifier intelligent control panel except FireWarden series panels, and the NSP-25 panel. Because the NBG-12LX is addressable, the control panel can display the exact location of the activated manual station. This leads fire personnel quickly to the location of the alarm.

### Features

- Maintenance personnel can open station for inspection and address setting without causing an alarm condition.
- Built-in bicolor LED, which is visible through the handle of the station, flashes in normal operation and latches steady red when in alarm.
- Handle latches in down position and the word “ACTIVATED” appears to clearly indicate the station has been operated.
- Captive screw terminals wire-ready for easy connection to SLC loop (accepts up to 12 AWG/3.25 mm<sup>2</sup> wire).
- Can be surface mounted (with SB-10 or SB-I/O) or semi-flush mounted. Semi-flush mount to a standard single-gang, double-gang, or 4" (10.16 cm) square electrical box.
- Smooth dual-action design.
- Meets ADAAG controls and operating mechanisms guidelines (Section 4.1.3[13]); meets ADA requirement for 5 lb. maximum activation force.
- Highly visible.
- Attractive shape and textured finish.
- Key reset.
- Includes Braille text on station handle.
- Optional trim ring (BG12TR).
- Meets UL 38, Standard for Manually Actuated Signaling Boxes.
- Up to 99 NBG-12LX stations per loop on CLIP protocol loops.
- Up to 159 NBG-12LX stations per loop on FlashScan® protocol loops.
- Dual-color LED blinks green to indicate normal on FlashScan® systems.

### Construction

Shell, door, and handle are molded of durable polycarbonate material with a textured finish.

### Specifications

- **Shipping Weight:** 9.6 oz. (272.15 g)
- **Normal operating voltage:** 24 VDC.
- **Maximum SLC loop voltage:** 28.0 VDC.
- **Maximum SLC loop current:** 375  $\mu$ A.
- **Temperature Range:** 32°F to 120°F (0°C to 49°C)
- **Relative Humidity:** 10% to 93% (noncondensing)
- **For use indoors in a dry location**



The NBG-12LX  
Addressable Manual Pull Station

### Installation

The NBG-12LX will mount semi-flush into a single-gang, double-gang, or standard 4" (10.16 cm) square electrical outlet box, or will surface mount to the model SB-10 or SB-I/O surface backbox. If the NBG-12LX is being semi-flush mounted, then the optional trim ring (BG12TR) may be used. The BG12TR is usually needed for semi-flush mounting with 4" (10.16 cm) or double-gang boxes (not with single-gang boxes).

### Operation

Pushing in, then pulling down on the handle causes it to latch in the down/activated position. Once latched, the word “ACTIVATED” (in bright yellow) appears at the top of the handle, while a portion of the handle protrudes from the bottom of the station. To reset the station, simply unlock the station with the key and pull the door open. This action resets the handle; closing the door automatically resets the switch.

Each manual station, on command from the control panel, sends data to the panel representing the state of the manual switch. Two rotary decimal switches allow address settings (1 – 159 on FlashScan® systems, 1 – 99 on CLIP systems).

### Architectural/Engineering Specifications

Manual Fire Alarm Stations shall be non-coded, with a key-operated reset lock in order that they may be tested, and so designed that after actual Emergency Operation, they cannot be restored to normal except by use of a key. An operated station shall automatically condition itself so as to be visually detected as activated. Manual stations shall be constructed of red-colored polycarbonate material with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in white letters, 1.00 inches (2.54 cm) or larger. Stations shall be suitable for surface mounting on matching backbox SB-10 or SB-I/O; or semi-flush mounting on a standard single-gang, double-gang, or 4"



(10.16 cm) square electrical box, and shall be installed within the limits defined by the Americans with Disabilities Act (ADA) or per national/local requirements. Manual Stations shall be Underwriters Laboratories listed.

Manual stations shall connect with two wires to one of the control panel SLC loops. The manual station shall, on command from the control panel, send data to the panel representing the state of the manual switch. Manual stations shall provide address setting by use of rotary decimal switches.

The loop poll LED shall be clearly visible through the front of the station. The LED shall flash while in the normal condition, and stay steadily illuminated when in alarm.

## Product Line Information

➤ **NBG-12LX:** Dual-action addressable pull station. Includes key locking feature.

**SB-10:** Surface backbox; metal.

➤ **SB-I/O:** Surface backbox; plastic.

**BG12TR:** Optional trim ring.

**17021:** Keys, set of two.

**NY-Plate:** New York City trim plate

## Agency Listings and Approvals

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 / CUL Listed:** S692 (listed for Canadian and non-Canadian applications)
- **MEA:** 67-02-E
- **CSFM:** 7150-0028:0199
- **FDNY:** COA #6038 (NFS2-640), COA #6058 (NFS2-3030)
- **BSMI:** C1313066760047
- **U.S. Coast Guard:** 161.002/23/3 (AFP-200); 161.002/27/3 (AM-2020/AFP-1010; 161.002/42/1 (NFS-640)
- **Lloyd's Register:** 02/6007 (NFS-640); 94/60004 (E2) (AFP-200); 03/60011 (E1); 07/60007 (NFS2-3030)
- **FM Approved**

**Patented:** U.S. Patent No. D428,351; 6,380,846; 6,314,772; 6,632,108.

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# ➤ NFS2-3030

## Intelligent Addressable Fire Alarm System



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.

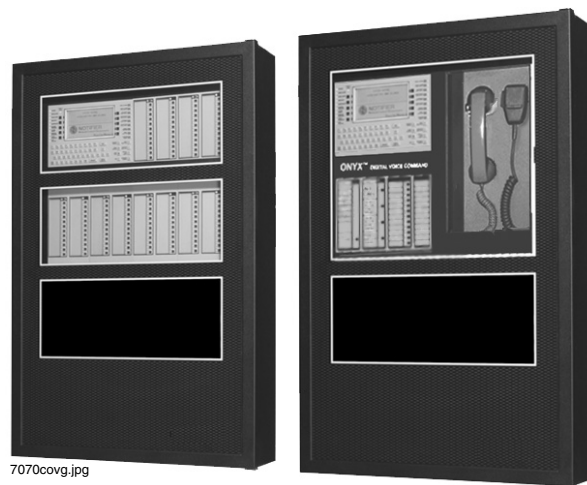
Information is critical to fire evacuation personnel, and the NFS2-3030's large 640-character Liquid Crystal Display (LCD) presents vital information to operators concerning a fire situation, fire progression, and evacuation details.

The NFS2-3030 supports the FireWatch Series internet monitoring modules IPDACT-2 and IPDACT-2UD and permits monitoring of alarm signals over the Internet, saving the monthly cost of two dedicated business telephone lines. Although not required, the secondary telephone line may be retained providing backup communication over the public switched telephone line.

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.

### Features

- **Listed to UL Standard 864, 9th edition.**
- 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), NCA-2, DVC, ONYXWorks, NCS, NFS-3030, NFS-640, and NCA).
  - Standard network for up to 103 nodes (NFS2-3030, NFS2-640, NFS-320(C), 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.



NFS2-3030s, DVC audio option at right

- 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.
- Optional universal 2,040-point DACT.
- 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.
- 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.

**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.

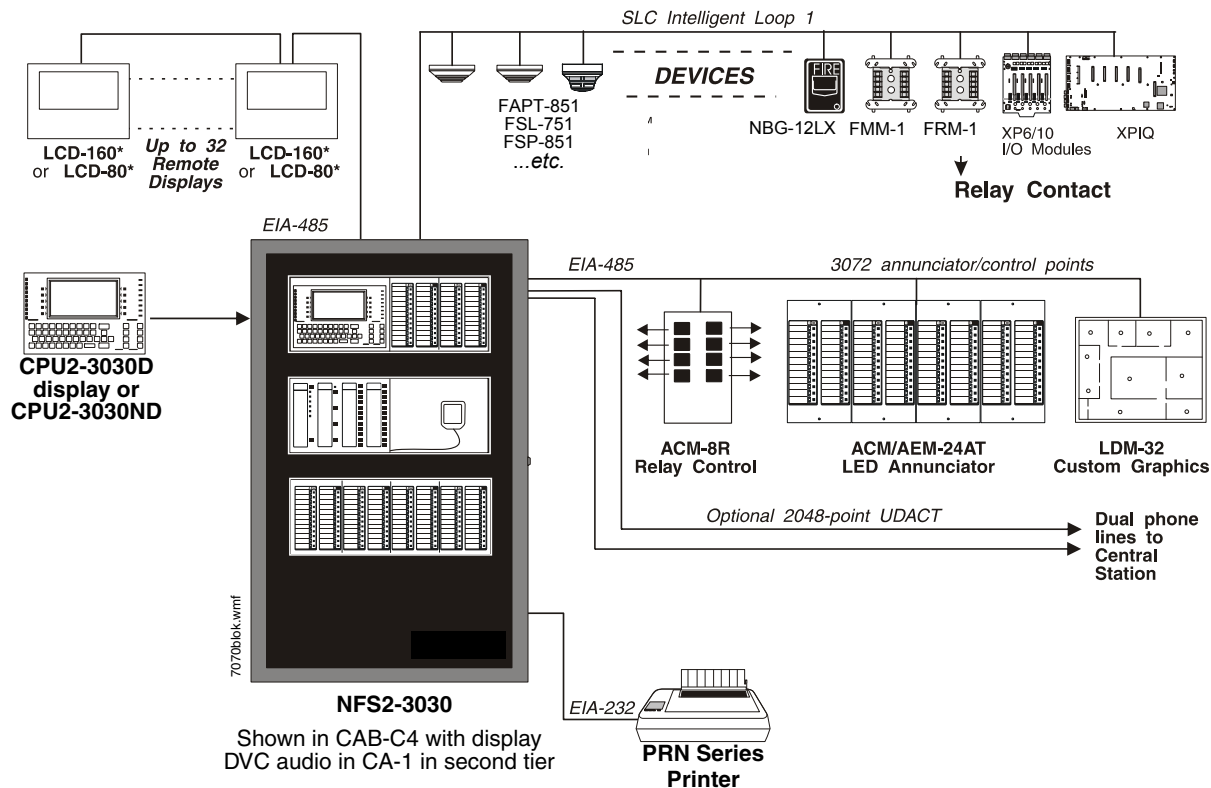
**FSL-751 VIEW® (VERY INTELLIGENT EARLY WARNING) SMOKE DETECTION TECHNOLOGY:**

- 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).

**Sample System Options**



**NOTE:** CPU2-3030 firmware version 14.0 (and higher) can support LCD-160 on the RDP port, or LCD-80 in terminal mode, but not both at the same time.

### **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 and 75 watt digital amplifiers.
- 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.

## **Ordering Information**

- “Configuration Guidelines” on page 3
- “Networking Options” on page 4
- “Power Supplies” 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 & 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 NFS2-3030), 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.

**VeriFire-TCD:** *VeriFire® Tools* CD-ROM. Contains programming software for ONYX series products, DVC, and XPIQ. Includes local panel connection cable. Programming PC requires a serial port connection. *See DN-6871.*

**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. 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). *See DN-6971.*

**NCS5-W-ONYX:** Standard Network Control Station, Wire. UL-Listed graphics PC with mouse, 19" color flat-screen LCD monitor. Order as necessary for network systems. Each NCS consumes one of 103 network addresses. *See DN-6868 (previous NCS-W), ONYX® DN-6869.*

**NCS5-F-ONYX:** Standard Network Control Station, Fiber. UL-Listed graphics PC with mouse, 19" color flat-screen LCD monitor. Order as necessary for network systems. Each NCS consumes one of 103 network addresses. *See DN-6868 (previous NCS-W), ONYX® DN-6869.*

**ONYXWorks-NW:** UL-listed graphics PC workstation for standard NOTI•FIRE•NET with wire media. Includes NFN Gateway wire version (NFN-GW-PC-W) and 19" color flat-screen LCD monitor. Each ONYXWorks workstation consumes one of 103 network addresses. *See DN-7048.*

**ONYXWORKS-HNW:** UL-listed graphics PC workstation for wire high-speed NOTI•FIRE•NET. Includes HS-NFN Gateway (NFN-GW-PC-HNW) and 19" color flat-screen LCD monitor. Each ONYXWorks consumes one of up to 200 network addresses. *See DN-7048.*

**ONYXWorks-NF:** UL-listed graphics PC workstation for standard NOTI•FIRE•NET with fiber media. Includes NFN Gateway wire version (NFN-GW-PC-F) and 19" color flat-screen LCD monitor. Each ONYXWorks workstation consumes one of 103 network addresses. *See DN-7048.*

**ONYXWORKS-HNSF:** UL-listed graphics PC workstation for single-mode-fiber high-speed NOTI•FIRE•NET. Includes HS-

NFN Gateway (NFN-GW-PC-HNSF) and 19" color flat-screen LCD monitor. Each ONYXWorks consumes one of up to 200 network addresses. *See DN-7048.*

**ONYXWORKS-HNMF:** UL-listed graphics PC workstation for multi-mode-fiber high-speed NOTI•FIRE•NET. Includes HS-NFN Gateway (NFN-GW-PC-HNMF) and 19" color flat-screen LCD monitor. Each ONYXWorks consumes one of up to 200 network addresses. *See DN-7048.*

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

## POWER SUPPLIES

**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.*

**BAT Series Battery:** AMPS-24 utilizes two 12 volt, 12 to 200 AH batteries. *See DN-6933.*

**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.

**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 amp or 10 amp addressable charging power supply. *See DN-60244.*

**FCPS-24S6/24S8:** Remote six-amp and eight-amp power supplies with battery charger. *See DN-6927.*

## AUDIO OPTIONS

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

**DAA-5025:** 50W, 25 Vrms Digital Audio Amplifier assembly with DAA-PS power supply board, shipped mounted to its chassis. *See DN-7046.*

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

**DAA-5070:** 50W, 70.7 Vrms Digital Audio Amplifier assembly with DAA-PS power supply board, shipped mounted to its chassis. *See DN-7046.*

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

**DAA-7525:** 75W, 25 Vrms digital audio amplifier assembly with DAA-PS power supply board, shipped mounted to its chassis. *See DN-60257.*

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

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

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

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

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

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

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

**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).

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

**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.*

**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.*

**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.*

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

**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.*

**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.*

**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.*

#### **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.*

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

**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.*

**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.

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

#### **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.*

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

**FSP-851:** Low-profile FlashScan® photoelectric detector. *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.*

**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.*

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

**FSP-851RA:** Same as FSP-851R but with ULC listing.

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

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

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

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

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

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

**B200SR:** Intelligent 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-REL:** FlashScan® releasing control module. *See DN-60390.*

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

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

**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 & 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 separately; requires BP2-4 battery plate. A trim ring option is available for semi-flush mounting. *See DN-6857.*

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

**CA-2:** Chassis for CPU when DVC is used with fire fighter'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.

**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 DAA-series or AA-series amplifier.

**BP2-4:** Battery plate, required.

**CHS-4L:** Low-profile four-position Chassis. Mounts two AA-30 amplifiers or one AMG-E and one AA-30.

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

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

## OTHER OPTIONS

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

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

**IPDACT-2/IPDACT Internet Monitoring Module:** Mounts in IPENC enclosure. 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.

**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.*





# 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 Amps maximum.
  - **AMPS-24E:** 240 VAC, 50/60 Hz, 2.25 Amps 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.

## 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 # 6058
- **CSFM:** 7165-0028:0224 (Commercial)
- **FM Approved**
- **FM6320 Approved.** Class 6320 for Gas Detection
- **City of Chicago**
- **City of Denver**
- **PSB Corporation**
- **Fire Services Department (Hong Kong)**

## Standards

The NFS2-3030 complies with the following UL Standards and NFPA 72 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)

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Made in the U.S. A.

# LCM-320 and LEM-320

## Loop Control and Expander Modules



Intelligent Fire Alarm Control Panels

### General

The LCM-320 Loop Control Module and the LEM-320 Loop Expander Module provide NOTIFIER's ONYX® Series of Fire Alarm Control Panels (FACPs) with Signaling Line Circuits (SLCs). The ONYX® Series NFS-640/NFS2-640 supports one LEM-320; the NFS-3030/NFS2-3030 supports up to five LCM-320s and five LEM-320s. The LEM-320 module is used to expand the NFS-640/NFS2-640 to a second loop, and to expand each LCM-320 used on the NFS-3030/NFS2-3030 — each NFS-3030/NFS2-3030 LCM-320 supports an expansion LEM-320.

### Features

- Up to 12,500 feet (3,810 m) on a Class B (Style 4) SLC loop (twisted-unshielded).
- Built-in degraded mode increases survivability.
- Very simple installation — plug-in style.
- Permits multiple loops in small enclosure.

### Specifications

**Voltage:** 24 VDC nominal, 27.6 VDC maximum.

**Maximum loop length:** The maximum wiring distance of an SLC using 12 AWG (3.1 mm<sup>2</sup>) twisted-pair wire is 12,500 feet (3810 m) per channel. For a twisted-unshielded pair, 12 AWG (3.1 mm<sup>2</sup>) to 18 AWG (0.78 mm<sup>2</sup>):

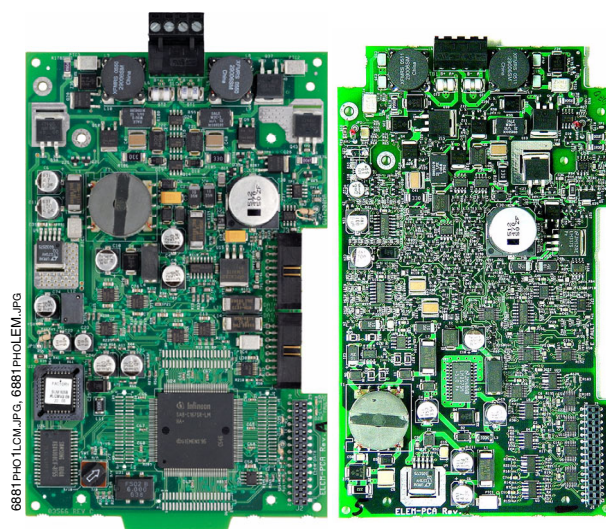
- Distance with 12 AWG: 12,500 ft (3,810 m).
- Distance with 14 AWG: 8,000 ft (2,438 m).
- Distance with 16 AWG: 4,875 ft (1,486 m).
- Distance with 18 AWG: 3,225 ft (983 m).
- 50 ohms maximum per length of Style 6 & 7 loops.
- 50 ohms maximum per branch for Style 4 loop.

**Maximum current:** for LCM-320: 130 mA; for LEM-320: 100 mA; for single SLC loop: 400 mA maximum.

**NOTE:** Maximum short circuit — loop will shut down until short-circuit condition is corrected.

**Maximum resistance:** 50 ohms (supervised and power-limited).

**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.



Loop Control Module

Loop Expander Module

### Product Line Information

**LCM-320:** Loop Control Module. Adds SLCs to NFS-3030/NFS2-3030; NFS-3030/NFS2-3030 supports up to five LCM-320s and five LEM-320s.

**LEM-320:** Loop Expander Module. Expands each LCM used on the NFS-3030/NFS2-3030; expands NFS-640/NFS2-640 to two loops.

### Agency Listings and Approvals

The listings and approvals below apply to the basic LCM-320 and LEM-320. 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:** S635
- **ULC:** S635/CS118
- **FM Approved**
- **CSFM:** 7165-0028:224, 7170-0028:223 (LCM/LEM-320 with NFS-3030/NFS2-3030). 7165-0028:214, 7170-0028:216 (LEM-320 with NFS-640). 7165-0028:243, 7170-0028:244 (LEM-320 with NFS2-640).
- **FDNY:** COA#6025 (LEM-320 with NFS2-640)
- **FDNY:** COA#6026 (LCM-320/LEM-320 with NFS2-3030)
- **City of Denver**
- **Hong Kong**

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# ➤ AMPS-24/E

## Power Supply

for the NFS-3030, NFS2-3030 and NCA-2



CatalogSection

### General

NOTIFIER's AMPS-24/E is an addressable power supply and battery charger with up to three 24 VDC outputs. It operates in either FlashScan® or CLIP (Classic Loop Interface Protocol) mode with the NFS-3030/NFS2-3030 Fire Alarm Control Panel (FACP). It can also be used as the primary power supply for the NCA-2 Network Control Annunciator.

### Features

- Addressable by NFS-3030/NFS2-3030 FACP.
- Selectable charging current charges 7 AH to 200 AH batteries.
- Isolated Signaling Line Circuit (SLC) interface.
- Trouble bus input for use with normally-open dry contacts or open-collector circuit.
- USB Type B connector for programming installation parameters.
- Brownout detection.
- Battery/battery charger supervision.
- Secondary Power Auxiliary Outputs: 24V @ 0.5A and 5V @ 0.15A.
- AC loss detection and AC loss delay reporting.
- Mounts in a CAB-4 Series enclosure, EQ Cabinet Series enclosure, BB-25, BB-100, or BB-200 Battery Backbox.

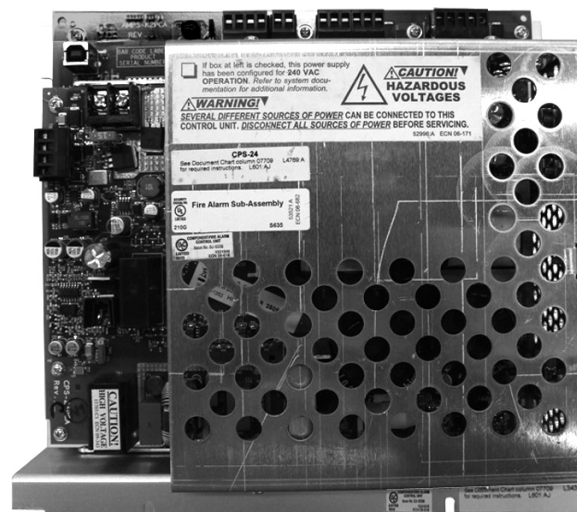
### Specifications

- Primary (AC) power:  
AMPS24: 110-120 VAC 50/60 Hz input, 5 A maximum;  
AMPS24E: 220-240 VAC 50/60 Hz input, 2.5 A maximum.
- MAIN 24V Output - filtered power-limited power. Refer to table for configuration/current information.

Charger Setting/ Battery Size	Main 24V (TB 1 on Main Control Unit) Max. Current	*Total AUX 24V (TB3 on Main Control Unit with TB2 on CPS- 24) Max. Current
1A/7-26AH Bat- teries	5A	3A
2A/12-60AH Bat- teries	5A	3A
5A/55-200AH Configuration 1 Configuration 2	5A 3A	0A 1A
Disabled	5A	5A

\* Maximum current for all AUX 24 volt outputs. Note that TB2 on CPS-24 is limited to 0.5A.

- AUX 24V - provides filtered power-limited power for additional components. Refer to table above for configuration/current information.
- Secondary power (battery) charging circuit: Current-limited, sealed lead-acid battery charger which will charge 7 to 200 AH batteries.  
Selectable charging current: 1.0 A, 2.0 A or 5.0 A.
- Secondary power auxiliary outputs.
- Wire sizes: 10 AWG (5.26 mm<sup>2</sup>) to 22 AWG (0.326 mm<sup>2</sup>).
- Battery fuse (F2): 15 A, fast-acting.
- Shipping Weight: 4.25 lb



### Agency Listings and Approvals

These listings and approvals apply to the AMPS-24/E power supply. 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: S635
- ULC: CS118
- City of Chicago
- City of Denver
- MEA: 345-02-E
- CSFM: 7165-0028:224
- FM: Approved
- FDNY: #6026

### Product Line Information

AMPS-24: Addressable power supply/battery charger

AMPS-24E: Same as AMPS-24: 220-240VAC operation

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Made in the U.S. A.

# CAB-4 Series Cabinets

## ONYX® Series Backboxes with Locking Doors



Peripheral Devices

### General

All cabinets for NOTIFIER fire alarm control panels are fabricated from 16-gauge steel. The cabinet assembly consists of two basic parts: a backbox and a locking door. Cabinets are available in either black or red, with or without LEXAN® windows. The LEXAN model provides a tasteful combination to accent the decor of the finest lobby setting.

- The **key-locked door** is provided with a pin-type hinge, two keys and the necessary hardware to mount the door to the backbox.
- The **backbox** has been engineered to provide ease-of-entry for the installer. **Knockouts** are positioned at numerous points to aid the installer in bringing a conduit into the enclosure with a minimum of hardship.
- **Right- or left-hand hinges**, selectable in the field. Door opens 180°.
- Cabinets are arranged in **four standard sizes**, A (one tier) through D (four tiers), plus a **mini cabinet** (AA, one tier without a battery compartment). See *Ordering Information*.
- A **trim ring option** is available for semi-flush mounting.
- **Chassis bridge** available for assembling multiple CHS-4 chassis external to the backbox.

### Ordering Information

A complete cabinet assembly consists of: a door, a backbox, an optional battery plate, and an optional semi-flush trim ring. For each cabinet required, order one "DR" door and one "SBB" backbox. The BP-4 or BP2-4 battery plate is required for each cabinet assembly that mounts batteries and/or a power supply in the lower position of the cabinet. The optional trim ring is an attractive "picture frame"-style black metal ring.

#### MINI "AA" SIZE, ONE TIER:

**DR-AA4:** Door assembly, LEXAN window, one tier (no battery compartment), BLACK.

**DR-AA4R:** Door assembly, LEXAN window, one tier (no battery compartment), RED.

**DR-AA4B:** Door assembly, solid door, one tier (no battery compartment), BLACK.

**DR-AA4BR:** Door assembly, solid door, one tier (no battery compartment), RED.

**SBB-AA4:** Backbox assembly, one tier (no battery compartment), BLACK.

**SBB-AA4R:** Backbox assembly, one tier (no battery compartment), RED.

**TR-AA4:** Accessory semi-flush-mount trim ring, one tier (no battery compartment).

**NOTE:** Black trim rings are used with red or black cabinets.

#### ONE TIER, "A" SIZE:

**DR-A4:** Door assembly, LEXAN window, one tier, BLACK.

**DR-A4R:** Door assembly, LEXAN window, one tier, RED.

**DR-A4B:** Door assembly, solid door, one tier, BLACK.

**DR-A4BR:** Door assembly, solid door, one tier, RED.

**SBB-A4:** Backbox assembly, one tier, BLACK.

**SBB-A4R:** Backbox assembly, one tier, RED.



NFS-640 in "B" sized  
CAB-4 cabinet

**TR-A4:** Accessory semi-flush-mount trim ring, one tier (opening 24.062" [61.118 cm] W x 20.062" [50.958 cm] H), BLACK.

**NOTE:** Black trim rings are used with red or black cabinets.

**BP-4:** Battery panel for NFS-640 and NFS-3030. Used to cover battery and power supply when lower position is used in backbox.

**BP2-4:** Battery panel for NFS2-3030. Used to cover battery and power supply when lower position is used in backbox.

#### TWO TIERS, "B" SIZE:

**DR-B4:** Door assembly, LEXAN window, two tiers, BLACK.

**DR-B4R:** Door assembly, LEXAN window, two tiers, RED.

**DR-B4B:** Door assembly, solid door, two tiers, BLACK.

**DR-B4BR:** Door assembly, solid door, two tiers, RED.

**SBB-B4:** Backbox assembly, two tiers, BLACK.

**SBB-B4R:** Backbox assembly, two tiers, RED.

**TR-B4:** Accessory semi-flush-mount trim ring, two tiers (opening 24.062" [61.118 cm] W x 28.562" [72.548 cm] H), BLACK.

**NOTE:** Black trim rings are used with red or black cabinets.

**BP-4:** Battery panel for NFS-640 and NFS-3030. Used to cover battery and power supply when lower position is used in backbox.

**BP2-4:** Battery panel for NFS2-3030. Used to cover battery and power supply when lower position is used in backbox.

#### THREE TIERS, "C" SIZE:

**DR-C4:** Door assembly, LEXAN window, three tiers, BLACK.

**DR-C4R:** Door assembly, LEXAN window, three tiers, RED.

**DR-C4B:** Door assembly, solid door, three tiers, BLACK.

**DR-C4BR:** Door assembly, solid door, three tiers, RED.

**SBB-C4:** Backbox assembly, three tiers, BLACK.

**SBB-C4R:** Backbox assembly, three tiers, RED.

**TR-C4:** Accessory semi-flush-mount trim ring, three tiers (opening 24.062" [61.118 cm] W x 37.187" [94.455 cm] H), BLACK.

**NOTE:** Black trim rings are used with red or black cabinets.

**BP-4:** Battery panel for NFS-640 and NFS-3030. Used to cover battery and power supply when lower position is used in backbox.

**BP2-4:** Battery panel for NFS2-3030. Used to cover battery and power supply when lower position is used in backbox.

**FOUR TIERS, "D" SIZE:**

- **DR-D4:** Door assembly, LEXAN window, four tiers, BLACK.
- **DR-D4R:** Door assembly, LEXAN window, four tiers, RED.
- **DR-D4B:** Door assembly, solid door, four tiers, BLACK.
- **DR-D4BR:** Door assembly, solid door, four tiers, RED.
- **SBB-D4:** Backbox assembly, four tiers, BLACK.
- **SBB-D4R:** Backbox assembly, four tiers, RED.

**TR-D4:** Accessory semi-flush-mount trim ring, four tiers (opening 24.062" [61.118 cm] W x 45.812" [116.363 cm] H), BLACK.

**Note:** Black trim rings are used with red or black cabinets.

**BP-4:** Battery panel for NFS-640 and NFS-3030. Used to cover battery and power supply when lower position is used in backbox.

**BP2-4:** Battery panel for NFS2-3030. Used to cover battery and power supply when lower position is used in backbox.

**ACCESSORIES:**

**WC-2:** Wire channel. Provides a pair of wire trays to neatly route wiring between CHS chassis.

**CB-1:** Chassis bridge. Provides a bridge between CHS Series chassis.

**DP-1B:** Blank dress panel, covers one CAB-4 tier, BLACK.

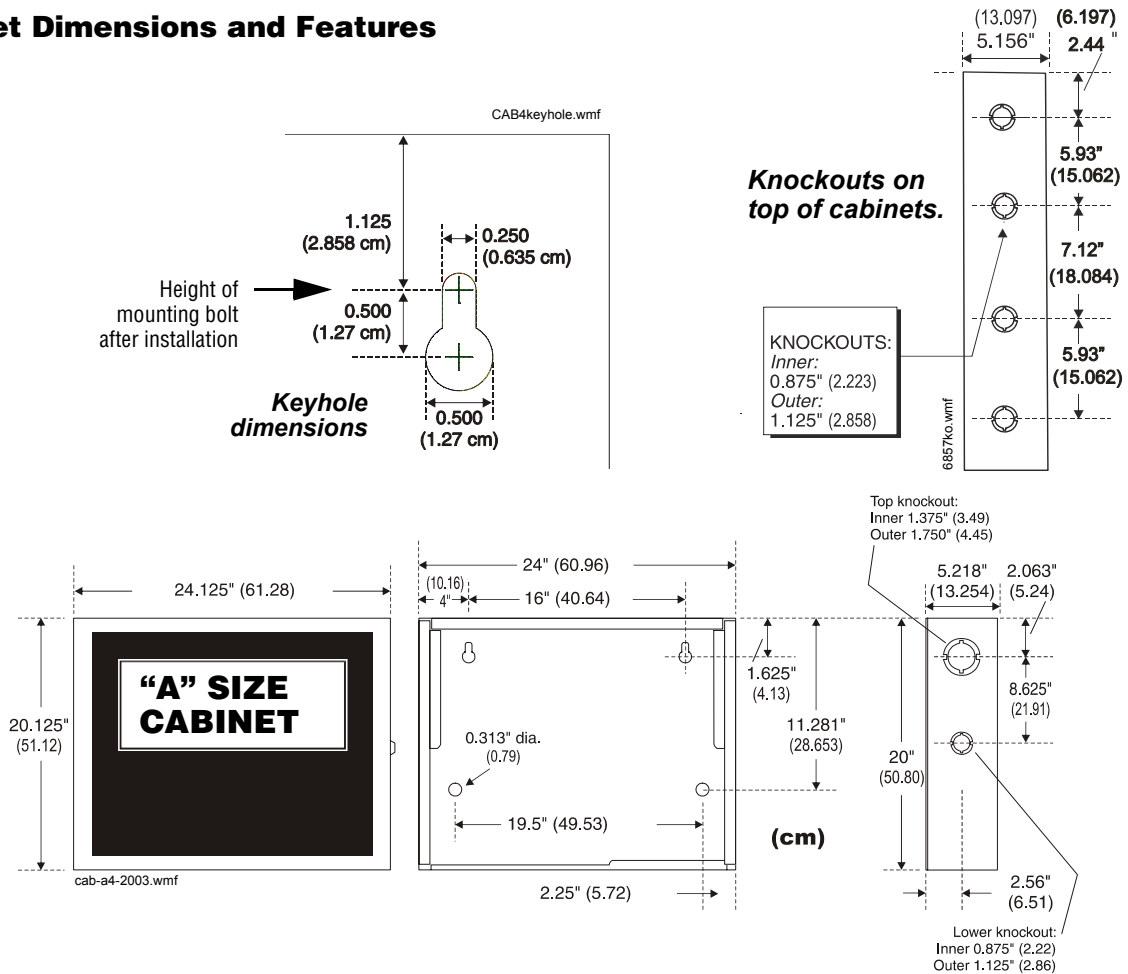
**ADP-4B:** Annunciator dress panel.

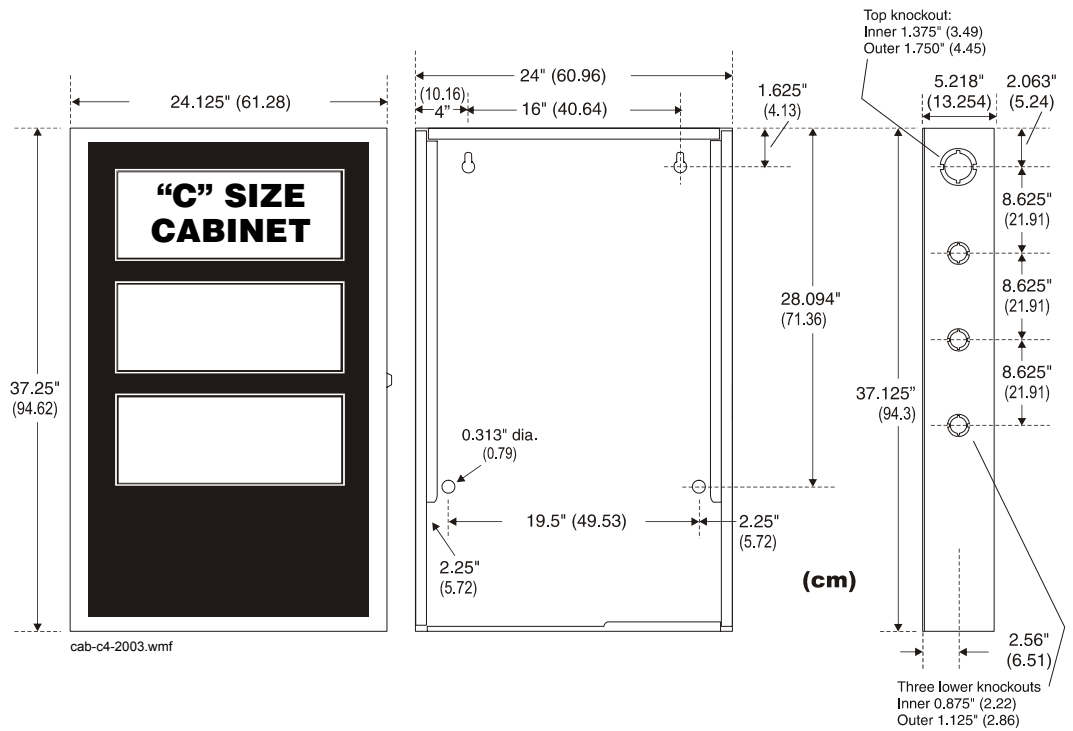
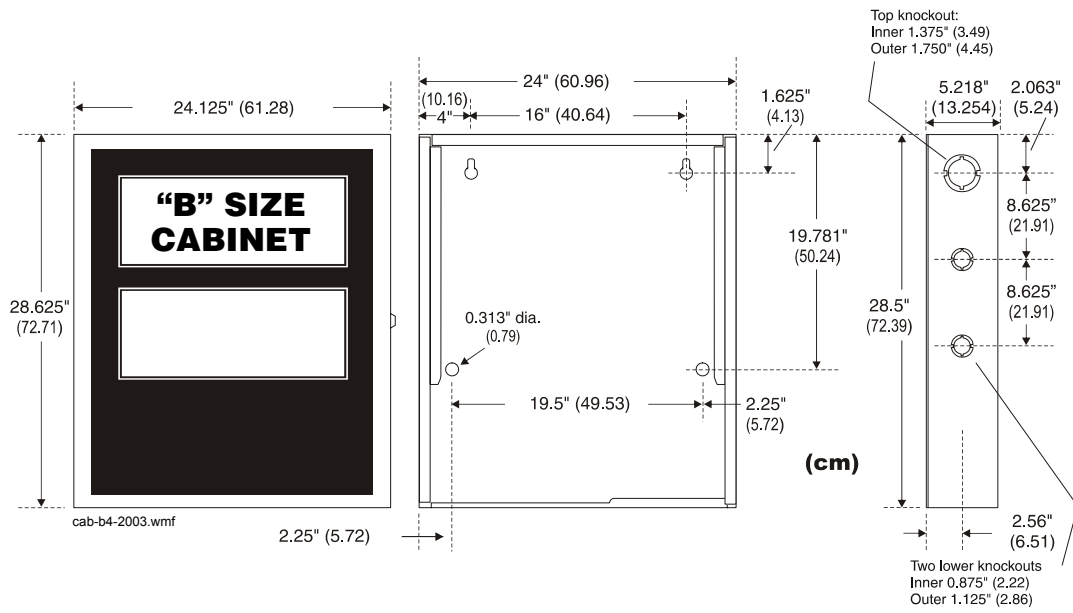
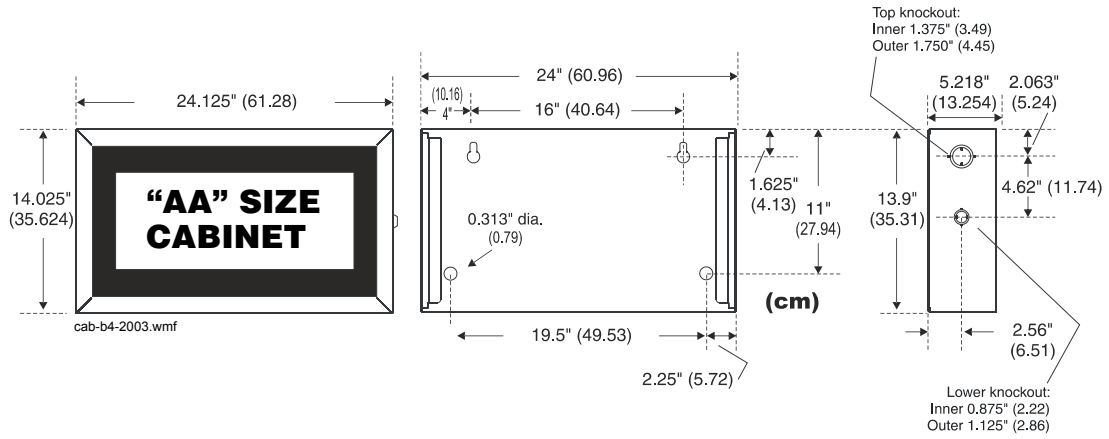
**Agency Listings and Approvals**

These listings and approvals below apply to the CAB-4 Series Cabinets. 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.

