City of Portland, Maine - Building or Use Permit Application
389 Congress Street, 04101 Tel: (207) 874-8703, FAX: (207) 8716

Job No: 2011-02-408-FAFS (2011-1226)	Date Applied: 2/11/2011	CBL: 146 - - C - 005 - 001 - - - - -	
Location of Construction: 777 STEVENS	Owner Name: FOR THE AGED HOME	Owner Address: 777 STEVENS AVE PORTLAND, ME - MAINE 04103	Phone:
Business Name:	Contractor Name: Norris Inc. – Dave Gagnon	Contractor Address:	Phone: 883-3473
Lessee/Buyer's Name:	Phone:	Permit Type: FIRE ALARM - Fire Alarm	Zone: R-6
Past Use: Congregate Care Elderly Housing Facility – 108 units	Proposed Use: Congregate Care Elderly Housing Facility – 108 units – install fire alarm	Cost of Work: 27000.00	CEO District:

		Fire Dept: K Approved w/ conditions ___ Denied ___ N/A Signature:	Inspection: Use Group: I-1 Type: Fire Alarm IBC2009 Signature:

Proposed Project Description: 777 Stevens Ave – Install Fire Alarm	Pedestrian Activities District (P.A.D.) 3/8/11

Permit Taken By:	Zoning Approval

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building Permits do not include plumbing, septic or electrial work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.

Special Zone or Reviews
___ Shoreland
___ Wetlands
___ Flood Zone
___ Subdivision
___ Site Plan
    Maj ___ Min ___ MM
Date: 2/14/11
Ok w/ conditions

Zoning Appeal
___ Variance
___ Miscellaneous
___ Conditional Use
___ Interpretation
___ Approved
___ Denied
Date:

Historic Preservation
___ Not in Dist or Landmark
___ Does not Require Review
___ Requires Review
___ Approved
___ Approved w/Conditions
___ Denied
Date:

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the appication is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT   ADDRESS   DATE   PHONE

Fire Alarm Permit

If you or the property owner owes real estate or property taxes or user charges on any property within the city, payment arrangements must be made before permits of any kind are accepted.

Installation address: __777 STEVENS AVE__ CBL: __146 · C·5__

Exact location: (within structure) __WHOLE BUILDING__

Type of occupancy(s) (NFPA & ICC): __EXISTING APARTMENT BUILDING__

Building owner: __PARK DANFORTH__

Must be
System Designer (point of contact): __NORRIS, INC. (DAVE GAGNON)__

Designer phone: __(207) 883-3473__ E-mail: __daveg @ norrisinc.com__

Installing contractor: __NORRIS, INC.__ Certificate of Fitness No: __1008__

Contractor phone: __(207) 883-3473__ E-mail: __daveg @ norrisinc.com__

This is a new application: YES ● NO ○ New AES Master Box: YES ● NO ○
(Include Master Box approval form)

Amendment to an existing permit: YES ○ NO ● Permit no: _____

The following documents shall be provided with this application:

- [ ] Floor plans
- [ ] Wiring diagram
- [ ] Annunciator details
- [ ] Input/ Output Matrix
- [ ] Equipment data sheets
- [ ] Electrical Permit Pulled (check alarm/com)

- [ ] Scope of Work
- [ ] 11 ½ x 17s
- [ ] pdf copy (may be e-mailed)
- [ ] Designer qualifications
- [ ] Battery/ voltage drop calcs

COST OF WORK: __26,600.00__

PERMIT FEE: _____
($10 PER $1,000 + $30 FOR THE FIRST $1,000)

RECEIVED

FEB 1 1 2011

Dept. of Building Inspections
City of Portland Maine

Master box approval only: YES ○ NO ○
(If yes check *New AES Master Box* above)

The **designer** shall be the responsible party for this application. Download a new copy of this application at www.portlandmaine.gov/fire for every submittal. Submit all plans in electronic PDF in **addition** to readable 11 ½ x 17s to the Building Inspections Department, 389 Congress Street, Room 315, Portland, Maine 04101.

Prior to acceptance of any fire alarm system, a complete commissioning and acceptance test must be coordinated with all fire system contractors and the Fire Department, and proper documentation of such test(s) provided.

All installation(s) must comply with the *City of Portland Technical Standard for Signaling Systems for the Protection of Life and Property*, available at www.portlandmaine.gov/fire .

Applicant signature: __David Gagnon__ Date: __2/10/11__

Director of Planning and Urban Development
Penny St. Louis

Job ID: 2011-02-408-FAFS   **Located At:** 777 STEVENS   **CBL:** 146 - - C - 005 - 001 - - - - -

Conditions of Approval:

Zoning

1. This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.
2. This property shall remain a Congregate Care Elderly Housing Facility with 108 units. Any change of use shall require a separate permit application for review and approval.

Fire

1. The scope of work is limited with regards to the NAC. Existing NAC shall be left as is. Old speaker/lights will be replaced with speaker/strobes and non-required, out of service speaker/lights removed.
2. The fire alarm system shall comply with the City of Portland Standard for Signaling Systems for the Protection of Life and Property. All fire alarm installation and servicing companies shall have a Certificate of Fitness from the Fire Department.
3. In field installation shall be installed per code as conditions dictate.
4. Records cabinate, FACP, annunciator(s), and pull stations shall be keyed alike.
5. Central Station monitoring for addressable fire alarm systems shall be by point.
6. All fire alarm records required by NFPA 72 should be stored in an approved cabinet located at the FACP labeled "FIRE ALARM RECORDS".
7. Installation of a Fire Alarm system requires a Knox Box to be installed per city ordinance.
8. System acceptance and commissioning must be coordinated with alarm and suppression system contractors and the Fire Department. Call 874-8703 to schedule.
9. Fire Alarm system shall be maintained. If system is to be off line over 4 hours a fire watch shall be in place. Dispatch notification required 874-8576.
10. Fire alarm system requires a wireless master box connection per city ordinance. Masterbox design and installation shall be as approved be City Electrical Division.
11. AES Zones shall be:
12. Zone 1: Water flow
13. Zone 2: City Disconnect
14. Zone 3: Floors 1 – 4
15. Zone 4: Floors 5 - Penthouse

Building

1. Fire Alarm systems shall be installed per Sec. 907 of the IBC 2009.

BUILDING PERMIT INSPECTION PROCEDURES
Please call 874-8703 or 874-8693 (ONLY)
or email: buildinginspections@portlandmaine.gov

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**

- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**

- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

1. Electrical – Commercial
2. Final at completion of work

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCU0PIED.

Elderly Housing - 1st unit Congregate Care Elderly Housing Facility

Job Type:	Fire Alarm / Suppression	**Job Description:**	777 Stevens Ave	**Job Year:**	2011
Building Job Status Code:	Initiate Plan Review	**Pin Value:**	642	**Tenant Name:**	
Job Application Date:		**Public Building Flag:**	N	**Tenant Number:**	
Estimated Value:	27,000	**Square Footage:**			
Related Parties:		FOR THE HOME		*Property Owner*	
		Norris Inc - Melissa Peters		*GENERAL CONTRACTOR*	

Job Charges

Fee Code Description	Charge Amount	Permit Charge Adjustment	Net Charge Amount	Payment Date	Receipt Number	Payment Amount	Payment Adjustment Amount	Net Payment Amount	Outstanding Balance

Location ID: 21532

Location Details

Alternate Id	Parcel Number	Census Tract	GIS X	GIS Y	GIS Z	GIS Reference	Longitude	Latitude
907258	146 C 005 001		M				-70.293028	43.684656

Location Type	Subdivision Code	Subdivision Sub Code	Related Persons	Address(es)
1				777 STEVENS AVENUE NORTH

Location Use Code	Variance Code	Use Zone Code	Fire Zone Code	Inside Outside Code	District Code	General Location Code	Inspection Area Code	Jurisdiction Code
BENEVOLENT & CHARITABLE		NOT APPLICABLE (R-1)					DISTRICT 7	MORRILLS CORNER

Structure Details

Structure: Loc id 000050510 Alt id 907258

Occupancy Type Code:

Structure Type Code	Structure Status Type	Square Footage	Estimated Value	Address
Hospitals & Institutional Buildings	6	0		777 STEVENS AVENUE NORTH

Longitude	Latitude	GIS X	GIS Y	GIS Z	GIS Reference		User Defined Property	Value
0	0	M						

Permit #: 20111226

Permit Data

Location Id	Structure Description	Permit Status	Permit Description	Issue Date	Reissue Date	Expiration Date
21532	PARK/DANFORTH HOME	Initialized	PARK/DANFORTH HOME			

Inspection Details

Inspection Id	Inspection Type	Inspection Result Status	Inspection Status Date	Scheduled Start Timestamp	Result Status Date	Final Inspection Flag

Fees Details

Fee Code Description	Charge Amount	Permit Charge Adjustment	Permit Charge Adj Remark	Payment Date	Receipt Number	Payment Amount	Payment Adjustment Amount	Payment Adj Comment
Job Valuation Fees	$290.00							

Permit #: 20111227

Permit Data

Location Id	Structure Description	Permit Status	Permit Description	Issue Date	Reissue Date	Expiration Date
21532	PARK/DANFORTH HOME	Initialized	Electric for Fire Alarm Permit			

Inspection Details

Inspection Id	Inspection Type	Inspection Result Status	Inspection Status Date	Scheduled Start Timestamp	Result Status Date	Final Inspection Flag

Fees Details

Fee Code Description	Charge Amount	Permit Charge Adjustment	Permit Charge Adj Remark	Payment Date	Receipt Number	Payment Amount	Payment Adjustment Amount	Payment Adj Comment
Electric Commercial Permit Fee	$55.00							

Master Box Approval

Applicant: NORRIS, INC.

App Phone #: (207) 883-3473

Building Name: PARK DANFORTH

Building Address: 777 STEVENS AVE PORTLAND, ME 04103

Occupancy: EXISTING APARTMENT BUILDING
Assembly OL>300, 20 unit apartment building, etc.

Emergency Contact: JAY GERRISH

Emergency phone #: 797-7710

Date of Application: PARK DANFORTH

Billing Address: 777 STEVENS AVE PORTLAND, ME 04103

Comments: REPLACING EXISTING BOX WITH AES

Applicant completes red box and submits with Fire Alarm Permit

1

FIRE PREVENTION: ☑ Approved ☐ Denied

02/15/11
Date

Fire Prevention Officer (58)

Comments: ZONE 1: Water flow   Zone 2: City Disconnect
ZONE 3: FLOOR 1-4   ZONE 4: FLOOR 5 - PENTHOUSE

2

FIRE ALARM: Box #:_____

ELECTRICAL DIVISION: ☐ Approved   ☐ Denied

3

Box Type: (AES Radio Box)/ _____
New   Other

Test Date: ___/___/___   In Service Date: ___/___/___   _____
Fire Alarm Technician

AES

Circuit if applicable: _____

4

FIRE ALARM: Same Running Assignment As Box: _____

Notifications: ☐ All Stations ☐ Run Books ☐ Digitizer   ☐ Computer ☐ Cad Box Test

☐ South Portland   ☐ _____   _____
Other   Dispatcher

5

BILLING: ☐ Entered   _____
Financial Officer

6

FIRE PREVENTION: ☐ Filed ___/___/___
Date

NORRIS INC

PO Box 2551
2257 West Broadway
South Portland, ME 04106

1.800.370.3473
fax 207.879.0540

www.norrisinc.com

SUBMITTAL PACKAGE

Project: **Park Danforth**

System: **Fire Alarm**

Submitted   Norris Inc.

By: 2257 West Broadway

South Portland, Maine 04106

Telephone: (800) 370-3473

Electrical   Norris Inc.

Contractor:

Date: 2/9/11

NORRIS INC

PO Box 2551
2257 West Broadway
South Portland, ME 04106

1.800.370.3473
fax 207.879.0540

www.norrisinc.com

2/9/11

Project Scope for Park Danforth Fire Alarm Upgrade (777 Stevens Ave, Portland):

- Fire alarm control panel upgrade to new Notifier NFS2640 model (UL 9th edition compliant). This upgrade addresses the issue of intermittent trouble conditions that are being created by a failing audio message generator in the voice notification portion of the system.
- Remove, replace, program and test each of the existing conventional style smoke detectors and pull stations with new addressable components.
- Provide/install new, City of Portland compliant, AES radio master box to replace the legacy municipal 100mA reporting box.
- Finals: full test/inspection of new system, including NFPA 72 paperwork.