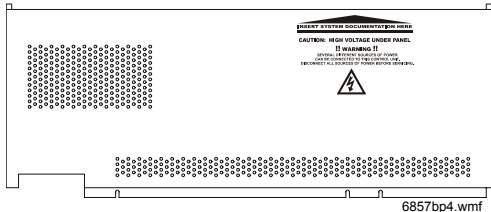
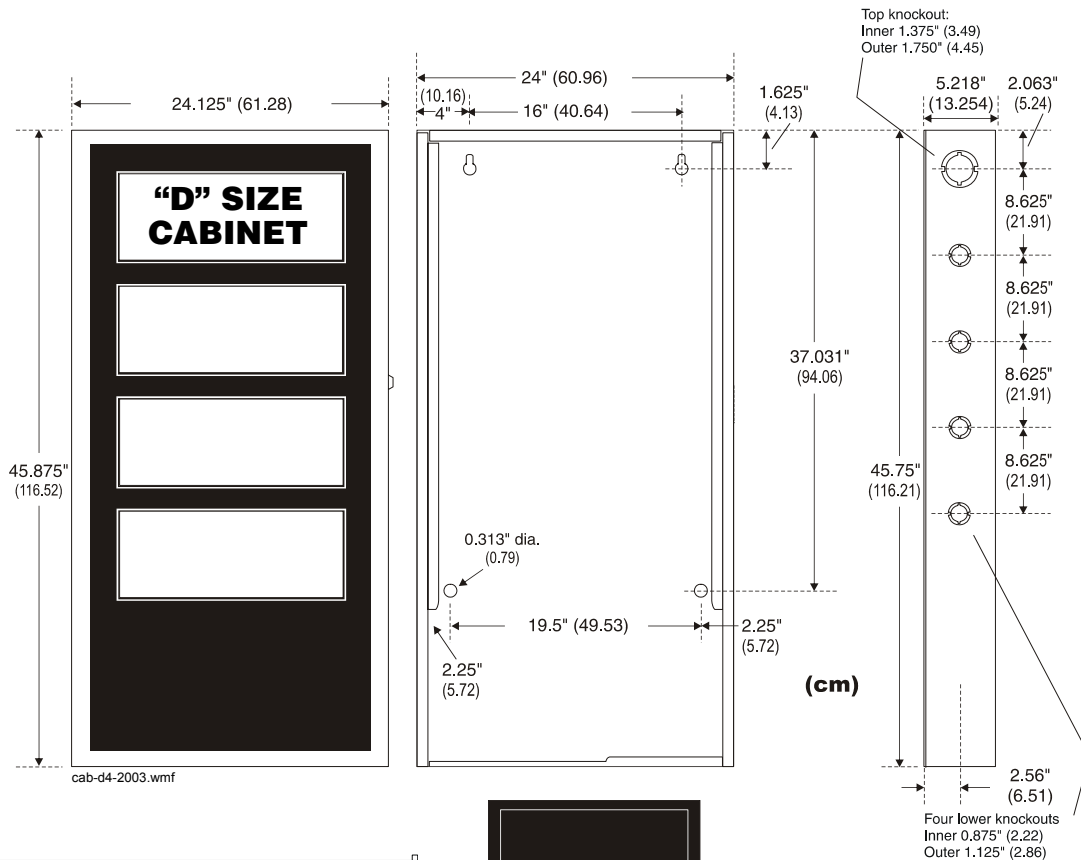
- **UL** Listed: file S635 (except AA size).
- **ULC** Listed: file CS118 (except AA size).
- **MEA** approved: files 317-01-E, 345-02-E (except AA size).
- **CSFM** approved (except AA size): files 7165-0028:214 (NFS-640), 7170-0028:216 (NFS-640), 7165-0028:224 (NFS-3030), 7170-0028:223 (NFS-3030).
- **FM** approved (except AA size).
- **U.S. Coast Guard** approved: 161.002/42/1 (NFS-640).

**Cabinet Dimensions and Features**

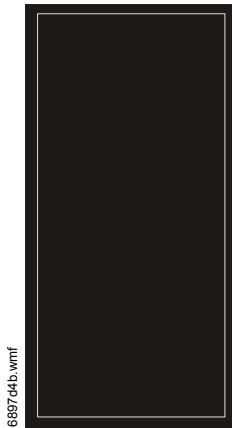








**The BP-4 Battery Dress Panel covers the Main Power Supply and the batteries in the cabinet. Only one BP-4 or BP2-4 is required per cabinet unless an AA cabinet is used (no battery compartment).**



**"D" sized cabinet with solid door. Solid door option available on all sizes in black or red.**

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# BAT Series Batteries

## Sealed Lead-Acid or Gell Cell


**Power Supplies**

### General

**BAT Series Batteries** feature a new part-numbering/listing system — providing an improved method of delivery for NOTIFIER-approved sealed lead-acid batteries for all your fire alarm system needs. Multiple brands of batteries are now offered under generic part numbers, reducing backorder situations and permitting us to deliver these products in a more timely fashion. NOTIFIER has approved the multiple brands listed below as possible product shipped for a given part number. Please note that any incoming orders for “PS Series” batteries will be converted to the equivalent BAT Series part numbers.



6933cov.jpg

### 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.

### 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:** files MH19884 (*B & B Battery*), MH20567 (*UPG, previously Jolt*), MH20845 (*Power-Sonic*).

### Part Number Reference

CURRENT Part Number	BATTERY DESCRIPTION	ALTERNATES APPROVED: manufacturers and P/Ns shipped under BAT P/Ns
BAT-1250	12 V, 5 AH, sealed.	BP5-12 (B&B Battery); PS-1250 (Power-Sonic); SA1250 (Jolt) to be replaced with UB1250 (UPG).
BAT-1250	12 V, 5 AH, sealed.	BP5-12 (B&B Battery); PS-1250 (Power-Sonic); SA1250 (Jolt) to be replaced with UB1250 (UPG).
BAT-1270	12 V, 7 AH, sealed.	BP7-12 (B&B Battery); PS-1270 (Power-Sonic); SA1272 (Jolt) to be replaced with UB1270 (UPG).
BAT-12120	12 V, 12 AH, sealed.	BP12-12 (B&B Battery); PS-12120 (Power-Sonic); SA12120 (Jolt) to be replaced with UB12120 (UPG).
BAT-12180	12 V, 18 AH, sealed.	PS-12180 (Power-Sonic); SA12180 (Jolt) to be replaced with UB12180 (UPG).
BAT-12180	12 V, 18 AH, sealed.	PS-12180 (Power-Sonic); SA12180 (Jolt) to be replaced with UB12180 (UPG).
BAT-12260	12 V, 26 AH, sealed.	BP26-12 (B&B Battery); PS-12260 (Power-Sonic); SA12260 (Jolt) to be replaced with UB12260 (UPG).
BAT-12550	12 V, 55 AH, sealed.	PS-12550 (Power-Sonic); XSA12550 (Jolt) to be replaced with UB12550 (UPG).
BAT-12550	12 V, 55 AH, sealed.	PS-12550 (Power-Sonic); XSA12550 (Jolt) to be replaced with UB12550 (UPG).
BAT-121000	12 V, 100 AH, gell cell.	PS-121000 (Power-Sonic); XSA121000A (Jolt) to be replaced with UB121000 (UPG).

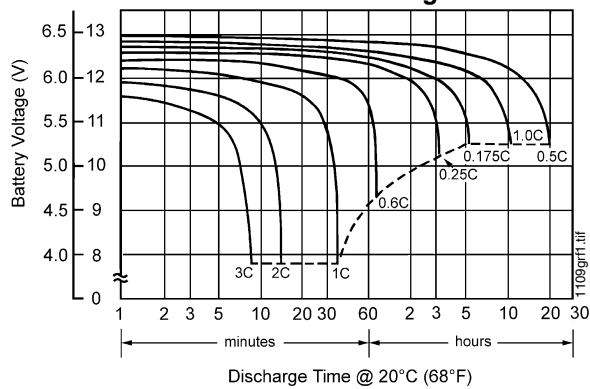
# POWER-SONIC

## Part Number Reference

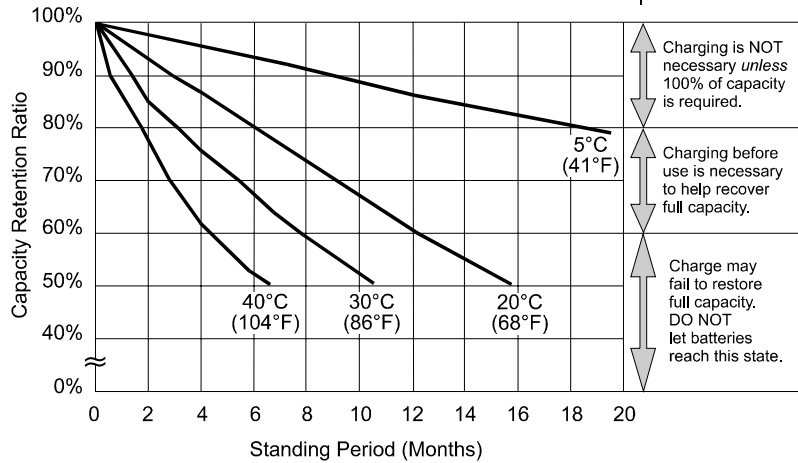
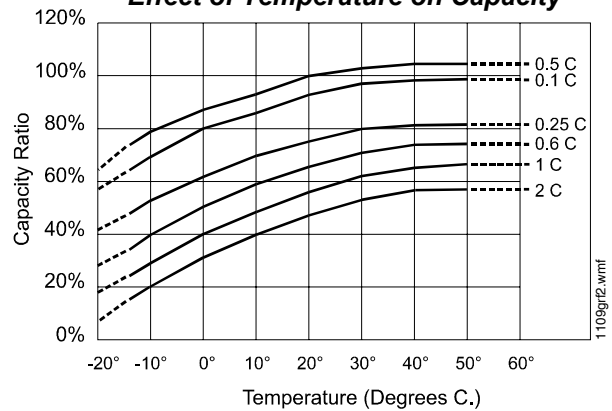
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MODEL	Nominal Voltage V	Nominal Capacity @ 20 hr. rate A.H.	Discharge Current @20 hr. rate mA	DIMENSIONS									
				Width		Depth		Height		Height over terminal		Weight	
				in.	mm	in.	mm	in.	mm	in.	mm	lb.	kg.
PS-1250	12	5	250	3.54	90	2.76	70	4.02	102	4.21	107	4.1	1.9
PS-1270	12	7	325	5.94	151	2.56	65	3.7	94	3.86	98	5.7	2.6
PS-12120	12	12	600	5.94	151	3.86	98	3.7	94	3.86	98	8.8	4
PS-12180	12	18	875	7.13	181	2.99	76	6.57	167	6.57	167	12.8	5.8
PS-12250	12	25	1300	6.89	175	6.54	166	4.92	125	4.92	125	18.7	8.5
PS-12550	12	55	3000	10.25	260	6.6	168	8.2	208	9.45	240	39.7	18
PS-121000	12	100	5000	12	305	6.6	168	8.2	208	9.45	240	65.7	29.8

**Characteristic Discharge Curves**



**Effect of Temperature on Capacity**

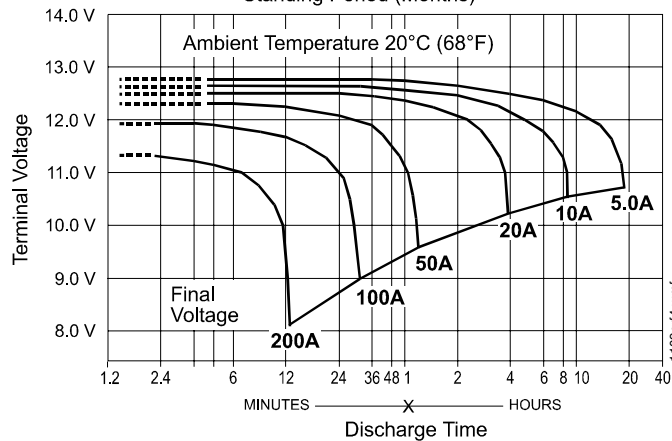


**at left:  
PS-121000  
Shelf-Life  
and Storage**

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

Charging before use is necessary to help recover full capacity.

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



**at left:  
PS-121000  
Discharge  
Characteristics**

## B & B BATTERY

Model	V	Nominal Capacity (AH)				Weight		Terminal				Dimensions							
								Standard		Optional		L		W		H		TH	
		20 hr	10 hr	5 hr	1 hr	kg	lbs	Type	Pos.	Type	Pos.	mm	in	mm	in	mm	in	mm	in
BP5-12	12	5.00	4.75	4.25	3.00	1.86	4.10	T1	3	T2		90	3.54	70	2.76	102	4.02	106	4.17
BP7-12	12	7.00	6.65	5.95	4.20	2.60	5.73	T2	5	T1		151	5.94	65	2.56	93	3.66	98	3.86
BP12-12	12	12.00	11.40	10.20	7.20	4.03	8.89	B1	5	T1		151	5.94	98	3.86	94	3.70	98	3.86
BP26-12	12	26.00	24.70	22.10	15.60	9.40	20.73	B1	7	T2.11	9	175	6.89	166	6.54	125	4.92	125	4.92

### Charging Procedure

Application	Charging method	Charging voltage at 20°C (V/cell)	Temperature compensation coefficient of charging voltage (mV/°C/cell)	Maximum charging current (CA)	Charging time 0.1 CA, 20°C (h)		Temp (°C)
					100% discharge	50% discharge	
For standby power source	Constant voltage and constant current charging (with current restriction)	2.25 ~ 2.30	- 3	0.3	24	20	0 - 40°C (32 ~ 104°F)
For cycle service		2.40 ~ 2.50	- 4	0.3	16	10	

Temperature compensation of charging voltage is not needed when using the batteries within 5°C to 35°C range.

Final Voltage	Discharge Time: for Model BP5-12								
	5 min	10 min	15 min	30 min	1 hr	3 hr	5 hr	10 hr	20 hr
	Battery Output Power (W): for Model BP5-12								
10.80 V	180.8	133.1	106.6	63.5	36.39	14.57	10.05	5.62	2.94
10.50 V	209.2	144.2	111.5	65.9	37.48	14.87	10.20	5.70	3.00
10.20 V	222.3	149.4	115.0	67.4	38.16	15.00	10.26	5.73	3.01
9.90 V	232.3	152.9	117.6	68.3	38.61	15.10	10.29	5.75	3.02
9.60 V	240.0	156.0	120.0	69.0	39.0	15.20	10.32	5.75	3.02

**Constant Power Discharge Characteristics at 25°C/77°F for BP5-12**

Final Voltage	Discharge Time: for Model BP7-12								
	5 min	10 min	15 min	30 min	1 hr	3 hr	5 hr	10 hr	20 hr
	Battery Output Power (W): for Model BP7-12								
10.80 V	253.1	186.3	149.3	88.8	50.95	20.40	14.07	7.86	4.11
10.50 V	292.9	201.8	156.2	92.2	52.47	20.81	14.28	7.98	4.20
10.20 V	311.2	209.1	161.0	94.3	53.42	21.00	14.36	8.02	4.22
9.90 V	325.2	214.1	164.7	95.6	54.06	21.15	14.41	8.04	4.23
9.60 V	336.0	218.4	168.0	96.6	54.60	21.27	14.45	8.04	4.23

**Constant Power Discharge Characteristics at 25°C/77°F for BP7-12**

Final Voltage	Discharge Time: for Model BP12-12								
	5 min	10 min	15 min	30 min	1 hr	3 hr	5 hr	10 hr	20 hr
	Battery Output Power (W): for Model BP12-12								
10.80 V	433.9	319.4	256.0	152.3	87.34	34.98	24.12	13.48	7.05
10.50 V	502.2	346.0	267.7	158.1	89.96	35.68	24.48	13.68	7.20
10.20 V	533.6	358.5	276.0	161.7	91.57	36.00	24.61	13.75	7.23
9.90 V	557.5	367.1	282.4	164.0	92.67	36.25	24.70	13.79	7.25
9.60 V	576.0	374.4	288.0	165.6	93.60	36.47	24.77	13.79	7.25

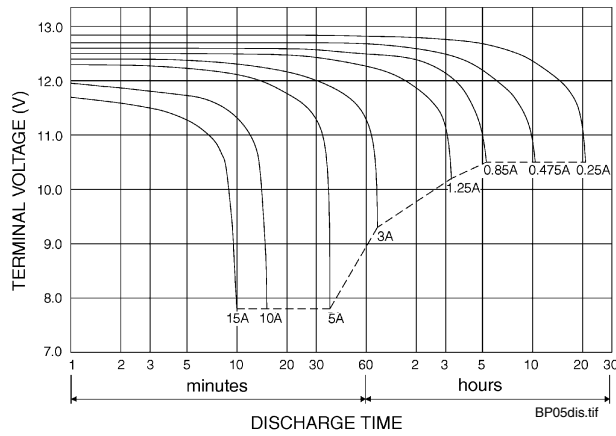
**Constant Power Discharge Characteristics at 25°C/77°F for BP12-12**

Final Voltage	Discharge Time: for Model BP26-12								
	5 min	10 min	15 min	30 min	1 hr	3 hr	5 hr	10 hr	20 hr
	Battery Output Power (W): for Model BP26-12								
10.80 V	940.0	692.0	554.6	330.0	189.23	75.79	52.25	29.20	15.26
10.50 V	1088.0	749.7	580.0	342.5	194.91	77.30	53.04	29.64	15.60
10.20 V	1156.0	776.7	598.0	350.3	198.41	78.00	53.33	29.79	15.67
9.90 V	1208.0	795.3	611.8	355.2	200.79	78.54	53.52	29.88	15.71
9.60 V	1248.0	811.2	624.0	358.8	202.80	79.01	53.68	29.88	15.71

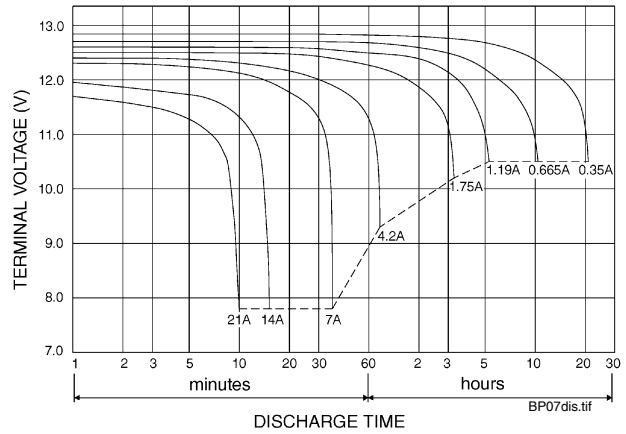
**Constant Power Discharge Characteristics at 25°C/77°F for BP26-12**

# B & B BATTERY

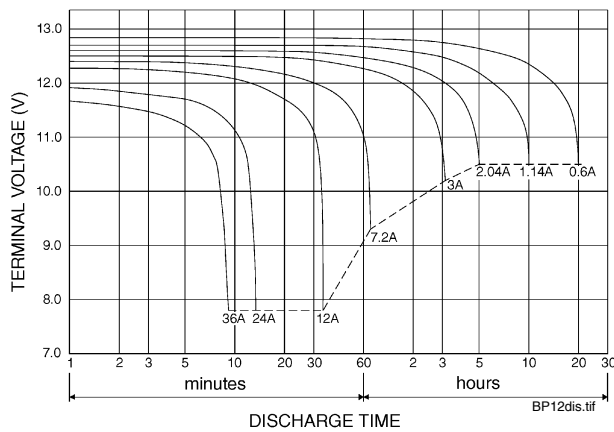
**BP5-12 Battery Discharge Characteristics (25°C/77°F)**



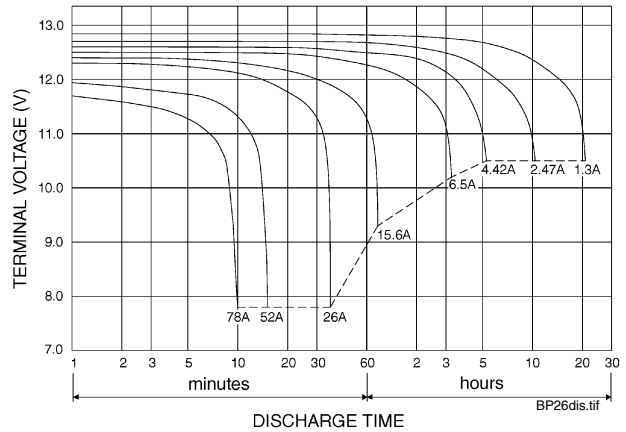
**BP7-12 Battery Discharge Characteristics (25°C/77°F)**



**BP12-12 Battery Discharge Characteristics (25°C/77°F)**



**BP26-12 Battery Discharge Characteristics (25°C/77°F)**



**BP05-12**



**BP12-12**



**BP26-12**

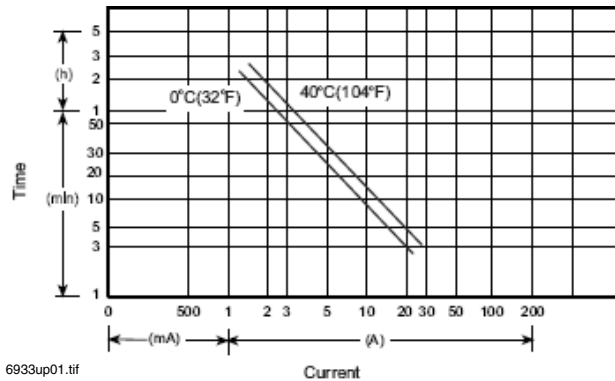


# UPG BATTERY

UB1250 has the same specifications as previous Jolt SA1250; SA1272 to be replaced with UB1270 (specs/diagrams pending).

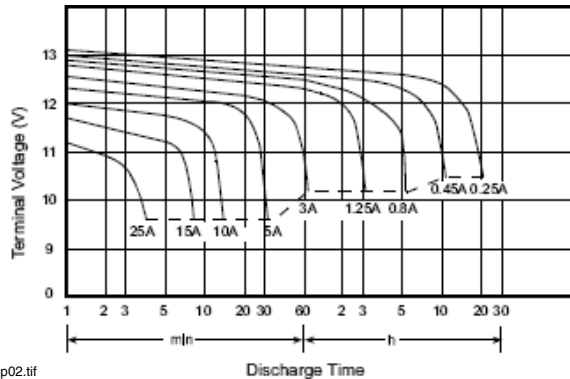
## UB1250 (previously SA1250) Diagrams

UB1250/SA1250 discharge current vs. time



6933up01.tif

UB1250/SA1250 discharge characteristics (25°C/77°F)



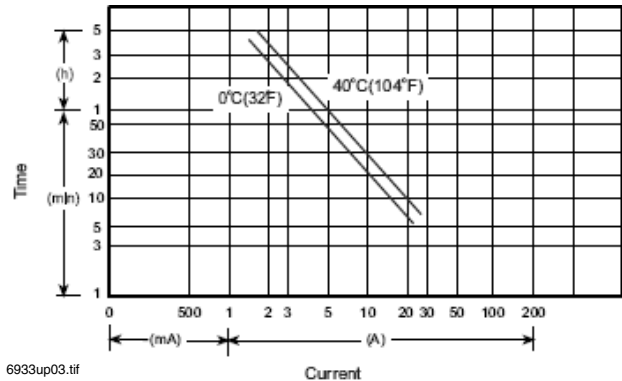
6933up02.tif

## UB1250, SA1250 Specifications

- Nominal voltage: 12 V.
- Nominal capacity (20 hr): 5.0 AH.
- Dimensions: total height 107 mm (4.21"); container height 101 mm (3.98"); length 90 mm (3.54"); width 70 mm (2.76").
- Weight: approximately 1.83 kg (4.03 lbs).
- Container material: UL94HB ABS, UL94V-0 ABS.
- Internal resistance (25°C, 77°F): ~ 32 m.
- Discharge capacity under different temperatures:
  - 40°C: ~ 102%
  - 25°C: ~ 100%
  - 0°C: ~ 85%
- Capacity 25°C/77°F:
  - 20 hr @ 0.25 A: 5.0 AH.
  - 5 hr @ 0.8 A: 4.0 AH.
  - 1 hr @ 3.0 A: 3.0 AH.
  - 1 C @ 5.0 A: 2.5 AH.
- Charging voltage (25°C, 77°F):
  - Standby use: 13.65 V ± 0.15 V.
  - Cycle use: 14.7 V ± 0.3 V.
- Maximum discharge current: 60 A (5 sec).
- Maximum charging current: 1.5 A.
- Self-discharge residual capacity (25°C, 77°F):
  - After 3 months: ~ 90%.
  - After 6 months: ~ 82%.
  - After 12 months: ~ 70%.

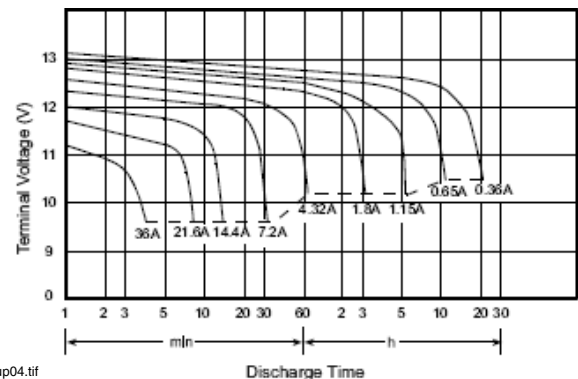
## SA1272 Diagrams

SA1272 discharge current vs. time



6933up03.tif

SA1272 discharge characteristics (25°C/77°F)



6933up04.tif

## SA1272 Specifications

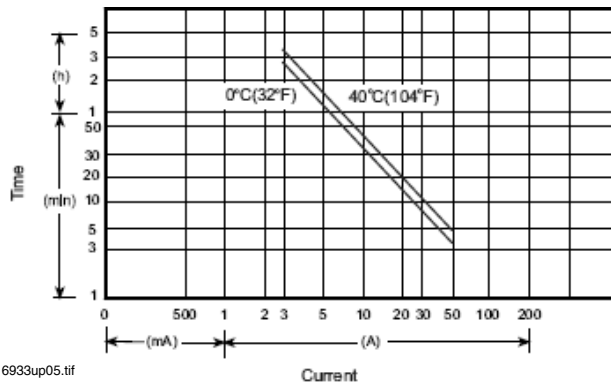
- Nominal voltage: 12 V.
- Nominal capacity (20 hr): 7.2 AH.
- Dimensions: total height 100 mm (3.94"); container height 94 mm (3.70"); length 151 mm (5.95"); width 65 mm (2.56").
- Weight: approximately 2.66 kg (5.85 lbs).
- Container material: UL94HB ABS, UL94V-0 ABS.
- Internal resistance (25°C, 77°F): ~ 22 m.
- Discharge capacity under different temperatures:
  - 40°C: ~ 102%
  - 25°C: ~ 100%
  - 0°C: ~ 85%
- Capacity 25°C/77°F:
  - 20 hr @ 0.36 A: 7.2 AH.
  - 5 hr @ 1.15 A: 5.76 AH.
  - 1 hr @ 4.32 A: 4.32 AH.
  - 1 C @ 7.2 A: 3.6 AH.
- Charging voltage (25°C, 77°F):
  - Standby use: 13.65 V ± 0.15 V.
  - Cycle use: 14.7 V ± 0.3 V.
- Maximum discharge current: 90 A (5 sec).
- Maximum charging current: 2.16 A.
- Self-discharge residual capacity (25°C, 77°F):
  - After 3 months: ~ 90%.
  - After 6 months: ~ 82%.
  - After 12 months: ~ 70%.

# UPG BATTERY

Same specifications as previous Jolt models; packaging and part numbers are the only changes.

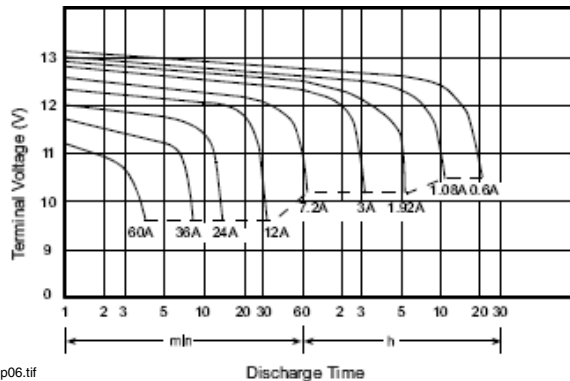
## UB12120 (was SA12120) Diagrams

UB12120/SA12120 discharge current vs. time



6933up05.tif

UB12120/SA12120 discharge characteristics (25°C/77°F)



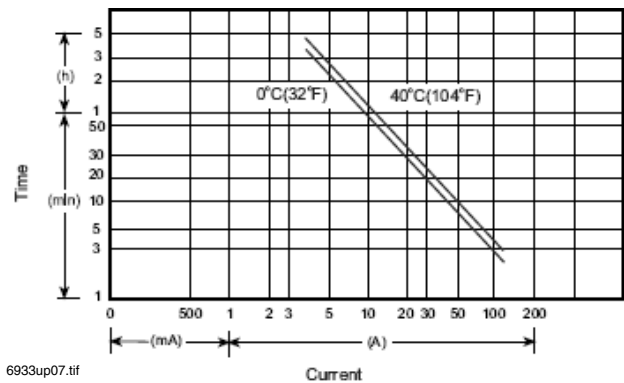
6933up06.tif

## UB12120, SA12120 Specifications

- Nominal voltage: 12 V.
  - Nominal capacity (20 hr): 12.0 AH.
  - Dimensions: total height 100 mm (3.94"); container height 94 mm (3.70"); length 151 mm (5.95"); width 98 mm (3.86").
  - Weight: approximately 4.10 kg (9.04 lbs).
  - Container material: UL94HB ABS, UL94V-0 ABS.
  - Internal resistance (25°C, 77°F): ~ 14 m.
  - Discharge capacity under different temperatures:
    - 40°C: ~ 102%
    - 25°C: ~ 100%
    - 0°C: ~ 85%
  - Capacity 25°C/77°F:
    - 20 hr @ 0.6 A: 12.0 AH.
    - 5 hr @ 1.92 A: 9.6 AH.
    - 1 hr @ 7.2 A: 7.2 AH.
    - 1 C @ 12.0 A: 6.0 AH.
  - Charging voltage (25°C, 77°F):
    - Standby use: 13.65 V ± 0.15 V.
    - Cycle use: 14.7 V ± 0.3 V.
- Maximum discharge current: 120 A (5 sec).  
 Maximum charging current: 3.6 A.  
 Self-discharge residual capacity (25°C, 77°F):  
 After 3 months: ~ 90%.  
 After 6 months: ~ 82%.  
 After 12 months: ~ 70%.

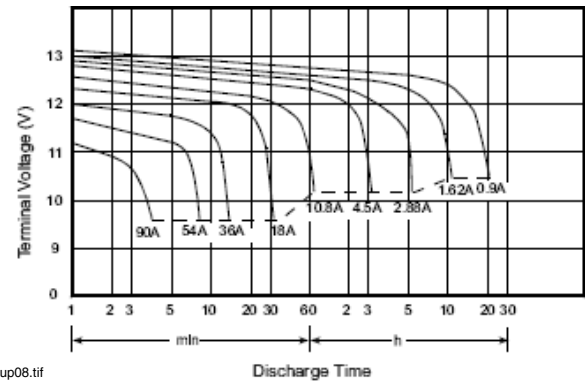
## UB12180 (was SA12180) Diagrams

UB12180/SA12180 discharge current vs. time



6933up07.tif

UB12180/SA12180 discharge characteristics (25°C/77°F)



6933up08.tif

## UB12180, SA12180 Specifications

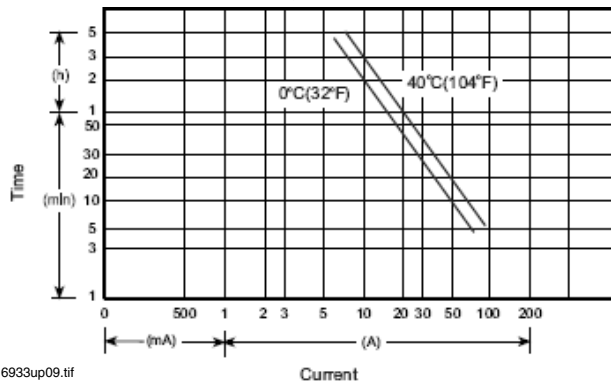
- Nominal voltage: 12 V.
  - Nominal capacity (20 hr): 18.0 AH.
  - Dimensions: total height 167 mm (6.58"); container height 167 mm (6.58"); length 181 mm (7.13"); width 76 mm (2.99").
  - Weight: approximately 6.06 kg (13.36 lbs).
  - Container material: UL94HB ABS, UL94V-0 ABS.
  - Internal resistance (25°C, 77°F): ~ 13 m.
  - Discharge capacity under different temperatures:
    - 40°C: ~ 102%
    - 25°C: ~ 100%
    - 0°C: ~ 85%
  - Capacity 25°C/77°F:
    - 20 hr @ 0.9 A: 18.0 AH.
    - 5 hr @ 2.88 A: 14.4 AH.
    - 1 hr @ 10.8 A: 10.8 AH.
    - 1 C @ 18.0 A: 9.0 AH.
  - Charging voltage (25°C, 77°F):
    - Standby use: 13.65 V ± 0.15 V.
    - Cycle use: 14.7 V ± 0.3 V.
- Maximum discharge current: 300 A (5 sec).  
 Maximum charging current: 5.4 A.  
 Self-discharge residual capacity (25°C, 77°F):  
 After 3 months: ~ 90%.  
 After 6 months: ~ 82%.  
 After 12 months: ~ 70%.

# UPG BATTERY

Same specifications as previous Jolt models; packaging and part numbers are the only changes.

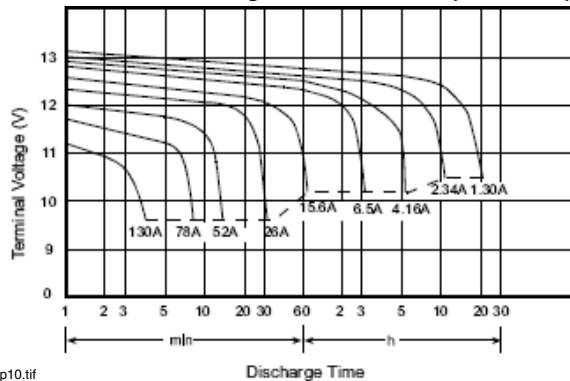
## UB12260 (was SA12260) Diagrams

UB12260/SA12260 discharge current vs. time



6933up09.tif

UB12260/SA12260 discharge characteristics (25°C/77°F)



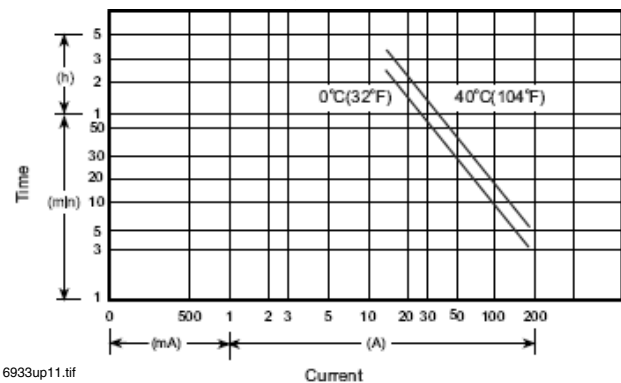
6933up10.tif

## UB12260, SA12260 Specifications

- Nominal voltage: 12 V.
- Nominal capacity (20 hr): 26.0 AH.
- Dimensions: total height 125 mm (4.92"); container height 125 mm (4.92"); length 166 mm (6.54"); width 175 mm (6.89").
- Weight: approximately 8.80 kg (19.40 lbs).
- Container material: UL94HB ABS, UL94V-0 ABS.
- Internal resistance (25°C, 77°F): ~ 10 m.
- Discharge capacity under different temperatures:
  - 40°C: ~ 102%
  - 25°C: ~ 100%
  - 0°C: ~ 85%
- Capacity 25°C/77°F:
  - 20 hr @ 1.3 A: 26.0 AH.
  - 5 hr @ 4.16 A: 20.8 AH.
  - 1 hr @ 15.6 A: 15.6 AH.
  - 1 C @ 26.0 A: 13.0 AH.
- Charging voltage (25°C, 77°F):
  - Standby use: 13.65 V ± 0.15 V.
  - Cycle use: 14.7 V ± 0.3 V.
- Maximum discharge current: 300 A (5 sec).
- Maximum charging current: 7.8 A.
- Self-discharge residual capacity (25°C, 77°F):
  - After 3 months: ~ 90%.
  - After 6 months: ~ 82%.
  - After 12 months: ~ 70%.

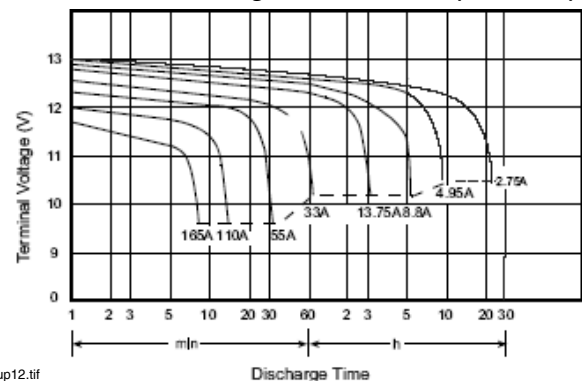
## UB12550 (was SA12550) Diagrams

UB12550/SA12550 discharge current vs. time



6933up11.tif

UB12550/SA12550 discharge characteristics (25°C/77°F)



6933up12.tif

## UB12550, SA12550 Specifications

- Nominal voltage: 12 V.
- Nominal capacity (20 hr): 55.0 AH.
- Dimensions: total height 234.5 mm (9.23"); container height 216.5 mm (8.52"); length 229 mm (9.02"); width 138 mm (5.43").
- Weight: approximately 19.0 kg (41.8 lbs).
- Container material: UL94HB ABS, UL94V-0 ABS.
- Internal resistance (25°C, 77°F): ~ 8 m.
- Discharge capacity under different temperatures:
  - 40°C: ~ 102%
  - 25°C: ~ 100%
  - 0°C: ~ 85%
- Capacity 25°C/77°F:
  - 20 hr @ 2.75 A: 55.0 AH.
  - 5 hr @ 8.8 A: 44.0 AH.
  - 1 hr @ 33.0 A: 33.0 AH.
  - 1 C @ 55.0 A: 27.5 AH.
- Charging voltage (25°C, 77°F):
  - Standby use: 13.65 V ± 0.15 V.
  - Cycle use: 14.7 V ± 0.3 V.
- Maximum discharge current: 600 A (5 sec).
- Maximum charging current: 16.5 A.
- Self-discharge residual capacity (25°C, 77°F):
  - After 3 months: ~ 90%.
  - After 6 months: ~ 82%.
  - After 12 months: ~ 70%.

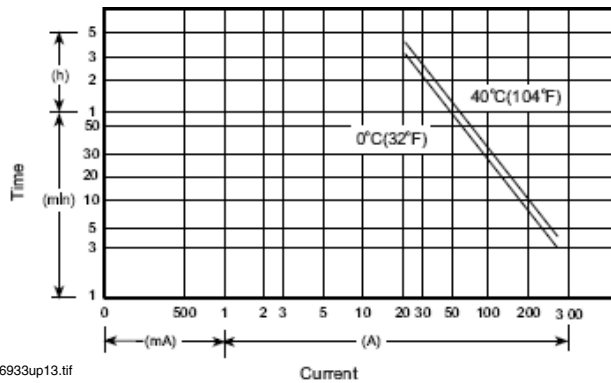


# UPG BATTERY

Same specifications as previous Jolt models; packaging and part numbers are the only changes.

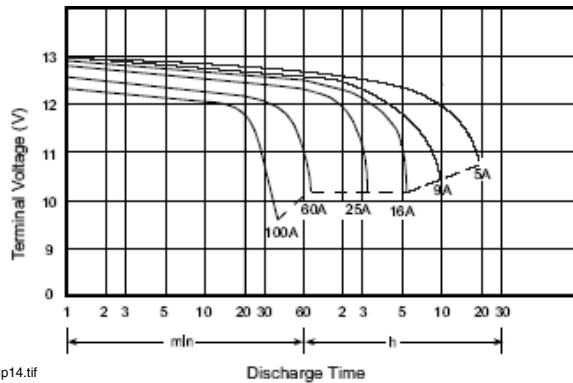
## UB121000 (XSA121000A) Diagrams

UB121000/XSA121000A discharge current vs. time



6933up13.tif

UB121000/XSA121000A discharge characteristics (25°C/77°F)



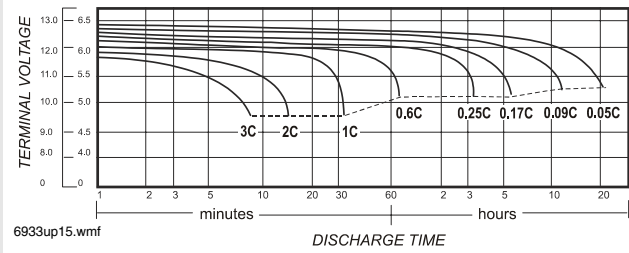
6933up14.tif

## UB121000 (XSA121000A) Diagrams

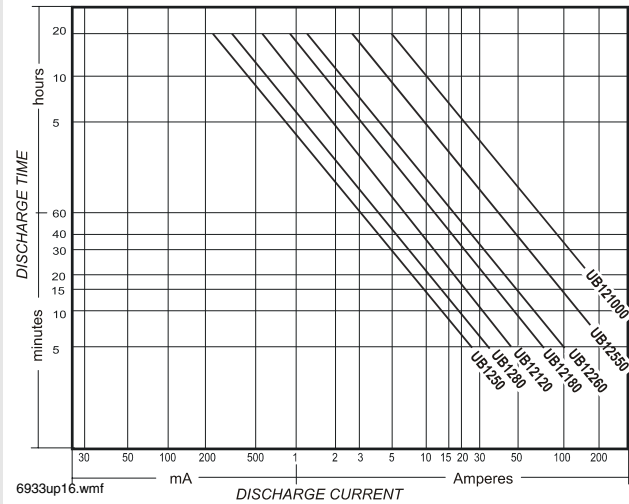
- Nominal voltage: 12 V.
- Nominal capacity (20 hr): 100.0 AH.
- Dimensions: total height 221 mm (8.70"); container height 214 mm (8.43"); length 329 mm (12.95"); width 172 mm (6.77").
- Weight: approximately 34.00 kg (74.8 lbs).
- Container material: UL94HB ABS, UL94V-0 ABS.
- Internal resistance (25°C, 77°F): ~ 6.5 m.
- Discharge capacity under different temperatures:
  - 40°C: ~ 102%
  - 25°C: ~ 100%
  - 0°C: ~ 85%
- Capacity 25°C/77°F:
  - 20 hr @ 5.0 A: 100.0 AH.
  - 5 hr @ 16.0 A: 80.0 AH.
  - 1 hr @ 60.0 A: 60.0 AH.
  - 1 C @ 100.0 A: 50.0 AH.
- Charging voltage (25°C, 77°F):
  - Standby use: 13.65 V ± 0.15 V.
  - Cycle use: 14.7 V ± 0.3 V.
- Maximum discharge current: 600 A (5 sec).
- Maximum charging current: 30 A.
- Self-discharge residual capacity (25°C, 77°F):
  - After 3 months: ~ 90%.
  - After 6 months: ~ 82%.
  - After 12 months: ~ 70%.

## UPG Summary Diagrams

Summary discharge characteristics



Summary discharge current vs. time curve (25°C/77°F)



6933up16.wmf



6933ub1280.jpg



6933ub12260.jpg

# UPG BATTERY

Same specifications as previous Jolt models;  
packaging and part numbers are the only changes.

## Charging Procedure: UPG Battery

Application	Charging method	Charging voltage at 25°C (V/cell)	Temperature compensation coefficient of charging voltage (mV/°C/cell)	Maximum charging current (CA)	Charging time 0.1 CA, 25°C (h)		Temp (°C)
					100% discharge	50% discharge	
For standby power source	Constant voltage and constant current charging (with current restriction)	2.25 ~ 2.30	- 3.3 (-1.8 mV/°F/cell)	0.3	T <sup>3</sup> 24	T <sup>3</sup> 20	0 – 40°C (32 – 104°F)
For cycle service		2.40 ~ 2.50	- 5 (-2.8 mV/°F/cell)	0.3	16 < T < 24	10 < T < 24	

Temperature compensation of charging voltage is not needed when using the batteries within 5°C to 35°C range.

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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.

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➤ **Notifier - NFS-LBB(R): Battery Backbox —**

Holds up to two BAT-12550 55  
AH batteries or one BAT-121000 100 AH battery.

Dimensions:

Box: 24.0" (61.0 cm) wide x 14.0" (35.6 cm) high x 7.75" (19. cm) deep.

Door: 24.125" (61.3 cm) wide x 14.25" (36.2 cm)

high x (door adds 0.063" [approx. 0.16 cm] to depth)



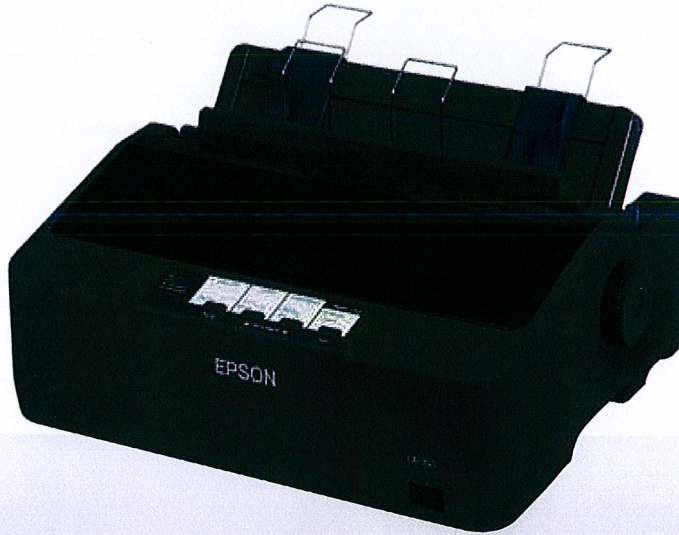
➤ **NFS-LBB = Black**

**NFS-LBBR -= Red**

Compact, reliable and economical

# ➤ LX-350 Dot Matrix Printer

# LX-350



## GENERAL INFORMATION

Epson, the world leader in Dot Matrix Printers, introduces a new printer with the same technology and quality of its predecessors, but with a more compact presentation and robustness.

The new LX-350 has fast and durable EPSON 9-Pin technology, prints up to 347 characters per second (10 cpi) and is ideal for front and back office applications needing continuous paper or multi-part stationery. Now more reliable than ever, the LX-350 has a mean time before failure of 10,000 power on hours.

A very economical printer to run, the LX-350 helps save money with its NEW high ribbon yield of up to 4 million characters (Ribbon compatible with LX-300+II and LX-300+\*). As an Energy Star Partner, Epson has determined that the LX-350 meets all U.S. EPA Energy Star guidelines for energy efficiency, making it a low power consumption printer.

Easy to integrate, the LX-350 has Parallel, Serial and USB interfaces as standard, and will fit neatly onto desks thanks to its compact design and cable management system.

## MAIN FEATURES

### Better Dependability with Low TCO

- Total print volume of 20 million lines
- Print head life of 400 million strokes/wire
- High reliability due to its improved MTBF of 10,000 power on hours

### High-speed printing

- 347 cps in 10 cpi mode draft high speed

### New ribbon with improved yield (S015631)

- Yield of up to 4 million characters and compatible with the LX-300+II and LX-300+\*

### Printing capacity of 5 part forms (1 original + 4 copies)

- Easily handles multiple part forms such as dispatch/shipping forms, printing checks, invoices and receipts among others

### Accessible Connectivity

- Easy to adapt with serial, parallel and USB high-speed interfaces

### Energy Star qualified

- Energy efficient model using less power consumption: 1.1W on standby, 27W powered on



**WORLD LEADER**  
**IMPACT DOT MATRIX PRINTER**  
SINCE 1996

## LX-350 Printer Specifications

### Print Method

9-pin, serial, impact dot matrix, narrow carriage

### Print Direction

Text Mode: Bidirectional

Graphics Mode: Unidirectional (bidirectional via software)

### Print Speed

Draft high-speed	347 cps (10 cpi)	357 cps (12 cpi)	390 cps (15 cpi)
Draft high-speed condensed	383 cps (17 cpi)	298 cps (20 cpi)	
Draft	260 cps (10 cpi)	312 cps (12 cpi)	223 cps (15 cpi)
Draft condensed	222 cps (17 cpi)	260 cps (20 cpi)	
Draft in bold	130 cps (10 cpi)		
Near Letter Quality	65 cps (10 cpi)	78 cps (12 cpi)	55 cps (15 cpi)
	47 cps (17 cpi)	56 cps (20 cpi)	

### Character Sets

15 International character sets,  
Standard version (13 sets of characters) Italic set,  
Version NLSF (43 sets of characters) Italic table,  
PC437 (US standard Europa), PC850 (Multilingual),  
PC860 (Portuguese)

### Resident Bitmapped Fonts

EPSON Draft : 10, 12, 15 cpi  
EPSON Roman : 10, 12, 15 cpi, Proportional  
EPSON Sans Serif : 10, 12, 15 cpi, Proportional  
EPSON OCR-B : 10 cpi

### Bar Code Fonts

EAN-13, EAN-8, Interleaved 2 of 5 ,UPC-A ,UPC-E ,  
Code 39 ,Code 128 ,POSTNET

### Column Width

80 cpl (10 cpi) 96 cpl (12 cpi) 120 cpl (15 cpi) 137 cpl (17 cpi) 160 cpl (20 cpi)

### Paper Path

Manual Insertion Rear in, Top out  
Tractor Rear in, Top out

### Paper size

#### Cut Sheets

Width 3.9 – 10.1" (100 – 257 mm)  
Length 3.9 – 14.3" (100 – 364 mm)  
Thickness 0.0025 – 0.0055" (0.065 – 0.14 mm)

#### Multiple forms

Width 3.9 – 10.1" (100 – 257 mm)  
Length 3.9 – 14.3" (100 – 364 mm)  
Thickness 0.0047 – 0.015" (Total) (0.12 – 0.39 mm)

#### Envelopes (No.6)

Width 6.5" (165 mm)  
Length 3.6" (92 mm)  
Thickness 0.0063 – 0.0205" (Total) (0.16 – 0.52 mm)

#### Envelopes (No.10)

Width 9.5" (241 mm)  
Length 4.1" (105 mm)  
Thickness 0.0063 – 0.0205" (Total) (0.16 – 0.52 mm)

#### Continuous forms

Width 4.0 – 10.0" (101.6 – 254.0 mm)  
Length (per sheet) 4.0 – 22.0" (101.6 – 558.8 mm)  
Thickness 0.0025 – 0.015" (Total) (0.065 – 0.39 mm)

### Paper Roll Holder

Width 8.5" (216 mm)  
Thickness 0.0028 – 0.0035" (0.07 – 0.09 mm)

### Paper Feed Mechanism

Standard Friction, Push Tractor  
Copies 1 original + 4 copies  
Format Space between lines of 1/6" (4.23 mm) or programmable in increments of 1/216" (0.118 mm)

### Warranty

Two-year limited warranty in the U.S. and Canada

cps: characters per second  
cpl: characters per inch, cpi: characters per line  
POH: Power On Hours

\* LX300-II/LX-300 Ribbon is not compatible with LX-350 model

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### Input Buffer

128KB

### Interfaces

Interfaces Bidirectional parallel (IEEE-1284)  
USB high speed (ver 2.0), Serial

### Ribbon Cartridge

Standard - S015631 Black  
Ribbon yield: 4.0 million characters  
(Draft 10 cpi, 14 dots/character)  
Ribbon is backwards compatible with  
LX-300-II and LX-300+\*

### Sound Level

Approx. 53 dB(A) (ISO 7779 standard)

### Reliability

Mean Time Before Failure 10,000 POH (at 25% duty)  
Print Head Life 400 million strokes/wire

### Control Panel

4 switches and 5 LEDs

### Operating Conditions

Temperature 41 – 95°F  
Humidity 10 – 80% RH

### Power requirements

Voltage AC 120 V / AC 220 - 240 V  
Frequency 50 Hz / 60 Hz  
Power consumption 27 W (ISO/IEC 10561 Letter pattern)  
Approx. 1.1 W in sleep mode 0 W in powered off mode  
Approx. 0.3W in auto off mode  
Energy Star Compliant

### Physical Dimensions

Width 14.25" (13.7" without knob)  
Depth 10.83"  
Height 6.06"  
Weight 9.04 lb

### Software Drivers

Operating System Microsoft® Windows® 2000 / XP / Win 7-8  
Microsoft® Windows Vista®  
EPSON Status Monitor 3 Microsoft® Windows® 2000 / XP / Win 7-8  
Microsoft® Windows Vista®  
EPSON Printer Setting Microsoft® Windows® 2000 / XP / Win 7-8  
Microsoft® Windows Vista®

### Options

LX-350 Dot Matrix Printer - 120V C11CC24001  
Ribbon S015631 - Compatible with LX-300-II and LX-300+  
Paper Roll Holder C12C811141



### New Ribbon with improved yield!

- Yield of up to 4 million characters
- Compatible with LX300-II and LX300+\* printers
- Epson Genuine Ribbons protect your printer and provide better print quality

# UDACT-2

## Universal Digital Alarm Communicator Transmitter



Annunciator Control System

### General

The Universal Digital Alarm Communicator Transmitter (UDACT-2) is designed for use on Notifier Fire Alarm Control Panels and on the NCA-2 Network Control Annunciator. When used in conjunction with the NCA-2 network control annunciator, the UDACT-2 can report the status of all control panels on NOTI•FIRE•NET™. The UDACT-2 transmits system status to UL listed Central Station Receivers via the public switched telephone network. The UDACT-2 can be installed in the panel cabinet or remotely in a separate enclosure.

**NOTE:** The UDACT-2 can also be used with legacy panels. Please refer to the UDACT-2 manual for more information.

The UDACT-2 upload/download programming and firmware updates are accomplished with VeriFire Tools. Refer to the Programming Section for further details.

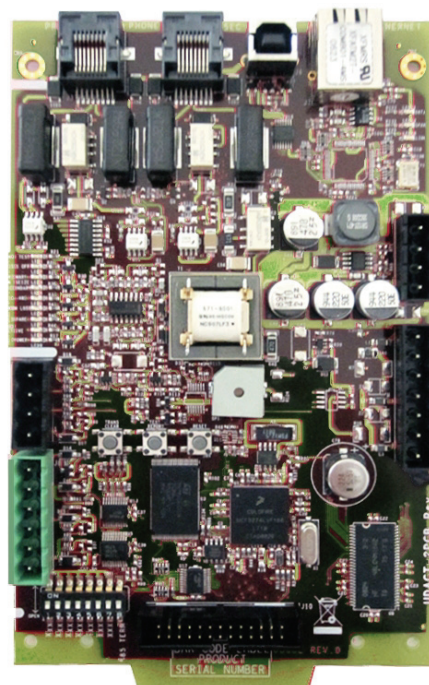
The UDACT-2 is capable of transmitting the status of software zones (Alarm and Trouble), System Trouble, Panel Off-Normal, Supervisory, Bell Trouble, Low Battery, and AC Fail. The UDACT-2 is capable of transmitting all of the zone and point status associated with each panel.

When the UDACT-2 is used with the NFS-3030, NFS2-3030, and NCA-2 it is capable of reporting up to 2,040 points. Reporting may be in the form of points or zones (refer to the UDACT-2 manual for specific reporting parameters). Points transmitted may be programmed for a variety of types, including fire, water-flow, supervisory, etc.

**NOTE:** Descriptions regarding point capacity, listed above, are for receivers which receive in Ademco Contact ID format. See chart on page 2 for compatible receivers.

### Features

- Programmable with VeriFire Tools version 6.60 or higher, allowing the UDACT-2 programming to be uploaded/downloaded and saved.
- Maximum of 14 point trouble messages transmitted per hour.
- Dual phone lines with line voltage detect.
- Compact in size: 6.75" x 4.25" (17.145 x 10.795 cm).
- USB port for upload/download programming.
- Manual Test Report function.
- Manual Transmission Clear function.
- Mounts in a separate enclosure (ABS-8RB or UBS-1B/R).
- Communicates vital system status including:
  - Independent zone fire alarm.
  - Independent zone non-fire alarm.
  - Independent zone trouble.
  - Independent zone supervisory.
  - AC (mains) Power Loss (programmable).
  - Low Battery and Earth Fault.
  - System Off-Normal.
  - 12 or 24 hour test signal.
  - Abnormal Test Signal per new UL requirements.
  - EIA-485 Communication Bus Failure.
- Annunciation of UDACT-2 Troubles including: loss of phone lines, communication failure with either Central Station, total communications failure.
- Individual LEDs for: Power, EIA-485 Loss, Manual Test, Kiss-off, Comm Fail, Primary Line Seize, Secondary Line Seize and Modem Communications.



UDACT-2

- Open Collector relay driver for Total Communications Failure or UDACT-2 trouble.
- Real-time clock.
- Extensive transient protection.
- EIA-485 interface to host panel.

### Programming

The UDACT-2 programming is created and downloaded using VeriFire Tools. This enables the unit to be programmed prior to installation, be easily modified, and saved either online or offline. A printed report with point or zone information can be generated from VeriFire Tools for an ONYX Series panel or network annunciator. The point report consists of the central station point address, ACS point, ACS point function, panel label, panel point, type code, custom and extended label, alarm verification, walktest participation, presignal, and PAS information. The zone report consists of a grid with the central station point address, ACS point address, source, ACS point function, custom label and panel label. This report may be sent to the Central Station for their records. VeriFire Tools also supports upgrading the UDACT-2 operating firmware.

## Communication Formats

- Ademco Contact ID
- 4+2 Standard
- SIA

**NOTE:** Ademco Contact ID must be used for independent zone reporting.

## Type Mode Feature

Ademco Contact ID format - only Use Type Mode to identify reports to Central Station as:

- Fire Alarm
- Supervisory
- Pull Station
- Heat Detector
- Waterflow
- Duct Detector
- Flame Sensor
- Smoke Zone
- Burglary
- 24 hour Non-Burglary
- High Temperature
- Low Temperature
- Low Water Pressure
- Low Water Level
- Pump Failure

## Electrical Specifications

**Standby current:** 40 mA.

**Current while communicating:** 75 mA.

**Maximum current while communicating and with open collector output activated:** 100 mA.

**Voltage:** Regulated 24 volts. Range: 21.2 to 28.2 volts.

## Agency Listings and Approvals

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/ULC Listed: S635
- FM Approved
- CSFM: 7165-0028:0243 (NFS2-640/320), 7165-0028:0224 (NFS2-3030)
- FDNY: COA#6085, COA#6098

## Ordering Information

**UDACT-2:** Universal Digital Alarm Communicator Transmitter. Includes operating and programming instructions, and mounting hardware.

**MABL-7:** DACT phone cord, 7 ft (2.13 m) long (two required).

**ABS-8RB:** Metal enclosure for externally mounting UDACT-2 up to 6,000 ft./1828.8 m from host FACP. 9.94" H x 4.63" W x 2.50" D (cm: 25.248 H x 11.760 W x 6.350 D).

**UBS-1B:** Metal enclosure with solid door, Black.

**UBS-1BR:** Metal enclosure with solid door, Red.

**R-10E:** SPDT Form-C relay. Contacts rated for 10 A @ 115 VAC. Connects to open collector relay driver.

**R-20E:** DPDT Two Form-C relays. Contacts rated for 10A @ 115 VAC. Connects to open collector relay driver.

**FBD-1:** Ferrite bead kit. Use for remote mounting only.

## UL Listed Receivers

The chart below shows UL listed receivers compatible with the UDACT-2. A check in the protocol column indicates the receiver supports that protocol.

Receiver	4+2 Standard 1800/2300	Ademco Contact ID	SIA
Ademco 685 (1)	✓	✓	
Ademco MX8000 (2)	✓	✓	✓
Silent Knight 9500 (3)	✓	✓	✓
Silent Knight 9800 (4)	✓	✓	✓
FBI CP220FB (5)	✓	✓	✓
Osborne Hoffman 2000E (6)		✓	✓
Radionics 6600 (7)		✓	✓
SurGard MLR2 (8)	✓	✓	
SurGard System III (9)		✓	✓
SurGard MLR-2000 (10)		✓	

(1) With 685-8 Line Card with Rev 4.4d software

(2) With 124060V206B and 124063 Line Card Rev B

(3) With version V2.4 Receiver & 126047 Line Card Rev G

(4) With 124077V2.00 Receiver & 126047 Line Card Rev M

(5) With software V3.9

(6) With V.7301 Receiver S/W

(7) With 01.01.03 Receiver S/W & Line Card 01.01.03

(8) With software V1.86

(9) With software V1.72

(10) With DSP4016 and V1.6 Line Card

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# ➤ LCD-160

## Liquid Crystal Display



Annunciator Control Systems

### General

The LCD-160 is a 640-character Liquid Crystal Display (LCD) annunciator and remote control for the NOTIFIER NFS-3030/NFS2-3030 Fire Alarm Control Panel (FACP). The LCD-160 will mimic the top portion (160 characters) of the NFS-3030/NFS2-3030's 640-character display. This provides the event and preprogrammed custom messages as displayed on the main panel. The full screen contains soft key functions, and can display other panel information.

### LCD-160 Features

- 640-character Liquid Crystal Display with backlit control.
- On-board input, output, and status indicators to support diagnostics.
- Software upgrades and foreign-languages character sets via serial port from a panel or other device using the Remote Data Port (RDP) interface. Upgrades do not require the replacement of any programmable devices.
- Rubberized keypad.
- Input for AKS-1 key switch.
- Fits in two ACS annunciator module locations.
- Display and Control Center (DCC) participation/indication.

### RDP Interface

Any communication between the control panel and any RDP device, such as the LCD-160, occurs over an RDP interface.

- RDP interface communication is supervised by the FACP and the LCD-160.
- RDP bus can drive up to 32 RDP devices. The FACP must be at one end of the bus; the last RDP device on the circuit must have an enabled end-of-line resistor.
- Each LCD-160 on the bus requires a non-resettable 24 VDC power connection. The power circuit is inherently supervised and a loss of power registers as a communication failure at the control panel.
- The LCD-160 can be powered by a regulated remote power supply listed for fire-protective signaling use. If the 24 VDC power comes from a non-power-limited source, it must remain separate from the power-limited RDP bus.

### Specifications

**Input supply voltage (TB2):** Regulated, filtered 24 VDC via non-resettable power supply interface listed for fire-protective signaling use. Sources can be: panels with integrated power supplies, main power supplies (AMPS-24, etc.), auxiliary power supplies (APS2-6R, etc.); or a compatible accessories output. If RDP devices are to be powered by separate power supplies, a common reference connection must be established.

**Data communications port (TB1):** Power-limited RDP interface.



**Current draw: Standby current:** 0.300 A with backlight on, 0.075 A with backlight off. **Alarm current:** 0.325 A with backlight on, all LEDs active.

### RDP BUS WIRING SPECIFICATIONS

**Wiring distance:** 4000 feet (1219.2 m) at 18 AWG (0.78 mm<sup>2</sup>) between the panel and the last device on the RDP bus (subject to system's power restrictions).

**Wiring size:** 18 to 12 AWG (0.78 to 3.1 mm<sup>2</sup>) twisted-pair cable, with characteristic impedance of 120 ohms  $\pm$  20%.

**Wire resistance:** Limit total wire resistance to 100 ohms on the RDP bus, and 10 ohms on the RDP device power circuit. Unloaded resistance between RDP connectors must be greater than 1K ohm. A remote power supply is required if total power wiring resistance exceeds 10 ohms.

**NOTE: 1) DO NOT RUN CABLE** adjacent to, or in the same conduit as: 120 VAC service; "noisy" electrical circuits that are powering mechanical bells or horns; audio circuits above 25 Vrms; motor control circuits; SCR power circuits; or non-power-limited circuits. 2) Refer to LCD-160 Manual, document no. 51850, if RDP devices are to be mounted in **SEPARATE CABINETS** or powered by **REMOTE POWER SUPPLIES**.

### TEMPERATURE/HUMIDITY RANGE:

This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93%  $\pm$  2% RH (noncondensing) at 32°C  $\pm$  2°C (90°F  $\pm$  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.

## LCD-160 Interface and Indicators

The liquid crystal display is 40 characters wide and 16 lines deep, and displays all programming screens and other information. The keypad is functional only when an entry is requested by the system. Enter or change fields and issue commands on the display by using the two types of keys on the keypad: fixed function and soft keys.

**Fixed function keys** are the ten keys labeled on the front of the LCD-160, operating at all times on all screens unless otherwise noted. With both an active command center and DCC enabled at the panel, Acknowledge, Signal Silence, System Reset, and Drill require permission before they can be processed.

**Acknowledge:** Press to respond to any event or trouble signal. If enabled, silences the LCD-160 piezo sounder. Sends an acknowledge message to the panel.

**Signal Silence:** Press to send a system silence command to the panel, with the particular silencing action information stored at the FACP. Verification screen appears on networked displays.

**System Reset:** Press to send a system reset command to the panel, with the particular reset action information stored at the FACP. Verification screen appears on networked displays.

**Drill:** Press (hold for two seconds) to activate all silenceable fire output circuits.

**Lamp Test:** Press to test the LED indicators and the piezo, or display firmware version numbers.

**Fire Alarm:** Scroll/display a list of associated events.

**Security:** Scroll/display a list of associated events.

**Supervisory:** Scroll/display a list of associated events.

**Trouble:** Scroll/display a list of associated events.

**Other Event:** Scroll between prealarm and disabled events.

For complete information on key functions and effects on different panels, refer to the *LCD-160 Manual* and panel manuals.

**Soft keys** are the six keys to the right and left of the display. Use them to select commands that appear on the display for each different screen. Refer to the screens in the *LCD-160 Manual* for descriptions of the applicable soft keys.

### STATUS LED INDICATORS

**Power (green)** illuminates when AC power is within normal operating limits.

**Fire Alarm (red)** illuminates when at least one fire alarm event exists. It will flash if any of these events are unacknowledged.

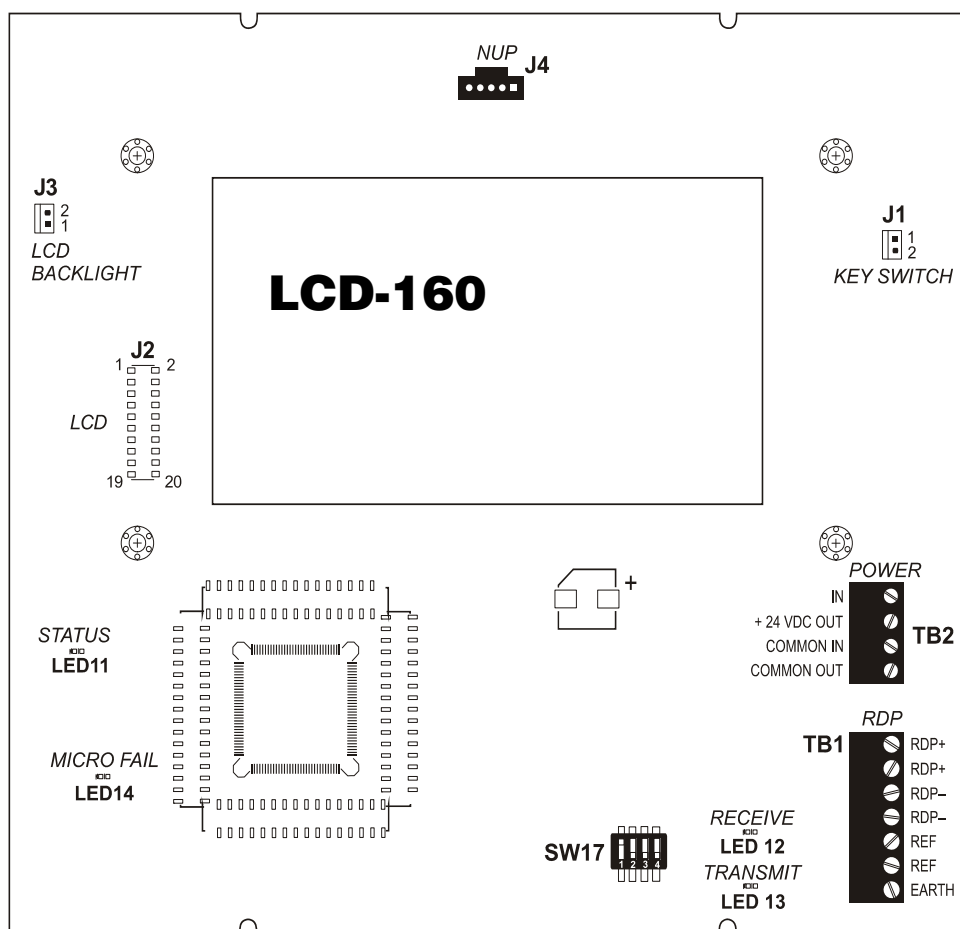
**Pre-Alarm (red)** illuminates when at least one pre-alarm event exists. It will flash if any of these events are unacknowledged.

**Security (blue)** illuminates when at least one security event exists. It will flash if any of these events are unacknowledged.

**Supervisory (yellow)** illuminates when at least one supervisory event exists. It will flash if any of these events are unacknowledged.

**System Trouble (yellow)** illuminates when at least one trouble event exists. It will flash if any of these events are unacknowledged.

**Other Event (yellow)** (future release).



**Signals Silenced (yellow)** illuminates if notification appliances have been silenced. It flashes if some, but not all, of the NACs have been silenced.

**Point Disabled (yellow)** illuminates when at least one device has been disabled. It will flash until all disabled points have been acknowledged.

**Controls Active (green)** illuminates when the LCD-160 assumes control of the node as a primary display.

### DIAGNOSTIC LED INDICATORS

**Status**, LED11 (green), blinks when the LCD-160 is on. Visible to the installer/troubleshooter only.

**Receive**, LED12 (green), blinks when data is received from the panel. Visible to the installer/troubleshooter only.

**Transmit**, LED13 (green), blinks when data is transmitted to the panel. Visible to the installer/troubleshooter only.

**Microfail**, LED14 (yellow), illuminates if the microcontroller fails. Visible to the installer/troubleshooter only.

### Event Handling and the Display and Control Center

UL and ULC require that when multiple command and control centers are installed, only one operator at any location can be in control at any given time for functions such as acknowledge, silence, and reset. This is called the Display and Control Center (DCC). DCC operation provides a mechanism to pass net-

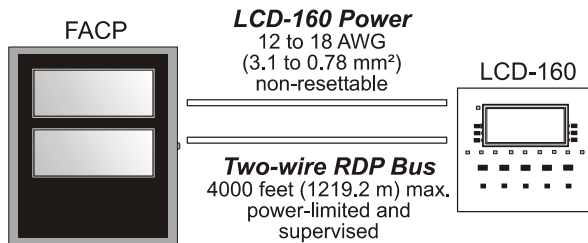
work control to alternate network control centers. This protocol allows for a "request for control" from another networked panel, which will be accepted or rejected from the current DCC. A 15-second time-out allowance provides for an automatic passing of control in the event there is no response from the original DCC. If the NFS-3030/NFS2-3030 panel associated with an LCD-160 has been programmed to participate in DCC, all remote displays with Local Control ON will automatically participate.

### Agency Listings and Approvals

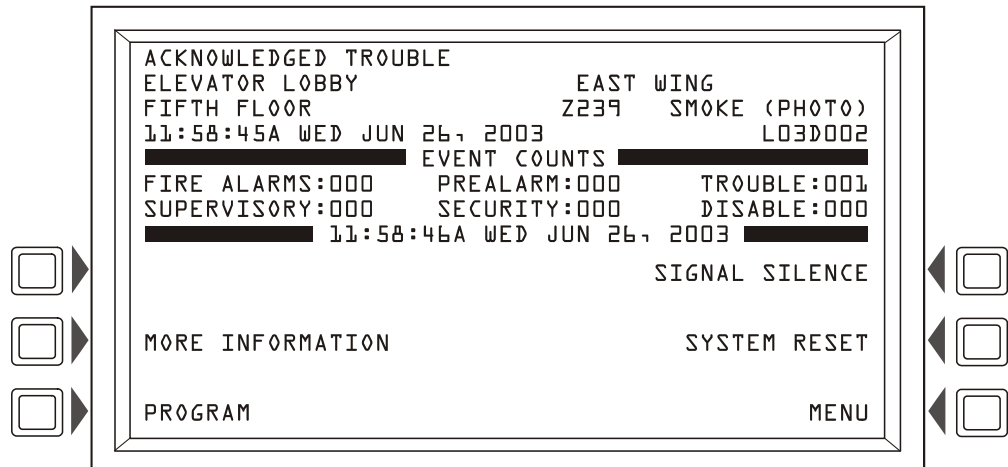
These listings and approvals apply to the LCD-160. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL:** S635
- **ULC:** S635
- **MEA:** 8-04-E (annunciator only)
- **FDNY:** COA#6026 (with NFS2-3030)
- **CSFM:** 7120-0028:227
- **FM** Approved

### RDP Bus Wire Runs



### Sample Screen: Point Event Display



## Product Line Information

**LCD-160:** 640-character Liquid Crystal Display annunciator.

### Backboxes

The following backboxes can be surface- or semi-flush-mounted to provide an enclosure for remote mounting. Use with 1/2" (1.27 cm) conduit in the provided knockouts.

➤ **ABS-2D (black) and ABS-2DR (red):** Surface- or semi-flush enclosure for remote mounting. Mounts an LCD-160 directly to the enclosure's hinged dress plate. The ABS-2D and ABS-2DR do NOT support the installation of the AKS-1 key-switch or APJ-1 phone jack. Not for use in Canadian applications. Optional trim ring **TR-ABS2D** for semi-flush mounting. **Dimensions, box:** 12.0" (30.480 cm) H x 12.0" (30.480 cm) W x 3.797" (9.644 cm) D (NOTE: The black ABS-2D is slightly deeper). **Dimensions, door:** 12.0" (30.480 cm) H x 12.0" (30.480 cm) W x 1.250" (3.175 cm) D.

**ABS-4D (black) and ABS-4DR (red):** Surface- or semi-flush enclosure for remote mounting. Mounts an LCD-160 and two annunciators directly to the enclosure's hinged dress plate. The ABS-4D and ABS-4DR do NOT support the installation of the AKS-1 key-switch or APJ-1 phone jack. **Dimensions, box:** 11.97" (30.40 cm) H x 19.87" (50.47 cm) W x 3.5" (8.89 cm) D. **Dimensions, door:** 11.97" (30.40 cm) H x 19.87" (50.47 cm) W x 1.250" (3.175 cm) D.

**ABF-2B:** Black flush enclosure for remote mounting. Mounts an LCD-160 directly to the enclosure's dress plate. Not for use in Canadian applications. Includes a painted black metal trim plate [11" (27.94 cm) high x 10.625" (26.99 cm) wide] and adhesive-backed annunciator label. 9.938" (25.24 cm) high x 9.188" (23.34 cm) wide x 3.75" (9.525 cm) deep.

**ABF-2DB:** Black flush enclosure for remote mounting. Mounts an LCD-160 directly to the enclosure's dress plate. Does not support the installation of AKS-1B. Box dimensions: 9.938" (25.24 cm) high x 9.188" (23.24 cm) wide x 3.75" (9.525 cm) deep. Door dimensions: 11" (29.94 cm) high x 10.375" (26.35 cm) wide x 0.75" (1.9 cm) deep.

**ABF-4B:** Black flush enclosure for remote mounting of one LCD-160 and two annunciator modules directly to the enclosure's dress plate. Knockouts are provided for use with 1/2" (1.27 cm) conduit. Includes a painted black metal trim plate [11" (27.94 cm) high x 19.375" (49.21 cm) wide] and an annunciator label. 9.938" (25.24 cm) high x 17.75" (45.09 cm) wide x 2.5" (6.35 cm) deep.