This

Certificate of Fitness

for

Fire Alarm Installation and Servicing Company

is awarded to

Norris Incorporated
PO Box 2551 – 2257 West Broadway
South Portland, ME 04106
(207)883-3473

CF # | 1008

12/31/2010

_____
Authority Having Jurisdiction
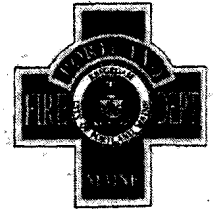
_____
Expiration Date

THIS CERTIFICATE IS NOT AN ENDORSEMENT OF THIS COMPANY BY THE AUTHORITY HAVING JURISDICTION.

TERMS AND CONDITIONS OF THIS CERTIFICATE OF FITNESS SHALL BE AS FOLLOWS:

THIS CERTIFICATE REMAINS THE PROPERTY OF THE PORTLAND FIRE DEPARTMENT AND SHALL BE RETURNED UPON DEMAND;

THIS CERTIFICATE OF FITNESS IS NON-TRANSFERABLE;

THIS CERTIFICATE OF FITNESS SHALL REMAIN IN EFFECT IN SO FAR AS THE BEARER OF SAID INSTRUMENT SHALL COMPLY WITH RULES AND REGULATIONS ESTABLISHED BY THE AUTHORITY HAVING JURISDICTION.

FAILURE TO COMPLY WITH ALL RULES AND REGULATIONS OF THE AUTHORITY HAVING JURISDICTION WILL RESULT IN THE FOLLOWING:

FIRST OFFENCE: PLAN OF ACTION TO ADDRESS DEFICIENCIES

SECOND OFFENCE: PROBATION OF SERVICE COMPANY

THIRD OFFENCE: TERMINATION OF CERTIFICATE OF FITNESS

NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES®

HEREBY CERTIFIES THAT

David S. Gagnon

HAS ATTAINED THE GRADE OF

LEVEL IV

IN FIRE PROTECTION ENGINEERING TECHNOLOGY
FIRE ALARM SYSTEMS

AND RECOGNIZES THAT THROUGH EDUCATION,
EXPERIENCE, AND KNOWLEDGE THIS PERSON HAS
MET THE STANDARDS SET FORTH BY THIS INSTITUTE

Certification Valid through April 1, 2011

CERTIFICATION NUMBER 88203

CHAIRMAN OF THE BOARD OF GOVERNORS, NICET

SPONSORED BY THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Norris Inc

2257 West Broadway
South Portland, ME 04106
1-800-370-3473

PARK DANFORTH
777 STEVENS AVE
PORTLAND, ME 04103-

PARKDA   207-797-7710   Fax:207-797-2558

Signature: _____ Date: _____

Park Danforth, Fire Alarm Upgrades

308804SP
Equipment List : Status: 5 Orders

2/9/2011   Page: 1   Time: 1:34 PM
Purchase Order #:   JAY GERRISH

PARK DANFORTH

777 STEVENS AVE
PORTLAND, ME 04103-   DateIn 12/09/2010

207-797-7710   DateDue 01/24/2011
                                                :

Product: B   :

Sales PDR

Qty	Description	Shipped Qty	Location
1	NOTIFIER-CPU2-640, NFS2-640 CPU - 120 VAC	1	I-I2
2	ADI-IM-12180, 12 VOLT,18 AH BATTERY	2	O5-C
1	NOTIFIER-LEM-320, Expands loop control module to 2 loops	1	H-H3
1	NOTIFIER-KDM-R2, Keyboard Display Module; For CPU2-640	1	H-H2
2	NOTIFIER-XP6-C, XP6 Transponder Control Module, 6 circuits.	2	H-H2
1	Notifier-CHS-6, Chassis, mounts up to 6 XP-6 modules in a BB-25	1	
1	NOTIFIER-DP-DISP2, Dress Plate used with CPU2-640	1	I-I2
1	NOTIFIER-DPA-1, Dress Plate, DVC, One Row	1	2-3
1	NOTIFIER-DVC-EM, Digital Voice Command, Extended Memory	1	G-G2
1	NOTIFIER-DVC-AO, Digital Voice Command, Analog Output	1	3-4
1	NOTIFIER-DVC-KD, Digital Voice Command, Keypad	1	
1	NOTIFIER-CA-1, Chassis, DVC, One Row	1	2-3
1	SPECIAL-AES, AES Radio Masterbox for Park Danforth:		

Norris Inc

2257 West Broadway
South Portland, ME 04106
1-800-370-3473

PARK DANFORTH
777 STEVENS AVE
PORTLAND, ME 04103-

PARKDA   207-797-7710   Fax:207-797-2558

Signature: _____   Date: _____

Park Danforth, Fire Alarm Upgrades

Equipment List : Status: 5 Orders

2/9/2011   Page: 2   Time: 1:34 PM

Purchase Order #:   JAY GERRISH

PARK DANFORTH

777 STEVENS AVE
PORTLAND, ME 04103-   DateIn 12/09/2010

207-797-7710   DateDue 01/24/2011
                                                    :

Product: B   :

Sales PDR

Qty	Description	Shipped Qty	Location
1	AES-7750-F8 RED, 8 Zone Fire Subscriber, 8 Supervised Zones,	1	
1	ADI-AS-XF1640Y, TRANSFORMER 16VAC 40VA	1	P5-C
1	ADI-IM-1270, 12V 7AMP BATTERY	1	O5-D
1	AES-7210-5-UM, 5dB Omni directional UHF Antenna	1	
1	AES-7220-10-N, Cable Assembly; 10 Ft. RG-58 BNC male N male	1	
1	AES-7230, Standard Coaxial Surge Protector, N female	1	
1	NOTIFIER-FSP-851, Intelligent Addressable Photo detector.	1	E-E3
1	NOTIFIER-B710LP, Intelligent detector base, with flange.	1	E-E4
2	NOTIFIER-FMM-101, Addressable Mini Module with FlashScan	2	E-E3
4	NOTIFIER-FRM-1, Intelligent Addressable Relay Module.	4	E-E2
1	AES-12-0101, N-Type Plug (male), crimp style for RG-8 Coax (9913)	1	
	First Floor:		
10	NOTIFIER-NBG-12LX, Addressable Pull Station; with FlashScan.	10	F-F4
19	NOTIFIER-FSP-851, Intelligent Addressable Photo detector.	19	E-E3
19	NOTIFIER-B710LP, Intelligent detector base, with flange.	19	E-E4
	Second Floor:		
4	NOTIFIER-NBG-12LX, Addressable Pull Station; with FlashScan.	4	F-F4
21	NOTIFIER-FSP-851, Intelligent Addressable Photo detector.	21	E-E3
21	NOTIFIER-B710LP, Intelligent detector base, with flange.	21	E-E4
	Third Floor:		
4	NOTIFIER-NBG-12LX, Addressable Pull Station; with FlashScan.	4	F-F4
19	NOTIFIER-FSP-851, Intelligent Addressable Photo detector.	19	E-E3
19	NOTIFIER-B710LP, Intelligent detector base, with flange.	19	E-E4
	Fourth Floor:		
3	NOTIFIER-NBG-12LX, Addressable Pull Station; with FlashScan.	3	F-F4
8	NOTIFIER-FSP-851, Intelligent Addressable Photo detector.	8	E-E3

➡NFS2-640(E)

Intelligent Addressable
Fire Alarm System

🅝 NOTIFIER®
by Honeywell

General

The NFS2-640 intelligent Fire Alarm Control Panel is part of the ONYX® Series of Fire Alarm Controls from NOTIFIER.

In stand-alone or network configurations, ONYX Series products 2 meet virtually every application requirement.

Designed with modularity and for ease of system planning, the NFS2-640 can be configured with just a few devices for small building applications, or for a large campus or high-rise application. Simply add additional peripheral equipment to suit the application.

The FireWatch Series internet monitoring modules IPDACT-2 and IPDACT-2UD permit 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.

NOTE: Unless called out with a version-specific "E" at the end of the part number, "NFS2-640" refers to models NFS2-640 and NFS2-640E; similarly, "CPU2-640" refers to models CPU2-640 and CPU2-640E.
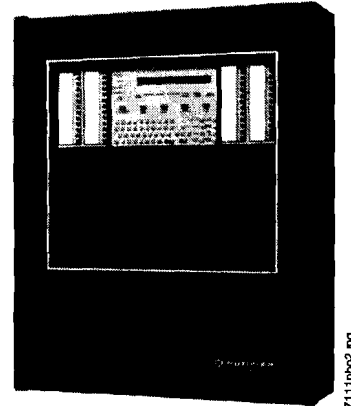
Features

- **Listed to UL Standard 864, 9th edition.**
- One, expandable to two, isolated intelligent Signaling Line Circuit (SLC) Style 4, 6 or 7.
- Up to 159 detectors (any mix of ion, photo, thermal, or multi-sensor) and 159 modules (Addressable pull stations, normally open contact devices, two-wire smoke, notification, or relay) per SLC. 318 devices per loop/636 per FACP or network node.
- Standard 80-character display, 640-character large display, 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).
  - 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.
- 6.0 amp switch mode power supply with four Class A/B built-in Notification Appliance Circuits (NAC). Selectable System Sensor, Wheelock, or Gentex strobe synchronization.
- Built-in Alarm, Trouble, Security, and Supervisory relays.
- VeriFire® Tools online or offline programming utility. Upload/Download, save, store, check, compare, and simulate panel databases. Upgrade panel firmware.
- Autoprogramming and Walk Test reports.
- Optional universal 636-point DACT.
- 80-character remote annunciators (up to 32).
- EIA-485 annunciators, including custom graphics.
- Printer interface (80-column and 40-column printers).
- History file with 800-event capacity in nonvolatile memory, plus separate 200-event alarm-only file.
- Alarm Verification selection per point, with tally.
- Autoprogramming and Walk Test reports.
- Presignal/Positive Alarm Sequence (PAS).
- Silence inhibit and Auto Silence timer options.

NFS2-640

- March time/temporal/California two-stage coding/strobe synchronization.
- Field-programmable on panel or on PC, with VeriFire Tools program check, compare, simulate.
- Full QWERTY keypad.
- Battery charger supports 18 – 200 amp hour batteries.
- Non-alarm points for lower priority functions.
- Remote ACK/Signal Silence/System Reset/Drill via monitor modules.
- Automatic time control functions, with holiday exceptions.
- Surface Mount Technology (SMT) electronics.
- Extensive, built-in transient protection.
- Powerful Boolean logic equations.

NCA-2 640-CHARACTER DISPLAY FEATURES:

- Backlit, 640-character display.
- Supports SCS Series smoke control system in both HVAC or FSCS modes (not UL-Listed for FSCS).
- Printer and CRT EIA-232 ports.
- EIA-485 annunciator and terminal mode ports.
- Alarm, Trouble, Supervisory, and Security relays.

FLASHSCAN® INTELLIGENT FEATURES:

- Poll up to 318 devices 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.
- Day/Night automatic sensitivity adjustment.
- Sensitivity windows:
  - **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).

- Degraded mode — in the unlikely event that the CPU2-640 microprocessor fails, FlashScan detectors revert to degraded operation and can activate the CPU2-640 NAC circuits and alarm relay. Each of the four built-in panel circuits includes a Disable/Enable switch for this feature.
- 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.

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 (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.
- FlashScan or classic mode compatible.
- Low-temperature warning signal at 40°F ± 5°F (4.44°C ± 2.77°C).

RELEASING FEATURES:
- Ten independent hazards.
- Sophisticated cross-zone (three options).
- Delay timer and Discharge timers (adjustable).
- Abort (four options).
- Low-pressure CO_2 listed.

VOICE AND TELEPHONE FEATURES:
- Up to eight channels of digital audio.
- 50 and 75 watt digital amplifiers (DAA series).
- Solid-state digital message generation.
- Firefighter telephone option.
- 30- to 120-watt high-efficiency amplifiers (AA Series).
- Backup tone generator and amplifier option.
- Multichannel voice transponder (XPIQ).

HIGH-EFFICIENCY OFFLINE SWITCHING
3.0 AMP POWER SUPPLY (6.0 A IN ALARM):
- 120 VAC (NFS2-640); 240 VAC (NFS2-640E).
- Displays battery current/voltage on panel (with display).

Sample System Options

NFS2-640
"C" cabinet size shown

7111blok.wmf
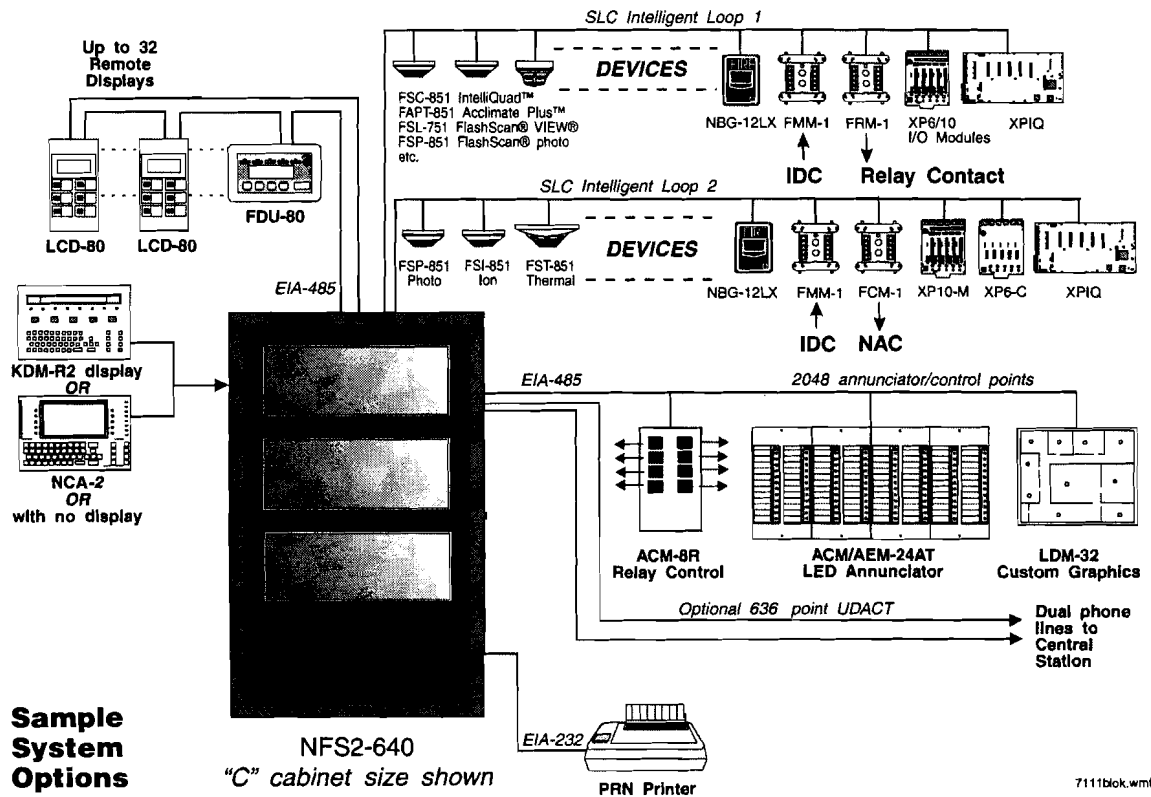
FlashScan, Exclusive World-Leading Detector Protocol

At the heart of the NFS2-640 is a set of detection devices and device protocol — FlashScan (U.S. Patent 5,539,389). Flash-Scan is an all-digital protocol that gives superior precision and high noise immunity.

In addition to providing 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 NFS2-640 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

Intelligent sensing is a set of software algorithms that provides the NFS2-640 with industry-leading smoke detection capability. These complex algorithms require many calculations on each reading of each detector, and are made possible by the high-speed microcomputer used by the NFS2-640.

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, such as those 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 routine. 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 (with KDM-R2) The NFS2-640, like all NOTIFIER intelligent panels, has the exclusive feature of pro-gram creation and editing capability from the front panel keypad, *while continuing to provide fire protection.* The architecture of the NFS2-640 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 NFS2-640 simultaneously monitors other (already installed) points for alarm conditions.

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 NFS2-640 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.

Placement of Equipment in Chassis and Cabinet

The following guidelines outline the NFS2-640's flexible system design.

Rows: The first row of equipment in the cabinet mounts in the chassis shipped with the CPU.. Mount the second, third, or fourth rows of equipment in a CHS4 series chassis or, for Digital Voice Command products, in **CA-1** or **CA-2**. (For DVC and DAA components see DVC Manual; for DVC-AO applications, see *AA Series Installation Manual*).

Wiring: When designing the cabinet layout, consider separation of power-limited and non-power-limited wiring as discussed in the *NFS2-640 Installation Manual.*

Positions: A chassis offers four basic side-by-side positions for components; the number of modules that can be mounted in each position depends on the chassis model and the size of the individual module. There are a variety of standoffs and hardware items available for different combinations and configurations of components.

It is critical that all mounting holes of the NFS2-640 are secured with a screw or standoff to ensure continuity of Earth Ground.

Layers: The CPU's chassis accepts four layers of equipment, including the control panel. The **CPU2-640** fills three positions (left to right) in the first-installed layer (the back of the chassis); its integral power supply occupies the center two positions in the next two layers; the optional display occupies (the left) two positions at the front, flush with the door. Some equipment, such as the **NCA-2**, may be mounted in the dress panel directly in front of the control panel. The NCA-2 can be used as a primary display for the NFS2-640 (use NCA/640-2-KIT) by directly connecting their network ports (required in Canadian stand-alone applications); see NCA-2 data sheet for mounting options *(DN-7047)*.

Expansion: Installing an **LEM-320** Loop Expander Module adds a second SLC loop to the control panel. The LEM-320 is mounted onto the CPU2-640, occupying the middle-right, second (back) slot on the chassis.

Networking: If networking two or more control panels, each unit requires a Network Control Module or High-Speed Network Control Module (see "Network Options" on page 6). These modules can be installed in any option board position (see manual), and additional option boards can be mounted in front of the network control modules.

➡ KDM-R2 Controls and Indicators

Program Keypad: QWERTY type *(keyboard layout, see figure).*

12 LED indicators: Power; Fire Alarm; Pre-Alarm; Security; Supervisory; System Trouble; Signals Silenced; Points Disabled; Control Active; Abort; Pre-Discharge; Discharge.

Keypad Switch Controls: Acknowledge/Scroll Display; Signal Silence; Drill; System Reset; Lamp Test.

LCD Display: 80 characters (2 x 40) with long-life LED backlight.
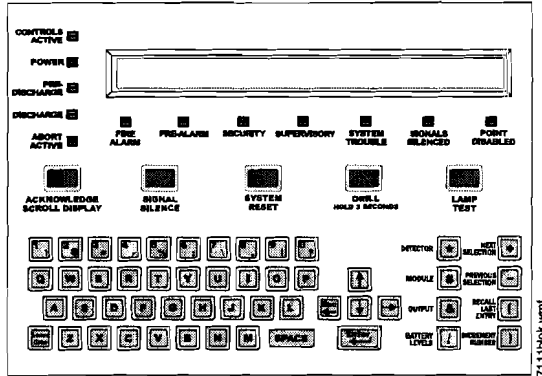
Configuration Guidelines

Stand-alone and network systems require a main display. On single-CPU systems (one CPU2-640/-640E), display options are the KDM-R2 or the NCA-2. On network systems (two or more networked fire panel nodes), at least one NCA-2, NCS, or ONYXWorks annunciation device is required. Other options listed as follows:

KDM-R2: 80-character backlit LCD display with QWERTY programming and control keypad. Order two BMP-1 blank modules and DP-DISP2 mounting plate separately. *Requires top row of a cabinet. Required for each stand-alone 80-character display system. The KDM-R2 may mount in network nodes to display "local" node information as long as at least one NCA-2 or NCS/ONYXWorks network display is on the system to display network information.*

NCA-2: Network Control Annunciator, 640 characters. On single *CPU2-640/-640E* systems, the optional NCA-2 can be used as the Primary Display for the panel and connects directly to the *CPU2-640/-640E.* On network systems (two or more networked fire panel nodes), one network display (either NCA-2 or NCS/*ONYXWorks*) is required for every system. On network systems, the NCA connects to (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-DISP2, ADP-4B, or in an annunciator box, such as the ABS-2D. In CAB-4 top-row applications, a DP-DISP2 and two BMP-1 blank modules are required for mounting. Required for NFS2-640 applications employing the DVC-EM and DAA series amplifiers. *See DN-7047.*

➡**CPU2-640:** Central processing unit with integral 3.0 amp (6.0 A in alarm) power supply for an NFS2-640 system. Includes CPU factory-mounted on a chassis; one Signaling Line Circuit expandable to two; installation, programming and operating manuals. *Order one per system or as necessary (up to 103 network nodes) on a network system.*

CPU2-640E: Same as CPU2-640 but requires 240 VAC, 1.5 amp, (3.0 A in alarm).

NCA/640-2-KIT: Bracket installation kit required to mount NCA-2 to the CPU2-640/-640E's standard chassis.

➡**DP-DISP2:** Dress panel for top row in cabinet with CPU2-640/640E installed.

ADP2-640: Dress panel for middle rows with CPU2-640/640E.

BMP-1: Blank module for unused module positions.

BP2-4: Battery plate, required.

AUDIO OPTIONS

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. Capable of playing up to eight simultaneous messages when used with DAA Series amplifiers. *See DN-7045.*

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

DVC-AO: DVC Analog Output board provides four analog output circuits for use with AA or XPIQ Series amplifiers. Four-channel operation supported. *See DN-7045.*

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

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

DAA-7525: 75W, 25 Vrms Digital Audio Amplifier assembly with DAA-PS power supply board. Shipped mounted to its chassis (no battery charger on DAA-7525 power supply board). *See DN-60257.*

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

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

CA-2: Chassis assembly, occupies two tiers of a CAB-4 Series enclosure. The left side accommodates one DVC mounted on a half-chassis and one NCA-2 or BP-CA2 mounted on a half-chassis. The right side houses a microphone/handset well. The CA-2 assembly includes CMIC-1 microphone. ADDRSeries doors with two-tier visibility are available for use with the CA-2 configuration: ADDR-B4, ADDR-C4, ADDR-D4 (below).

CFFT-1: Chassis to mount firefighters telephone and one ACS annunciator in a CAB-4 row. Includes TELH-1 firefighters handset for the DVC, chassis, phone well and mounting hardware. Order DP-CFFT dress panel separately.

DP-CFFT: CFFT-1 dress panel. Requires BMP-1 if no ACS annunciator is installed.

TELH-1: Firefighter's Telephone Handset for use with the DVC-EM 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.*

*NOTE: Use ADDR-B4/C4/D4 when CA-2 chassis is installed in top two rows with NCA-2 or BP-CA2. Use standard door when CA-

2 is not installed in top two rows. Please see the DVC application guide for additional configuration information.

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

DPA-2B: Dress panel used with CA-2 chassis assembly.

VP-2B: Dress panel, required when CA-2 chassis is installed in the top two cabinet rows.

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.*

BP-CA2: Blank plate for CA-2 chassis.