**CAB-4 Series cabinets:** Surface- or semi-flush-mounted, in sizes to accommodate one to four rows of equipment plus batteries (up to two 25 AH batteries). Four sizes are available. Doors are ordered separately, and feature reversible hinges to mount doors on the left or right side. Doors also open a full 180°. Keylocks are included. For dimensions and further information, see data sheets for **CAB-4 Series** (DN-6857).

### ACCESSORIES

**DP-DISP:** Dress Panel Display for cabinet mounting of an LCD-160. LCD-160 mounts directly to the dress panel, which hinge-mounts to the top tier of a CAB-4 Series backbox.

**ADP-4B:** Annunciator Dress Panel-4B (black) for cabinet mounting of an LCD-160. LCD-160 mounts directly to the dress panel, which hinge-mounts to the tier of a CAB-4 Series backbox.

**TR-ABS2D:** Optional trim ring for semi-flush mounting ABS-2D(R).

**VP-2B:** Vented Dress Panel for use with the ADP-4B dress panel installed in the top tier of a NOTIFIER cabinet. It covers the gap between the dress panel and top of the cabinet.

**AKS-1B:** Annunciator Key Switch provide access security for the control switches on the LCD-160. Key-switch kit includes key, hardware, and an annunciator label.

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## ➤ DVC Series

### Digital Voice Command DVC-EM, DVC-EMF, DVC-EMSF



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, 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. DVCs are available in versions supporting wire, multi-mode fiber, or single-mode fiber media. 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, DVC-EMF, and DVC-EMSF models.

#### Features

- Listed to UL Standard 864, 9th edition.
- Programmable from NUP port using *VeriFire® Tools* with:
  - DVC-EM: 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.
  - DVC-EMF: Same as DVC-EM, except supports multi-mode fiber-optic media.
  - DVC-EMSF: Same as DVC-EM, except supports single-mode fiber-optic media.
- 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.
- 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 option.
- 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<sub>p-p</sub> 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<sub>p-p</sub> 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 when normal digital 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 firefight-

ers' 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 announce 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 mm<sup>2</sup>) 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 mm<sup>2</sup>) 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 RXA, TXA, RXB, and TXB (J100, J101, J102, and J103):** ST® style, supervised. Multi-mode fiber-optic cable: 50/125 or 62.5/125 micrometers. Single-mode fiber-optic cable: 9/125 micrometers. Attenuation of cabling between two nodes (fiber-optic circuits are point-to-point) must not exceed the following maximum attenuations: 4.2 dB for multi-mode with 50/125 micrometer cable @ 850 nm. 8.0 dB for multi-mode with 62.5/125 micrometer cable @ 850 nm. 5.0 dB for single-mode with 9/125 micrometer cable @ 1300 nm.
- **Auxiliary input A (AUX A, TB4):** Signal strength from low-level analog audio input: maximum 1.0 VRMS, or 1.41 V<sub>p-p</sub>. Optional supervision is selectable through programming. Recommended wiring: 18 AWG (0.821 mm<sup>2</sup>) twisted-pair; max. 14 AWG (2.08 mm<sup>2</sup>). 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<sub>p-p</sub> nominal, 15 V<sub>p-p</sub> maximum. Optional supervision is selected through programming. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm<sup>2</sup>) twisted-pair.
- **Remote microphone interface (TB9):** Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm<sup>2</sup>) 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 mm<sup>2</sup>) twisted-pair.
- **Alarm bus (TB12):** Power-limited by source. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm<sup>2</sup>) 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 mm<sup>2</sup>) to last handset.
- **Optional DVC-AO analog audio output circuits (TB5, TB6, TB7, and TB8):** Supervised, power-limited outputs. Signal strength: +12 V<sub>p-p</sub> nominal, +15 V<sub>p-p</sub> maximum. Recommended wiring: 18 AWG (0.821 mm<sup>2</sup>) twisted-pair; max. 14 AWG (2.08 mm<sup>2</sup>). Maximum impedance: 66 ohms.

## Standards and Codes

The Digital Voice Command DVC, DVC-EM, DVC-EMF, and DVC-EMSF 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, DVC-EM, DVC-EMF, and DVC-EMSF 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:** file S635.
- **ULC Listed:** file S635.

The DVC is approved by the following agencies except for use with a DAA2 or DAX Series amplifier, or DS-FM Series fiber conversion module:

- **FM Approved.**
- **CSFM approved:** file 7165-0028:224 (NFS2-3030); 7165-0028:243 (NFS2-640).
- **FDNY:** COA#6026 (NFS2-3030); COA#6025 (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.*

**DVC-EMF:** 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 multi-mode fiber-optic ports, requires DAA-5025F, or DAA-5070F, or DAA-7525F.*

**DVC-EMSF:** 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 single-mode fiber-optic ports, requires DAA-5025SF, DAA-5070SF, or DAA-7525F.*

**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 data sheet 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 data sheet 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 data sheet 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.

**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 DAX and DAA2 Series amplifiers.

**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.

- **DAA-5025:** 50W, 25Vrms Digital Audio Amplifier assembly with DAA-PS power supply board, shipped mounted to its chassis. Supports twisted-pair wire media. See DN-7046. (*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. See DN-7046. (*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. See DN-60257. (*For multi-mode fiber-optic media order DAA-7525F. For single-mode fiber-optic media order DAA-7525SF.*)

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# ➤ HPFF8(E) and HPFF8CM(E)

## 8 Amp and 24-Volt Power Supplies



Power Supplies

### Description

The Honeywell HPFF8(E) and HPFF8CM(E) are Notification Appliance Circuit (NAC) Expander Power Supplies designed to extend the power capabilities of existing NACs and provide power for auxiliary devices. The HPFF8 and HPFF8CM connects to any 12 or 24V Fire Alarm Control Panel (FACP) or operates stand-alone.

They provide regulated and filtered 24VDC power to four NAC's and an auxiliary output. The NAC outputs are rated at 3.0 amps each and the auxiliary output is rated at 2.0 amps (this output is continuously supplied, even in alarm, and therefore must be taken into account for power supply loading and battery size calculations). The combined output cannot exceed 8.0 amps.

The HPFF8 and HPFF8CM provide independent output circuit supervision so in the event of a NAC fault they can notify the attached FACP. In addition they have a trouble memory feature that displays past troubles (by NAC) for rapid diagnostics. Synchronization is built in for five appliance brands.

The HPFF8 and HPFF8CM have two fully independent supervised initiating circuits that can be used for synchronized strobes and coded horns. Their NAC outputs may be configured as any of the following:

- four Class B (Style Y)
- two Class A (Style Z)
- two Class B and one Class A
- four Class A with the optional HPP31076 Class A adapter

These power supplies contain an internal Battery charger capable of charging up to 26.0 amp-hour (AH) batteries.

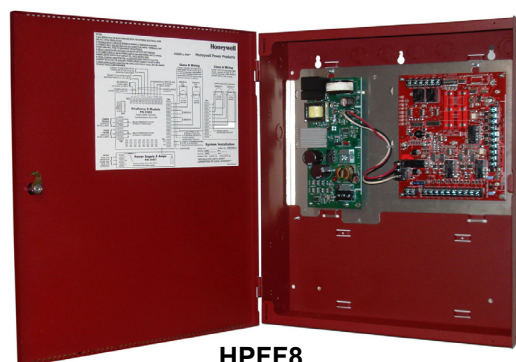
The HPFF8 is mounted in a lockable wall cabinet that can accommodate up to two 18AH batteries. The HPFF8CM is designed to mount in Notifier's large CAB-4 series or equipment series enclosure (order separately). Each HPFF8CM can accommodate two 12AH batteries.

One of the most challenging aspects of a retrofit application is locating the existing End-of-Line (EOL) resistor. In these applications that have EOL values other than the 3.9k normally used with the HPFF8, a single resistor matching the existing EOL can be used as a reference for all the outputs. This feature speeds installation and system checkout because the actual EOL does not need to be located and changed in the circuit. The reference resistor must be within the range of 1.9k to 25k.

**NOTE:** 4 separate programming resistors for the HPFF8 are provided in the hardware kit shipped with each HPFF8(E) and HPFF8CM(E). They are 3.9K (5 of these are provided, need only 1 for programming), 2.2K (1 each), 4.7K (1 each) and 10K (1 each)

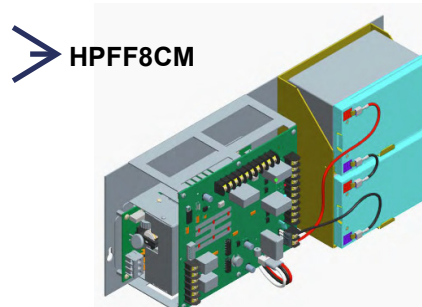
### Features

- Four (4) power limited supervised notification application circuits (NAC's) capable of supplying +24VDC at 3.0 amp maximum each.
- NAC output circuits may be configured as any of the following:
  - Four Class B (Style Y).
  - Two Class B & one Class A.
  - Two Class A (Style Z).



HPFF8

HPFF8photo.JPG



➤ HPFF8CM

- Four Class A (requires the HPP31076 Class A adapter).
- Four field-programmable operational modes:
  - Pass-through.
  - Temporal generator.
  - Sync generator.
  - Pass-through Filtered.
- Temporal coding and sync protocols compatible with the following notification appliance brands:
  - System Sensor.
  - Faraday.
  - Amseco.
  - Cooper-Wheelock.
  - Gentex.
- Protocol pass-through for synchronizing large systems.
- Two fully independent supervised input/output control circuits.
- Redundant activation operation for survivability.
- Supports FACP's Selectable Silence ability.
- 2.0 amp auxiliary continuously supplied output.
- Eight status LEDs.
- Supervised AC input, battery voltage, auxiliary output, charger, and earth ground faults.
- Trouble indication for supervision of the following:
  - NAC circuits.
  - Auxiliary output.
  - AC input.
  - Battery charger voltage.
  - Earth ground faults.
- Optional two-hour delay for AC loss.
- Separate Trouble and AC Fail Form-C relay contacts.

- The Trouble Form-C relay contacts selectable for immediate or a 2 hour delay with AC failure.
- 26 AH battery charger capability:
  - HPFF8(E) supports two 12V 18AH batteries
  - HPFF8CM(E) supports two 12V 12AH batteries per unit.
- NAC Overload protection and indication.
- Provision for mounting single or 6 circuit addressable control or relay modules inside the enclosure. (Use mounting kit PN 90475.)
- Standard Honeywell key and lock can be replaced with the NOTIFIER key and lock.

## Specifications

**Primary Input Power:** 120VAC, 60Hz, 3.6A standard; 240VAC, 50Hz, 2.1A on units with E suffix.

**Secondary Power:** 24 volt operation: two 7-26 AH batteries.

**Battery Charging Capacity:** 7 to 26 AH batteries. Up to 26 AH batteries.

**HPFF8 Cabinet:** Holds up to two 18AH batteries.

**HPFF8CM:** Holds up to two 12AH batteries.

**Total Output Current:** 8.0A max. **Standby Current:** 0.075 A.

**Auxiliary Power Output:** 2.0A under all conditions.

**NAC Output Ratings:** 24VDC fully regulated, 3.0A max per circuit (8.0A total).

**End-of-Line Resistor Range:** 1.9K to 25k ohm, ½ watt. Product ships with 4 separate programming resistors. They are 3.9K (5 each - only need one for programming), 2.2K (1 each), 4.7K (1 each) and 10K (1 each)

**Common Trouble/ Relay Fail Relay:** 2.0A at 30VDC.

**Input Control Circuits:** compatible with 12 and 24 VDC control panel NACs.

**Input Control Current (alarm):** 5.68 mA @ 12 VDC, 12.28 mA @ 24 VDC.

**Temperature Rating:** 32°F to 120°F (0°C to 49°C).

**Relative Humidity:** 10% to 93% non-condensing.

### Cabinet Dimensions:

- **HPFF8 Cabinet:** 16.65" W x 19.0" H x 5.2" D (42.29 cm W x 48.26 cm H x 13.23 cm D).
- **Large equipment enclosure:**
  - **EQBB-B4:** 24" W x 28.5" H x 5.16" D (60.96 cm W x 72.39 cm H x 13.1 cm D).
  - **EQBB-C4:** 24" W x 37.13" H x 5.16" D (60.96 cm W x 71.36 cm H x 13.1 cm D).
  - **EQBB-D4:** 24" W x 45.75" H x 5.16" D (60.96 cm W x 116.21 cm H x 13.1 cm D).

## Product Line Information

**HPFF8:** 8.0A fire rated power supply. Unit includes red enclosure, battery cable and installation instructions. 120VAC/60Hz.

**HPFF8E:** 240VAC/50Hz version of HPFF8.

**HPFF8CM:** 8.0A fire rated power supply (chassis mounted). Unit includes mounting hardware, battery cable and instructions for installation in large equipment enclosure. 120VAC/60Hz.

**HPFF8CME:** 240VAC/50Hz version of HPFF8CM.

**HPP31076:** Class A (Style Z) NAC Adaptor. Increase Class A circuits from 2 to 4.

**XP6-C:** Six-circuit supervised addressable control module activated through FACP programming on a select basis to control power supply activation or output.

**FCM-1:** Supervised addressable control module activated through FACP programming to activate power supply.

**90474:** Mounting kit; required to attach an addressable module onto the control circuit board (included with supply).

**BAT Series:** Batteries HPFF8CM(E) utilizes two 12 volt, 7 to 26AH batteries.

**CAB-4 Series Enclosures:** For mounting HPFF8CM power supplies, consists of a backbox and locking door. Available in Black or Red. Four sizes available. Ordered separately. See DN-6857.

- **SBB-A4:** Backbox for mounting one HPFF8CM. Requires DR-A4 door.
- **SBB-B4:** Backbox for mounting up to two HPFF8CMs. Requires DR-B4 door.
- **SBB-C4:** Backbox for mounting up to three HPFF8CMs. Requires DR-C4 door.
- **SBB-D4:** Backbox for mounting up to four HPFF8CMs. Requires DR-D4 door.

**NOTE:** Door options available. See DN-6875 for details.

**EQ Series Enclosures:** For mounting HPFF8CM power supplies, consists of a backbox and locking door. Black. Three sizes available. Ordered separately. See DN-60229.

- **EQBB-B4:** Backbox for mounting one HPFF12CM. Requires EQDR-B4 door.
- **EQBB-C4:** Backbox for mounting one HPFF12CM. Requires EQDR-C4 door.
- **EQBB-D4:** Backbox for mounting one HPFF12CM. Requires EQDR-D4 door.

**17045KIT:** Notifier key and lock set.

## Listings and Approvals

Listings and approvals below apply to all. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. UL 864 9th Edition.

- **UL Listed:** S24562
- Seismic Certification of Non-Structural Electrical Components and Systems
- **FM Approved**
- **CSFM:** 7315-1637:0102
- **NYFD:** COA#6032

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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.



# ➤ DAA2 Series

## Digital Audio Amplifiers



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 DAA2-50 or DAA2-75 series amplifier 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, or increased output wattage to 100W (100W option applies to DAA2-50 series only, other rules apply).

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.

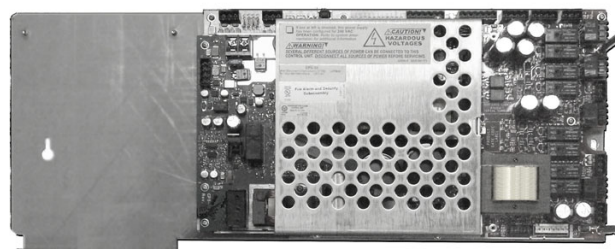
Up to 32 devices, such as DAA2 amplifiers, can be connected to the DAL on one DVC Digital Voice Command unit. DAA2 amplifiers may be mixed with DAX and DAA series amplifiers on the same DAL.

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<sub>RMS</sub> (all DAA2-5025 models) or 70 V<sub>RMS</sub> (all DAA2-5070 models).
- 75 W total output power at 25 V<sub>RMS</sub> (all DAA2-7525 models).
- Supports two Class A high-level audio outputs; or four Class B outputs.
- Optional BDA amplifiers support alternative configurations.
  - Backup amplifier - supports one-to-one backup (all DAA2 models).
  - Primary amplifier - supports two-channel operation (all DAA2 models).
  - Primary amplifier - increase power up to 100W, one- or two-channel operation. (DAA2-50 series only, configuration rules apply.)
- Supports one-to-many amplifier backup applications using the same model DAA2.
- Firefighter telephone riser supports 7 active firefighter telephones. System 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<sub>RMS</sub>, 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.

Batteries for the DAA2 may be installed in any of the following configurations:

- In a CHS-BH1 optional battery chassis. The CHS-BH1 battery chassis will hold two 12.0 AH batteries, and mounts on the left side of the DAA2 chassis, so that the DAA2 and batteries are contained in a single cabinet tier.
- In the battery row (bottom) of the CAB-4 Series cabinet, or in the bottom row of an EQ Series cabinet.
- In a cabinet adjacent to the cabinet that holds the DAA2, with connections in conduit. External battery charging is supported.

### 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 mm<sup>2</sup> - 2.08 mm<sup>2</sup>).

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 7AH to 26AH Batteries	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<sup>2</sup>) 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<sub>RMS</sub>, 3V<sub>RMS</sub> 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<sub>p-p</sub> 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<sub>RMS</sub> (DAA2-5025 and DAA2-7525). 70 V<sub>RMS</sub> (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 S635
- ULC Listed: S635
- CSFM: 7165-0028:0234 (NFS2-640/NFS-320), 7165-0028:0224 (NFS2-3030)
- FDNY: #6067 (NFS2-640/NFS-320), #6065 (NFS2-3030)

## Product Line Information

### 50 WATT DAA2 AMPLIFIERS

Shipped mounted to the chassis.

➤ **DAA2-5025:** 120 VAC Digital Audio Amplifier (50 W, 25 V<sub>RMS</sub>).

**DAA2-5070:** 120 VAC Digital Audio Amplifier (50 W, 70 V<sub>RMS</sub>).

**DAA2-5025E:** 220-240 VAC Digital Audio Amplifier (50 W, 25 V<sub>RMS</sub>).

**DAA2-5070E:** 220-240 VAC Digital Audio Amplifier (50 W, 70 V<sub>RMS</sub>).

### 75 WATT DAA2 AMPLIFIERS

Shipped mounted to the chassis.

➤ **DAA2-7525:** 120 VAC Digital Audio Amplifier (75 W, 25 V<sub>RMS</sub>).

**DAA2-7525E:** 220-240 VAC Digital Audio Amplifier (75 W, 25 V<sub>RMS</sub>).

### BDA BACKUP DIGITAL AMPLIFIERS

**BDA-25V:** Backup Digital Amplifier (25 V<sub>RMS</sub>), 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<sub>RMS</sub>), 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.

### ACCESSORIES

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

**DP-1B:** Dress panel: covers one tier of CAB-4 Series cabinet.

**ACT-25, ACT-70:** Audio-coupling transformers. Used with AA-30 or DAA2-series amplifiers to drive thousands of amplifiers in large system applications.

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Made in the U.S. A.

# HPFF12(E) and HPFF12CM(E)

## 12 Amp and 24-Volt Power Supplies



Power Supplies

### Description

The Honeywell HPFF12(E) and HPFF12CM(E) are Notification Appliance Circuit (NAC) Expander Power Supplies designed to extend the power capabilities of existing NACs and provide power for auxiliary devices. The HPFF12 and HPFF12CM connects to any 12 or 24V Fire Alarm Control Panel (FACP) or operates stand-alone.

They provide regulated and filtered 24VDC power to four NAC's and an auxiliary output. The NAC outputs are rated at 3.0 amps each and the auxiliary output is rated at 2.0 amps (this output is continuously supplied, even in alarm, and therefore must be taken into account for power supply loading and battery size calculations). The combined output cannot exceed 12.0 amps.

The HPFF12 and HPFF12CM provide independent output circuit supervision so in the event of a NAC fault they can notify the attached FACP. In addition they have a trouble memory feature that displays past troubles (by NAC) for rapid diagnostics. Synchronization is built in for five appliance brands.

The HPFF12 and HPFF12CM have two fully independent supervised initiating circuits that can be used for synchronized strobes and coded horns. Their NAC outputs may be configured as any of the following:

- four Class B (Style Y)
- two Class A (Style Z)
- two Class B and one Class A
- four Class A with the optional HPP31076 Class A adapter

These power supplies contain an internal Battery charger capable of charging up to 26.0 amp-hour (AH) batteries.

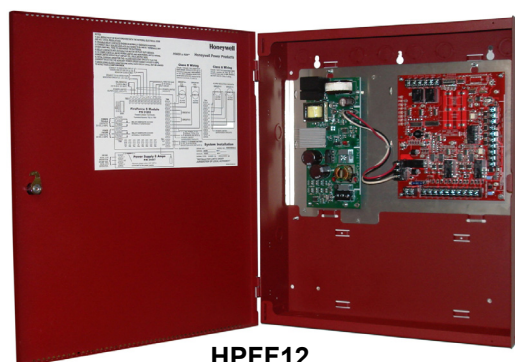
The HPFF12 is mounted in a lockable wall cabinet that can accommodate up to two 18AH batteries. The HPFF12CM is designed to mount in Notifier's equipment series enclosure (order separately). Each HPFF12CM can accommodate two 12AH batteries.

One of the most challenging aspects of a retrofit application is locating the existing End-of-Line (EOL) resistor. In these applications that have EOL values other than the 3.9k normally used with the HPFF12, a single resistor matching the existing EOL can be used as a reference for all the outputs. This feature speeds installation and system checkout because the actual EOL does not need to be located and changed in the circuit. The reference resistor must be within the range of 1.9k to 25k.

**NOTE:** 4 separate programming resistors for the HPFF12 are provided in the hardware kit shipped with each HPFF12(E) and HPFF12CM(E). They are 3.9K (5 of these are provided, need only 1 for programming), 2.2K (1 each), 4.7K (1 each) and 10K (1 each)

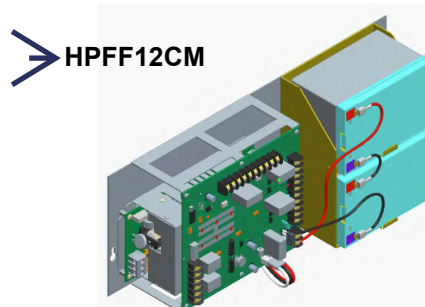
### Features

- Four (4) power limited supervised notification application circuits (NAC's) capable of supplying +24VDC at 3.0 amp maximum each.
- NAC output circuits may be configured as any of the following:
  - Four Class B (Style Y).
  - Two Class B & one Class A.
  - Two Class A (Style Z).



HPFF12

HPFF8photo.JPG



HPFF12CM

- Four Class A (requires the HPP31076 Class A adapter).
- Four field-programmable operational modes:
  - Pass-through.
  - Temporal generator.
  - Sync generator.
  - Pass-through Filtered.
- Temporal coding and sync protocols compatible with the following notification appliance brands:
  - System Sensor.
  - Faraday.
  - Amseco.
  - Cooper-Wheelock.
  - Gentex.
- Protocol pass-through for synchronizing large systems.
- Two fully independent supervised input/output control circuits.
- Redundant activation operation for survivability.
- Supports FACP's Selectable Silence ability.
- 2.0 amp auxiliary continuously supplied output.
- Eight status LEDs.
- Supervised AC input, battery voltage, auxiliary output, charger, and earth ground faults.
- Trouble indication for supervision of the following:
  - NAC circuits.
  - Auxiliary output.
  - AC input.
  - Battery charger voltage.
  - Earth ground faults.
- Optional two-hour delay for AC loss.
- Separate Trouble and AC Fail Form-C relay contacts.

- The Trouble Form-C relay contacts selectable for immediate or a 2 hour delay with AC failure.
- 26 AH battery charger capability:
  - HPFF12(E) supports two 12V 18AH batteries
  - HPFF12CM(E) supports two 12V 12AH batteries per unit.
- NAC Overload protection and indication.
- Provision for mounting single or 6 circuit addressable control or relay modules inside the enclosure. (Use mounting kit PN 90475.)
- Standard Honeywell key and lock can be replaced with the NOTIFIER key and lock.

## Specifications

**Primary Input Power:** 120VAC, 60Hz, 5.0A standard; 240VAC, 50Hz, 2.80A on units with E suffix.

**Secondary Power:** 24 volt operation: two 7-26 AH batteries.

**Battery Charging Capacity:** Up to 26 AH batteries.

**HPFF12 Cabinet:** Holds up to two 18AH batteries.

**HPFF12CM:** Holds up to two 12AH batteries.

**Total Output Current:** 12.0A max. **Standby Current:** 0.075 A.

**Auxiliary Power Output:** 2.0A under all conditions.

**NAC Output Ratings:** 24VDC fully regulated, 3.0A max per circuit (12.0A total).

**End-of-Line Resistor Range:** 1.9K to 25k ohm, ½ watt. Product ships with 4 separate programming resistors. They are 3.9K (5 each - only need one for programming), 2.2K (1 each), 4.7K (1 each) and 10K (1 each)

**Common Trouble/ Relay Fail Relay:** 2.0A at 30VDC.

**Input Control Circuits:** compatible with 12 and 24 VDC control panel NACs.

**Input Control Current (alarm):** 5.68 mA @ 12 VDC, 12.28 mA @ 24 VDC.

**Temperature Rating:** 32°F to 120°F (0°C to 49°C).

**Relative Humidity:** 10% to 93% non-condensing.

### Cabinet Dimensions:

- **HPFF12 Cabinet:** 16.65" W x 19.0" H x 5.2" D (42.29 cm W x 48.26 cm H x 13.23 cm D).
- **Large equipment enclosure:**
  - **EQBB-B4:** 24" W x 28.5" H x 5.16" D (60.96 cm W x 72.39 cm H x 13.1 cm D).
  - **EQBB-C4:** 24" W x 37.13" H x 5.16" D (60.96 cm W x 71.36 cm H x 13.1 cm D).
  - **EQBB-D4:** 24" W x 45.75" H x 5.16" D (60.96 cm W x 116.21 cm H x 13.1 cm D).

## Product Line Information

**HPFF12:** 12.0A fire rated power supply. Unit includes red enclosure, battery cable and installation instructions. 120VAC/60Hz.

**HPFF12E:** 240VAC/50Hz version of HPFF12.

**HPFF12CM:** 12.0A fire rated power supply (chassis mounted). Unit includes mounting hardware, battery cable and instruc-

tions for installation in large equipment enclosure. 120VAC/60Hz.

**HPFF12CME:** 240VAC/50Hz version of HPFF12CM.

**HPP31076:** Class A (Style Z) NAC Adaptor. Increase Class A circuits from 2 to 4.

**XP6-C:** Six-circuit supervised addressable control module activated through FACP programming on a select basis to control power supply activation or output.

**FCM-1:** Supervised addressable control module activated through FACP programming to activate power supply.

**90474:** Mounting kit; required to attach an addressable module onto the control circuit board (included with supply).

**BAT Series:** Batteries HPFF12CM(E) utilizes two 12 volt, 7 to 26AH batteries.

See DN-6857. See DN-6875 for details. **EQ Series Enclosures:** For mounting HPFF12CM power supplies, consists of a backbox and locking door. Black. Three sizes available. Ordered separately. See DN-60229.

- **EQBB-B4:** Backbox for mounting one HPFF12CM. Requires EQDR-B4 door.
- **EQBB-C4:** Backbox for mounting one HPFF12CM. Requires EQDR-C4 door.
- **EQBB-D4:** Backbox for mounting one HPFF12CM. Requires EQDR-D4 door.

**17045KIT:** Notifier key and lock set.

## Listings and Approvals

Listings and approvals below apply to all. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. UL 864 9th Edition.

- **UL Listed:** S24562
- Seismic Certification of Non-Structural Electrical Components and Systems
- **FM Approved**
- **CSFM:** 7315-1637:0102

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## ➤ RM-1 Series

### Remote Microphone and Cabinets RM-1, RM-1SA, CAB-RM, CAB-RMR



Emergency Voice Evacuation

#### GENERAL

The **RM-1 Series Remote Microphone** provides a cost-effective microphone interface for paging to selected speaker zones. The Power and Trouble LEDs provide easy-to-understand visual indications of its status. Various mounting options are available. The microphone assembly can be mounted in a small, compact enclosure or located in a comprehensive paging command center.

The RM-1 Series remote microphone can be utilized with the **DVC Digital Voice Command Center** and **DAA2** amplifiers, or to expand a legacy installation.

#### FEATURES

- Automatic gain control circuit.
- Supervised microphone.
- Form-C trouble contacts.
- Form-C contacts activated when microphone is in use.
- Power On LED.
- Trouble LED.
- Pluggable terminal blocks.
- Low-level audio (LLA) IN and THRU screws.

#### CAB-3/CAB-4 SERIES INSTALLATION

The RM-1 can mount to the back of an ADP-4B dress panel inside a CAB-3 or CAB-4 Series cabinet. It can be mounted in any of the four positions on the dress panel, with the following exception:

- **Do NOT mount** the RM-1 in front of a CHS-4L chassis.

See page 2 for illustrations of mounted units.

#### SPECIFICATIONS

**Power requirements:** 20 mA primary, non-fire alarm current; 66 mA when microphone is activated; 20 mA secondary, non-fire alarm current.

**Operating voltage:** 17 to 26.4 volts.

#### PRODUCT LINE INFORMATION

➤ **RM-1:** Remote microphone assembly for mounting on an ADP-4B dress panel.

**RM-1SA:** Remote microphone assembly for mounting in a CAB-RM(R), for remote applications.

**CAB-RM:** Stand-alone cabinet, black.

➤ **CAB-RMR:** Stand-alone cabinet, red.

#### AGENCY LISTINGS AND APPROVALS

These listings and approvals apply to the RM-1 Series Remote Microphone. 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:** S635
- **ULC:** CS118/CS733 Vol. 12

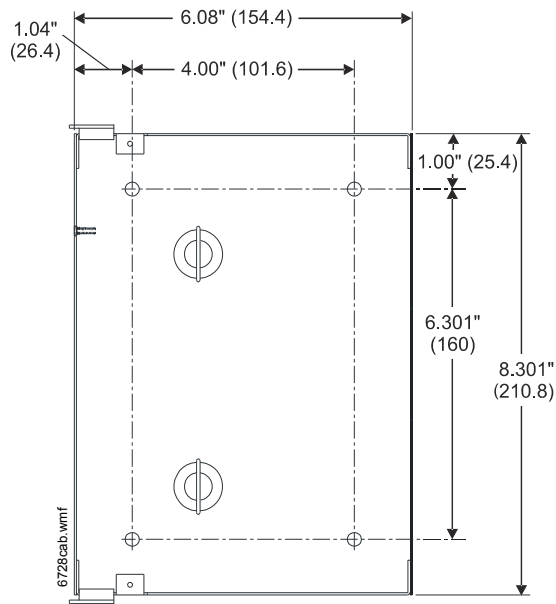
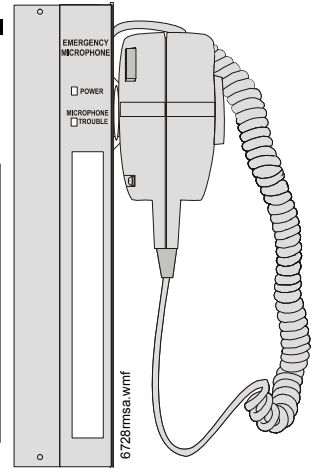
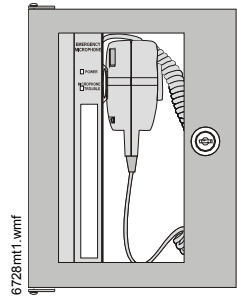
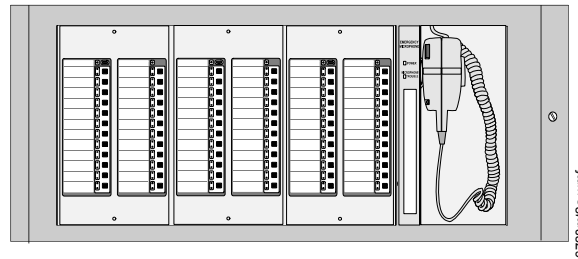
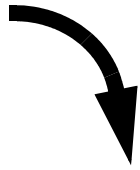
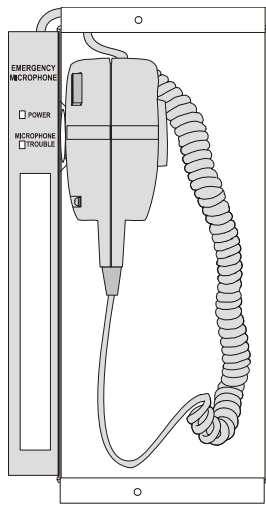


- **MEA:** 327-94-E Vol.III
- **CSFM:** 7165-0028:0224 (NFS-3030/NFS2-3030)
- **FM:** Approved (RM-1, RM-1SA)
- **FDNY:** #6058 (NFS2-3030)

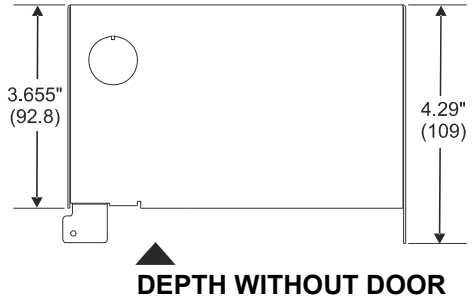
# RM-1 MOUNTING & CABINET DIMENSIONS

AT RIGHT: RM-1SA (right) and in CAB-RM or CAB-RMR.

BELOW: RM-1 (left) and on ADP-4B dress panel.



## CAB-RM/CAB-RMR DIMENSIONS inches (mm)



HEIGHT/WIDTH WITHOUT DOOR

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# STI Stopper® II and Weather Stopper® II

## Covers for Manual Pull Stations



Miscellaneous

### General

The Safety Technology International, Inc. Stopper® II cover for manual pull stations helps deter unwanted activation and is also an effective guard against physical damage. It has been proven by use in thousands of installations throughout the world, including schools, hospitals, hotels and stores. The Stopper® II has also been tested and approved by fire prevention and testing authorities.

### Features

- Window made of clear and durable plastic.
- Optional warning horn powered by 9 VDC battery.
- Provides weatherproofing for outdoor pull stations when equipped with optional gasket (Weather Stopper II).
- Fits pull stations from 5-1/2" to 6-3/4".
- Unconditional lifetime guarantee against cover breakage and damage.

### Applications

The Stopper® II can be used in almost any pull station environment.

### Spacer Installation

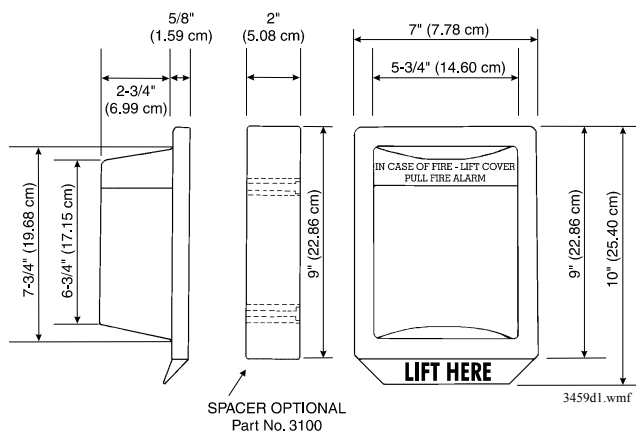
#### (SURFACE MOUNT MODELS ONLY)

The spacer is used for surface-mounted or oversized manual stations. Longer screws are provided for use with tap-in anchors. Remove knock-out at top or bottom of spacer as necessary.

### Gasket Installation

#### (WEATHER STOPPER® II MODELS ONLY)

Installing neoprene gaskets behind the spacer and/or Stopper® II frame will provide additional weatherproofing. A conduit gasket may be used to seal the top or bottom of the spacer.



### Size Of Pull Station Accomodated

The Stopper® II and Weather Stopper® II can be installed over a flush-mounted station up to 5-1/2" wide and 6-3/4" high. However, the pull station's maximum dimensions will decrease as its depth (distance from the wall) increases, i.e.: a 3/4" deep pull station may be 5-1/2" wide x 6" high; a 1-5/8" deep pull station may be 5" wide x 6" high; a 2-3/8" deep pull station may be 4" wide x 5-3/4" high; a 2-3/4" deep pull station may be 3" wide x 5-1/2" high. See sections "Spacer Installation" and "Gasket Installation".

### 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:** S2466
- **ULC Listed:** S2466
- ADA Compliant
- STI-1100 & STI-1130: **Factory Mutual Approved**
- STI-1100 & STI-1130: **BSA:** 947-81-SA
- STI-1100, STI-1130, STI-1250, STI-3150: **CSFM AHJ Approval Required**
- STI-1200, STI-1230, STI-1250: **MEA 49-00-E**
- STI-1250, STI-3150: **NEMA-3R** When mounted on a smooth surface or when mounted with STI-1280 Back Plate

## Product Line Information

STI-1100Stopper® II, flush mount, with horn.

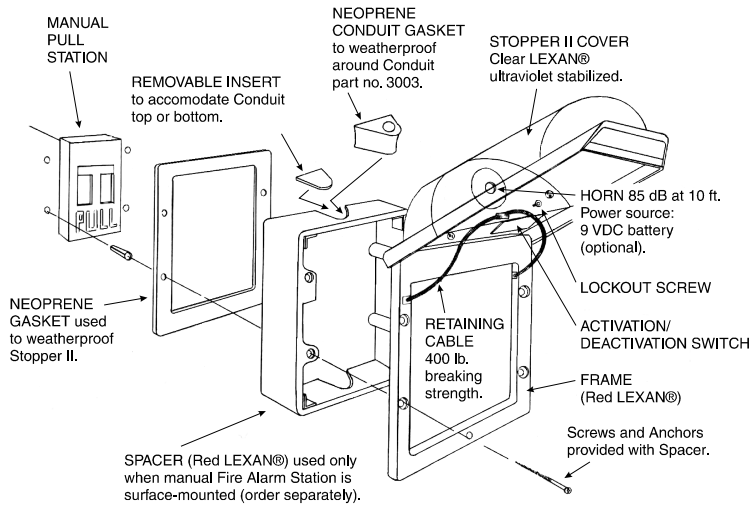
STI-1130Stopper® II, surface mount, with horn.

STI-1200Stopper® II, flush mount, without horn.

STI-1230Stopper® II, surface mount, without horn.