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

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

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

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 V_{RMS} audio power for the NFS-640. 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 V_{RMS} systems and 100 watts of power. *See DN-3224.*

XPIQ: The XPIQ quad intelligent voice transponder for distributed multichannel voice evacuation systems, an integrated audio amplification and distribution subsystem controlled by FACP. Capable of playing up to four simultaneous messages. Accepts up to four 25-watt amplifiers. *See XPIQ data sheet, DN-6823.*

POWER SUPPLIES, STANDARD CABINETS

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

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.*

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

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

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

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

CAB-4 Series Enclosure: NFS2-640 mounts in a standard CAB-4 Series enclosure (available in four sizes, "A" through "D"). Backbox and door ordered seperately; requires BP2-4 battery plate. A trim ring option is available for semi-flush mounting. *See DN-6857.*

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

COMPATIBLE DEVICES, EIA-232 PORTS

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

VS4095/5: Printer, 40-column, 24V. Mounted in external backbox. *See DN-3260.*

COMPATIBLE DEVICES, EIA-485 PORTS

ACS: Annunciator Control Modules ACM/AEM-24AT and ACM/AEM-48A; remote serial annunciator/control systems. *See DN-0524 and DN-6862.*

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.*

LCD-80/FDU-80: 80-character, backlit LCD display. Mounts up to 6,000 ft. (1828.8 m) from panel. Up to 32 per FACP. *See LCD-80/-80TM (DN-3198) and FDU-80 (DN-6820).*

LDM: Lamp Driver Modules LDM-32, LDM-E32, and LDM-R32; remote custom graphic driver modules. *See LDM data sheet DN-0551.*

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 ACM-8R data sheet DN-3558.*

SCS: Smoke control stations SCS-8, SCE-8, with lamp drivers SCS-8L, SCE-8L; eight (expandable to 16) circuits. *See SCS data sheet DN-4818.*

TM-4: Transmitter Module. Includes three reverse-polarity circuits and one municipal box circuit. Mounts in panel module position (single-address-style) or in CHS2-M2 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). Up to 256 programmable codes. Mounts in **BB-UZC** or other compatible chassis (purchased separately). *See DN-3404.*

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.*

BEAMMKR: 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.*

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

FSP-851T: FSP-851 plus dual electronic thermistors that add 135°F (57°C) fixed-temperature thermal sensing. *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.*

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.*

B501BH-2: Standard sounder base. Replaces B501BH. *See DN-60054.*

B501BHT-2: Temporal tone sounder base. Replaces B501BHT. *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.*

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.*

NETWORK OPTIONS

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: 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: 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-F), 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 .*

OTHER OPTIONS

IPDACT-2/2UD, IPDACT Intenet 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.

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

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

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

LEM-320: Loop Expander Module. Expands each NFS2-640 to two Signaling Line Circuits. *See DN-6881.*

VeriFire-TCD: VeriFire Tools CD-ROM. Contains programming software for the ONYX Series. Includes local panel connection cable. *See DN-6871.*

VeriFireUG-TCD: VeriFire Tools CD-ROM. Upgrade.

BAT Series: Batteries. NFS2-640 utilizes two 12 volt, 18 to 200 AH batteries. This series of products replaces the previous PS Series. *See DN-6933.*

NFS-LBB: Battery Box (required for batteries larger than 25 AH).

NFS-LBBR: Same as above but red.

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

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

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

SYSTEM SPECIFICATIONS

System Capacity

- Intelligent Signaling Line Circuits .... 1 expandable to 2
- Intelligent detectors .... 159 per loop
- Addressable monitor/control modules .... 159 per loop
- Programmable software zones 99
- Special programming zones 14
- LCD annunciators per CPU2-640/-640E and NCA-2 *(observe power)* 32
- ACS annunciators per CPU2-640/-640E .... 32 addresses x 64 points
- ACS annunciators per NCA-2 .... 32 addresses x 64 or 96 points

NOTE: The NCA-2 supports up to 96 annunciator address points per ACM-24/48.

Specifications

- Primary input power, **CPU2-640 board:** 120 VAC, 50/60 Hz, 3.0 A. **CPU2-640E board:** 220/240 VAC, 50/60 Hz, 1.5 A.
- Total output 24 V power: 6.0 A in alarm.

NOTE: The power supply has a total of 6.0 Amps of available power. This is shared by all internal circuits.

- Standard notification circuits (4): 1.5 A each.
- Resettable regulated 24V power: 1.25 A.
- Two non-resettable regulated 24V power outputs:
  - 1.25 A
  - 0.50 A.
- Non-resettable 5V power: 0.15 A.
- Battery charger range: 18 AH – 200 AH. Use separate cabinet for batteries over 25 AH.
- Float rate: 27.6 V.

Cabinet Specifications

Systems can be installed in CAB-4 Series cabinets *(four sizes with various door options, see DN-6857)*. Requires BP2-4 Battery Plate.

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 NFS2-640 control panel. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL Listed:** S635
- **ULC Listed:** S635
- **FM Approved**
- **MEA:** 128-07-E
- **FDNY COA # 6025**
- **CSFM:** 7170-0028:244; 7165-0028:243
- **City of Chicago**
- **City and County of Denver**

Standards

The NFS2-640 complies with the following UL Standards and NFPA 72 Fire Alarm Systems requirements:

- **UL 864, 9th Edition** (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 and Waterflow). *Not applicable for FM.*
- **EMERGENCY VOICE/ALARM.**
- **OT, PSDN** (Other Technologies, Packet-switched Data Network)

mally 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 μA (LED flashing).

Maximum IDC wiring resistance: 1,500 ohms.

Maximum IDC Voltage: 11 Volts.

Maximum IDC Current: 240 μA

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.

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:** 7300-0028:202 (For Domestic only)
- **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)*

Product Line Information

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

Made in the U.S. A.

FCM-1(A) & FRM-1(A) Series

Control and Relay Modules

(N) NOTIFIER®
by Honeywell

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.
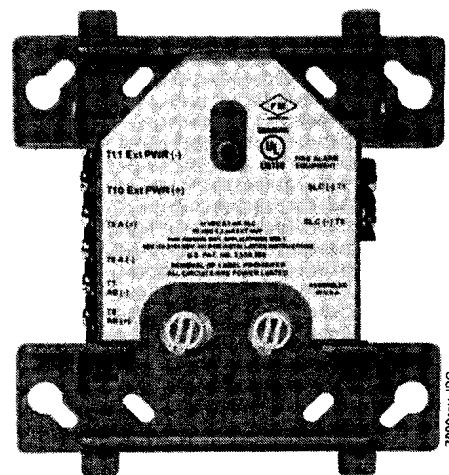
Features

- 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), or control telephone devices. 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).

FCM-1(A)

- 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 µA direct poll, 375 µA group poll with LED flashing, 485 µA 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:** 7300-0028:202, 7300-0028:219
- **MEA:** 14-00-E
- **FDNY:** COA #6038, #6026

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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www.notifier.com

➡NBG-12LX

Addressable Manual Pull Station

Ⓝ NOTIFIER®
by Honeywell

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 mm² 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 µA.
- **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"

➡ DK-2LVLPF

Product Name:	DK-2LVLPF
Category:	Low Voltage Voice/Data
Sub Category:	Low Voltage Specialty
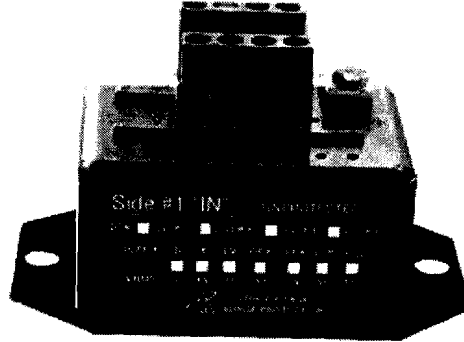
Description: The 2LVLPF is available; however, its recommended use is limited to control panels and systems that use less than 500mA of current. Its recommended replacement is the DTK-2MHLP series. Please note that the installation instructions for this entry reference the DTK-2LVLP series. Call DITEK for details. Alarm panel surge protection

➡ DTK120HW

DTK-HW Series

Category:

Sub Category:

AC Power

Power - Industrial
Surge Protection

Description: DITEK's "HW" series of surge protectors are engineered and
manufactured to the exacting standards of the life safety industry. More
fire alarm panels worldwide are protected by the 120 HW than any other
protector. HW products are available in 120V, 240V, or 120/240V single
phase configurations. Parallel connected AC surge protector.

➡ Intelligent Bases

B200SR, B710LP(A), B2241BI(A), B224RB(A), B501, B501BH-2, B501BHT-2, Mounting Kits, and Accessories

Ⓝ NOTIFIER®
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.

The **RMK400 recessed mounting kit** provides the most aesthetically pleasing installation. Surface mounting boxes are available when flush mounting isn't possible.

Specifications

Diameter:

- *B501:* 4.1" (104 mm).
- *B224BI, B224RB, B710LP:* 6.1" (155 mm).
- *B501BH-2, B501BHT-2:* 6.0" (152 mm).
- *B200SR:* 6.875" (17.46 cm).

Wire gauge:

- *B224BI, B224RB:* 14 to 24 AWG.
- *B710LP, B501, B501BH-2, B501BHT-2, B200SR:* 12 to 24 AWG.

Temperature range:

- *B224BI, B224RB, B501BH-2, B501BHT-2, B200SR:* 32°F to 120°F (0°C to 49°C).
- *B501 and B710LP,* -4°F to 150°F (0°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 B200SR:

External supply voltage: 16 to 33 VDC (VFWR)

Standby current: 500 µA maximum.

- **Alarm current:** 35 mA maximum.

SLC operating voltage: 15 to 32 VDC.

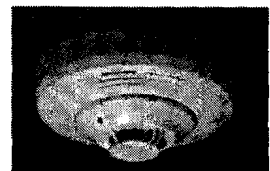**SLC standby current:** 300 µF.

Flangeless Mounting Base
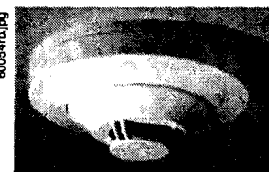
Relay Base
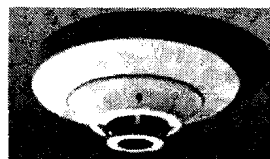
Flanged Mounting Base

Recessed Mounting

Standard Sounder Base

Flangeless Surface Mounting

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

FOR B501BH-2, B501BHT-2:

External supply voltage: 17 to 32 VDC.

Standby current: 1.0 mA maximum.

Alarm current: 15 mA maximum.

Maximum ripple voltage: 10% of supply voltage.

Startup capacitance: 200 µF.

Sounder delay time: *For B501BH-2 and B501BHT-2,* 0.75 to 5.7 seconds.

Sound output: greater than 90 dBA measured in anechoic room at 10 feet (3.048 m), 24 volts. 85 dBA minimum in UL reverberant room.

Recessed Mounting Kit

The RMK400 can be used with drywall or suspended ceilings. The aesthetically pleasing design can be used with standard junction boxes — suitable for use with 4.0" (10.16 cm) octago-

nal, 50 mm, and 60 mm junction boxes connected to flexible conduit. Note that junction boxes are not included in the kit. As an application example, with the B501 base, the RMK400 provides a simple installation solution in applications that demand a lower-profile smoke detector.

Product Line Information

INTELLIGENT BASES

B501: Flangeless mounting base.

B501A: Flangeless mounting base, ULC Listed.

B501BP: Bulk pack of B501 (10).

➡ **B710LP:** Flanged mounting base.

B710LPA: Flanged mounting base, ULC Listed.

B710LPBP: Flanged mounting base.

B200SR: Intelligent sounder base capable of producing sound output with T3 or continuous tone. Replaces the B501BH series bases in retrofit applications.

B501BH-2: Plug-in System Sensor standard *sounder* detector base, steady tone. Includes B501 base.

B501BHT-2: Plug-in System Sensor *temporal tone* sounder base.

B501BHA: Plug-in System Sensor standard *sounder* detector base, steady tone, with ULC Listing. Includes **B501** base.

B501BHTA: Plug-in System Sensor *temporal tone* sounder base, with ULC listing.

B224RB: Relay base.

B224RBA: Relay base, ULC Listed.

B224BI: Isolator base.

B224BIA: Isolator base, ULC Listed.

MOUNTING KITS AND ACCESSORIES

RMK400: Recessed mounting kit.

SMK400E: Surface mounting kit, flangeless.

SMB600: Surface mounting kit, flanged.

F110: Retrofit flange for B501B, B524.

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 *(T55-127-000 included)*.

XP-4: Extension pole for XR2B *(5 to 15 ft/1.524 to 4.572 m)*.