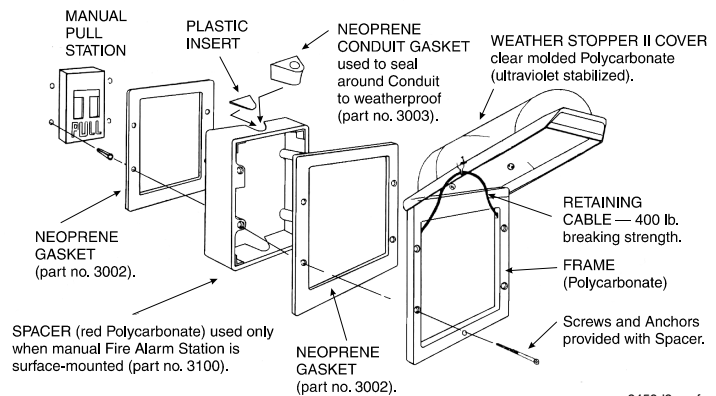
STI-1250Weather Stopper® II, flush mount.

➤ STI-3150Weather Stopper® II, surface mount.



Weather Stopper® II (at left)

Stopper® II (at right)



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# ➤ FSP-851(A) Series

## Intelligent Plug-In Photoelectric Smoke Detectors with FlashScan®



Intelligent/Addressable Devices

### 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 [systemsensors.com](http://systemsensors.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 156-1380 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 mm<sup>2</sup>). 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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Made in the U.S. A.

# ➤ FST-851(A) Series

## Intelligent Thermal (Heat) Detectors with FlashScan®



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 flanged 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](http://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 156-1380 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 (NFS-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 mm<sup>2</sup>). 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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# Intelligent Bases

**B501(A), B200S(A), B200SR(A),  
B210LP(A), B2241BI(A), B224RB(A),  
Mounting Kits, and Accessories**

 **NOTIFIER**<sup>®</sup>  
by Honeywell

**Addressable Devices**

## General

Intelligent FlashScan® and CLIP mounting bases and kits provide a variety of ways to install NOTIFIER detectors in any application. Intelligent detectors can be mounted in either flanged or flangeless bases depending on junction box selection (see *Junction Box Selection Guide*). Across this product line, detectors plug in easily to the base with SEMS screws; and models employ various 12 to 24 AWG wire ranges.

**Relay, isolator, and sounder bases** can be used to meet local code requirements. Relay bases provide one Form-C contact relay for control of auxiliary functions such as door closure and elevator recall. Isolator bases allow loops to continue to operate under fault conditions and automatically restore when the fault is removed. Sounder bases are available in temporal and non-temporal pattern versions depending on whether the signal is to be used for evacuation purposes.

## Specifications

### Diameter:

- B501: 4.1" (104 mm).
- B224BI, B224RB, B210LP: 6.1" (155 mm).
- B200S/SR: 6.875" (17.46 cm).

### Wire gauge:

- B224BI, B224RB: 14 to 24 AWG.
- B210LP, B501, B200S/SR: 12 to 24 AWG.

### Temperature range:

- B224BI, B224RB, B200S/SR: 32°F to 120°F (0°C to 49°C).
- B210LP, B501: -4°F to 150°F (-20°C to 66°C).

**Humidity range:** 10% to 93% RH, non-condensing.

**System 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).

## Electrical Ratings

### FOR B200S/SR:

**External supply voltage:** 16 to 33 VDC (VFWR)

**Standby current:** 500 µA maximum.

### Alarm current:

- B200S: 25 mA maximum at high-volume setting; 15 mA maximum at low-volume setting.
- B200SR: 35 mA maximum.

**SLC operating voltage:** 15 to 32 VDC.

**SLC standby current:** 300 µA.



Flangeless Mounting Base  
B501(A)



Flanged Mounting Base  
B210LP(A)



Sounder Base  
B200S(A), B200SR(A)



Relay Base  
B224RB(A)

**Sound output:** measured in a UL reverberant room at 10 feet, 24 Volts (continuous tone).

- B200S, high-volume: Greater than 85 dBA minimum.
- B200S, low-volume: Greater than 75 dBA minimum.
- B200SR: Greater than 85 dBA minimum.

### FOR B224RB, B224BI:

**Operating voltage:** 15 to 32 VDC (powered by SLC).

**Standby ratings:** <500 µA maximum @ 24 VDC.

**Set time (B224RB only):** short delay 55 to 90 msec; long delay 6 to 9 seconds.

**Reset time (B224RB only):** 20 msec maximum.

**Relay characteristics (B224RB only):** two-coil latching relay; one Form-C contact; ratings (UL/CSA): 0.9 A @ 125 VAC, 0.9 A @ 110 VDC, and 3.0 A @ 30 VDC.

## Product Line Information

### INTELLIGENT BASES

**B501:** Flangeless mounting base.

**B501A:** Flangeless mounting base, ULC Listed.

**B501BP:** Bulk pack of B501 (10).

**B210LP:** Flanged mounting base.

**B210LPA:** Flanged mounting base, ULC listed

**B210LPBP:** Bulk pack of B210LP (10).

**B200S:** Intelligent addressable 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.

**B200SA:** Same as B200S with ULC-listing.

**B200SR:** Intelligent sounder base capable of producing sound output with ANSI Temporal 3 or continuous tone.

**B200SRA:** Same as B200SR with ULC-listing.

**B224RB:** Relay base.

**B224RBA:** Relay base, ULC Listed.

**B224BI:** Isolator base.

**B224BIA:** Isolator base, ULC Listed.

**MOUNTING KITS AND ACCESSORIES**

**SMB600:** Surface mounting kit, flanged.

**F110:** Retrofit flange for converting high-profile bases to low-profile.

**F110BP:** Bulk pack of F110 (10).

**F210:** Accessory flange ring for B210LP(A) base (new design). 6-inch diameter.

**F210BP:** Bulk pack of F210 (10).

**RA100Z:** Remote LED annunciator.

**RA100ZA:** Remote LED annunciator, ULC Listed.

**M02-04-00:** Detector test magnet.

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

**XR2B:** Detector removal tool for current heads (*T55-127-010 included*).

**XR2:** Detector Remove Tool for use with low profile detector heads, and FSL-751.

**XP-4:** Extension pole for XR2/B (*5 to 15 ft/1.524 to 4.572 m*).

**T55-127-010:** Detector removal head.

**BCK-200B:** Black detector kit, package of 10 (for use with photo and ion detectors).

**WCK-200B:** White detector kit, package of 10 (for use with photo and ion detectors).

**Agency Listings and Approvals**

The listings and approvals below apply to intelligent bases as noted. 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:** S911
- **ULC Listed:** S911
- **FM Approved**
- **MEA:** 22-95-E, 205-94-E Vol. 2; 257-06-E
- **CSFM:** 7300-1653:0126, 7135-1653:0213, 7300-0028:0173, 7300-1653:0109

**Junction Box Selection Guide**

Base Models	Single Gang	3.5" Oct.	4.0" Oct.	4.0" Sq.	4.0" Sq. with 3.0" mud ring	50 mm	60 mm	70 mm	75 mm
B200S, B200SR	Yes	Yes	Yes	Yes	Yes	No	No	No	No
B501	No	Yes	No	No	Yes	Yes	Yes	Yes	No
B210LP	Yes	Yes	Yes	Yes	Yes	No	No	No	No
B224RB	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
B224BI	No	Yes	Yes	Yes	No	No	No	Yes	Yes

**NOTE:** Box depth contingent on base and wire size. Refer to National Electric Code or applicable local codes for appropriate recommendations.

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# > 302 Series

## Rate-Anticipation Heat Detectors

**FIRE-LITE ALARMS**  
by Honeywell

### Conventional Initiating Devices

#### General

The **Thermotech 302 Series** rate-anticipation heat detectors operate within a controlled range of two to three degrees of their set points, regardless of the speed or rate of temperature rise. These detectors are available in either 135°F (57.2°C) or 194°F (90°C) ratings.

The 302 Series are normally-open devices designed especially for fire detection and alarm systems.

#### Features

- **Immediate response.** The 302 Series activate whenever ambient air temperature reaches a detector's setting, eliminating the thermal time lag inherent in conventional heat detectors.
- **Eliminates false alarms.** The 302 Series do not respond to momentary temperature fluctuations below the selected temperature.
- **Universal application.** The 302 Series can be used in all areas for any type of occupancy.
- **Self-restoring.**
- **Hermetically sealed.** Shock resistant, corrosion resistant, and tamper-proof.

#### Principles Of Operation

The 302 Series rate-anticipation heat detectors respond and activate the fire alarm immediately whenever the ambient temperature reaches the preset temperature setting. Under rapid heat rise conditions, the rate-anticipation feature enables the detector to respond one to three degrees ahead of the setting. At the same time, however, it does not respond to momentary temperature fluctuations below the selected protection level, thus eliminating false alarms. When temperature drops back down below the protection level, the detector automatically resets itself.

#### Dimensions (Model 302)

**Total overall length:** 4-1/8" (10.48 cm).

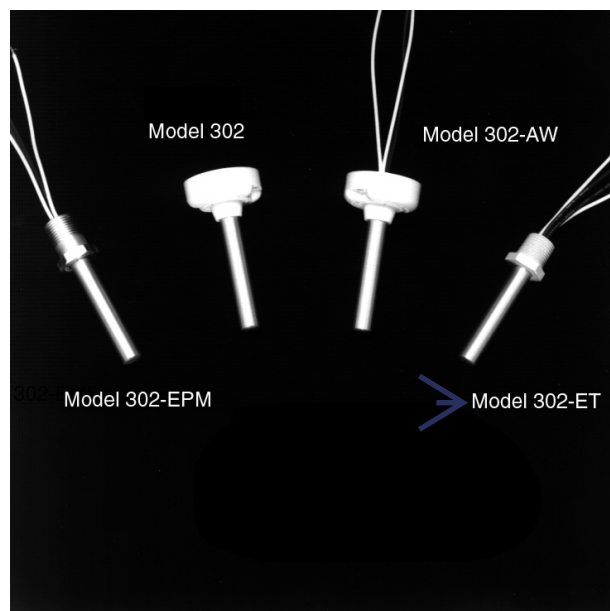
**Base diameter:** 2" (5.08 cm).

#### Electrical Ratings

<u>Voltage</u>	<u>Current</u>
6 - 125 VDC	5 amps
6 - 25 VDC	1 amp
125 VDC	0.5 amp

#### Application Information

302 Series detector have a smooth ceiling UL rating of 50' x 50' (15.24 x 15.24 meters) and are the only type of heat detectors having such a rating on both fixed temperature and rate anticipation.

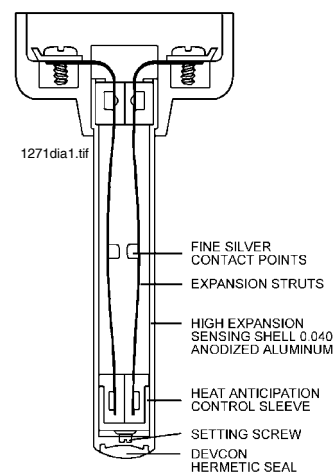


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#### Agency Listings and Approvals

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:** S539 (302-AW-135/-194; 302-ET-135/-194; 302-135-194)
- **FM Approved:** (302-AW-135/-194; 302-ET-135/-194; 302-135/-194)
- **CSFM:** 7270-0021:001



#### Cut-Away View

Thermotech Model 302 Series Rate-Anticipation Heat Detectors		
Model Number	Description	Refer To
302-135	135°F Interior Vertical Mounting	Note 1 below
302-194	194°F Interior Vertical Mounting	
302-AW-135	135°F All-Weather Vertical Mounting	Note 2 below
302-AW-194	194°F All-Weather Vertical Mounting	
302-ET-135	135°F All-Weather Vertical Mounting	Note 3 below
302-ET-194	194°F All-Weather Vertical Mounting	
302-EPM-135	135°F Explosion Proof Mounting	Note 4 below
302-EPM-194	194°F Explosion Proof Mounting	
AP-P	Decorative white plastic adaptor plate for mounting 302 and 302-AW to 4" outlet box.	

**NOTE 1:** For interior mounting in any atmosphere that is compatible with terminal-screw-type connections. UL rating 50' x 50' (15.24 x 15.24 meters).

**NOTE 2:** Hermetically sealed for moisture-proof or dust-proof installations. Requires no special backbox when the all-weather leads are properly spliced to "THW" or equivalent type wire.

**NOTE 3:** Hermetically sealed for moisture-proof or dust-proof installations. Requires no special backbox. Has plastic hexagonal wrench grip bushing with 1/2" (1.27 cm) conduit threads for attachment to threaded hub cover, or any outlet box.

**NOTE 4:** Explosion-proof for installation in hazardous locations. Has hexagonal wrench-grip bushing with 1/2" (1.27 cm) conduit threads for attachment to threaded hub cover of Series JL fixture fitting as manufactured by Killark Electric Co., or equal.

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# ➤ FMM-1(A), FMM-101(A), FZM-1(A) & FDM-1(A)

## Monitor Modules with FlashScan®



Intelligent/Addressable Devices

### General

Four different monitor modules are available for Notifier's intelligent control panels for a variety of applications. Monitor modules supervise a circuit of dry-contact input devices, such as conventional heat detectors and pull stations, or monitor and power a circuit of two-wire smoke detectors (FZM-1(A)).

**FMM-1(A)** is a standard-sized module (typically mounts to a 4" [10.16 cm] square box) that supervises either a Style D (Class A) or Style B (Class B) circuit of dry-contact input devices.

➤ **FMM-101(A)** is a miniature monitor module a mere 1.3" (3.302 cm) H x 2.75" (6.985 cm) W x 0.5" (1.270 cm) D that supervises a Style B (Class B) circuit of dry-contact input devices. Its compact design allows the FMM-101(A) to be mounted in a single-gang box behind the device it monitors.

**FZM-1(A)** is a standard-sized module that monitors and supervises compatible two-wire, 24 volt, smoke detectors on a Style D (Class A) or Style B (Class B) circuit.

**FDM-1(A)** is a standard-sized dual monitor module that monitors and supervises two independent two-wire Style B (Class B) dry-contact initiating device circuits (IDCs) at two separate, consecutive addresses in intelligent, two-wire systems.

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 within the group has new information, the panel CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of other designs.

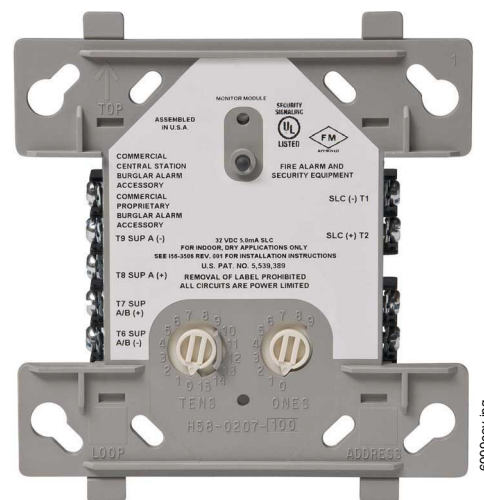
### FMM-1(A) Monitor Module

- Built-in type identification automatically identifies this device as a monitor module to the control panel.
- Powered directly by two-wire SLC loop. No additional power required.
- High noise (EMF/RFI) immunity.
- SEMS screws with clamping plates for ease of wiring.
- Direct-dial entry of address: 01 – 159 on FlashScan loops; 01 – 99 on CLIP loops.
- LED flashes green during normal operation (this is a programmable option) and latches on steady red to indicate alarm.

The FMM-1(A) Monitor Module is intended for use in intelligent, two-wire systems, where the individual address of each module is selected using the built-in rotary switches. It provides either a two-wire or four-wire fault-tolerant Initiating Device Circuit (IDC) for normally-open-contact fire alarm and supervisory devices. The module has a panel-controlled LED indicator. The FMM-1(A) can be used to replace MMX-1(A) modules in existing systems.

### FMM-1(A) APPLICATIONS

Use to monitor a zone of four-wire smoke detectors, manual fire alarm pull stations, waterflow devices, or other normally-open dry-contact alarm activation devices. May also be used to monitor normally-open supervisory devices with special supervisory indication at the control panel. Monitored circuit may be wired as an NFPA Style B (Class B) or Style D (Class



FMM-1(A) (Type H)

A) Initiating Device Circuit. A 47K ohm End-of-Line Resistor (provided) terminates the Style B circuit. No resistor is required for supervision of the Style D circuit.

### FMM-1(A) OPERATION

Each FMM-1(A) uses one of the available module addresses on an SLC loop. It responds to regular polls from the control panel and reports its type and the status (open/normal/short) of its Initiating Device Circuit (IDC). A flashing LED indicates that the module is in communication with the control panel. The LED latches steady on alarm (subject to current limitations on the loop).

### FMM-1(A) SPECIFICATIONS

**Nominal operating voltage:** 15 to 32 VDC.

**Maximum current draw:** 5.0 mA (LED on).

**Average operating current:** 350  $\mu$ A (LED flashing), 1 communication every 5 seconds, 47k EOL.

**Maximum IDC wiring resistance:** 40 ohms.

**EOL resistance:** 47K ohms.

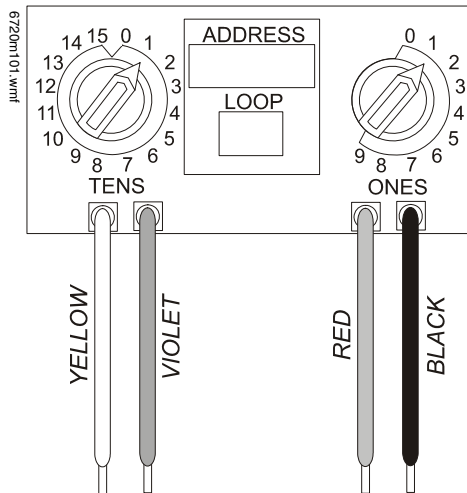
**Temperature range:** 32°F to 120°F (0°C to 49°C).

**Humidity range:** 10% to 93% noncondensing.

**Dimensions:** 4.5" (11.43 cm) high x 4" (10.16 cm) wide x 1.25" (3.175 cm) deep. Mounts to a 4" (10.16 cm) square x 2.125" (5.398 cm) deep box.

## ➤ FMM-101(A) Mini Monitor Module

- Built-in type identification automatically identifies this device as a monitor module to the panel.
- Powered directly by two-wire SLC loop. No additional power required.
- High noise (EMF/RFI) immunity.
- Tinned, stripped leads for ease of wiring.
- Direct-dial entry of address: 01 – 159 on FlashScan loops; 01 – 99 on CLIP loops.



The FMM-101(A) Mini Monitor Module can be installed in a single-gang junction directly behind the monitored unit. Its small size and light weight allow it to be installed without rigid mounting. The FMM-101(A) is intended for use in intelligent, two-wire systems where the individual address of each module is selected using rotary switches. It provides a two-wire initiating device circuit for normally-open-contact fire alarm and security devices. The FMM-101(A) can be used to replace MMX-101(A) modules in existing systems.

### FMM-101(A) APPLICATIONS

Use to monitor a single device or a zone of four-wire smoke detectors, manual fire alarm pull stations, waterflow devices, or other normally-open dry-contact devices. May also be used to monitor normally-open supervisory devices with special supervisory indication at the control panel. Monitored circuit/device is wired as an NFPA Style B (Class B) Initiating Device Circuit. A 47K ohm End-of-Line Resistor (provided) terminates the circuit.

### FMM-101(A) OPERATION

Each FMM-101(A) uses one of the available module addresses on an SLC loop. It responds to regular polls from the control panel and reports its type and the status (open/normal/short) of its Initiating Device Circuit (IDC).

### FMM-101(A) SPECIFICATIONS

Nominal operating voltage: 15 to 32 VDC.

**Average operating current:** 350  $\mu$ A, 1 communication every 5 seconds, 47k EOL; 600  $\mu$ A Max. (Communicating, IDC Shorted).

**Maximum IDC wiring resistance:** 40 ohms.

**Maximum IDC Voltage:** 11 Volts.

**Maximum IDC Current:** 400  $\mu$ A.

**EOL resistance:** 47K ohms.

**Temperature range:** 32°F to 120°F (0°C to 49°C).

**Humidity range:** 10% to 93% noncondensing.

**Dimensions:** 1.3" (3.302 cm) high x 2.75" (6.985 cm) wide x 0.65" (1.651 cm) deep.

**Wire length:** 6" (15.24 cm) minimum.

## FZM-1(A) Interface Module

- Supports compatible two-wire smoke detectors.
- Supervises IDC wiring and connection of external power source.
- High noise (EMF/RFI) immunity.
- SEMS screws with clamping plates for ease of wiring.
- Direct-dial entry of address: 01 – 159 on FlashScan loops, 01 – 99 on CLIP loops.
- LED flashes during normal operation; this is a programmable option.
- LED latches steady to indicate alarm on command from control panel.

The FZM-1(A) Interface Module is intended for use in intelligent, addressable systems, where the individual address of each module is selected using built-in rotary switches. This module allows intelligent panels to interface and monitor two-wire conventional smoke detectors. It transmits the status (normal, open, or alarm) of one full zone of conventional detectors back to the control panel. All two-wire detectors being monitored must be UL compatible with the module. The FZM-1(A) can be used to replace MMX-2(A) modules in existing systems.

### FZM-1(A) APPLICATIONS

Use the FZM-1(A) to monitor a zone of two-wire smoke detectors. The monitored circuit may be wired as an NFPA Style B (Class B) or Style D (Class A) Initiating Device Circuit. A 3.9 K ohm End-of-Line Resistor (provided) terminates the end of the Style B or D (class B or A) circuit (maximum IDC loop resistance is 25 ohms). Install ELR across terminals 8 and 9 for Style D application.

### FZM-1(A) OPERATION

Each FZM-1(A) uses one of the available module addresses on an SLC loop. It responds to regular polls from the control panel and reports its type and the status (open/normal/short) of its Initiating Device Circuit (IDC). A flashing LED indicates that the module is in communication with the control panel. The LED latches steady on alarm (subject to current limitations on the loop).

### FZM-1(A) SPECIFICATIONS

**Nominal operating voltage:** 15 to 32 VDC.

**Maximum current draw:** 5.1 mA (LED on).

**Maximum IDC wiring resistance:** 25 ohms.

**Average operating current:** 300  $\mu$ A, 1 communication and 1 LED flash every 5 seconds, 3.9k eol.

**EOL resistance:** 3.9K ohms.

**External supply voltage (between Terminals T3 and T4):** DC voltage: 24 volts power limited. Ripple voltage: 0.1 Vrms maximum. Current: 90 mA per module maximum.

**Temperature range:** 32°F to 120°F (0°C to 49°C).

**Humidity range:** 10% to 93% noncondensing.

**Dimensions:** 4.5" (11.43 cm) high x 4" (10.16 cm) wide x 1.25" (3.175 cm) deep. Mounts to a 4" (10.16 cm) square x 2.125" (5.398 cm) deep box.

## FDM1(A) Dual Monitor Module

The FDM-1(A) Dual Monitor Module is intended for use in intelligent, two-wire systems. It provides two independent two-wire initiating device circuits (IDCs) at two separate, consecutive addresses. It is capable of monitoring normally open contact fire alarm and supervisory devices; or either normally open or normally closed security devices. The module has a single panel-controlled LED.

**NOTE:** The FDM-1(A) provides two Style B (Class B) IDC circuits ONLY. Style D (Class A) IDC circuits are NOT supported in any application.

### FDM-1(A) SPECIFICATIONS

**Normal operating voltage range:** 15 to 32 VDC.

**Maximum current draw:** 6.4 mA (LED on).

**Average operating current:** 750  $\mu$ A (LED flashing).

**Maximum IDC wiring resistance:** 1,500 ohms.

**Maximum IDC Voltage:** 11 Volts.

**Maximum IDC Current:** 240  $\mu$ A

**EOL resistance:** 47K ohms.

**Maximum SLC Wiring resistance:** 40 Ohms.

**Temperature range:** 32° to 120°F (0° to 49°C).

**Humidity range:** 10% to 93% (non-condensing).

**Dimensions:** 4.5" (11.43 cm) high x 4" (10.16 cm) wide x 2.125" (5.398 cm) deep.

### FDM-1(A) AUTOMATIC ADDRESSING

The FDM-1(A) automatically assigns itself to two addressable points, starting with the original address. For example, if the FDM-1(A) is set to address "26", then it will automatically assign itself to addresses "26" and "27".

**NOTE:** "Ones" addresses on the FDM-1(A) are 0, 2, 4, 6, or 8 only. Terminals 6 and 7 use the first address, and terminals 8 and 9 use the second address.



#### CAUTION:

Avoid duplicating addresses on the system.

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## Installation

FMM-1(A), FZM-1(A), and FDM-1(A) modules mount directly to a standard 4" (10.16 cm) square, 2.125" (5.398 cm) deep, electrical box. They may also be mounted to the SMB500 surface-mount box. Mounting hardware and installation instructions are provided with each module. All wiring must conform to applicable local codes, ordinances, and regulations. These modules are intended for power-limited wiring only.

The FMM-101(A) module is intended to be wired and mounted without rigid connections inside a standard electrical box. All wiring must conform to applicable local codes, ordinances, and regulations.

## Agency Listings and Approvals

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:** S635
- **ULC:** S635
- **FM Approved**
- **CSFM:** 7300-0028:0219
- **MEA:** 457-99-E
- **U.S. Coast Guard:**

– 161.002/23/3 (AFP-200: FMM-1/-101, FZM-1)

– 161.002/42/1 (NFS-640: FMM-1/-101)

- **Lloyd's Register:**

– 03/60011/E1 (FMM-1/-101, FZM-1)

– 94/60004/E2 (AFP-200: *except* FDM-1)

– 02/60007 (NFS-640: FDM-1)

- **FDNY:** COA #6038 (NFS2-640, NFS-320), COA# 6058 (NFS2-3030)

## Product Line Information

**NOTE:** "A" suffix indicates ULC-listed model.

**FMM-1(A):** Monitor module.

**FMM-101(A):** Monitor module, miniature.

**FZM-1(A):** Monitor module, two-wire detectors.

**FDM-1(A):** Monitor module, dual, two independent Class B circuits.

**SMB500:** Optional surface-mount backbox.

**NOTE:** See installation instructions and refer to the SLC Wiring Manual, PN 51253.

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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.





# InnovairFlex

## Intelligent Non-Relay Photoelectric Duct Smoke Detector

 **NOTIFIER**<sup>®</sup>  
by Honeywell

Intelligent Devices

### General

The Notifier InnovairFlex DNR intelligent non-relay photoelectric duct smoke detector and DNRW watertight non-relay photoelectric duct smoke detector feature a pivoting housing that fits both square and rectangular footprints capable of mounting to a round or rectangular duct.

DNRW duct smoke detector, with its NEMA-4 rating, is listed as a watertight, UV resistant enclosure providing protection against falling dirt, rain, and windblown dust, splashing and hose directed water, allowing operators to use the detector in the most extreme environments.

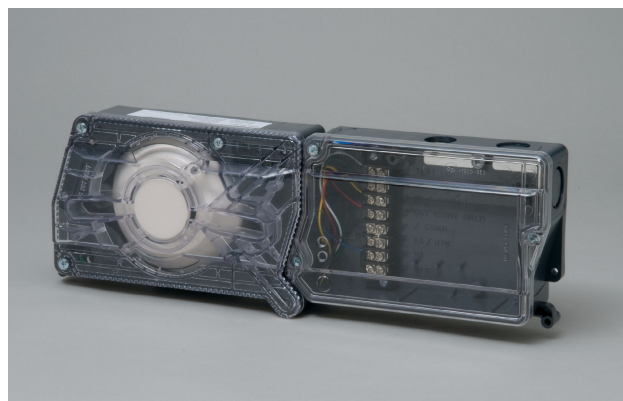
These units sense smoke in the most challenging conditions, operating in airflow speeds of 100 to 4,000 feet per minute, temperatures of -4 degrees F to 158 degrees F, and a humidity range of 0 to 95 percent (non-condensing.)

An improved cover design isolates the sensor head, which allows for ease of maintenance. A cover tamper feature indicates a trouble signal for a removed or improperly installed sensor cover. The Notifier InnovairFlex housing provides a 3/4-inch conduit knockout and ample space to facilitate easy wiring and mounting of a relay module.

The Notifier InnovairFlex duct smoke detector can be customized to meet local codes and specifications without additional wiring. The new InnovairFlex product line is compatible with all previous Innovair models, including remote test accessories.

### Features

- Photoelectric, integrated low-flow technology
- Air velocity rating from 100 ft/min to 4,000 ft/min (0.5 m/s to 20.32 m/s)
- Versatile mounting options: square or rectangular configuration
- Broad ranges for operating temperature (-4F to 158F) and humidity (0% to 95% non-condensing)
- Patented sampling tube installs from front or back of the detector with no tools required
- Cover tamper signal
- Increased wiring space with a newly added 3/4" conduit knockout
- Available space within housing to accommodate mounting of a relay module
- Easily accessible code wheels on sensor head (sold separately)
- Clear cover for convenient visual inspection
- Remote testing capability
- Requires com line power only
- Accommodates the installation of an addressable relay module, sold separately, (FRM-1 or NC-100R) for applications requiring a Form-C relay



### Specifications

**Size: (Rectangle)** 14.38 in (37 cm) Length; 5 in (12.7 cm) Width, 2.5 in (6.6 cm) Depth

**Size: (Square)** 7.75 in (19.7 cm) Length; 9 in (22.9 cm) Width; 2.5 in (6.35 cm) Depth

**Weight:** 1.6 lb (0.73 kg)

**Operating Temperature Range:** -4 degrees F to 158 degrees F (-20 degrees C to 70 degrees C)

**Storage Temperature Range:** -22 degrees F to 158 degrees F (-30 degrees C to 70 degrees C)

**Operating Humidity Range:** 0% to 95% relative humidity (non-condensing)

**Air Duct Velocity:** 100 to 4,000 ft/min (0.5 to 20.32 m/s)

### Accessories

Notifier provides system flexibility with a variety of accessories, including two remote test stations and different means of visible and audible system annunciation. As with our duct smoke detectors, all duct smoke detector accessories are UL listed.

DNR(W)s with a date code of 0013 or higher do not require external 24VDC for remote test applications when used with a remote-test-capable detector.

### ACCESSORY CURRENT LOADS AT 24 VDC

Device	Standby	Alarm
RA100Z	0mA	12 mA Max
RTS151/ RTS151KEY	0mA	12mA Max

## Agency Listings and Approvals

Consult product manual for lists of compatible UL-Listed devices. 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: S911
- ULC Listed: S911
- CFSM Listed: 3242-1653:209

## Product Line Information

*NOTE: "A or "CDN" suffix indicates ULC listed model.*

➤ **DNR(A):** Intelligent non-relay photoelectric low flow smoke detector housing. Requires photoelectric smoke detector (sold separately).

**DNRW:** Watertight intelligent non-relay photoelectric low flow duct smoke detector housing. Requires photoelectric smoke detector (sold separately). NEMA-4.

**FSP-851:** Addressable low-profile photoelectric smoke detector.

**FSP-851R:** Remote test capable addressable low-profile photoelectric smoke detector.

**NP-100:** Addressable low-profile photoelectric smoke detector for FireWarden series panels.

**NP-100R:** Remote test capable addressable low-profile photoelectric smoke detector for FireWarden series panels.

**DCOIL:** Remote test coil. Required for older DNR(W) duct detector housing.

**DST1(A):** Metal sampling tube duct width up to 1 ft (0.3m)

**DST1.5(A):** Metal sampling tube duct widths up to 1 ft to 2 ft (0.3 to 0.6 m)

➤ **DST3(A):** Metal sampling tube duct widths up to 2 ft to 4 ft (0.6 to 1.2 m)

**DST5(A):** Metal sampling tube duct widths up to 4 ft to 8 ft (1.2 to 2.4 m)

**DST10(A):** Metal sampling tube duct widths up to 8 ft to 12 ft (2.4 to 3.7 m)

**DH400OE-1:** Weatherproof enclosure

**ETX:** Metal exhaust tube duct, width 1 ft (0.3 m)

**M02-04-00:** Test magnet

**P48-21-00:** End cap for metal sampling tubes

**RA100Z(A):** Remote annunciator alarm LED

**RTS151(A):** Remote test station

**RTS151KEY(A):** Remote test station with key lock

## Important Note

- DNRW duct detector housings with a date code of 0013 or higher do not require a DCOIL or auxiliary 24 VDC for remote test applications when used with a remote test capable detector.
- DNRW duct detector housings with a date code of 0012 or earlier require a DCOIL and auxiliary 24 VDC power for remote test applications.

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Made in the U.S. A.

# Duct Smoke Detector Accessories

for Notifier/System Sensor Products



Miscellaneous

## General

Duct smoke detector accessories add functionality to the duct smoke system by allowing quick, convenient inspections at eye level and effective audible and visual notification options. All System Sensor duct smoke detectors and accessories are UL listed.

## Specifications

### APA151 PIEZO ANNUNCIATOR

The APA151 piezo annunciator, which replaces the APA451 with a new, improved look, provides an audible alarm signal, a red LED to indicate alarm status, and a green LED to indicate power status. It is intended for use with System Sensor 4-wire conventional duct smoke detector applications without a system control panel, to comply with NFPA 90A.



APA151.wmf

APA151 Piezo Annunciator	
Voltage	Regulated 24 VDC
Operating Voltage	16 to 33 VDC
Maximum Alarm Current	30 mA
Temperature Range	32°F to 120°F (0°C to 49°C)
Relative Humidity	10 to 93%, non-condensing
Wire Gauge	12 to 18 AWG
Dimensions	4.6" H x 2.9" W x .45" D

### MHR/MHW MINI-HORNS

The MHR and MHW SpectrAlert® Advance mini-horns feature temporal or continuous tones at high and low volume settings. Their small footprint allows mounting to single-gang back boxes for applications where a small device is desired.



MHR.wmf, MHW.wmf



60535cov.wmf

MHR/MHW SpectrAlert Advance Mini-Horns	
Voltage	Regulated 12 DC or FWR (Full Wave Rectified) or Regulated 24 VDC or FWR
Operating Voltage	8 to 33 VDC (9 to 33 VDC with Sync-Circuit™ Module)
Sounder Current Draw	22 mA RMS max. at 8 to 17.5 Volts DC 17 mA RMS max. at 8 to 17.5 Volts FWR 29 mA RMS max. at 16 to 33 Volts DC 25 mA RMS max. at 16 to 33 Volts FWR
Temperature Range	32°F to 120°F (0°C to 49°C)
Humidity Range	10 to 93% non-condensing
Nominal Sounder Frequency	3 kHz
Wire Gauge	12 to 18 AWG
Dimensions	4.6"H x 2.9"W x 0.45"D

### RA100Z/RA100ZA REMOTE ANNUNCIATORS

The RA100Z and RA100ZA remote annunciators are designed for both conventional and intelligent applications. Their red LED provides visual indication of an alarm condition.



RA100Z.wmf

RA100Z/RA100ZA Remote Annunciator	
Voltage Range	Conventional System: 3.1 to 32 VDC Intelligent System: 18 to 32 VDC
Maximum Alarm Current	10 mA
Dimensions	4.6"H x 2.8"W x 1.3"D

### RTS151/RTS151KEY REMOTE TEST STATIONS

The RTS151 and RTS151KEY remote test stations are automatic fire detector accessories designed to test duct smoke detectors from a convenient location. For 4-wire detectors, the RTS151KEY test station features a multi-colored LED that alternates between steady green and red. For 2-wire detectors, the LED illuminates red for alarm.



RTS151.wmf, RTS151KEY.wmf

RTS151 Remote Test Station	
Power Requirements	Alarm LED 2.8 to 32 VDC, 10 mA max. Total Current: 95 mA max.
Test Switch	10 VA @ 32 VDC
Reset Switch	10 VA @ 32 VDC
Alarm Response Time	40 seconds max.
Temperature Range	14°F to 140°F (-10°C to 60°C)
Relative Humidity	95% non-condensing
Wire Gauge	14 to 18 AWG
Dimensions	4.8"H x 2.9"W x 1.4"D

### RTS151KEY Remote Test Station with Key

Power Requirements	Power LED (Green): 14 to 35 VDC, 12 mA max. Alarm LED (RED): 2.8 to 32 VDC, 12 mA max.
Alarm Response Time	40 seconds max.
Temperature Range	14°F to 140°F (-10°C to 60°C)
Relative Humidity	95% non-condensing
Wire Gauge	14 to 18 AWG
Dimensions	4.6"H x 2.75"W x 1.8"D

### RTS2/RTS-AOS MULTI-SIGNALLING ACCESSORIES

The RTS2 and RTS2-AOS multi-signaling accessories are designed to work with InnovairFlex 4-wire conventional duct smoke detectors. These accessories include a key switch that can be used to select one of two connected sensors to be tested, reset, or both by a push button switch. They also enable sensitivity measurements using the SENS-RDR sensitivity reader (sold separately). The AOS (Add-On Strobe) is an optional accessory included with the RTS2-AOS model.



RTS-AOS.wmf, AOS.wmf

### RTS2 and RTS-AOS Multi-Signaling Accessory

Voltage	20 to 29 VDC
Power Requirements	Standby: 3.0 mA max. Trouble: 16.0 mA max. Alarm without Strobe: 30 mA max. Alarm with Strobe: 55 mA max.
Sounder	85 dBA at 10 ft.
Temperature Range	14°F to 140°F (-10°C to 60°C)
Relative Humidity	95% non-condensing
Wire Gauge	14 to 22 AWG
Dimensions	4.8"W x 5.3"H x 1.6"D

## Product Line Information

**APA151:** Piezo Annunciator

**MHR:** Mini-Horn, Red

**MHW:** Mini-Horn, White

**RA100Z/RA100ZA:** Remote Annunciator

**RTS151:** Remote Test Station

**RTS151KEY:** Remote Test Station with Key

**RTS2:** Multi-signaling Accessory

**AOS:** Add-On Strobe

**RTS2-AOS:** Multi-Signaling Accessory

## 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

The listings and approvals below apply to the basic products. 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: S4011**
- **FM Approved**
- **CSFM: 7135-1653:196**

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# ➤ FCM-1(A) & FRM-1(A) Series

## Control and Relay Modules



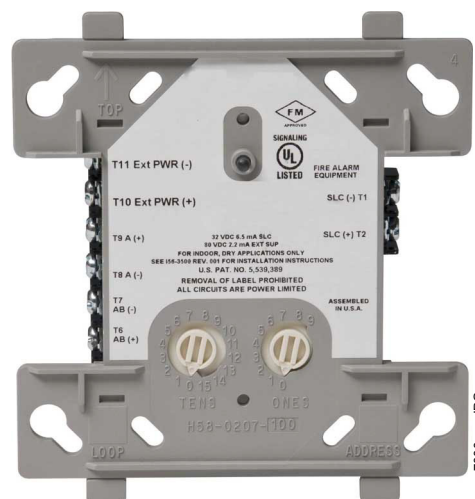
Intelligent / Addressable Devices

### General

**FCM-1(A) Control Module:** The FCM-1(A) Addressable Control Module provides Notifier intelligent fire alarm control panels a circuit for Notification Appliances (horns, strobes, speakers, etc.). Addressability allows the FCM-1(A) to be activated, either manually or through panel programming, on a select (zone or area of coverage) basis.

➤ **FRM-1(A) Relay Module:** The FRM-1(A) Addressable Relay Module provides the system with a dry-contact output for activating a variety of auxiliary devices, such as fans, dampers, control equipment, etc. Addressability allows the dry contact to be activated, either manually or through panel programming, on a select basis.

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. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of other designs.



FCM-1(A)

### Features

- Built-in type identification automatically identifies these devices to the control panel.
- Internal circuitry and relay powered directly by two-wire SLC loop. The FCM-1(A) module requires power (for horns, strobes, etc.), or audio (for speakers).
- Integral LED “blinks” green each time a communication is received from the control panel and turns on in steady red when activated.
- LED blink may be deselected globally (affects all devices).
- High noise immunity (EMF/RFI).
- The FCM-1(A) may be used to switch 24-volt NAC power, audio (up to 70.7 Vrms).
- Wide viewing angle of LED.
- SEMS screws with clamping plates for wiring ease.
- Direct-dial entry of address 01– 159 for FlashScan loops, 01 – 99 for CLIP mode loops.
- Speaker, and audible/visual applications may be wired for Class B or A (Style Y or Z).

### Applications

The FCM-1(A) is used to switch 24 VDC audible/visual power, high-level audio (speakers). The FRM-1(A) may be programmed to operate dry contacts for applications such as door holders or Air Handling Unit shutdown, and to reset four-wire smoke detector power.

**NOTE:** Refer to the SLC Manual (PN 51253) for details regarding releasing applications with the FCM-1(A). Refer to the FCM-1-REL datasheet (DN-60390) for new FlashScan® releasing applications.

### Construction

- The face plate is made of off-white heat-resistant plastic.
- Controls include two rotary switches for direct-dial entry of address (01-159).

- The FCM-1(A) is configured for a single Class B (Style Y) or Class A (Style Z) Notification Appliance Circuit.
- The FRM-1(A) provides two Form-C dry contacts that switch together.

### Operation

Each FCM-1(A) or FRM-1(A) uses one of 159 possible module addresses on a SLC loop (99 on CLIP loops). It responds to regular polls from the control panel and reports its type and status, including the open/normal/short status of its Notification Appliance Circuit (NAC). The LED blinks with each poll received. On command, it activates its internal relay. The FCM-1(A) supervises Class B (Style Y) or Class A (Style Z) notification or control circuits.

Upon code command from the panel, the FCM-1(A) will disconnect the supervision and connect the external power supply in the proper polarity across the load device. The disconnection of the supervision provides a positive indication to the panel that the control relay actually turned ON. The external power supply is always relay isolated from the communication loop so that a trouble condition on the external power supply will never interfere with the rest of the system.

Rotary switches set a unique address for each module. The address may be set before or after mounting. The built-in TYPE CODE (not settable) will identify the module to the control panel, so as to differentiate between a module and a sensor address.

### Specifications for FCM-1(A)

**Normal operating voltage:** 15 to 32 VDC.

**Maximum current draw:** 6.5 mA (LED on).

**Average operating current:** 350  $\mu$ A direct poll, 375  $\mu$ A group poll with LED flashing, 485  $\mu$ A Max. (LED flashing, NAC shorted.)

Maximum NAC Line Loss: 4 VDC.

**External supply voltage (between Terminals T10 and T11):** Maximum (NAC): Regulated 24 VDC; Maximum (Speakers): 70.7 V RMS, 50W.

**Drain on external supply:** 1.7 mA maximum using 24 VDC supply; 2.2 mA Maximum using 80 VRMS supply.

**Max NAC Current Ratings:** For class B wiring system, the current rating is 3A; For class A wiring system, the current rating is 2A.

**Temperature range:** 32°F to 120°F (0°C to 49°C).

**Humidity range:** 10% to 93% non-condensing.

**Dimensions:** 4.5" (114.3 mm) high x 4" (101.6 mm) wide x 1.25" (31.75 mm) deep. Mounts to a 4" (101.6 mm) square x 2.125" (53.975 mm) deep box.

**Accessories:** SMB500 Electrical Box; CB500 Barrier

### Specifications for FRM-1(A)

**Normal operating voltage:** 15 to 32 VDC.

**Maximum current draw:** 6.5 mA (LED on).

**Average operating current:** 230 µA direct poll; 255 µA group poll.

**EOL resistance:** not used.

**Temperature range:** 32°F to 120°F (0°C to 49°C).

**Humidity range:** 10% to 93% non-condensing.

**Dimensions:** 4.5" (114.3 mm) high x 4" (101.6 mm) wide x 1.25" (31.75 mm) deep. Mounts to a 4" (101.6 mm) square x 2.125" (53.975 mm) deep box.

**Accessories:** SMB500 Electrical Box; CB500 Barrier

### Agency Listings and Approvals

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:** S635
- **ULC:** S3705 (A version only)
- **FM Approved**
- **CSFM:** 7300-0028:0219
- **MEA:** 14-00-E
- **FDNY:** COA #6067, #6065

### Contact Ratings for FRM-1(A)

Current Rating	Maximum Voltage	Load Description	Application
3 A	30 VDC	Resistive	Non-Coded
2 A	30 VDC	Resistive	Coded
.9 A	110 VDC	Resistive	Non-Coded
.9 A	125 VDC	Resistive	Non-Coded
.5 A	30 VDC	Inductive (L/R=5ms)	Coded
1 A	30 VDC	Inductive (L/R=2ms)	Coded
.3 A	125 VAC	Inductive (PF=0.35)	Non-Coded
1.5 A	25 VAC	Inductive (PF=0.35)	Non-Coded
.7 A	70.7 VAC	Inductive (PF=0.35)	Non-Coded
2 A	25 VAC	Inductive (PF=0.35)	Non-Coded

**NOTE:** Maximum (Speakers): 70.7 V RMS, 50 W

### Product Line Information

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

**FCM-1(A):** Intelligent Addressable Control Module.

**FRM-1(A):** Intelligent Addressable Relay Module.

**A2143-20:** Capacitor, required for Class A (Style Z) operation of speakers.

**SMB500:** Optional Surface-Mount Backbox.

**CB500:** Control Module Barrier — required by UL for separating power-limited and non-power limited wiring in the same junction box as FCM-1(A).

**NOTE:** For installation instructions, see the following documents:

- *FCM-1(A) Installation document I56-1169.*
- *FRM-1(A) Installation document I56-3502.*
- *Notifier SLC Wiring Manual, document 51253.*

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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.



# ET Series

## Low-Profile Speaker and Speaker Strobes

 **NOTIFIER**<sup>®</sup>  
by Honeywell

Audio/Visual Devices

### GENERAL

Wheelock's high performance Series ET Speakers and Series ET Speaker Strobes provide high audio output, clear audibility, dual voltage (25/70 VRMS) capability and field selectable taps from 1/8 to 8 watts. They are designed to meet the critical needs of the life safety industry for effective emergency voice communications, tone signaling and visible signaling to alert the hearing impaired.

The low profile design incorporates a speaker mounting plate for faster and easier installation. Each model has a built-in level adjustment feature and an aesthetic two (2) screw grille cover.

The Series ET Speaker Strobe models incorporate Low Current draw Series RSS Strobes.

Strobe options for wall mount models include 1575 cd or Wheelock's patented MCW multi-candela strobe with field selectable candela settings of 15/30/75/110cd or the high intensity MCWH strobe with field selectable 135/185cd.

Ceiling mount models are available in Wheelock's patented MCC multi-candela ceiling strobe with field selectable intensities of 15/30/75/95cd or the high intensity MCCH strobe with field selectable 115/177cd.

The strobe portion of all Series ET Strobes may be synchronized when used in conjunction with the Wheelock SM, DSM sync modules or the power supply with patented Wheelock Sync Protocol. Wheelock's synchronized strobes offer an easy way to comply with ADA recommendations concerning photosensitive epilepsy.

Series ET70 and ET90 Speaker Strobes are UL Listed for indoor use under Standard 1971 (Signaling Devices for the Hearing Impaired) and Standard 1480 (Speaker Appliances), and use a Xenon flashtube with solid state circuitry enclosed in a rugged Lexan® lens to provide maximum reliability for effective visual signaling. All inputs are supervised and employ IN/OUT wiring terminals for fast installation using #12 to #18 AWG wiring.

Color options for Series ET speakers and speaker strobes are red or white plated.

Wheelock's Weatherproof Low Profile Speaker Strobe, Series ET70WP-2475W-FR appliance has an extended temperature range of -40° F to 150° F (-40° C to 66° C) that will satisfy virtually all outdoor and severe environment applications.

For outdoor applications the ET70WP-2475W-FR must be wall mounted to a Weatherproof Back Box (IOB). Models are available for surface mounting to Wheelock weatherproof backboxes on walls or ceilings. The optional WP-KIT allows the weatherproof backboxes (IOB, WPBB or WPSBB) to be mounted to a recessed electrical box for concealed conduit installation. For semi-flush installation, the WPA and WFPA kits allow a customer to mount the weatherproof appliances to a recessed electrical box without the need for an external weatherproof backbox.

### FEATURES

- ADA/NFPA/UFC/ANSI compliant.
- Meets OSHA 29 Part 1910.165.
- Wall mount models are available with Field Selectable Candela.
- Settings of 15/30/75/110cd or 135/185cd (Multi-Candela models) or 1575cd (Single Candela model).



**ET70 Series  
Speaker Strobe**



**ET90 Series  
Speaker**



**Multi-Candela Indicator  
(bottom of strobe lens)**

- Ceiling mount models are available with field selectable candela settings of 15/30/75/95cd or 115/177cd (multi-candela models).
- Strobes produce 1 flash per second over the regulated voltage range.
- 24 VDC with wide UL "Regulated Voltage" using filtered DC or unfiltered VRMS input voltage.
- Synchronize with Wheelock SM, DSM or power supply with built-in Wheelock sync protocol.
- Field selectable taps for 25 or 70 VRMS operation from 1/8 watt to 8 watts.
- High efficiency design for maximum output at minimum wattage across a frequency range of 400 to 4000 HZ.
- Fast installation with IN/OUT screw terminals using #12 to #18 AWG wires.



**WARNING: PLEASE READ THESE SPECIFICATIONS AND ASSOCIATED INSTALLATION INSTRUCTIONS CAREFULLY BEFORE USING, SPECIFYING OR APPLYING THIS PRODUCT. FAILURE TO COMPLY WITH ANY OF THESE INSTRUCTIONS, CAUTIONS OR WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE, AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

2225ssr70.jpg; 2225pho2.tif; 6601pho3.jpg

## GENERAL NOTES:

- Strobes are designed to flash at 1 flash per second minimum over their "Regulated Voltage Range". Note that NFPA-72 specifies a flash rate of 1 to 2 flashes per second and ADA Guidelines specify a flash rate of 1 to 3 flashes per second.
- All candela ratings represent minimum effective Strobe intensity based on UL Standard 1971.
- Series ET Speaker Strobes and Series ET Speakers are listed under UL Standard 1971 for indoor use with a temperature range of 32°F to 120°F (0°C to 49°C) and maximum humidity of 85%.
- Wheelock Weatherproof Appliances are designed to operate over an extended temperature of -40° F to 150°F (-40°C to 66°C) and all candela ratings represent minimum effective strobe intensity based on UL 1638. Maximum humidity of 93% RH + 2%.
- "Regulated Voltage Range" is the newest terminology used by UL to identify the voltage range. Prior to this change UL used the terminology "Listed Voltage Range".

## ARCHITECTURAL/ENGINEERING SPECIFICATIONS

The speaker appliances shall be Wheelock Series ET Speakers and speaker strobe appliances shall be Wheelock Series ET Speaker Strobes or approved equals. The speakers shall be UL Listed under Standard 1480 for Fire Protective Service and speakers equipped with strobes shall be listed under UL Standard 1971 for Signaling Devices for the Hearing-Impaired. In addition, the strobes shall be certified to meet the requirements of FCC Part 15, Class B.

All speakers shall be designed for a field selectable input of either 25 or 70 VRMS, with selectable power taps from 1/8 watt

to 8 watts. All models shall have listed sound output of up to 93 dB at 10 feet and a listed frequency response of 400 to 4000 Hz. The speaker shall also incorporate a sealed back construction. All inputs shall employ terminals that accept #12 to #18 AWG wire sizes.

The strobe portion of the appliance shall produce a flash rate of one (1) flash per second over the Regulated Voltage Range and shall incorporate a Xenon flashtube enclosed in a rugged Lexan® lens. The strobe shall be of low current design. Where, Multi-Candela Speaker Strobes are specified, the strobe intensity shall have field selectable settings and shall be rated per UL Standard 1971 at 15/30/75/110cd or 135/185cd for wall mount and 15/30/75/95 cd or 115/177cd for ceiling mount. The selector switch for selecting the candela shall be tamper resistant. The 1575 strobe shall be specified when 15 candela UL Standard 1971 listing with 75 candela on-axis is required (e.g. ADA compliance).

When synchronization is required, the strobe portion of the appliance shall be compatible with Wheelock's SM, DSM sync modules or a power supply with built-in Wheelock Patented Sync Protocol. The strobes shall not drift out of synchronization at any time during operation. If the sync module or Power Supply fails to operate, (i.e., contacts remain closed), the strobe shall revert to a non-synchronized flash rate.

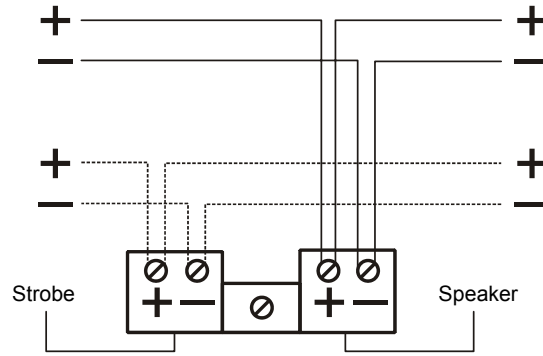
The speaker and speaker strobe appliances shall be designed for indoor surface or flush mounting. The speaker and speaker strobe shall incorporate a speaker mounting plate with a grille cover which is secured with two screws for a level, aesthetic finish and shall mount to standard electrical hardware requiring no additional trimplate or adapter. The finish of the Series ET speakers and speaker strobes shall be white, red or nickel plate. All speakers and speaker strobes shall be backward compatible.



**WARNING: CONTACT WHEELOCK FOR THE CURRENT INSTALLATION INSTRUCTIONS (P83983) SERIES NS-24MCW, (P84234) SERIES NS-12 AND 24 VDC SINGLE CANDELA MODELS, (P83600) SERIES NH AND "GENERAL INFORMATION" SHEET (P82380) ON THESE PRODUCTS. THESE DOCUMENTS UNDERGO PERIODIC CHANGES. IT IS IMPORTANT THAT YOU HAVE CURRENT INFORMATION ON THE PRODUCTS. THESE MATERIALS CONTAIN IMPORTANT INFORMATION THAT SHOULD BE READ PRIOR TO SPECIFYING OR INSTALLING THESE PRODUCTS, INCLUDING:**

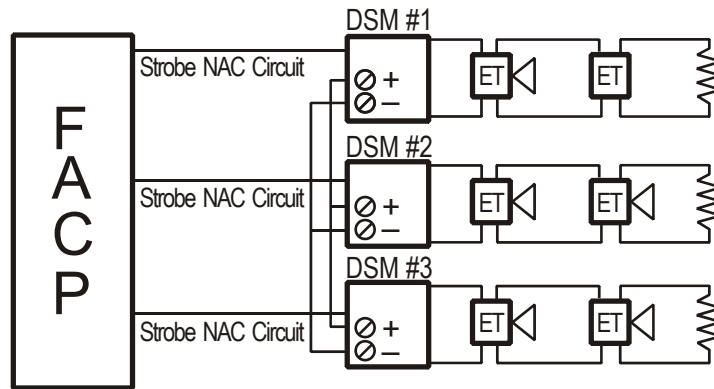
- **TOTAL CURRENT REQUIRED BY ALL APPLIANCES CONNECTED TO SYSTEM SECONDARY POWER SOURCES.**
- **FUSE RATINGS ON NOTIFICATION APPLIANCE CIRCUITS TO HANDLE PEAK CURRENTS FROM ALL APPLIANCES ON THOSE CIRCUITS.**
- **COMPOSITE FLASH RATE FROM MULTIPLE STROBES WITHIN A PERSON'S FIELD OF VIEW.**
- **ADDING, REPLACING OR CHANGING APPLIANCES OR CHANGING CANDELLA SETTINGS WILL AFFECT CURRENT DRAW. RECALCULATE CURRENT DRAW TO INSURE THAT THE TOTAL AVERAGE CURRENT AND TOTAL PEAK REQUIRED BY ALL APPLIANCES DO NOT EXCEED THE RATED CAPACITY OF THE POWER SOURCES OR FUSES.**
- **THE VOLTAGE APPLIED TO THE PRODUCTS MUST BE WITHIN THEIR "REGULATED VOLTAGE RANGE."**
- **INSTALLATION OF 110 CANDELA STROBE PRODUCTS IN SLEEPING AREAS.**
- **INSTALLATION IN OFFICE AREAS AND OTHER SPECIFICATION AND INSTALLATION ISSUES.**
- **THESE APPLIANCES ARE NOT DESIGNED TO BE USED ON CODED SYSTEMS IN WHICH THE APPLIED VOLTAGE IS CYCLED ON AND OFF.**
- **FAILURE TO COMPLY WITH THE INSTALLATION INSTRUCTIONS OR GENERAL INFORMATION SHEETS COULD RESULT IN IMPROPER INSTALLATION, APPLICATION, AND/OR PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**
- **CONDUCTOR SIZE (AWG), LENGTH AND AMPACITY SHOULD BE TAKEN INTO CONSIDERATION PRIOR TO DESIGN AND INSTALLATION OF THESE PRODUCTS, PARTICULARLY IN RETROFIT INSTALLATIONS.**

# WIRING DIAGRAMS



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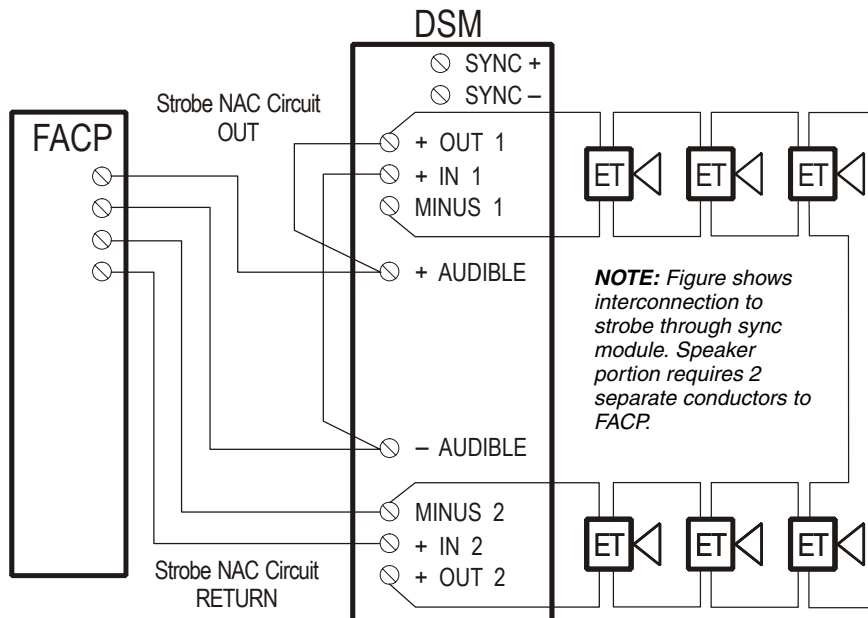
**Series ET Speaker and Strobe Operate Independently (Non-Sync or Sync)**



2225bd2.wmf

DSM Interconnecting wiring shown. Maximum of 20.

**Series ET Speaker Strobes Synchronized with DSM Module Single Class "A"**



2225bd3.wmf

**NOTE:** Figure shows interconnection to strobe through sync module. Speaker portion requires 2 separate conductors to FACP.

**Series ET Speaker Strobe Appliances Synchronized with DSM Module Single Class "A"**

## SPECIFICATIONS

ET70/ET90 Speaker Strobes	ET70 Strobe Current - Wall Mount							ET90 Strobe Current - Ceiling Mount					
	241575W	24MCW				24MCWH		24MCC				24MCCH	
	1575cd	15cd	30cd	75cd	110cd	135cd	185cd	15cd	30cd	75cd	95cd	115cd	177cd
16-33 VDC	0.090	0.060	0.092	0.165	0.220	0.300	0.420	0.065	0.105	0.189	0.299	0.300	0.420

**NOTE:** UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units). For strobes the UL max current is usually at the minimum listed voltage (16v for 24v units). For audibles the max current is usually at the maximum listed voltage (33v for 24v units). For unfiltered FWR ratings, see installation instructions.

Watts	1/8	1/4	1/2	1	2	4	8
ET Speaker	75.0	78.0	81.0	84.0	87.0	90.0	93.0
ET Speaker Strobe	75.0	78.0	81.0	84.0	87.0	90.0	93.0
ET70WP-2475W	78.0	81.0	84.0	87.0	90.0	93.0	95.0

\*\*NOTE: dBA ratings based on UL testing under UL Standard 1480.

## 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 progress. Consult factory for listing status.

- UL Listed: S2652 (Speakers); S2652/S5391 (Strobe/Speakers)
- CSFM: 7125-0785:146; 7125-0785:152; 7320-0785:134
- MEA: 151-92-E Vol. 21

## ORDERING INFORMATION

Model	Strobe Candela	Non-Sync	Sync w/ SM, DSM	Model Color	Wall/Ceiling	Agency Approvals (* Pending)				
						UL	MEA	CSFM	FM	BFP
ET70-24MCW-FR	15/30/75/110	X	X	Red	Wall	X	X	X	X	X
ET70-24MCW-FW	15/30/75/110	X	X	White	Wall	X	X	X	X	X
ET70-241575W-FR	15 (75 on axis)	X	X	Red	Wall	X	X	X	X	X
ET70-241575W-FW	15 (75 on axis)	X	X	White	Wall	X	X	X	X	X
ET70WP-2475W-FR	75	X	X	Red	Wall	X	X	X	*	*
ET90WP-2475W-FW	75	X	X	White	Wall/Ceiling	X	X	X	X	X
ET90-24MCC-FR	15/30/75/95	X	X	Red	Ceiling	X	X	X	X	*
ET90-24MCC-FW	15/30/75/95	X	X	White	Ceiling	X	X	X	X	*
ET90-24MCCH-FW	115/177	X	X	White	Ceiling	X	X	X	X	*
ET70-R	-	-	-	Red	Wall/Ceiling	X	X	X	X	X
ET70-W	-	-	-	White	Wall/Ceiling	X	X	X	X	X

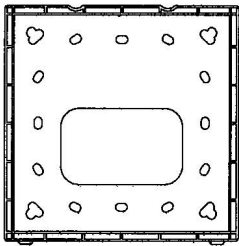
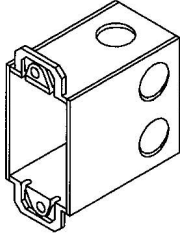
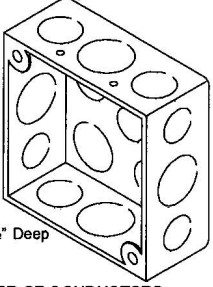
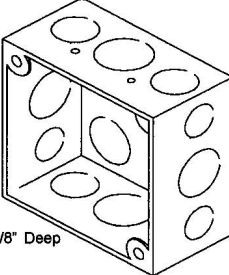
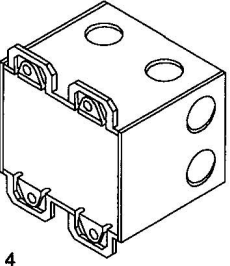
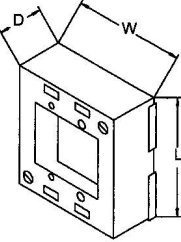
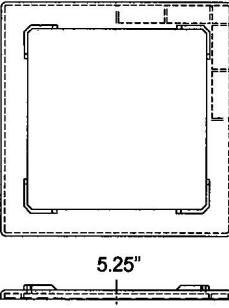
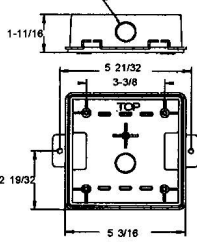
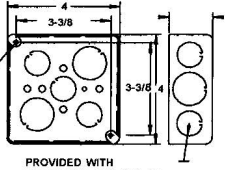
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This document is not intended to be used for installation purposes. We try to keep our product information up-to-date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without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




This document contains descriptions for the lettered mounting options found on Notifier Datsheets for Wheelock products. The source of information is Wheelock document #S7000, Rev. 02/04.

<p><b>(A) UNIVERSAL MOUNTING PLATE</b></p>  <p>"AS" Mounting</p>	<p><b>(B) SINGLE-GANG, FLUSH (BO)</b></p>  <p>See Notes 1 &amp; 8</p> <p>MAXIMUM NUMBER OF CONDUCTORS</p> <table border="1"> <tr> <td>AWG #18</td> <td>AWG #16</td> <td>AWG #14</td> <td>AWG #12</td> </tr> <tr> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table>	AWG #18	AWG #16	AWG #14	AWG #12	4	4	4	4	<p><b>(D) 4" SQUARE, FLUSH (BO)</b></p>  <p>1-1/2" Deep</p> <p>See Note 2</p> <p>MAXIMUM NUMBER OF CONDUCTORS</p> <table border="1"> <tr> <td>AWG #18</td> <td>AWG #16</td> <td>AWG #14</td> <td>AWG #12</td> </tr> <tr> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table>	AWG #18	AWG #16	AWG #14	AWG #12	4	4	4	4																
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<p><b>(E) 4" SQUARE, DEEP, FLUSH (BO)</b></p>  <p>2-1/8" Deep</p> <p>See Note 3</p> <p>MAXIMUM NUMBER OF CONDUCTORS</p> <table border="1"> <tr> <td>AWG #18</td> <td>AWG #16</td> <td>AWG #14</td> <td>AWG #12</td> </tr> <tr> <td>8</td> <td>8</td> <td>8</td> <td>8</td> </tr> </table>	AWG #18	AWG #16	AWG #14	AWG #12	8	8	8	8	<p><b>(F) DOUBLE-GANG, FLUSH (BO)</b></p>  <p>See Notes 4</p> <p>MAXIMUM NUMBER OF CONDUCTORS</p> <table border="1"> <tr> <td>AWG #18</td> <td>AWG #16</td> <td>AWG #14</td> <td>AWG #12</td> </tr> <tr> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table>	AWG #18	AWG #16	AWG #14	AWG #12	4	4	4	4	<p><b>(G) DOUBLE-GANG, SURFACE (BO)</b></p>  <table border="1"> <tr> <td>L</td> <td>W</td> </tr> <tr> <td>4-3/4"</td> <td>4-3/4"</td> </tr> <tr> <td>D</td> <td>GANG #</td> </tr> <tr> <td>1-3/4"</td> <td>2</td> </tr> </table> <p>See Note 5</p> <p>MAXIMUM NUMBER OF CONDUCTORS</p> <table border="1"> <tr> <td>AWG #18</td> <td>AWG #16</td> <td>AWG #14</td> <td>AWG #12</td> </tr> <tr> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table>	L	W	4-3/4"	4-3/4"	D	GANG #	1-3/4"	2	AWG #18	AWG #16	AWG #14	AWG #12	4	4	4	4
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<p><b>(H) NATP-R OR NAPT-W</b></p>  <p>5.25"</p> <p>5.25"</p> <p>Thickness: 13/64"</p>	<p><b>(I) WPBB-R</b> For surface mounting AS outdoor products.</p>  <p>MAXIMUM NUMBER OF CONDUCTORS</p> <table border="1"> <tr> <td>AWG #18</td> <td>AWG #16</td> <td>AWG #14</td> <td>AWG #12</td> </tr> <tr> <td>8</td> <td>8</td> <td>8</td> <td>8</td> </tr> </table>	AWG #18	AWG #16	AWG #14	AWG #12	8	8	8	8	<p><b>(J) BB-R BACKBOX</b> Standard steel backbox with knockouts for interior surface mounting, concealed conduit mounting or semi-flush applications. It is painted to match the signal.</p>  <p>#8-32 TAP (2) HOLES</p> <p>PROVIDED WITH KNOCKOUTS FOR 1/2" &amp; 3/4" CONDUIT</p> <p>See Note 9</p> <p>MAXIMUM NUMBER OF CONDUCTORS</p> <table border="1"> <tr> <td>AWG #18</td> <td>AWG #16</td> <td>AWG #14</td> <td>AWG #12</td> </tr> <tr> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table>	AWG #18	AWG #16	AWG #14	AWG #12	4	4	4	4																
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AWG #18	AWG #16	AWG #14	AWG #12																															
4	4	4	4																															

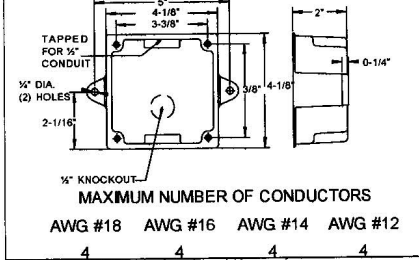
NOTIFIER® is a Honeywell company.

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. For more information, contact NOTIFIER. Phone: (203) 484-7161 FAX: (203) 484-7118

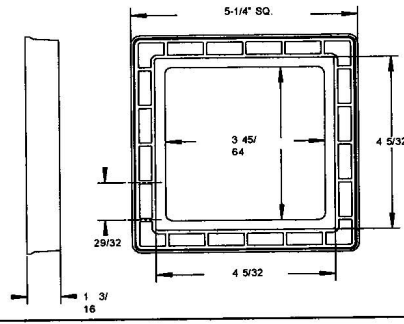
 NOTIFIER® 12 Clintonville Road, Northford, Connecticut 06472

**ISO 9001**  
**CERTIFIED**  
 ENGINEERING & MANUFACTURING  
 QUALITY SYSTEMS

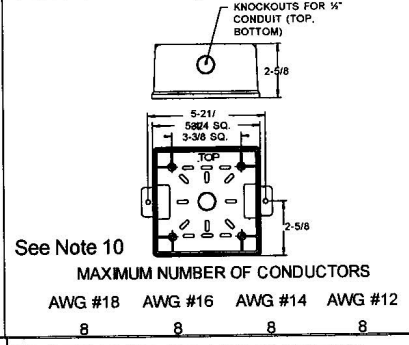
**(K) WBB-R WEATHER RESISTANT BACKBOX**  
 Sturdy die cast housing, threaded conduit hole and knockout for outdoor applications. It is painted to match the signal.



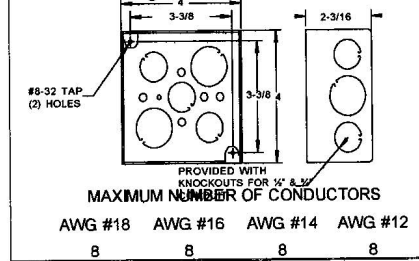
**(L) ISP2-R OT ISP2-W SURFACE ADAPTER**



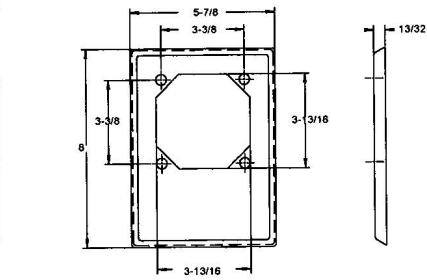
**(M) IOB-R OR IOB-W BACKBOX**  
 For surface mounting MT products.



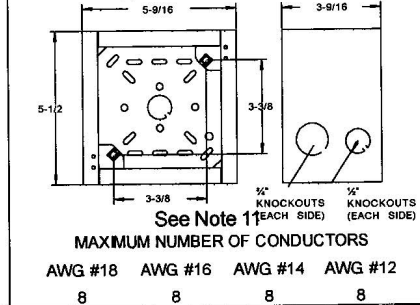
**(N) DBB-R BACKBOX**  
 Standard steel backbox provided with knockouts for interior surface mounting, concealed conduit mounting or semi-flush applications. It is painted to match the signal.



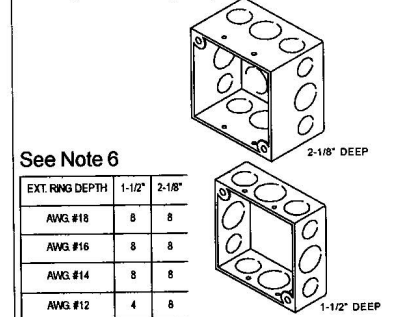
**(O) RP-R RETROFIT PLATE (Order Code: 5042)**



**(P) SBB-R OR SBB-W BACKBOX**  
 For surface mounting speakers, chimes, and electronic applications.



**(Q) 4" SQUARE DEEP W/ EXTENSION RING, FLUSH (BO)**

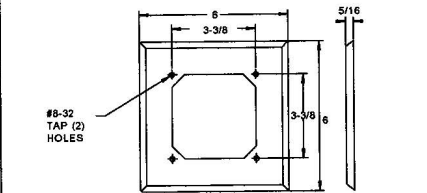


See Note 6

EXT. RING DEPTH	1-1/2"	2-1/8"
AWG #18	8	8
AWG #16	8	8
AWG #14	8	8
AWG #12	4	8

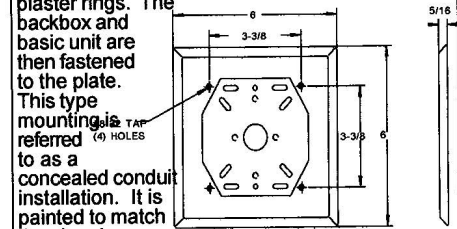
**(R) SFP-R OR SFP-W SEMI-FLUSH PLATE**

Stamped aluminum surface wall plate which mounts behind the basic unit and serves to cover recessed backboxes in semi-flush mounting applications. It is painted to match the signal.

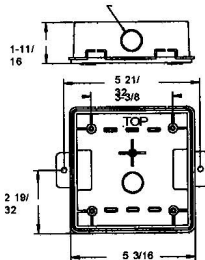


**(S) AP-P OR AP-R ADAPTER PLATE**

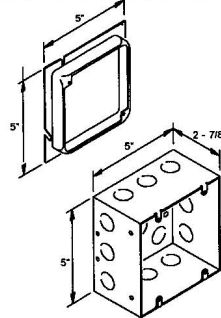
Stamped aluminum adapter plate designed for applications where semi-flush installations cannot be used. The plate can be mounted to standard octagon or round backboxes single or double gang boxes or plaster rings. The backbox and basic unit are then fastened to the plate. This type mounting is referred to as a concealed conduit installation. It is painted to match the signal.



**(T) WPSBB-R**

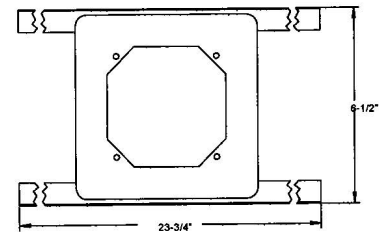


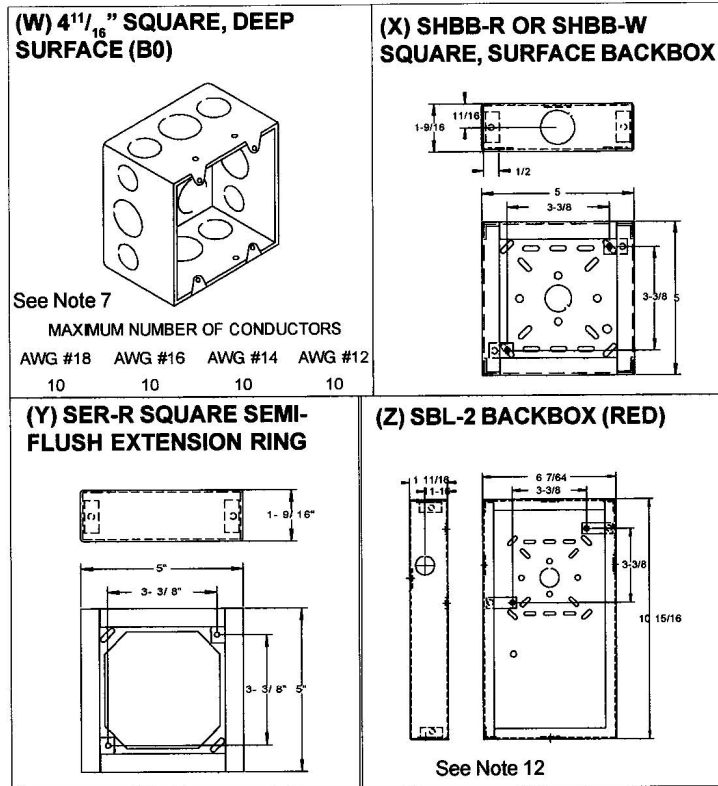
**(U) 5" SQUARE BACKBOX W/ EXTENSION RING, FLUSH (BO)**



**(V) SSB-4 CEILING SUPPORT BRIDGE**

Provisions for (4) J-nuts #8-32 in 3-3/8" square  
 Material: Steel





**NOTES:**  
(BO) = By Others

## GENERAL NOTES

- FIGURE B IS TYPICAL OF A STEEL CITY LXM-WOW BOX OR EQUAL. FIGURE B SHOULD BE A 3.5" DEEP BACKBOX FOR CONDUIT INSTALLTIONS AND IS TYPICAL OF A STEEL CITY CY-½ BOX OR EQUAL.
- FIGURE D IS TYPICAL OF A STEEL CITY 52151 BOX OR EQUAL.
- FIGURE E IS TYPICAL OF A STEEL CITY 52171 BOX OR EQUAL.
- FIGURE F IS TYPICAL OF TWO STEEL CITY LXM-WOW BOXES OR EQUAL.
- FIGURE G IS TYPICAL OF A WIREMOLD 5748-2 BOX OR EQUAL
- FIGURE Q IS TYPICAL OF A STEEL CITY 52171 BOX WITH A STEEL CITY 53151 EXTENSION RING OR EQUAL.
- FIGURE W IS TYPICAL OF A STEEL CITY 72171-1 BOX OR EQUAL.
- USE 3.5 DEEP BACKBOX ON ALL MIZ PRODUCTS WHEN EMT CONDUIT IS USED.
- WHEN USED WITH AC HORN (J), "BB" MUST BE USED FOR SURFACE MOUNT.
- MT OR MTWP STROBEARE FOR OUTDOOR MOUNTING.
- ONLY E70, ET70, ET-1080, & CH70 PRODUCTS WILL MOUNT TO THE SBB BACKBOX.
- USE WITH SERIES RSSP.
- FIGURE U IS TYPICAL OF A RANDL INDUSTRIES BACKBOX.  
("Total Number of conductors shall be in accordance with NEC table 314.16 (B)").