T55-127-000: 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:** 7300-1653:109; 7300-1653:126, 7300-1653:191

Junction Box Selection Guide

Base Models	Single Gang	Double 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
B200SR	Yes	Yes	No	Yes	Yes	No	No	No	No	No
B501	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No
B710LP	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No
B224RB	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
B224BI	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes
B501BH-2	No	No	No	No	Yes	No	No	No	No	No
B501BHT-2	No	No	No	No	Yes	No	No	No	No	No

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

ISO 9001
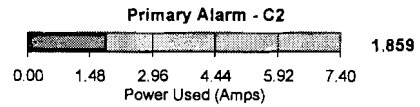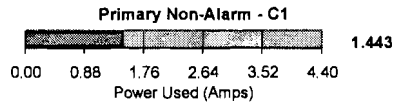CERTIFIED
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www.notifier.com

Total Current	
C1	1.443 A
C2	1.859 A
C3	1.483 A
C4	1.859 A

Primary Non-Alarm - C1

1.443

0.00 0.88 1.76 2.64 3.52 4.40
Power Used (Amps)

Primary Alarm - C2

1.859

0.00 1.48 2.96 4.44 5.92 7.40
Power Used (Amps)

Device	C1 - Non-Alarm Current				C2 - Alarm Current				C3 - Standby Current			
	Qty		Draw	Total	Qty		Draw	Total	Qty		Draw	Total
CPU2-640	1	x	0.25000	0.25000	1	x	0.25000	0.25000	1	x	0.25000	0.25000
CPS-24	1	x	0.00000	0.00000	1	x	0.00000	0.00000	1	x	0.04000	0.04000
SLC1 Device Activation Current	1	x	0.40000	0.40000	1	x	0.40000	0.40000	1	x	0.40000	0.40000
FDU-80, FDU-80G	1	x	0.06430	0.06430	1	x	0.06430	0.06430	1	x	0.06430	0.06430

Device	Qty		Draw	Total	Qty		Draw	Total	Qty		Draw	Total
DVC-EM	1	x	0.44000	0.44000	1	x	0.44000	0.44000	1	x	0.44000	0.44000
DVC-KD	1	x	0.06000	0.06000	1	x	0.06000	0.06000	1	x	0.06000	0.06000
DVC-AO	1	x	0.17500	0.17500	1	x	0.17500	0.17500	1	x	0.17500	0.17500
XP6-C	2	x	0.00225	0.00450	2	x	0.03500	0.07000	2	x	0.00225	0.00450
FSP-851	107	x	0.00036	0.03852					107	x	0.00036	0.03852
FST-851	3	x	0.00030	0.00090					3	x	0.00030	0.00090
NBG-12LX	29	x	0.00030	0.00870					29	x	0.00030	0.00870
FRM-1	7	x	0.00020	0.00140					7	x	0.00020	0.00140
SLC Loop Device Activation Current					1	x	0.40000	0.40000				
		Total Non-Alarm Load:		1.443		**Total Alarm Load:**		1.859		**Total Standby Load:**		1.483

C4 - Maximum Secondary Fire Alarm Current Draw

Only include those additional power supplies that are backed up by the control panels batteries.

Device	Qty		Draw	Total
Total Primary Alarm Load - C2			1.859	1.859
APS-6R	0	x	0.000	
APS2-6R	0	x	0.000	
AA-30	0	x	3.000	
AA-120	0	x	7.300	
ACPS-2406	0	x	6.000	
FCPS-24S6	0	x	6.000	
FCPS-24S8	0	x	8.000	
DAA-5025/DAA-5070	0	x	0.900	
ACPS-610	0	x	10.000	
Other Power Supply	0	x	0.000	
Other Power Supply	0	x	0.000	
Total Standby Alarm Load:				1.859

NOTIFIER® by Honeywell — System Power Requirements

Notifier NFS2-640 Fire Alarm Control Panel

Protected Premises: PARK DANFORTH		Date: 2/9/2010
Address:		
City: PORTLAND	State: Maine	Zip: 04106

Prepared By: Norris Inc.		Phone:
Address: 2257 West Broadway	Email:	
City: South Portland	State: Maine	Zip: 04061

AC Branch Current Requirements   **5.00** AMPS @ 120 VAC

Current required by source to power the fire alarm system.

Primary Standby Load   **1.44** Amps

Current load on the primary power supply during **non-alarm** conditions.

Primary Alarm Load   **1.86** Amps

Current load on the primary power supply during **alarm** conditions.

Secondary Load Requirements   **43.28** Amp Hours

Total Secondary Load from the calculation table below.

Current Draw		Time (hours)	Total (AH)
Secondary Standby Load	x	Required Standby Time	
1.483 A		24 hours	35.60
Secondary Alarm Load	x	Required Alarm Time (hours)	
1.859 A		15 Minutes	
		0.250 hours	0.46
		Total Secondary Load	36.06
		Derating factor	x 1.2
		Secondary Load Requirements (Amp Hours)	43.28 AH

Battery Selection   **55** Amp Hours

Select batteries from the list below.

55 AH BAT-12550 Battery (12 volt)

☒ Two   ☐ Four (two 12VDC sets in parallel)

Battery Distribution Chart
Shows amp-hour distribution of your selections.

Secondary Alarm Load 1%
Spare Battery Capacity 21%
Secondary Standby Load 78%

☒ Spare Battery Capacity
☐ Secondary Standby Load
■ Secondary Alarm Load
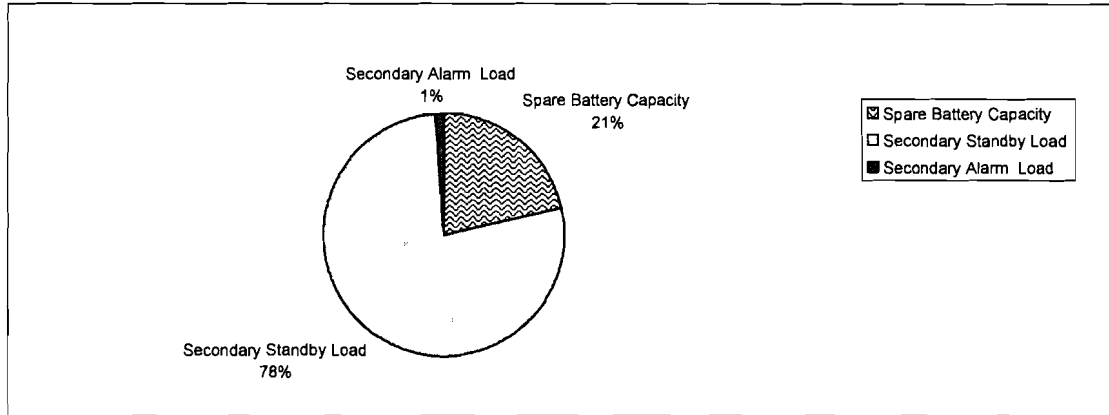
Comments :
1. Battery size exceeds FACP capacity. BB-55 or other external battery box
2. Selected battery size meets secondary load requirements.
3. The selected batteries (55AH) are within the charger range of this power supply (18-200AH).

Spare Battery Capacity	11.72	Battery Selection (AH) - Secondary Load Requirements (AH)
Secondary Standby Load	42.72	Secondary Standby Load (AH) * Derating Factor
Secondary Alarm Load	0.56	Secondary Alarm Load (AH) * Derating Factor

MR 201
RELAY

AES BOX

FACP

MONITOR
MODULE

➡BAT Series Batteries

Sealed Lead-Acid or Gell Cell

Ⓝ **NOTIFIER**®
by Honeywell

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.
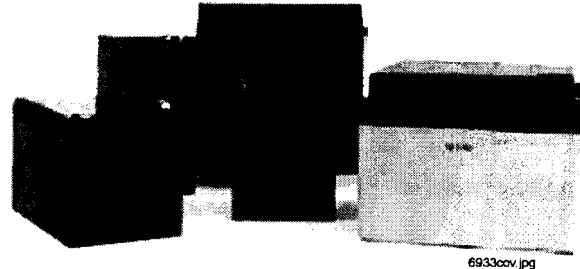
Features

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

6933cov.jpg

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

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

Discharge Time @ 20°C (68°F)
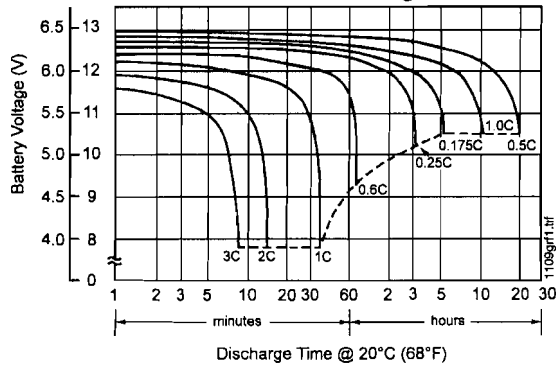
Effect of Temperature on Capacity

Temperature (Degrees C.)

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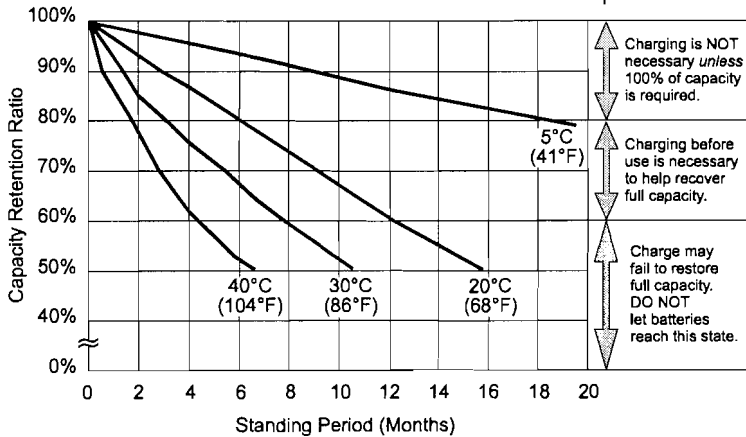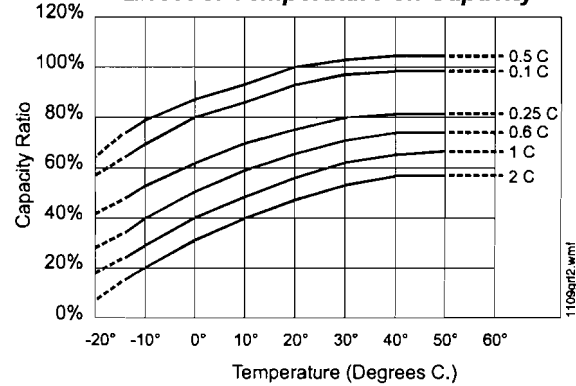
at left:
PS-121000
Shelf-Life
and Storage

Standing Period (Months)
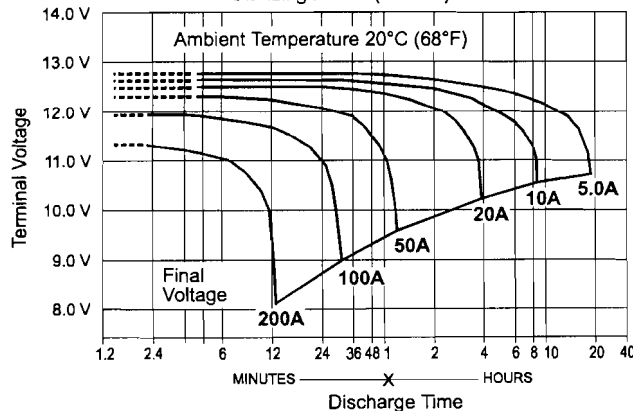
at left:
PS-1210000
Discharge
Characteristics

Discharge Time

B & B BATTERY

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

BP05dis.tif
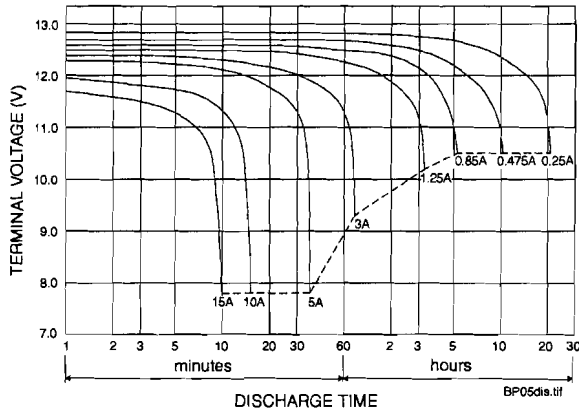
BP12-12 Battery Discharge Characteristics (25°C/77°F)

BP12dis.tif
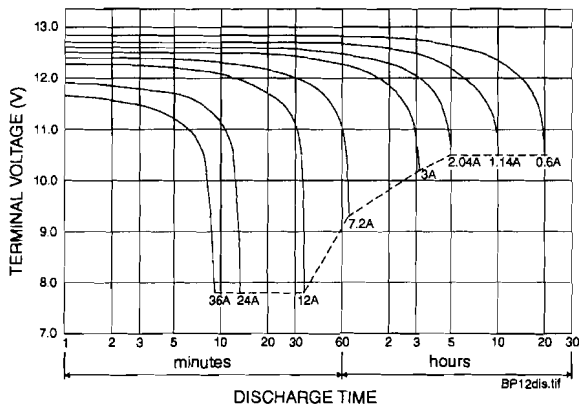
BP7-12 Battery Discharge Characteristics (25°C/77°F)

BP07dis.tif
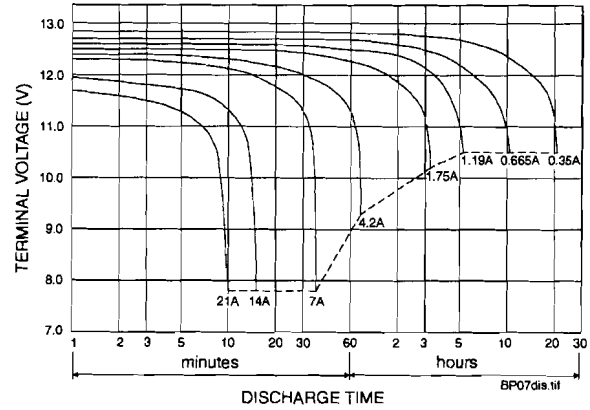
BP26-12 Battery Discharge Characteristics (25°C/77°F)

BP26dis.tif
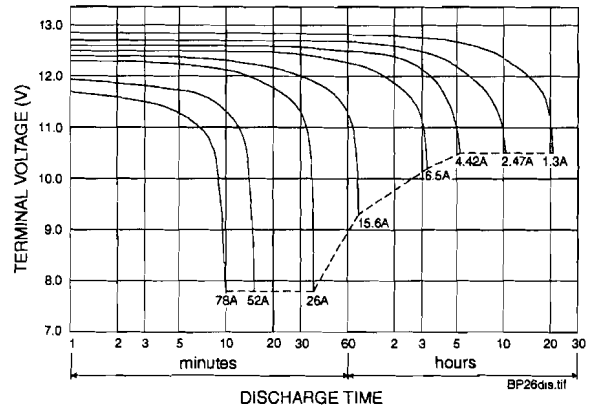
BP05-12

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 — Current

UB1250/SA1250 discharge characteristics (25°C/77°F)
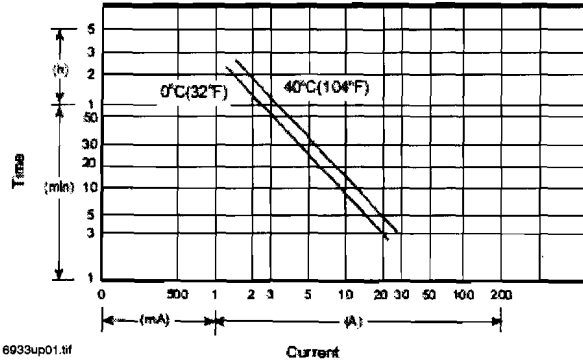
6933up02.tif — Discharge Time

SA1272 Diagrams

SA1272 discharge current vs. time

6933up03.tif — Current
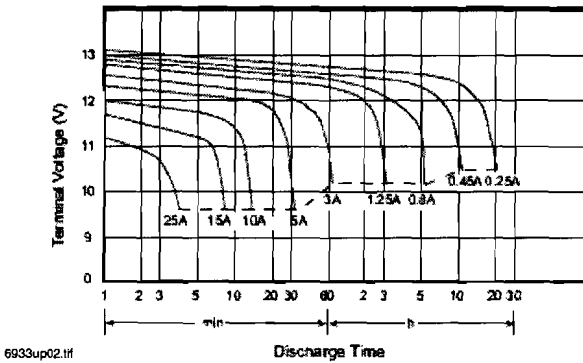
SA1272 discharge characteristics (25°C/77°F)

6933up04.tif — Discharge Time
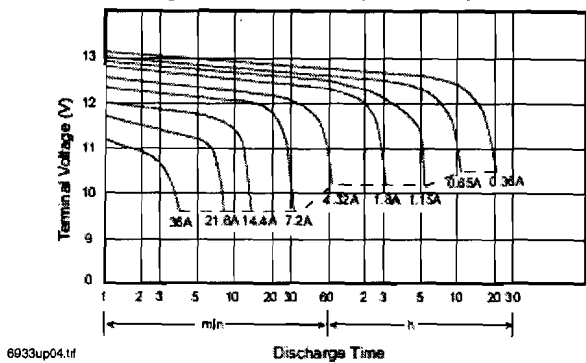
UB1250, SA1250 Specifications

- 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 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.
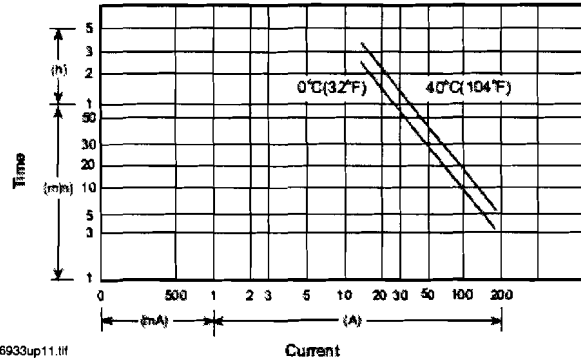
UB12260 (was SA12260) Diagrams

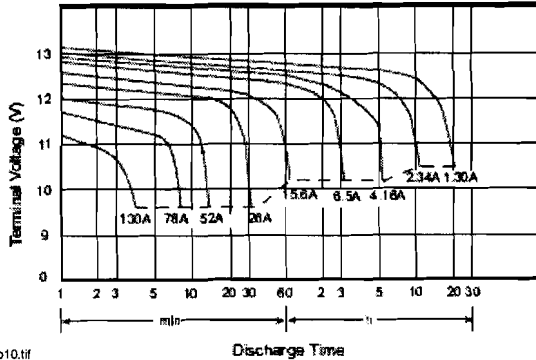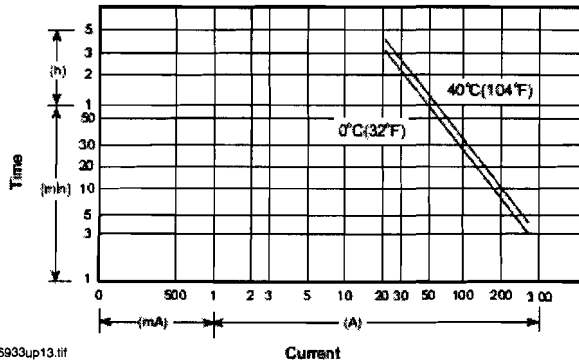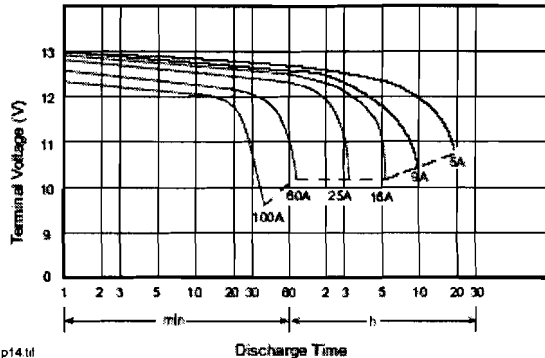*UB12260/SA12260 discharge current vs. time*

6933up09.tif   Current

UB12260/SA12260 discharge characteristics (25°C/77°F)
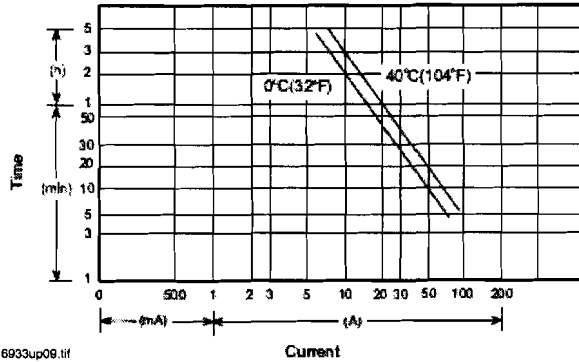
6933up10.tif   Discharge Time

UB12550 (was SA12550) Diagrams

UB12550/SA12550 discharge current vs. time

6933up11.tif   Current

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

6933up12.tif   Discharge Time
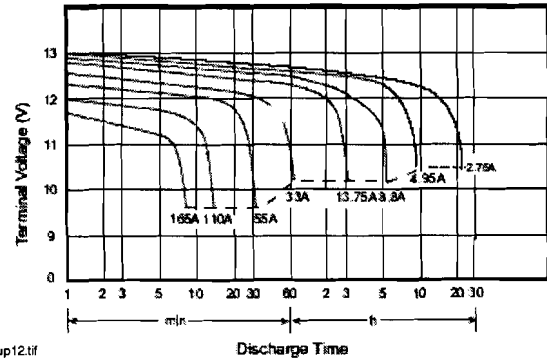
UB12260, SA12260 Specifications

- 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, 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 — Current

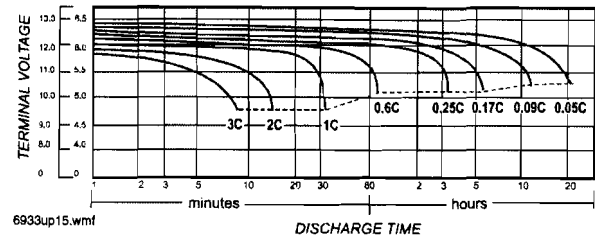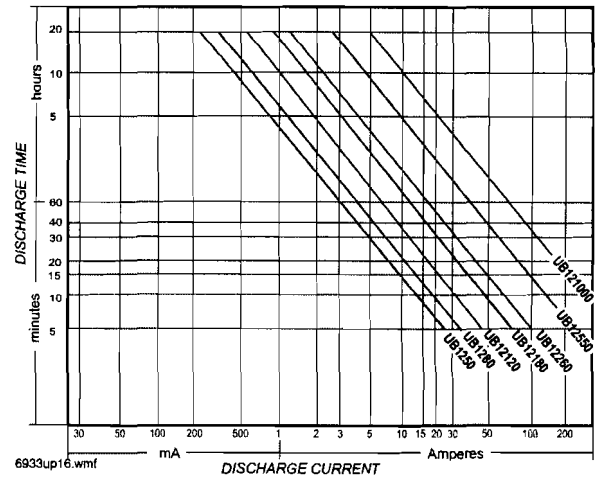### UB121000/XSA121000A discharge characteristics (25°C/77°F)

6933up14.tif — Discharge Time

UPG Summary Diagrams

Summary discharge characteristics

6933up15.wmf — DISCHARGE TIME

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

6933up16.wmf — DISCHARGE CURRENT

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%.

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	T³ 24	T³ 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.