# MOUNTING MATRIX

	SERIES E90/ET90	SERIES RSS/RSSP	SERIES CH	SERIES ET 1010 & 1080	SERIES MB MOTOR BELLS	SERIES E70/ET70	SERIES MIZ/MIZ-TC	SERIES MT	SERIES NH/NS	SERIES HS4/HS	SERIES SM & DSM	SERIES AMT	SERIES AS/AH	SERIES RSSWP <sup>1</sup> , ASWP <sup>2</sup> , AHWP <sup>3</sup> , MTWP <sup>4</sup> , MT-12/24 AND ET70WP <sup>4</sup> WEATHERPROOF	SERIES RSSR (RED LENS)
(A) UNIVERSAL MOUNTING PLATE													X		
(B) 1-GANG X 2' DEEP - FLUSH (BO) NOTE 1 & 8		X				X		X					X		X
(D) 4" X 4" X 1.5" DEEP - FLUSH (BO) NOTE 2		X		X				X	X	X			X		X
(E) 4" X 4" X 2.125" DEEP FLUSH (BO) NOTE 3		X		X	X			X	X	X			X	X	X
(F) 2-GANG X 3.5" DEEP - FLUSH (BO) NOTE 4 & 8		X						X	X	X			X	X	X
(G) 2-GANG X 1.75" DEEP - SURFACE (BO) NOTE 5		X						X					X		X
(H) NATP TRIMPLATE		X						X					X		X
(I) WPBB-R WEATHERPROOF BACKBOX FOR ASWP														2	
(J) BB SURFACE (WSI) NOTE 9		X			X			X					X		X
(K) WBB WEATHER-PROOF (WSI)				X	X								X	3	
(L) ISP2 SURFACE ADAPTER			X			X		X	X	X		X			
(M) IOB SURFACE & WEATHER-PROOF (WSI) NOTE 10								X	X	X		X		4	
(N) DBB SURFACE (WSI)		X		X	X			X	X	X		X	X		X
(O) RP-R RETROFIT PLATE (WSI)		X	X	X	X	X		X	X	X		X	X		X
(P) SBB SURFACE (WSI) NOTE 11	X	X	X	X	X	X		X	X	X		X			X
(Q) 4" X 4" X 2.125" BOX W/ 1.5" EXTENSION RING - FLUSH (BO) NOTE 6	X		X	X		X									
(R) SFP SEMI-FLUSH PLATE (WSI)		X	X	X	X	X		X	X	X		X	X		X
(S) AP ADAPTER PLATE (WSI)					X										
(T) WPSBB-R WEATHERPROOF BACK BOX FOR RSSWP														1	
(U) 5" SQUARE BACKBOX W/ EXTENSION RING, FLUSH	X		X	X		X									
(V) SSB-4 CEILING (WSI) SUPPORT BRIDGE	X		X	X		X							X		
(W) 4.6875" X 4.6875" X 2.125" DEEP-SURFACE (BO)											X				
(X) SHBB (WSI) SHALLOW SURFACE		X			X				X				X		X
(Y) SER SEMI-FLUSH EXTENSION RING (RETROFIT APPLICATIONS)	X		X			X									
(Z) SBL-2 SURFACE (WSI) NOTE 12		X	X	X	X										

## MOUNTING NOTES

▲ Caution: The mounting options figures show the maximum number of field wires (conductors) that can enter the backbox used with each mounting option. If these limits are exceeded, there may be insufficient space in the backbox to accommodate the field wires and stresses from the wires could damage the product. Although the limits shown for each mounting option comply with the National Electrical code (NEC), Wheelock recommends use of the largest backbox option and the use of approved stranded field wires whenever possible, to provide additional wiring room for easy installation and minimum stress on the product from wiring.

▲ Caution: Check that the installed product will have sufficient clearance and wiring room prior to installing backboxes and conduit, especially if sheathed multiconductor cable or 3/4" conduit fittings are used.

1. Mounting hardware for each mounting option is supplied.
2. Conduit entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product. When extension rings are required, conduit should enter through the backbox, not the extension ring. Use Steel City #53151 (1-1/2" deep) or #53171 (2-1/8" deep) extension rings (as noted in the mounting options) or equal with the same cut-out area.
3. When terminating field wires, do not use more lead length than required. Excess lead length could result in insufficient wiring space for the appliance.
4. Use care and proper techniques to position the field wires in the backbox so that they use minimum space and produce minimum stress on the product. This is especially important for stiff, heavy gauge wires and wires with thick insulation or sheathing.
5. Do not pass additional wires (used for other than the appliance) through the backbox "unless the backbox is of a sufficient size to permit additional wiring as described in NEC 314.16 (B)". Such additional wires could result in insufficient wiring space for the appliance.



NFPA-72 Section 4-4.4 "Wall Mounted Appliances shall be mounted such that the entire lens is not less than 80" (2.03m) and not greater than 96" (2.30m)."

"Exception: Appliances installed in sleeping areas shall comply with 4-4.4.3." Not included in this document.

ADA 4.28.3 (6) states that "strobes shall be 80" from the finished floor or 6" from the ceiling".

**BACKBOX MOUNTING HEIGHTS  
for WHEELOCK WALL MOUNTED  
HORIZONTAL STROBE APPLIANCES**

BACKBOX MOUNTING OPTIONS*	SERIES AS/AH AUDIBLE STROBE		SERIES RSSP FLUSH & SURFACE RETROFIT PLATE		SERIES NS/NS4 HORN STROBE		SERIES RSS STROBE		SERIES MT & AMT MULTITONE STROBE	
	80 IN.	6 IN.	80 IN.	6 IN.	80 IN.	6 IN.	80 IN.	6 IN.	80 IN.	6 IN.
(B) 1-GANG X 2" DEEP - FLUSH (BO)	77 1/2"	8 1/2"			78 3/8"	7 5/8"	79 1/8"	6 7/8"		
(D) 4" X 4" X 1.5" DEEP - FLUSH (BO)	77"	9"	83 15/16"		77 7/8"	8 1/8"	78 5/8"	7 3/8"	79 15/16"	6 1/16"
(E) 4" X 4" X 2.125" DEEP - FLUSH (BO)	77"	9"	83 15/16"		77 7/8"	8 1/8"	78 5/8"	7 3/8"	79 15/16"	6 1/16"
(F) 2-GANG X 3.5" DEEP - FLUSH (BO)	77 1/2"	8 1/2"			78 3/8"	7 5/8"	79 1/8"	6 7/8"	80 9/16"	5 7/16"
(G) 2-GANG X 1.75" DEEP - SURFACE (BO)	77 1/2"	8 1/2"			78 3/8"	7 5/8"	79 1/8"	6 7/8"	80 9/16"	5 7/16"
(M) JOB SURFACE & WEATHER-PROOF (WSI)									79 3/8"	6 5/8"
(P) SBB SURFACE (WSI)									79 1/4"	6 3/4"
(Q) 4" X 4" X 2.125" BOX W/ 1.5" EXTENSION RING -FLUSH (BO)										
(U) 5" SQUARE BACKBOX W/ EXTENSION RING, FLUSH (BO)	69 1/2"	8 1/2"	83 7/16"		77 3/8"	7 5/8"	78 1/8"	6 7/8"	79 7/16"	5 9/16"
(X) SHBB (WSI) SHALLOW SURFACE	76 1/2"	9 1/2"			77 3/8"	8 5/8"	78 1/8"	7 7/8"		
(Y) 4" X 4" X 1.5" BOX W/ 1.5" EXTENSION RING PLATE (BO)										
(Z) SBL-2 SURFACE (WSI)			78"							

BACKBOX MOUNTING OPTIONS*	SERIES CH70 CHIME STROBE		SERIES ET-1080 VANDAL RESISTANT SPEAKER STROBE		SERIES E70 SPEAKER STROBE		SERIES ET70 SPEAKER STROBE		SERIES SA-70S SELF AMPLIFIED SPEAKER STROBE	
	80 IN.	6 IN.	80 IN.	6 IN.	80 IN.	6 IN.	80 IN.	6 IN.	80 IN.	6 IN.
(P) SBB SURFACE (WSI)	77 3/4"	8 1/4"	79 3/16"	6 13/16"	77 3/4"	8 1/4"	77 3/4"	8 1/4"	79 3/16"	6 13/16"
(Q) 4" X 4" X 2.125" BOX W/ 1.5" EXTENSION RING -FLUSH	78 1/2"	7 1/2"	80"	6"	78 1/2"	7 1/2"	78 1/2"	7 1/2"	80"	6"
(U) 5" SQUARE BACKBOX W/ EXTENSION RING- FLUSH	78"	7"	79 1/2"	5 1/2"	78"	7"	78"	7"	79 1/2"	5 1/2"
(X) SHBB (WSI) SHALLOW SURFACE										
(Y) 4" X 4" X 1.5" BOX W/ 1.5" EXTENSION RING PLATE (BO)	78 1/2"	7 1/2"	80"	6"						

\* Measured from Bottom of Backbox

**NOTES:**

(BO) = By Others

(WSI) = Wheelock Product



## > Outdoor Selectable-Output Horns, Strobes, and Horn Strobes for Wall Applications



*SpectrAlert® Advance outdoor audible visible products are rich with features that cut installation times and maximize profits.*

### Features

- Weatherproof per NEMA 4X, IP56
- Listed to UL 1638 (strobe) and UL 464 (horn)
- Compatible with System Sensor synchronization protocol and legacy SpectrAlert products
- Field-selectable candela settings: 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, and 185
- Automatic selection of 12- or 24-volt operation at 15 and 15/75 candela
- Rotary switch for horn tone and three volume selections
- Horn rated at 88+ dBA at 16 volts
- Rated from -40°F to 151°F
- Universal mounting plate with an onboard shorting spring that tests wiring continuity before devices are installed
- Plug-in design with minimal intrusion into the back box
- Tamper-resistant construction
- Listed for ceiling or wall mounting

**SpectrAlert Advance** offers the broadest line of outdoor horns, strobes, and horn strobes in the industry. With white or red plastic housings, wall or ceiling mounting options, and plain or FIRE-printed devices, SpectrAlert Advance can meet virtually any application requirement, including indoor, outdoor, wet, and dry applications in temperatures from -40°F to 151°F.

Like the entire SpectrAlert Advance line, outdoor horns, strobes, and horn strobes for wall applications include a variety of features that increase application flexibility and simplify installation. First, field-selectable settings, including candela, automatic selection of 12- or 24-volt operation, horn tones, and three volume options enable installers to easily adapt devices to meet requirements.

Next, SpectrAlert Advance devices use a universal mounting plate for both wall and ceiling applications. This mounting plate includes an onboard shorting spring that ensures wiring continuity before devices are installed, so installers can verify proper wiring without mounting the devices and exposing them to potential construction damage. Once the plates are mounted, all SpectrAlert Advance devices utilize a plug-in design with a single captured screw to speed installation and virtually eliminate costly ground faults.

Outdoor devices ship with weatherproof plastic back boxes (metal back boxes are available separately) that accommodate in-and-out wiring for daisy chaining devices. Plastic back boxes feature removable side flanges and improved resistance to saltwater corrosion. Knock-outs located on the back eliminate the need to drill holes for screw-in mounting. Plastic and metal weatherproof back boxes come with 3/4-inch top and bottom conduit entries and 3/4-inch knock-outs at the back. A screw-in NPT plug with an O-ring gasket for a watertight seal is included with each back box.

### Agency Listings



S4011 (chimes, horn strobes, horns)  
S3593 (outdoor and alert strobes)



3023572



MEA452-05-E



7300-1653-187 (outdoor strobes)  
7125-1653-188 (horn strobes,  
chime strobes)  
7135-1653-189 (horns, chimes)

# SpectrAlert Advance Outdoor Horn, Strobe, and Horn Strobe Specifications

## Architect/Engineer Specifications

### General

SpectrAlert Advance outdoor horns, strobes, and horn strobes shall mount to a weatherproof back box. A universal mounting plate shall be used for mounting ceiling and wall products. The notification appliance circuit wiring shall terminate at the universal mounting plate. Also, SpectrAlert Advance products, when used with the Sync•Circuit™ Module accessory, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts. When used with the Sync•Circuit Module, 12-volt-rated notification appliance circuit outputs shall operate between 9 and 17.5 volts; 24-volt-rated notification appliance circuit outputs shall operate between 17 and 33 volts. Outdoor SpectrAlert Advance products shall operate between –40 and 151 degrees Fahrenheit from a regulated DC or full-wave rectified unfiltered power supply. Strobes and horn strobes shall have field-selectable candela settings including 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, and 185.

### Strobe

The strobe shall be a System Sensor SpectrAlert Advance Model \_\_\_\_\_ listed to UL 1971 and shall be approved for fire protective service. The strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. The strobe must be installed with its weatherproof back box in order to remain outdoor approved per UL. The strobe shall be suitable for use in wet environments.

### Horn Strobe Combination

The horn strobe shall be a System Sensor SpectrAlert Advance Model \_\_\_\_\_ listed to UL 1971 and UL 464 and shall be approved for fire protective service. The horn strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. The horn shall have three audibility options and an option to switch between a temporal three pattern and a non-temporal (continuous) pattern. These options shall be set by a multiple position switch. On four-wire products, the strobe shall be powered independently of the sounder. The horn or horn strobe models shall operate on a coded or non-coded power supply. The horn strobe must be installed with its weatherproof back box in order to remain outdoor approved per UL. The horn strobe shall be suitable for use in wet environments.

## Physical/Electrical Specifications

<b>Operating Temperature</b>	–40°F to 151°F (–40°C to 66°C)
<b>Strobe Flash Rate</b>	1 flash per second
<b>Nominal Voltage</b>	Regulated 12 DC/FWR or regulated 24 DC/FWR <sup>1</sup>
<b>Operating Voltage Range<sup>2</sup></b>	8 to 17.5 V (12 V nominal) or 16 to 33 V (24 V nominal)
<b>Input Terminal Wire Gauge</b>	12 to 18 AWG
<b>Wall-Mount Dimensions (including lens)</b>	5.6" L × 4.7" W × 2.5" D (142 mm L × 119 mm W × 64 mm D)
<b>Horn Dimensions</b>	5.6" L × 4.7" W × 1.3" D (142 mm L × 119 mm W × 33 mm D)
<b>Wall-Mount Weatherproof Back Box Dimensions (SA-WBB)</b>	5.7" L × 5.1" W × 2.0" D (145 mm L × 130 mm W × 51 mm D)

### Notes:

1. Full Wave Rectified (FWR) voltage is a non-regulated, time-varying power source that is used on some power supply and panel outputs.
2. P, S, PC, and SC products will operate at 12 V nominal only for 15 and 15/75 cd.

## UL Current Draw Data

UL Max. Strobe Current Draw (mA RMS)						UL Max. Horn Current Draw (mA RMS)					
	Candela	8–17.5 Volts		16–33 Volts		Sound Pattern	dB	8–17.5 Volts		16–33 Volts	
		DC	FWR	DC	FWR			DC	FWR	DC	FWR
Standard Candela Range	15	123	128	66	71	Temporal	High	57	55	69	75
	15/75	142	148	77	81	Temporal	Medium	44	49	58	69
	30	NA	NA	94	96	Temporal	Low	38	44	44	48
	75	NA	NA	158	153	Non-Temporal	High	57	56	69	75
	95	NA	NA	181	176	Non-Temporal	Medium	42	50	60	69
	110	NA	NA	202	195	Non-Temporal	Low	41	44	50	50
	115	NA	NA	210	205	Coded	High	57	55	69	75
High Candela Range	135	NA	NA	228	207	Coded	Medium	44	51	56	69
	150	NA	NA	246	220	Coded	Low	40	46	52	50
	177	NA	NA	281	251						
	185	NA	NA	286	258						

UL Max. Current Draw (mA RMS), 2-Wire Horn Strobe, Standard Candela Range (15–115 cd)									
DC Input	8–17.5 Volts			16–33 Volts					
	15	15/75	15	15/75	30	75	95	110	115
Temporal High	137	147	79	90	107	176	194	212	218
Temporal Medium	132	144	69	80	97	157	182	201	210
Temporal Low	132	143	66	77	93	154	179	198	207
Non-Temporal High	141	152	91	100	116	176	201	221	229
Non-Temporal Medium	133	145	75	85	102	163	187	207	216
Non-Temporal Low	131	144	68	79	96	156	182	201	210
<b>FWR Input</b>									
Temporal High	136	155	88	97	112	168	190	210	218
Temporal Medium	129	152	78	88	103	160	184	202	206
Temporal Low	129	151	76	86	101	160	184	194	201
Non-Temporal High	142	161	103	112	126	181	203	221	229
Non-Temporal Medium	134	155	85	95	110	166	189	208	216
Non-Temporal Low	132	154	80	90	105	161	184	202	211

UL Max. Current Draw (mA RMS), 2-Wire Horn Strobe, High Candela Range (135–185 cd)									
DC Input	16–33 Volts				FWR Input	16–33 Volts			
	135	150	177	185		135	150	177	185
Temporal High	245	259	290	297	Temporal High	215	231	258	265
Temporal Medium	235	253	288	297	Temporal Medium	209	224	250	258
Temporal Low	232	251	282	292	Temporal Low	207	221	248	256
Non-Temporal High	255	270	303	309	Non-Temporal High	233	248	275	281
Non-Temporal Medium	242	259	293	299	Non-Temporal Medium	219	232	262	267
Non-Temporal Low	238	254	291	295	Non-Temporal Low	214	229	256	262

## Candela Derating

For K series products used at low temperatures, listed candela ratings must be reduced in accordance with this table.

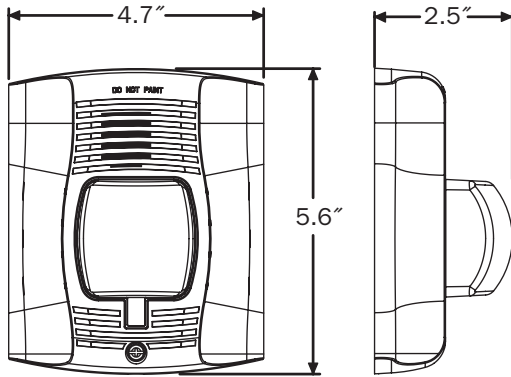
Strobe Output (cd)	
Listed Candela	Candela rating at –40°F
15	Do not use below 32°F
15/75	
30	
75	
95	44
110	70
115	110
135	115
150	135
177	150
185	177

## Horn Tones and Sound Output Data

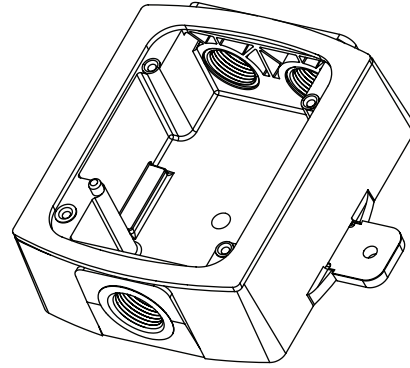
Horn and Horn Strobe Output (dBA)											
Switch Position	Sound Pattern	dB	8–17.5 Volts		16–33 Volts		24-Volt Nominal				
			DC	FWR	DC	FWR	Reverberant		Anechoic		
			DC	FWR	DC	FWR	DC	FWR	DC	FWR	
1	Temporal	High	78	78	84	84	88	88	99	98	
2	Temporal	Medium	74	74	80	80	86	86	96	96	
3	Temporal	Low	71	73	76	76	83	80	94	89	
4	Non-Temporal	High	82	82	88	88	93	92	100	100	
5	Non-Temporal	Medium	78	78	85	85	90	90	98	98	
6	Non-Temporal	Low	75	75	81	81	88	84	96	92	
7†	Coded	High	82	82	88	88	93	92	101	101	
8†	Coded	Medium	78	78	85	85	90	90	97	98	
9†	Coded	Low	75	75	81	81	88	85	96	92	

†Settings 7, 8, and 9 are not available on 2-wire horn strobe.

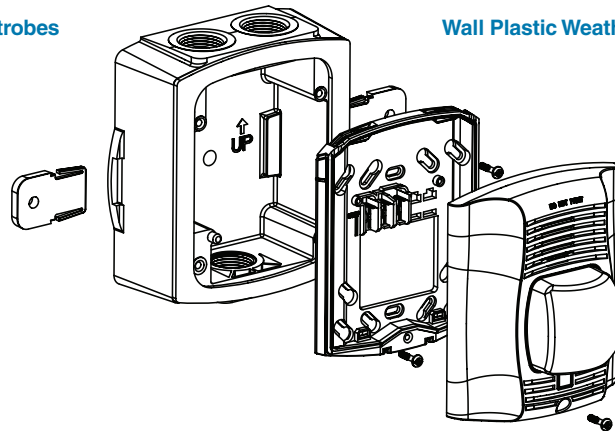
## SpectrAlert Advance Diagrams



Wall-Mount Horn Strobes



Wall Plastic Weatherproof Back Box



Wall-Mount Horn Strobe with Plastic Weatherproof Back Box

## SpectrAlert Advance Ordering Information

Model	Description
<b>Wall Horn Strobes</b>	
P2RK*†	2-Wire Horn Strobe, Standard cd, Red, Outdoor (includes plastic weatherproof back box)
P2RHK*†	2-Wire Horn Strobe, High cd, Red, Outdoor (includes plastic weatherproof back box)
P2WK*†	2-Wire Horn Strobe, Standard cd, White, Outdoor (includes plastic weatherproof back box)
P2WHK*†	2-Wire Horn Strobe, High cd, White, Outdoor (includes plastic weatherproof back box)
P4RK†	4-Wire Horn Strobe, Standard cd, Red, Outdoor (includes plastic weatherproof back box)
P4WK	4-Wire Horn Strobe, Standard cd, White, Outdoor (includes plastic weatherproof back box)
P2RHK-120	2-Wire Horn Strobe, High cd, Red, Outdoor, 120 V (includes plastic weatherproof back box)
<b>Wall Strobes</b>	
SRK*†	Strobe, Standard cd, Red, Outdoor (includes plastic weatherproof back box)
SRHK*†	Strobe, High cd, Red, Outdoor (includes plastic weatherproof back box)
SWK*†	Strobe, Standard cd, White, Outdoor (includes plastic weatherproof back box)
SWHK*†	Strobe, High cd, White, Outdoor (includes plastic weatherproof back box)
<b>Horns</b>	
HRK†	Horn, Red, Outdoor (includes plastic weatherproof back box)
<b>Accessories</b>	
SA-WBB	Red, Metal Weatherproof Back Box
SA-WBBW	White, Metal Weatherproof Back Box

### Notes:

\* Add "-P" to model number for plain housing (no "FIRE" marking on cover), e.g., P2RK-P.

† Add "-R" to model number for weatherproof replacement device (no back box included), only for use with weatherproof outdoor flush mounting plate, WTP and WTPW. "Standard cd" refers to strobes that include 15, 15/75, 30, 75, 95, 110, and 115 candela settings. "High cd" refers to strobes that include 135, 150, 177, and 185 candela settings. **When replacing standard outdoor units both the device and back box must be replaced.**





## Audible Visible Accessories

System Sensor offers a wide range of Audible Visible (AV) accessories to enable you to meet a variety of application requirements.



### Features

#### MP120K Mounting Plate

- Designed for both indoor and outdoor use
- Plug-in design eliminates ground faults
- Power supply that converts 120 VAC to nominal 24 V FWR
- Compatible with all two-wire SpectrAlert Advance® devices

#### Color Lens Attachments

- Easily turns any device into a strobe for ECS, severe weather, sprinkler activation and more
- Outdoor rated from -35°F to 151°F
- Wall- or ceiling-mount lenses available
- UL 1638 listed

#### WTP Weatherproof Plates

- Enables flush mounting of outdoor devices to brick, ceramic tile, concrete, and masonry brick
- Weatherproof per NEMA 3R
- For use in both indoor and outdoor applications
- For use with all K series (outdoor) products replacement -R models
- Universal mounting plate easily attaches to the weatherproof plate

### Agency Listings



S4011  
S3593



7300-1653:195  
7300-1653:204



582-06-E

The **MP120K Mounting Plate** is designed to use 120 VAC to power SpectrAlert Advance horns, strobes, horn strobes, chimes, and chime strobes.

**Color Lens Attachments** install easily on any indoor or outdoor SpectrAlert Advance strobe devices to provide distinctive visual signaling.

**WTP Series Weatherproof Plates** enable installers to flush mount outdoor horns, strobes, horn strobes, speakers, and speaker strobes to a variety of wall surfaces, including brick, ceramic tile, concrete, and masonry brick. These NEMA 3R-rated plates come in red and white to suit aesthetic and functional requirements. They may be used indoors or outdoors (with outdoor devices), as required by conditions. They easily attach to the SpectrAlert Advance universal mounting plate.

**Trim Rings** for speakers and speaker strobes allow for additional space within the backbox. Trim rings for horns, strobes, and horn strobes allow 4-wire devices to mount to a single-gang back box.

**SpectrAlert Advance Outdoor Back Boxes** ensure a NEMA 4X watertight listing for AV devices. In locations where a SpectrAlert Advance device is surface mounted, **Back Box Skirts** are the best solution to mask the back box. **Retrofit Plates** cover paint outlines on the wall when replacing legacy SpectrAlert Advance products.

**SpectrAlert Advance DECALS** are for use on our non-pad printed wall- and ceiling-mount devices. Each decal comes with AGENT, EVAC, ALERT, or FIRE label options. The **Sync-Circuit Module** synchronizes SpectrAlert Advance strobes at 1 Hz and horns and chimes at temporal 3 over a single pair of wires. Patented module technology also allows the silencing of horns or chimes on horn strobe and chime strobe models over a pair of wires. See Datasheet A05-1007-005 for more information.

## Specifications

### MP120K

120 VAC mounting plate model MP120K shall be listed to UL 464 for fire protective signaling systems. The mounting plate shall power a two-wire SpectraAlert® Advance horn, strobe, horn strobe, chime or chime strobe from a 120 VAC supply converted to nominal 24 V FWR. For indoor applications, the mounting plate shall be installed in a 4x4x2<sup>1</sup>/<sub>8</sub>-inch junction box. For outdoor applications, the mounting plate shall be installed using the proper SpectraAlert Advance outdoor weatherproof back box and outdoor listed notification appliance.

### Compatibility

MP120K may be used with any of the following products at all horn and strobe settings: P2R, P2RH, P2RK, P2RHK, P2W, P2WH, SR, SRH, SRK, SRHK, SW, SWH, PC2R, PC2RH, PC2RK, PC2RHK, PC2W, PC2WH, SCR, SCRH, SCRK, SCRHK, SCW, SCWH, HR, HRK, HW, SR-P, SW-P, SRH-P, SWH-P, P2R-P, P2W-P, P2RH-P, P2WH-P, SCR-P, SCW-P, SCRH-P, SCWH-P, PC2R-P, PC2W-P, PC2RH-P, PC2WH-P, SR-SP, SRH-SP, P2R-SP, P2RH-SP, SCW-SP, SCWH-SP, PC2W-SP, PC2WH-SP, CHR, CHW, CHSR, CHSW.

### Physical/Operating Specifications

**Standard Operating Temperature** -40°F to 151°F (-40°C to 66°C)

**Humidity Range** 10 to 93% non-condensing (indoor products)

**Nominal Voltage** Regulated 120 VAC

**Operating Voltage Range** 96–132 VAC

**Current Draw From AC Line** 150 mA max.

### WTP Weatherproof Plates

The SpectraAlert Advance weatherproof plate for horns, strobes, and horn strobes shall mount to 4x4x1<sup>1</sup>/<sub>4</sub>-inch and 2x4x1<sup>1</sup>/<sub>2</sub>-inch back boxes. The weatherproof plate for speakers and speaker strobes shall mount to 4x4x2<sup>1</sup>/<sub>8</sub>-inch back boxes. The weatherproof plate may be installed on brick, concrete, ceramic tile, and masonry brick and must be used with System Sensor "K" series outdoor replacement models (-R). Outdoor SpectraAlert Advance products shall operate between -40°F and 151°F.

### Physical Specifications

**Speaker Strobe** 7.25" L x 6.26" W x 3.00" D (including speaker and lens)

**Speaker** 7.25" L x 6.26" W x 1.30" D (including speaker)

**Horn Strobe** 6.90" L x 5.90" W x 2.80" D (including strobe lens)

**Horn** 6.90" L x 5.90" W x 1.60" D (including horn)

Note: WTP and WTPW are compatible with 4x4x1<sup>1</sup>/<sub>4</sub>-inch and 2x4x1<sup>1</sup>/<sub>2</sub>-inch back boxes. (Compatible with outdoor horns, horn strobes and strobes)

WTP-SP and WTP-SPW are compatible with 4x4x2<sup>1</sup>/<sub>8</sub>-inch back boxes. (Compatible with outdoor speakers and speaker strobes)

### Models Available for Use with the Watertight Plates:

**WTP/WTPW** HRK-R

**WTP/WTPW** SRK-R, SRHK-R, SWK-R, SWHK-R

**WTP/WTPW** P2RK-R, P2RHK-R, P4RK-R, P2WK-R, P2WHK-R

**WTP-SP** SPRK-R, SPWK-R

**WTP-SPW** SPSRK-R

Note: -R models ship without the outdoor back box. The weatherproof mounting plates are designed to be used only with -R replacement models.

## Specifications

### Color Lens Attachments

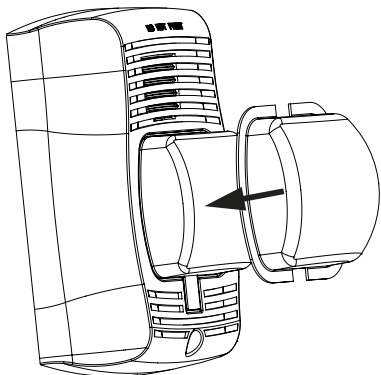
The System Sensor SpectrAlert Advance color lens attachments shall be approved for fire protective service as listed in UL 1638. The lens attachments shall only be used with non-FIRE-printed System Sensor strobe devices. The lens shall mount to any wall- or ceiling-mount strobes and shall be rated from -35°F to 151°F.

### Compatibility

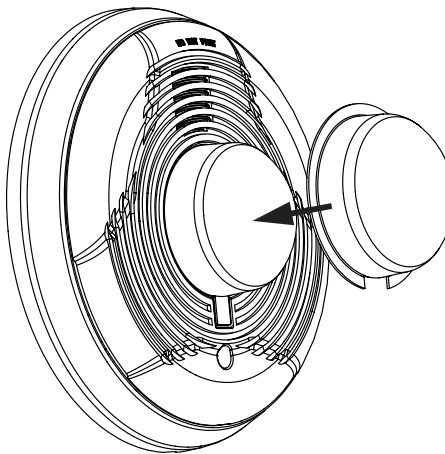
Color lens attachments may be used with the following System Sensor plain (non-FIRE-printed) indoor or outdoor strobe models: SR-P, SRH-P, SW-P, SWH-P, P2R-P, P2W-P, P2WH-P, P2RK-P, P2RHK-P, SCW-P, PC2R-P, PC2W-P, PC2WH-P, SPSW-P, SPSR-P, SPSWH-P, SPSRH-P, SPSWV-P, SPSRV-P, SPSCW-P, SPSCWH-P, SPSCWV-P, SPSCWVH-P, SRK-P, SRHK-P, SWK-P, SWHK-P, P2WK-P, P2WHK-P, SPSWK-P, SPSRK-P, SW-CLR-ALERT, SCW-CLR-ALERT, SPSCW-CLRALERT.

## Color Lens Installation

### Installation to Wall-Mount Strobe



### Installation to Ceiling-Mount Strobe



## Candela Rating for UL 1638

Light output of color lenses is measured per UL 1638, on axis, and is not derated.

### Strobe Output (cd)

Candela Switch Setting	On-Axis Candela Rating (UL1638) – All Colors
15	15
15/75*	NA
30	30
75	75
95	95
110	110
115	115
135	135
150	150
177	177
185	185

\*15/75 Candela setting not to be used with color lenses



## Ordering Information

Part No.	Description
<b>Metal Weatherproof Backboxes</b>	
MWBWW	white, wall-mount, compatible with: SPWK-R, SPWK, SPSWK-R, SPSWK-P, SPSWK
MWBB	red, wall-mount, compatible with: SPRK-R, SPRK
MWBBCW	white, ceiling-mount, compatible with: SPCWK, SPSCWK, SPCWK-R, SPSCWK, SPSCWK-R, SPSCWHK, SPSCWHK-R
SA-WBBW	white, wall-mount, compatible with: P2WK, P2WHK, P2WHK-P, P2WK-P, SWK, SWK-P, P2WHK-R, P2WK-R, SWHK-R
SA-WBB	red wall-mount, compatible with: P2RK, P2RK-P, P2RK-R, SRK, SRK-P, SRK-R, P2RHK, P4RK, P4RHK, SRHK, HRK, P2RHK-R, P2RK-R, HRK-R, P4RHK-R, P4RK-R, SRHK-R
SA-WBBCW	white, ceiling-mount compatible with: PC2WK, SCWK
SA-WBBW	white, wall-mount, compatible with: P2WK, P2WHK, P2WHK-P, P2WK-P, SWK, SWK-P, P2WHK-R, P2WK-R, SWHK-R
<b>Back Box Skirts</b>	
BBS-2	red, wall-mount, compatible with: P2R, SR, HR, CHSR, CHR, P2RH, P4R, P4RH, SRH, P2R-P, P2RH-P, P4R-P, P4RH-P, SR-P, SRH-P, SR-SP, SRH-SP, P2R-SP, P2RH-SP
BBSC-2	red, ceiling-mount, compatible with: PC2R, SCR, PC2RH, PC4R, PC2RH-P, SCRH, PC2R-P, SCR-P, SCRH-P
BBSW-2	white, wall-mount, compatible with: P2W, SW, HW, CHSW, CHW, P2WH, P4W, P4WH, SWH, SW-ALERT, SWH-ALERT, SW-CLR-ALERT, SW-P, SWH-P
BBSCW-2	white, ceiling-mount, compatible with: PC2W, SCW, PC4W, PC4WH, SCWH, SCW-SP, SCWH-SP, PC2W-SP, PC2WH-SP, PC2W-P, PC2WH-P, SCWH-P, SCW-P, SCWH
BBS-SP201W	Surface-mount back-box skirt for the PF24V (ExitPoint™ Directional Sounder with Voice Messaging)
SPBBS	red, wall-mount, compatible with: SPR, SPSR, SPRV, SPSR-P, SPSRH, SPSRH-P
SPBBSC	red, ceiling-mount, compatible with: SPCR, SPSCR
SPBBSW	white, wall-mount, compatible with: SPW, SPSW, SPWV, SPSW-CLR-ALERT, SPSW-ALERT, SPSWH, SPSWH-P, SPSWV, SPSWV-P
SPBBSCW	white, ceiling-mount, compatible with: SPCW, SPSCW, SPCWV, SPSCW-CLR-ALERT, SPSCW-P, SPSCWH, SPSCWH-P, SPSCWV, SPSCWV-P, SPSCWH, SPSCWH-P

Part No.	Description
<b>Colored Lenses</b>	
LENS-B	Wall-mount, blue
LENS-R	Wall-mount, red
LENS-G	Wall-mount, green
LENS-A	Wall-mount, amber
LENS-BC	Ceiling-mount, blue
LENS-RC	Ceiling-mount, red
LENS-GC	Ceiling-mount, green
LENS-AC	Ceiling-mount, amber
<b>Decals</b>	
DECAL-R	red, used for non-pad-printed wall-mount devices. (10 total decals per box for 5 devices)*
DECAL-RC	red, used for non-pad-printed ceiling-mount devices. (15 total decals per box for 5 devices)*
DECAL-W	white, used for non-pad-printed wall-mount devices. (10 total decals per box) for 5 devices*
DECAL-WC	white, used for non-pad-printed ceiling-mount devices. (15 total decals per box for 5 devices)*
*All Decals include Labels: "AGENT, EVAC, ALERT & FIRE"	
<b>Retrofit Plates (For use with horn strobe &amp; speaker strobe devices)</b>	
RFPW	9.5" x 7" white
RFP	9.5" x 7" red
<b>Mounting Plate</b>	
MP120K	120 VAC Adapter Mounting Plate
<b>Sync Modules</b>	
MDL3W	white, 12/24 volt Sync-Circuit module.
MDL3R	red 12/24 volt Sync-Circuit module
<b>Trim Rings</b>	
TR	red, wall-mount for use with speaker devices
TRC	red, ceiling-mount for use with speaker devices
TRC-HS	red, ceiling-mount for use with horn strobe devices
TRCW	white, ceiling-mount for use with speaker devices
TRCW-HS	red, ceiling-mount for use with horn strobe devices
TR-HS	red, wall-mount for use with horn strobes devices
TRW	white, wall-mount for use with speaker devices
TRW-HS	white, wall-mount for use with horn strobe devices
<b>Watertight Plates</b>	
WTPW	white, for use with horn, strobes & horn strobe devices
WTP	red, for use with horn, strobes & horn strobe devices
WTP-SPW	white, for use with speaker devices
WTP-SP	red, for use with speaker devices



**NO  
EXCUSES!**



**FAD**



## FIRE ALARM DOCUMENTS

The FAD is the perfect fit to meet the demanding code requirements today. SAE's number one goal is to manufacture code compliant solutions and this product allows you to do just that. NFPA 72 2010 section 6.2.2.1 states, "A record of installed software and firmware version numbers shall be maintained at the location of the fire alarm control unit."

This durable 16 gauge steel enclosure with a solid piano hinge and key lock will keep all of your code required documents in one safe place. With a 4GB USB flash drive it stores your fire alarm software safe and secure eliminating the occurrences of the software not being on site when technicians arrive to service the system. Along with your fire alarm software you can store your test & inspection documents, service records, manuals & AS built drawings for the system. Using a standard USB B connector it allows you to plug in with any standard SB printer cable to upload or download information.

The FDB is designed to hold critical manuals and documents with a durable steel retainer. It has designated hooks to organize key rings and hold important business cards for easy access and reference. Inside the cover it has a organized note table that allows for documentation for passwords and other critical system information.