ISO 9001
CERTIFIED
ENGINEERING & MANUFACTURING
QUALITY SYSTEMS

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

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

➡LCM-320 and LEM-320

Loop Control and Expander Modules

Ⓝ **NOTIFIER**®
by Honeywell

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 mm²) twisted-pair wire is 12,500 feet (3810 m) per channel. For a twisted-unshielded pair, 12 AWG (3.1 mm²) to 18 AWG (0.78 mm²):

  – 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.
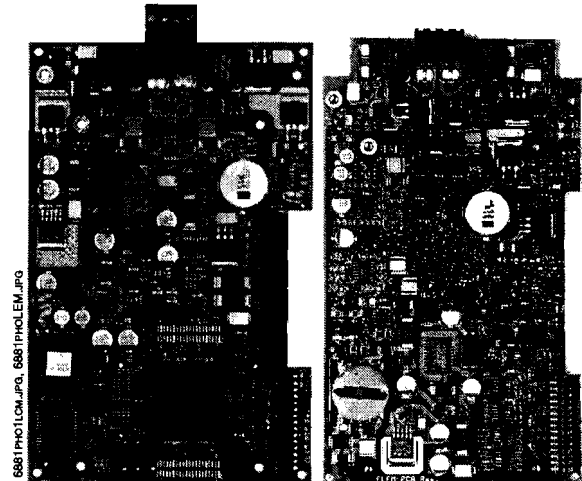
Loop Control
Module

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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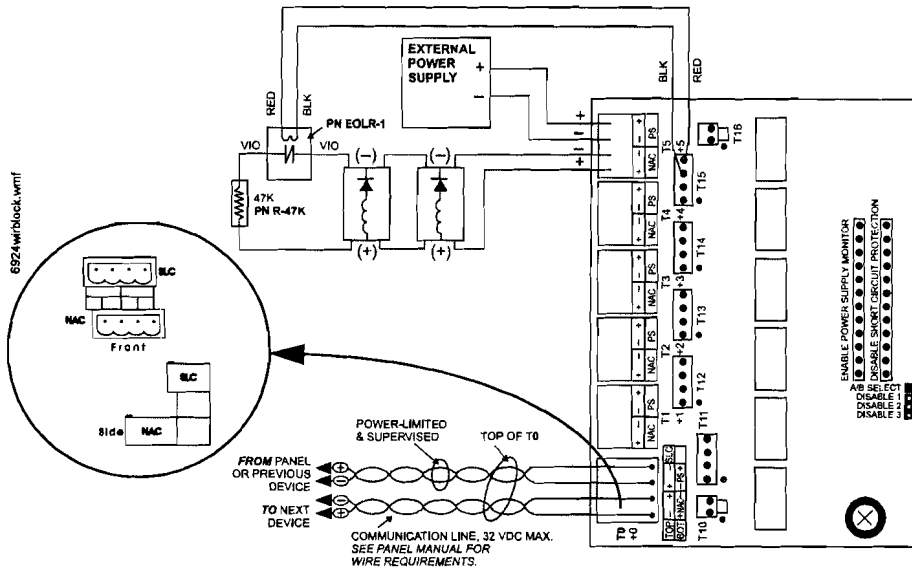ENGINEERING & MANUFACTURING
QUALITY SYSTEMS

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Wiring Diagrams

NOTE: EOL relay coil connections must be made using EOL relay connector assemblies on T10 – T16 in event that all NACs on the PCB have dedicated supplies.

Figure 2 Example of Class B, Style Y NAC configuration with a single supply dedicated to a single NAC
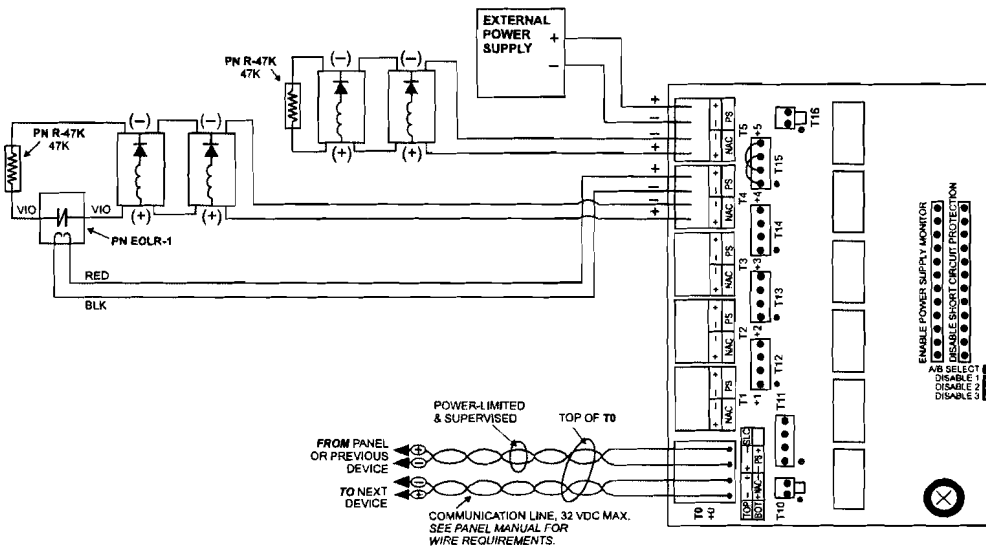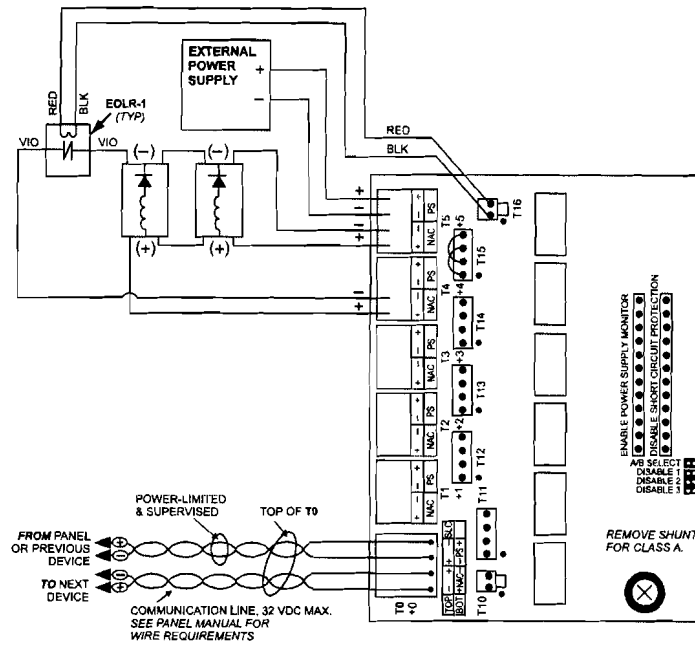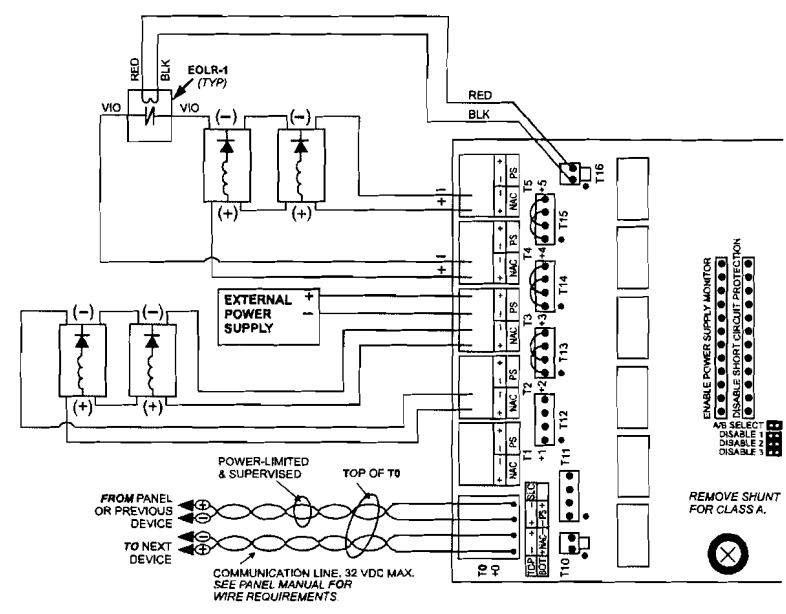

Figure 3 Example of Class B, Style Y NAC configuration with a single supply shared by two NACs

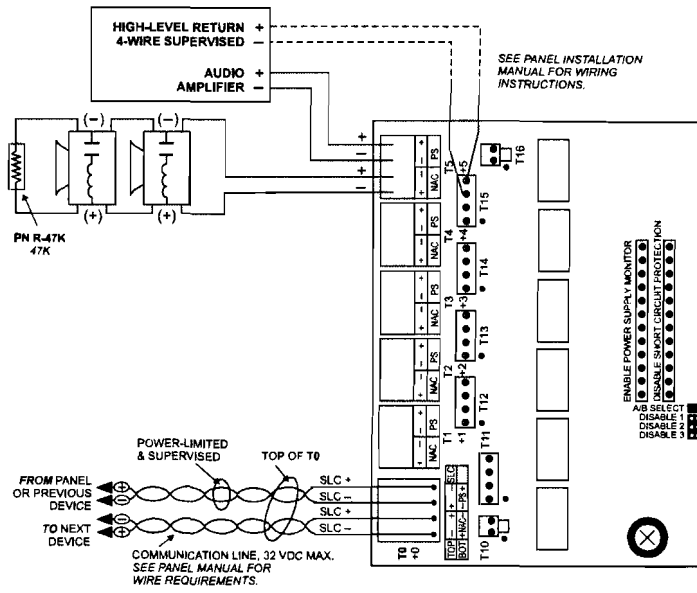**Figure 4 Example of Class A, Style Z NAC configuration with a single supply dedicated to a single NAC**

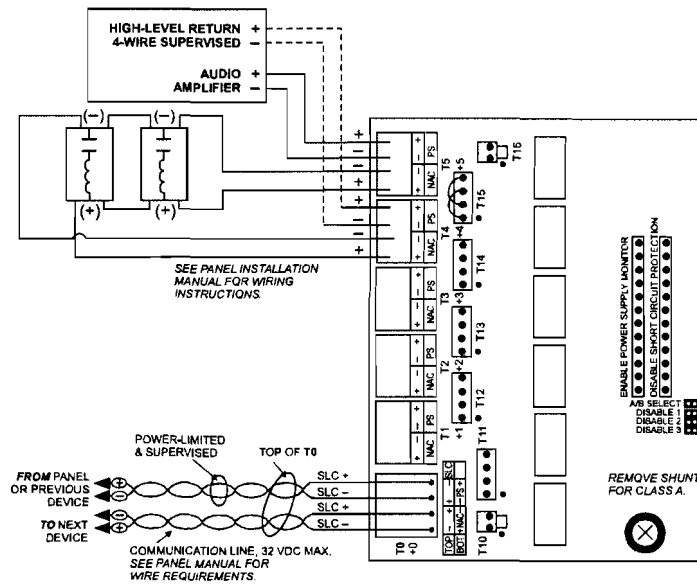**Figure 5 Example of Class A, Style Z NAC configuration with a single supply shared by 2 NACs**

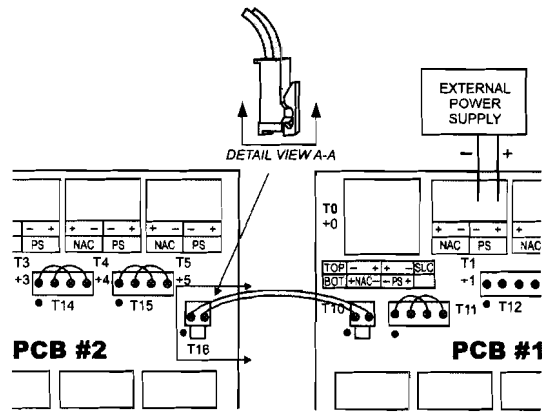**Figure 6 Example of Class B, Style Y audio NAC configuration**

Figure 7 Example of Class A, Style Z audio NAC configuration

NOTE: *Supply is shared by NACs +0 and +1 (on PCB #1) as well as +3, +4, and +5 (on PCB # 2). Refer to Figure 2 through Figure 5 for typical NAC wiring. Make certain that the lip on the long power supply jumper engages the retaining tab on T10 or T16 as shown in detail view A-A.*

Figure 8 Example of multiple boards sharing the same external power supply

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➡ DVC Series

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

Ⓝ NOTIFIER®
by Honeywell

Voice Control Systems

General

The DVC is the heart of an integrated, full-featured Audio Command Center. The DVC Digital Voice Command combines the capabilities of a powerful digital audio processor, an event-driven audio message generator, and a router. Designed for use with Digital Audio Loop (DAL) devices such as DAA2, DAX and DAA series digital amplifiers, 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.
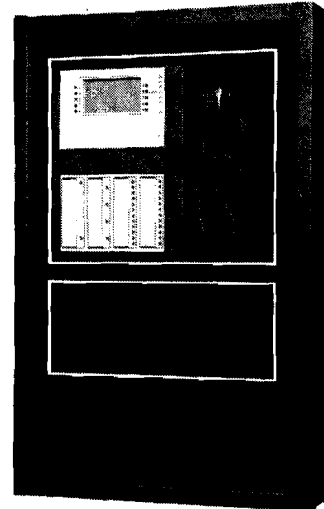
DVC
Shown using CA-2 mounting option,
SBB-C4, and ADDR-C4 door.