### Standard Features:

- Installed with a 4 gig digital flash drive with USB B connector
- 2 Key ring hooks to hold system keys
- Business card holder for key contacts
- Overall Dimensions are 12" x 13" tall and 2 ¼ deep
- 16 gauge steel box and cover for security
- Durable powercoat baked on finish other colors available
- Standard ¾" cat 30 key lock other lock assemblies available
- Solid stainless steel piano hinge
- Permanently screened white ink 1" high "Fire Alarm Documents"
- Legend sheet for passwords and system information



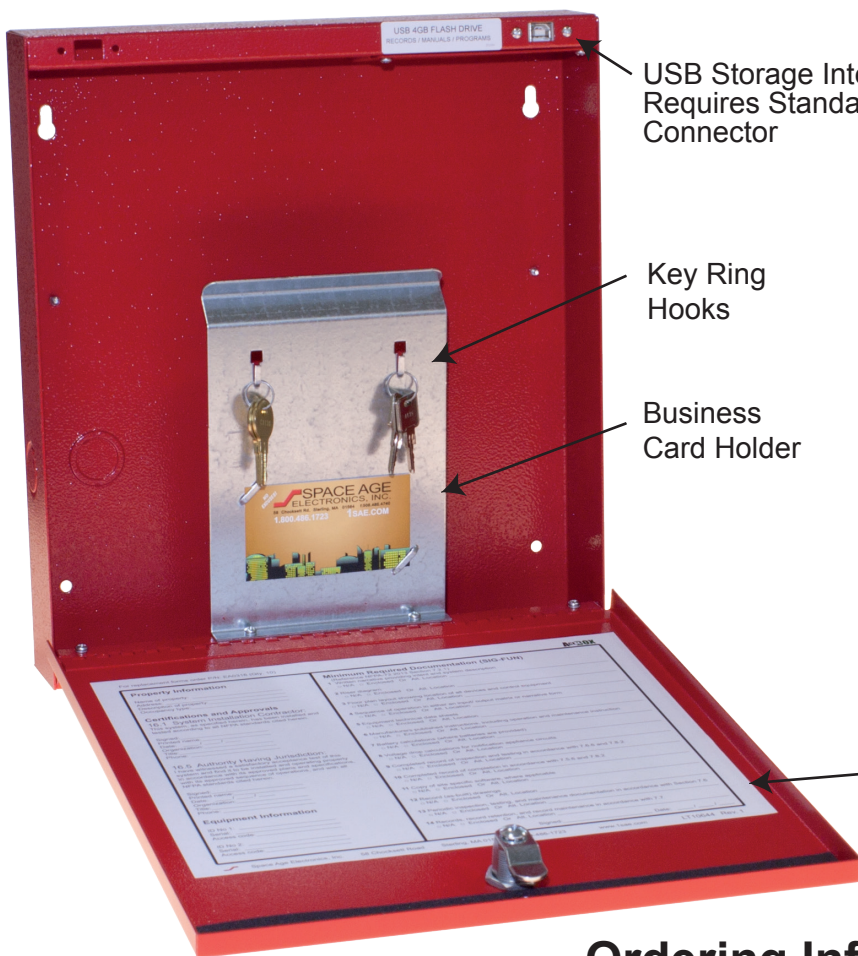
**ISO 9001  
REGISTERED  
COMPANY**



**ACEBOX**

# Specifications:

The fire alarm documents box (FAD) shall be constructed of 18 gauge cold rolled steel. It shall have a red powder coat epoxy finish. The cover shall be permanently screened with 1" high lettering "FIRE ALARM DOCUMENTS" with white indelible ink. The access door shall be locked with a 3/4" barrel lock and the hinge shall be a solid width 12" stainless steel piano hinge. The enclosure will supply 4 mounting holes. Inside the enclosure will accommodate standard 8 1/2 x 11 manuals and loose document records that will be protected within the enclosure. A legend sheet will be permanently attached to the door for system required documentation, key contacts and system information. The FAD will have securely mounted inside a minimum of 4 Gigabyte digital flash memory drive with a standard USB B connector for uploading and downloading information. The drive shall not be accessible without tools to any person whom gains access to the records. The enclosure shall also provide 2 key ring holders with a location to mount standard business type cards for key contact personnel.



USB Storage Interface Requires Standard USB-B Connector

Key Ring Hooks

Business Card Holder

For replacement forms order PIN: EA0316 (Qty. 10)

Property Information	Minimum Required Documentation (SIG-FUN)
Name of property: _____ Address: _____ Description of property: _____ Occupancy type: _____	(Reference NFPA-72 2013 Section 7.2.1) 1 Written narrative providing intent and system description □ NA □ Enclosed □ All Location
<b>Certifications and Approvals</b> 16.1 System Installation Contractor: This system, as specified herein, has been installed and tested according to all NFPA standards cited herein. Signed: _____ Date: ____/____/____ Organization: _____ Title: _____ Phone: _____	2 Riser diagram □ NA □ Enclosed □ All Location
16.5 Authority Having Jurisdiction: I have witnessed a satisfactory acceptance test of this system and find it to be installed and operating properly in accordance with its approved plans and specifications, with its approved sequence of operations, and with all NFPA standards cited herein. Signed: _____ Date: ____/____/____ Organization: _____ Title: _____ Phone: _____	3 Floor plan layout showing location of all devices and control equipment □ NA □ Enclosed □ All Location
<b>Equipment Information</b> ID No 1: _____ Serial: _____ Access code: _____ ID No 2: _____ Serial: _____ Access code: _____	4 Sequence of operation in either an input/output matrix or narrative form □ NA □ Enclosed □ All Location
	5 Equipment technical data sheets □ NA □ Enclosed □ All Location
	6 Manufacturers published instructions, including operation and maintenance instruction □ NA □ Enclosed □ All Location
	7 Battery calculations (where batteries are provided) □ NA □ Enclosed □ All Location
	8 Voltage drop calculations for notification appliance circuits □ NA □ Enclosed □ All Location
	9 Completed record of inspection and testing in accordance with 7.6.6 and 7.8.2 □ NA □ Enclosed □ All Location
	10 Completed record of completion in accordance with 7.5.6 and 7.8.2 □ NA □ Enclosed □ All Location
	11 Copy of site specific software, where applicable □ NA □ Enclosed □ All Location
	12 Record (as built) drawings □ NA □ Enclosed □ All Location
	13 Periodic inspection, testing, and maintenance documentation in accordance with Section 7.6 □ NA □ Enclosed □ All Location
	14 Records, record retention, and record maintenance in accordance with 7.7 □ NA □ Enclosed □ All Location
	Signed: _____ Date: ____/____/____

Legend sheet for storing system information including contacts, sign-off, maintenance & test information, and alternate locations of additional records.

## Ordering Information:

Part # Description

SSU00685 Fire Alarm Storage Cabinet RED

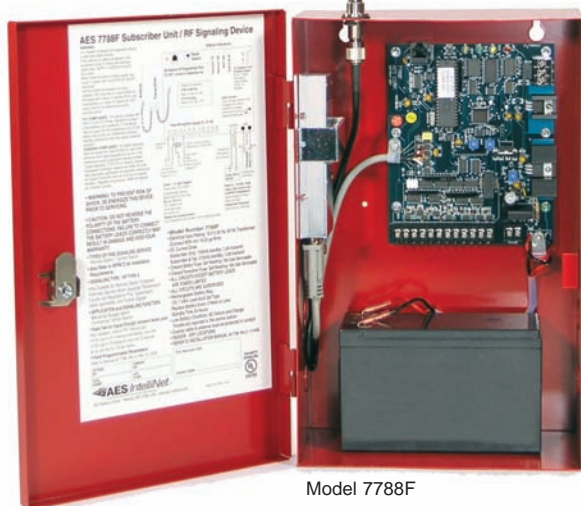
➤ SSU00686 Custom screening with your Logo

Check out our Infinity line eFAD single gang 2 Gig digital storage solutions (IAMEFAD)



# ➤ 7788F/7744F Series

## Wireless Fire Alarm Communicators for AES-IntelliNet



### Advanced Wireless Alarm Monitoring

The AES-IntelliNet mesh radio network offers unmatched reliability and speed in delivering wireless alarm signals to a central station without third party fees or reliance on networks owned by companies outside the security and fire alarm industry. AES-7788F/7744F Series Smart Subscriber Transceivers provide the wireless communication link between the fire alarm panel and the central station receiver. The 7788F/7744F Series is ideal for most commercial fire alarm applications. Each 7788F/7744F Series Subscriber is housed in a full sized, red, locked, steel cabinet and supports a range of alarm panel inputs including EOL fire, EOL supervised, and direct voltage from the panel (non-fire applications).

### Supervised Operation

AES Smart Subscribers offer fully supervised operation that includes monitoring of operating power (both primary AC power and battery backup) and the connection to the radio network. Each Subscriber “checks in” with the AES central station receiver at least once every 24 hours. The supervision check in time can be set for as often as once per minute and, because the central station owns the wireless network, there is no additional cost for air time to transmit supervisory signals.

### Full Data Reporting from Alarm Panel Digital Dialer

Models 7788F-ULP and 7744F-ULP come equipped with an IntelliPro Fire Full Data Module (AES-7794) which enables reporting of full alarm data captured from the fire alarm panel's digital communicator. IntelliPro Fire supports most alarm communication formats including Contact ID, Pulse, as well as Bosch Modem IIe and Modem IIIa2.



### Features – All models

- UL Listed commercial fire alarm applications.
- Meets NFPA 72 requirements
- Direct reporting to AES receiver across IntelliNet wireless mesh network
- Each Subscriber acts as transmitter/receiver/repeater
- Simple and fast activation on network
- On board status LEDs for easy set up
- 8 programmable zone inputs – 7788F
- 4 programmable zone inputs and 4 reverse polarity inputs – 7744F
- Easy programming via AES handheld programmer or PC
- Rugged metal housing ideal for any commercial fire alarm application

### Models 7788F/7744F-ULP with IntelliPro Fire also includes

- IntelliPro Fire transmits full alarm data from virtually any fire alarm panel digital communicator
- Alarm format support for Contact ID, Pulse, or Bosch Modem IIe or Modem IIIa2
- Easy installation in AES subscriber
- Operates in applications with or without a phone line



Wireless mesh networking is an innovative technology adopted by many industries with applications that need to communicate data over a large geographic area with a high level of reliability at a low total cost of ownership.

The advanced design and 2-way communications capability provides easy installation, expansion, and management when compared to alternative communication methods, both wired and wireless.

# 7788F/7744F Series



## Technical Specifications

### 7788F/7744F Series Subscribers

#### Dimensions

- 13.25"H x 8.5"W x 4.3"D  
(34cm H x 21.5cm W x 11cm D)

#### Weight

- Approx. 7 pounds (3.2 kilograms), excludes battery.

#### Radio Frequency

- Standard Frequency Range: 450-470MHz (others available)
- Output Power - 2 Watts (others available)

#### Antenna

- Included 2.5 db tamper resistant antenna mounts on enclosure
- Multiple remote antenna options available

#### Power Input

- 16.5VAC, 40VA (transformer not included)

#### Backup Battery

- Will charge 12V battery up to 7.5 AH. Requires 12VDC 7.5 AH battery for UL 864.

#### Alarm Signal Inputs (subscriber)

- 7788F – 8 individually programmable zones
- 7744F - 4 individually programmable zones and 4 reverse polarity inputs

#### UL Standards

- UL 864 Edition 9 – Standard for Control Units and Accessories for Fire Alarm Systems
- UL 365 – Standard for Police Station Connected Burglar Alarm Units and Systems
- UL 1681 – Standard for Central Station Burglar Alarm Units

#### Antenna Cut / Communication

##### Trouble Output

- Form C relay; fail secure; rated for 24 VDC 1A resistive

##### Reset Button

- Located on main circuit board.

##### Operating Temperature

- 0° to 50° C (32° to 122°F)

##### Storage Temperature

- -10° to 60° C (14° to 140°F)

##### Relative Humidity

- 0 to 85% RHC, Non Condensing

### AES-7794 IntelliPro Fire

#### Input / Output Connections

- RJ11 connection to AES subscriber for module data and power
- RJ11 connector for Handheld Programmer/PC programming
- RJ31X Telco connections - T and R both in and out via terminal strip and RJ45
- Alarm Panel digital communicator T and R both in and out via terminal strip and RJ45
- Trouble output: Form C relay detects if Subscriber is off the network

#### Alarm Formats

- Support for Contact ID and Pulse formats as well as Modem IIe and Modem IIIa2 converted to CID

#### Size

- 2.8 x 5.0 inches (7.1cm x 12.7cm)

#### Power Requirements

- 12 VDC nominal - primary and backup power provided by the AES 7788F/7744F or other Subscriber

## How to Order

Model	Description
7744F	4 Zone Fire Alarm Subscriber with 4 reverse polarity inputs
7744F-ULP	7744F Fire Alarm Subscriber with IntelliPro Fire full data module
7788F	8 Zone Fire Alarm Subscriber
7788F-ULP	7788F Fire Alarm Subscriber with IntelliPro Fire full data module

## Optional Accessories

7041E	Subscriber Handheld Programmer
7794	IntelliPro Fire Full Data Module



AES-IntelliNet™ is the industry leader in delivering high quality wireless mesh networks to the fire and security industry in commercial, corporate, government, and educational applications with its broad line of products and advanced network management tools. Users of AES-IntelliNet networks have gained significant revenue, communications, and cost advantages while meeting the high standards of reliability required for the fire and security industry. AES-IntelliNet alarm monitoring systems are deployed at hundreds of thousands of locations in over 150 countries.



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of AES Corporation

7788F-7744F/9/7/11R3

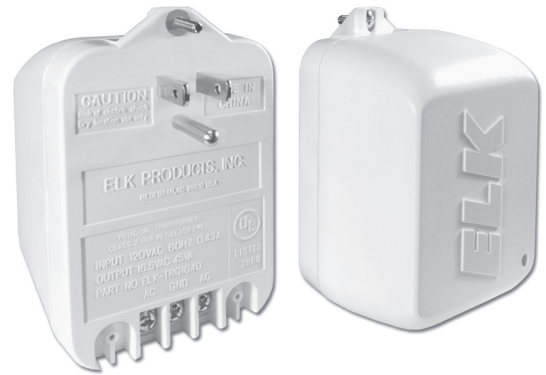
# AC Transformers & 12 VDC Plug In Power Supply

## ELK-TRG1640 & TRG2440

- Auto-Resetting (PTC) Fused Secondary
- Green Power On LED
- Grounding Prong & Terminal
- Electrical outlet mounting tab
- UL Listed
- Lifetime Limited Warranty
- Wire Strain Relief

## Specifications

- Input Voltage: 120 VAC, 60 Hz, .43A
- Output Voltage: TRG1640 = 16.5 Volts A.C.  
TRG2440 = 24 Volts A.C.
- Output Power: TRG1640 = 45 VA  
TRG2440 = 40 VA
- Size: 4.14"H x 2.74"W x 2.2"D  
(105mm x 70mm x 56mm)
- Color: White



**LIFETIME WARRANTY**  
**Grounding Terminal**  
**Power LED**  
**Strain Relief**  
**All in One!**

## ELK-P1216

The ELK-P1216 is a general purpose 12 Volts D.C. Switching Plug-In Power Supply. It is ideal for alarm, access control, and CCTV applications requiring up to 1.5 Amps. The power pack plugs into 100 to 120 Volts A.C., and supplies regulated 12 Volts D.C. to a standard 2.1mm power plug.

## Features

- Switching Power Supply
- Regulated 12 Volts D.C. Output
- Six foot cord and standard
- 2.1mm x 5.5mm x 9mm plug (center is positive)
- UL Listed
- Efficiency Level: V
- Lifetime Limited Warranty

## Specifications

- DC Output Voltage: 12 Volts D.C.
- Current Rating: 1.5 Amps
- AC Input Voltage Range: 100-120 @ 47~63 Hz
- Size: 1.75"H x 1.375"W x 2.75"D




**12 Volts D.C.**  
**Plug-In Power Supply**  
**Slimline Design**  
**RoHS Compliant**

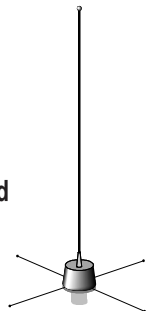
**ELK**  
PRODUCTS

# Antenna & Accessory Selection Guide

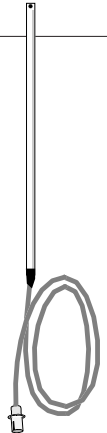
**Description**  
**Freq Range**  
**Gain**  
**Power Capability**  
**Mast/Whip Length**  
**Mast/Whip Material**  
**Mount Style**  
**Ground Radials Included**  
**Connector Type**  
**Recommended Cable**  
**Application**  
**Bandwidth**  
**Vertical Beam Width**  
**Horizontal Beam Width**  
**Order Number**



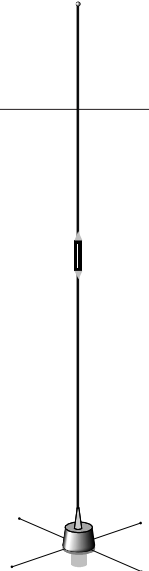
**Casetop Flex**  
 460-470  
 2.5db  
 5W  
 10"  
 Black Vinyl Clad/Flex  
 Mounts on case  
 No (case is gnd plane)  
 TNC  
 cable included  
 Indoor  
 ±5 MHz  
 38°  
 Omnidirectional  
**7210-3-UR/C**



**Standard**  
 460-470  
 3db  
 50W  
 18"  
 Stainless Steel  
 Universal Mount  
 Yes  
 N  
 7220-10-N or -25  
 In/Outdoor  
 ±5 MHz  
 35°  
 Omnidirectional  
**7210-3-UM**



**Stealth**  
 460-470  
 3db  
 50W  
 18"  
 Vinyl Clad  
 Easy Hang Mount  
 Yes  
 TNC  
 10' cable included  
 Indoor  
 ±5 MHz  
 35°  
 Omnidirectional  
**7211**



**Hi Gain**  
 460-470  
 5db  
 50W  
 36"  
 Stainless Steel  
 Universal Mount  
 Yes  
 N  
 7220-10-N or -25-N  
 In/Outdoor  
 ±5 MHz  
 18°  
 Omnidirectional  
**7210-5-UM**



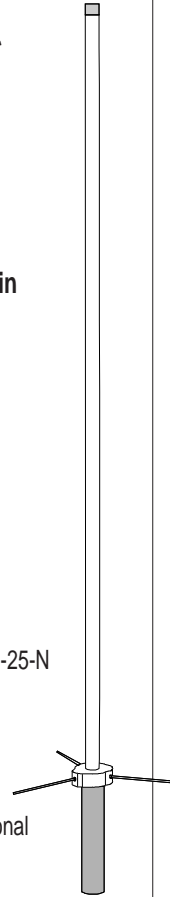
## Antenna & Accessory Selection Guide, *continued*

<b>Description</b>	<b>Rugged Hi Gain</b>
<b>Freq Range</b>	460-470
<b>Gain</b>	6db
<b>Power Capability</b>	150W
<b>Mast/Whip Length (approx)</b>	48"
<b>Mast/Whip Material</b>	Fiberglass
<b>Mount Style</b>	Mast Mount
<b>Ground Radials Included</b>	Yes
<b>Connector Type</b>	N
<b>Recommended Cable</b>	7220-10-N / -25-N
<b>Application</b>	In/Outdoor
<b>Bandwidth</b>	±5 MHz
<b>Vertical Beam Width</b>	14°
<b>Horizontal Beam Width</b>	Omnidirectional
<b>Order Number</b>	<b>7210-6-UC</b>

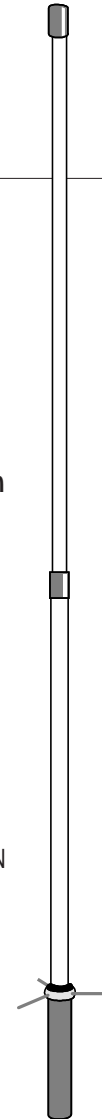


**NEW!**

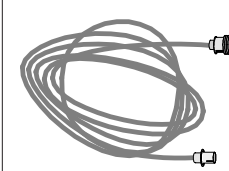
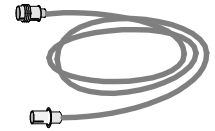
<b>Description</b>	<b>Higher Gain</b>
<b>Freq Range</b>	460-470
<b>Gain</b>	7+db
<b>Power Capability</b>	200W
<b>Mast/Whip Length (approx)</b>	72"
<b>Mast/Whip Material</b>	Fiberglass
<b>Mount Style</b>	Mast Mount
<b>Ground Radials Included</b>	Yes
<b>Connector Type</b>	N
<b>Recommended Cable</b>	7220-10-N / -25-N
<b>Application</b>	In/Outdoor
<b>Bandwidth</b>	±5 MHz
<b>Vertical Beam Width</b>	12°
<b>Horizontal Beam Width</b>	Omnidirectional
<b>Order Number</b>	<b>7210-7-US</b>



<b>Description</b>	<b>Central Station</b>
<b>Freq Range</b>	460-470
<b>Gain</b>	9db
<b>Power Capability</b>	200W
<b>Mast/Whip Length (approx)</b>	96"
<b>Mast/Whip Material</b>	Fiberglass
<b>Mount Style</b>	Mast Mount
<b>Ground Radials Included</b>	Yes
<b>Connector Type</b>	N
<b>Recommended Cable</b>	7220-10-N / -25-N
<b>Application</b>	In/Outdoor
<b>Bandwidth</b>	±5 MHz
<b>Vertical Beam Width</b>	7°
<b>Horizontal Beam Width</b>	Omnidirectional
<b>Order Number</b>	<b>7210-9-UC</b>



**10' Cable**  
**RG58 Low Loss**  
 BNC male to N male  
 7050 to Antenna  
**7220-10-N**



**25' Cable**  
**RG58 Low Loss**  
 BNC male to N male  
 7050 to Antenna  
**7220-25-N**



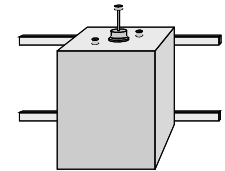
**Lightning Protector**

N female to N female Coax Inline  
*A MUST for systems with outdoor antennas*

**7230**

**Bandpass Cavity Filter**

Enhances radio performance by filtering out unwanted RF energy. Custom tuned to specified frequency. N female to N female. Call for details.





# Multi-Voltage Conventional Relays



Miscellaneous

## General

System Sensor's multi-voltage conventional relays are used for high-current switching applications such as fan and damper assembly control, door control, air handling unit controls, and other types of system interfacing.

The R-10T(A)/20T(A) and R-14T(A)/R-24T(A) models are multi-voltage relays with terminal strip field wiring connections, mounting track and hardware. The R-10T(A) is a single FORM-C (SPDT) relay with a red activation LED, and the R-14T(A) is a 4-gang 1 FORM-C (SPDT) relay with 4 red activation LEDs. The R-20T(A) is a single 2 FORM-C (DPDT) relay with red activation LED, and the R-24T(A) is a 4-gang 2 FORM-C (DPDT) relay with 4 red activation LEDs.

The R-10E(A)/R-20E(A) and R-14E(A)/R-24E(A) are similar to the T series track mount relays, but they are mounted into a steel enclosure. The enclosure has a removable front cover that provides easy access and a LED viewing hole on the top of the cover.

PR-1(A)/PR-2(A)/PR-3(A) are epoxy encapsulated multi-voltage relays. They are single pole double throw relays that use a red LED as a visible indication of relay coil energization. PR-3 is identical to PR-2 except it has an extra pair of wires for redundant power input.

Model EOLR-1(A) is an epoxy encapsulated single pole single throw, normally open relay that can be used as an end of line device in fire alarm systems, e.g. to supervise power supplies.

## Specifications

### R-10T(A)/R-14T(A)/R-20T(A)/ R-24(A)T

**Operating Voltage Range:** 18-35 VDC, 18-35 VAC, 115 VAC, 230 VAC.

**Operating Current:** 23 mA @ 24 VDC, 59 mA @ 24 VAC, 150 mA @ 120 VAC, 180 mA @ 240 VAC [R-10T(A)/R-14T(A)].

40 mA DC max. @ 24 VDC, 24 VAC, 92 mA @ 24 VAC, 220 mA @ 120 VAC, 260 mA @ 240 VAC [R-20T(A)/R-24T(A)]

**Humidity Range:** 10% to 93% (non-condensing).

**Dimensions:** R-10T(A)/ R-20T(A): 2.5"L x 3.35"W x 1.2"H.

R-14T(A)/R-24T(A): 10"L x 3.35"W x 1.2"H.

**Operating Temperature:** -40° F to 158° F (-40°C to 70°C)

**Contact Ratings:** 24 VDC: 7A with L/R = 5 mS.  
120 VAC: 10 A.  
120 VAC: 1/6 HP.  
230 VAC: 7 A.



Multi-Voltage Conventional Relays

7015gmo06102

### R-10E(A)/ R-14E(A)/R-20E(A)/ R-24E(A)

**Operating Voltage Range:** 18-35 VDC, 18-35 VAC, 115 VAC, 230 VAC.

**Operating Current:** 23 mA DC max. @ 24 V, 59 mA @ 24 VAC, 150 mA @ 120 VAC, 180 mA @ 240 VAC [R-10E(A)/R-14E(A)].

-40 mA DC max. @ 24 VDC, 24 VAC, 115 VAC, 230 VAC (R-20E/R-24E).

**Humidity Range:** 10% to 93% (non-condensing).

**Dimensions:** R-10E(A)/R-20E(A): 5.1"L x 3.75"W x 2.5"H.

R-14E(A)/R-24E(A): 11"L x 5.3"W x 2.5"H.

**Operating Temperature:** -40° F to 158° F (-40° C to 70° C).

**Contact Ratings:** 24 VDC: 7 A with L/R = 5mS.  
120 VAC: 10 A.  
120 VAC: 1/6 HP.  
230 VAC: 7 A.

### PR-1(A)

**Operating Voltage Range:** 18-35 VDC, 18-35 VAC, 120 VAC.

**Operating Current:** 15 mA DC max. @ 24 VDC, 24 VAC, 120VAC.

**Humidity Range:** 10% to 93% RH.

**Dimensions:** 0.87" H x 2.01" W x 1.42" D.

**Operating Temperature:** -40° F to 158° F (-40° C to 70° C).

**Contact Ratings:** 24 VDC: 7 A with LR = 5 mS.  
120 VAC: 7 A max. (0.35 PF).  
250 VAC: 10 A resistive.  
30 VDC: 10 A resistive.

**Wire Length:** 8" minimum.

**PR-2(A)/PR-3(A)**

**Operating Voltage Range:** 10 to 40 VDC.  
**Operating Current:** 30 mA DC max.  
**Humidity Range:** 10% to 93% RH.  
**Dimensions:** 0.91" H x 1.65" W x 1.22" D.  
**Operating Temperature:** -40° F to 158° F (-40° C to 70° C).  
**Contact Ratings:** 120 VAC: 10 A (resistive load).  
 120 VAC: 7 A max. (0.35 PF).  
 250 VAC: 10 A max. (resistive load).  
 30 VDC: 10 A max. (resistive load).  
**Wire Length:** 8" minimum.

**EOLR-1(A)**

**Operating Voltage Range:** 9 to 40 VDC.  
**Operating Current:** 20 mA DC max.  
**Humidity Range:** 10% to 93% RH.  
**Operating Temperature:** -22° F to 140° F (-30° C to 60° C).  
**Contact Ratings:** 120 VAC: 0.5 A max. (resistive load).  
 30 VDC: 3 A max. (resistive load).  
**Wire Length:** 8" minimum.

**Agency Listings and Approvals**

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/ULC Listed: S3705
- ULC Listed: CS669
- MEA: 419-04-E
- CSFM: 7300-1653:173

**PRODUCT LINE INFORMATION**

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

**PR-1(A):** Epoxy encapsulated single pull double throw (SPDT) relay. It also uses a red LED as a visible indication of relay coil energization with pigtails.

**PR-2(A):** Epoxy encapsulated single pull double throw (SPDT) activated by 10 to 40 VDC. It uses a red LED as a visible indication of relay coil energization with pigtails.

**PR-3(A):** Epoxy encapsulated single pull double throw (SPDT) activated by 10 to 40 VDC. It contains an additional black and red wire for redundant power input with pigtails.

**EOLR(A):** Epoxy encapsulated single pull single throw (SPST) normally open relay that is activated by 9 to 40 VDC. This relay can be used as an end of line device in fire alarm systems, e.g., to supervise power supplies.

**R-10T(A):** Single (SPDT) relay with a red activation LED.

**R-14T(A):** 4-gang (SPDT) relay with 4 red activation LEDs.

**R-20T(A):** Single (DPDT) relay with a red activation LED.

**R-24T(A):** 4-gang (DPDT) relay with 4 red activation LEDs.

**R-10E(A):** Single (SPDT) relay with a red activation LED.

**R-14E(A):** 4-gang (SPDT) relay with 4 red activation LEDs.

**R-20E(A):** Single (DPDT) relay with a red activation LED.

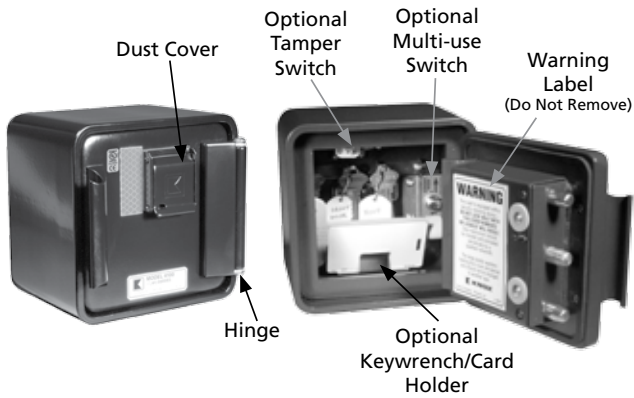
**R-24E(A):** 4-gang (DPDT) relay with 4 red activation LEDs.

➤ **GI-TSW-01 tamper box with shunt**



Burglar Alarm Products MISCELLANEOUS CONTACT TAMPER BOX WITH SHUNT  
WITH 1 FOOT LEAD WIRES

**High Security Commercial Key Vault**



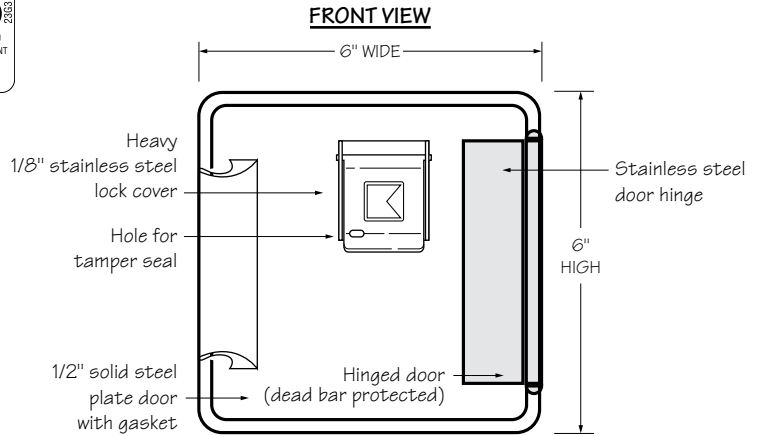
A new Knox-Box that's for those applications where a 3200 Series is too small yet the 4400 Series too large. The high security 4100 Series has a hinged-door allowing for the convenient single-handed operation. The 4100 Series Knox-Vault protects and stores building keys, access cards and the Knox FDC Keywrench allowing departments to keep a keywrench on site.

**Features and Benefits**

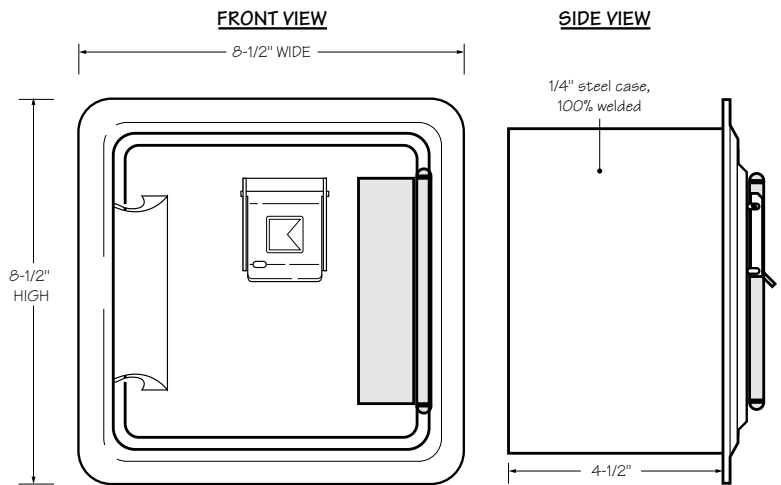
- Holds up to 24 keys in the large interior compartment
- Ensures high security with UL listed Medeco lock(s)
- Includes Knox-Coat® that is four times better than standard powder coat
- Resists moist conditions with a weather resistant silicone door gasket
- Colors: Black, Dark Bronze or Aluminum
- Weight: Surface mount - 17 lbs.  
Recessed mount - 19 lbs.

**Options**

- Alarm Tamper Switches (U/L listed)
- Recessed Mounting Kit (RMK) for recessed models only
- Dual lock configuration
- Access card holder
- Keywrench holder



**4100 Surface Mount**



**4100 Recessed Mount**

**Ordering Specifications**

*To ensure procurement and delivery of the 4100 Series Knox-Vault, it is suggested that the following specification paragraph be used:*

**KNOX-VAULT** surface/recessed mount, with/without UL Listed tamper switches. 1/4" plate steel housing, 1/2" thick solid steel door with interior silicone gasket seal. Lock UL listed. Lock has 1/8" thick stainless steel dust cover with tamper seal mounting capability. Vault has anti-theft re-locking mechanism with drill resistant hard-plate lock protector.

Exterior Dimensions: Surface mount – 6"H x 6"W x 4 1/2"D  
Recessed mount – 8 1/2"H x 8 1/2"W x 4 1/2"D

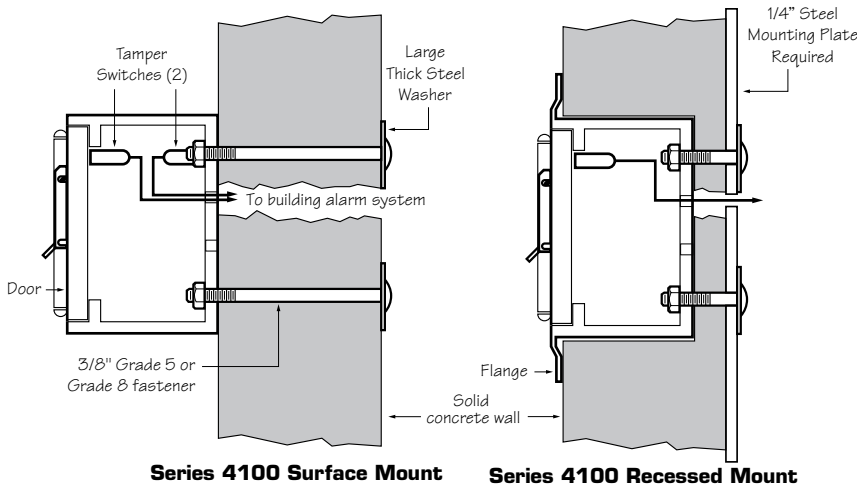
Lock: UL Listed. Double-action rotating tumblers and hardened steel pins accessed by a proprietary coded biased cut key.

Finish: Knox-Coat® proprietary finishing process  
Finish Color - Black, Dark Bronze or Aluminum

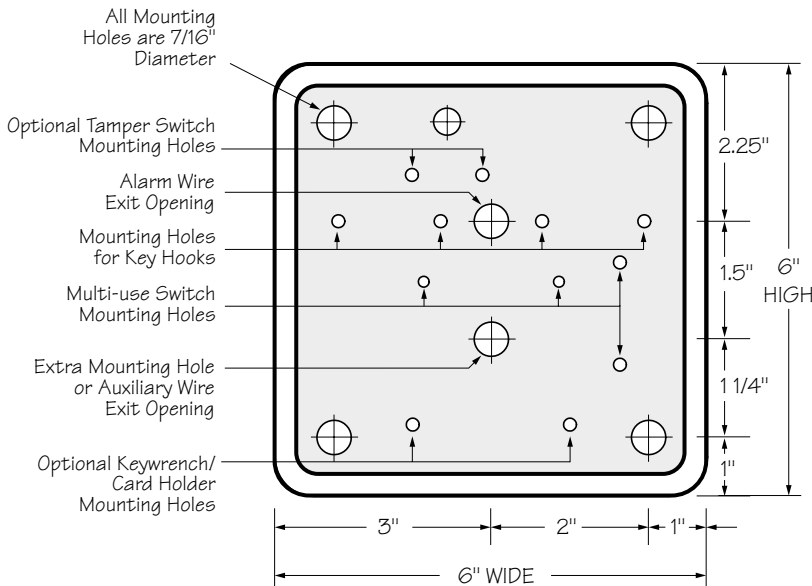
P/N: 4100 Series Knox-Vault (mfr's cat. ID)

Mfr's Name: **KNOX COMPANY**

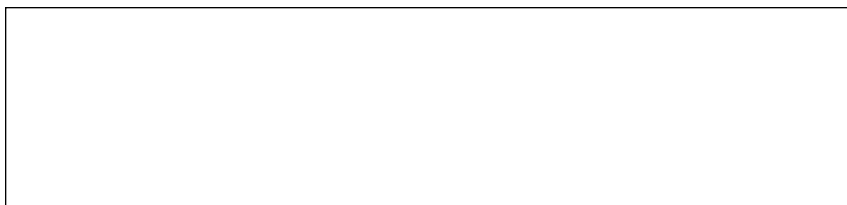
**Suggested minimum mounting height  
6 feet above ground**



**INSIDE VIEW**



**Attention: KNOX-BOX® key box is a very strong device that MUST be mounted properly to ensure maximum security and resist physical attack.**



**Recessed Mounting Kit**

The 4100 Recessed Mounting Kit (RMK) is used for recessed models only. It contains a shell housing and mounting hardware to be cast-in-place in new concrete or masonry construction. After construction is completed, the Knox-Vault mounts inside the recessed shell housing. The RMK may only be used in new concrete or masonry construction.

**Installation In Cast Concrete**

The optional Recessed Mounting Kit is for use in new concrete or masonry construction only. The kit includes a shell housing and mounting hardware to be cast-in-place. The KNOX-VAULT is mounted into the shell housing after construction is completed.

**RMK Exterior Dimensions**

6 5/8" H x 7 1/4" W x 5 1/4" D

**IMPORTANT:** Care should be taken to insure that the front of the RMK shell housing, including the cover plate and screw heads, is flush with the finish wall. The RMK must be plumbed to insure vertical alignment of the vault.

**Recessed Mounting Using Recessed Mounting Kit (RMK)**

KNOX-VAULT® mounts inside RMK shell after completion of construction

RMK shell is mounted in wall during new construction