- Auxiliary input for 12 V_{p-p} analog low-level audio sources. Includes user audio level adjustment feature.
- Auxilary input accepts external audio sources such as telephone paging or background music. High impedance input accepts 600 ohm, line level, 1.0 VRMS, or 1.41 V_{p-p} low level audio. Selectable AGC, user control of audio level, and audio supervision are supported.
- Associated NCA-2, or NFS2-3030 (programmed for network monitor mode) supports **NOTI•FIRE•NET** applications.
- Multiple audio command centers supported via **NOTI•FIRE•NET**.
- Distribution of one channel of standard-level paging audio on **NOTI•FIRE•NET**.
- Three standalone, non-network mode options:
  - NFS2-3030 (NUP to NUP) digital and analog.
  - NFS2-640 (NUP to NUP) analog audio only.
  - NFS2-640 with NCA-2 (NUP to NUP to NUP) digital and analog.
- Push-to-talk relay, or logic argument.
- Isolated alarm bus input, to be used for backup activation of alarm messages 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 annunciate DAL device events.
Refer to the DVC System Audio Product Application Guide (part number M-AG-DVC) for more details on DVC applications).

Specifications

- **24 VDC power (TB1)**: 24 VDC, 1.0 A, non-resettable, power-limited by the source. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair.
- **Digital audio ports, wire media, A and B (TB2, TB3)**: Maximum distance per segment is 1900 feet (579.12 m) on Belden 5320UJ (18 AWG, TP) FPL cable: 18 AWG (0.821 mm²) twisted-pair, foil-shielded, power-limited. Consult wiring documentation provided in document P/N 52916ADD:C *Addendum to DVC and DAA Manuals.*
- **Digital audio ports, single- and multi-mode fiber-optic RXA, TXA, RXB, and TXB (J100, J101, J102, and J103)**: ST® style, supervised. Multi-mode fiber-optic cable: 50/125 or 62.5125 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_{p-p}. Optional supervision is selectable through programming. Recommended wiring: 18 AWG (0.821 mm²) twisted-pair; max. 14 AWG (2.08 mm²). Auxiliary input must be in the same room as the DVC.
- **Auxiliary Input B (AUX B, TB14)**: Signal strength from low-level analog audio input: 12 V_{p-p} nominal, 15 V_{p-p} maximum. Optional supervision is selected through programming. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair.
- **Remote microphone interface (TB9)**: Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair. Power-limited. Maximum distance between remote microphone and DVC: 1000 feet (300 m).
- **Push-to-talk interface (TB10)**: Dry contact. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair.
- **Alarm bus (TB12)**: Power-limited by source. Recommended wiring: 14 to 18 AWG (2.08 to 0.821 mm²) twisted-pair.
- **FFT riser (TB13)**: Power-limited output. Class A (Style Z) or Class B (Style Y) operation. Style Y two-wire connections require a 3.9K ohm, 1/2 watt resistor (P/N K-3.9K). Maximum wiring resistance (including individual telephone zone to last handset) permitted is 50 ohms, 10,000 feet (3048 m) maximum wiring distance at 12 AWG (3.31 mm²) to last handset.
- **Optional DVC-AO analog audio output circuits (TB5, TB6, TB7, and TB8)**: Supervised, power-limited outputs. Signal strength: +12 V_{p-p} nominal, +15 V_{p-p} maximum. Recommended wiring: 18 AWG (0.821 mm²) twisted-pair; max. 14 AWG (2.08 mm²). Maximum impedance: 66 ohms.

Standards and Codes

The Digital Voice Command DVC, 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 theDVC, 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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→ 7750F

◤AES | IntelliNet
CORPORATION | For Alarm Monitoring

RF Subscriber Unit
UL Fire and AA Burglary Listed
NFPA-72 Compliant

UL Listed

UL Listed Central station

Remote Station

864,827,1610,365,681

CSFM

- **UL Listed**
  (Fire & AA Burglary)

- **NFPA-72 Compliant**

- **864, 827,1610,365, 681**

- **Options for Full Data for
  Fire and Burglary**

- **Available in 4 & 8 Zone
  Configurations**

- **Built-in Power Supply
  and Battery Charger**
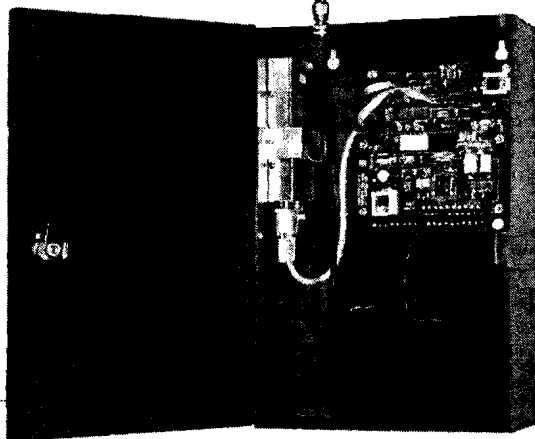
Advanced Wireless Alarm Monitoring

The 7750-F smart subscriber unit links an alarm panel to an alarm monitoring central station. This 2-way transceiver and repeater in one is housed in a full size locking steel cabinet for superior performance. The 7750-F supports a wide range of inputs such as NO/NC/EOL and direct voltage. It automatically senses phone line cuts and antenna cuts, and monitors battery and AC power status. Advanced status reporting, self-diagnostics and a built-in power supply make the 7750-F the first choice for all wireless alarm communication needs.

Full Data for Fire and Burglary

Use with the optional Firetap for full fire data or the IntelliTap for full burglary data.

Available Configurations	Available Options
7750 F 4x4 – 4 reversing polarity inputs plus 4 programmable EOL inputs	FireTap 7768
	IntelliTap 7067
	NEMA 4 Enclosure
➡ **7750 F 8** – 8 programmable EOL inputs	High Gain Antenna
	Back Up Battery
	Available in Burglary Beige or Fire Red

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.

7750F
RF Subscriber Unit

Technical Specifications

Radio
Standard CSAA frequency ranges: 450-470 MHz and 130-174 MHz, VHF and UHF. Others available

Standard Output Power
2 watts (requires FCC license)

Power Input
16.5 VAC, 40VA UL listed
Class II transformer required

Voltage
12 VDC nominal

Current
175mA standby; 800mA transmit

Alarm Signal Inputs
• 4 individually programmable Zones: NO/NC/EOL, trouble restore
• RS-232

Operating Temperature Range
0° to 50°C, 32° to 122°F

Storage Temperature Range
-10° to 60°C, 14° to 140°F

Relative Humidity Range
0-85% RHC non-condensing

Back up Battery
12V, 7 AH option

Low Battery Reporting
22.5-minute test cycle

AC Status
Reports to central station after approximately 4 minutes without AC power, reports power restored after approximately 4 minutes of restored power

Antenna Cut (local reporting)
12 VDC signal output at outputJ4, 200 mA max load

Open Collector Output
200mA maximum load

Size
13.25"H x 8.5"W x 4.3"D
34cm x 21.5cm x 11cm

Weight
6.4 lbs, 2.9 Kilograms (excluding battery)

Colors
Available in standard Burglary Beige or Fire Red
Please specify when ordering

Available Options
• 7750F-8 RF subscriber unit with 8 EOL inputs
• 7750F-4x4 RF subscriber unit with 4 EOL inputs and 4 reverse polarity inputs
• 7768 - FireTap
• 7067 - IntelliTap
Please specify when ordering

Available configurations
• 4 EOL Inputs
• 8 EOL inputs
• 4 EOL inputs w/4 reverse polarity inputs
• NEMA 4 Enclosure

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 130 countries.

AES|IntelliNet
CORPORATION | For Alarm Monitoring

For more information
Call 800-AES-NETS (800-237-6387)

Antenna & Accessory Selection Guide

Description	Casetop Flex	Standard	Stealth	Hi Gain
Freq Range	460-470	460-470	460-470	460-470
Gain	2.5db	3db	3db	5db
Power Capability	5W	50W	50W	50W
Mast/Whip Length	10"	18"	18"	36"
Mast/Whip Material	Black Vinyl Clad/Flex	Stainless Steel	Vinyl Clad	Stainless Steel
Mount Style	Mounts on case	Universal Mount	Easy Hang Mount	Universal Mount
Ground Radials Included	No (case is gnd plane)	Yes	Yes	Yes
Connector Type	TNC	N	TNC	N
Recommended Cable	cable included	7220-10-N or -25	10' cable included	7220-10-N or -25-N
Application	Indoor	In/Outdoor	Indoor	In/Outdoor
Bandwidth	±5 MHz	±5 MHz	±5 MHz	±5 MHz
Vertical Beam Width	38°	35°	35°	18°
Horizontal Beam Width	Omnidirectional	Omnidirectional	Omnidirectional	Omnidirectional
Order Number	➡ 7210-3-UR/C	7210-3-UM	7211	7210-5-UM

AES-IntelliNet

More Antennas & Accessories on Next Page ->

by **AES Corporation** 285 Newbury St. Peabody, Massachusetts 01960 USA

7-antenna2.p65; zd01c; 12/01

Antenna & Accessory Selection Guide, *continued*

NEW!
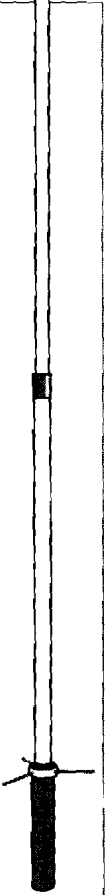
Description	Rugged Hi Gain	Higher Gain	Central Station
Freq Range	460-470	460-470	460-470
Gain	6db	7+db	9db
Power Capability	150W	200W	200W
Mast/Whip Length (approx)	48"	72"	96"
Mast/Whip Material	Fiberglass	Fiberglass	Fiberglass
Mount Style	Mast Mount	Mast Mount	Mast Mount
Ground Radials Included	Yes	Yes	Yes
Connector Type	N	N	N
Recommended Cable	7220-10-N / -25-N	7220-10-N / -25-N	7220-10-N / -25-N
Application	In/Outdoor	In/Outdoor	In/Outdoor
Bandwidth	±5 MHz	±5 MHz	±5 MHz
Vertical Beam Width	14°	12°	7°
Horizontal Beam Width	Omnidirectional	Omnidirectional	Omnidirectional
Order Number	7210-6-UC	7210-7-US	7210-9-UC

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.

AES-IntelliNet.

7-antenna2.p65; zd01c; 12/01

➡FSP-851, FSP-851T, & FSP-851R

Intelligent Plug-In Photoelectric

Ⓝ NOTIFIER®
by Honeywell

General

Notifier 851 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 decade address switches, providing exact detector location for selective maintenance when chamber contamination reaches an unacceptable level. The FSP-851 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. The FSP-851R is a remote test capable detector for use with DNR(W) duct detector housings. FSP-851 series detectors are compatible with all ONYX series Notifier intelligent Fire Alarm Control Panels (FACP).
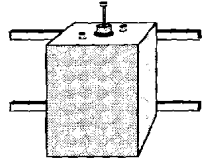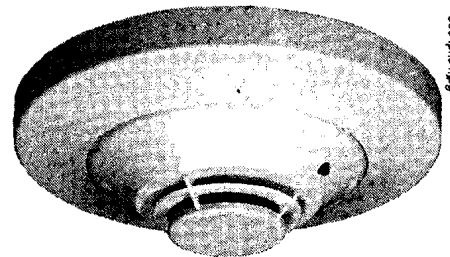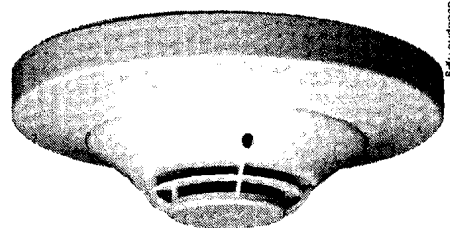
FlashScan® (U.S. Patent 5,539,389) is a communication protocol developed by Notifier that greatly increases the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices in the group has new information, the panel's CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of earlier designs.

FSP-851 with B710LP base

FSP-851T with B710LP base

Features

- Sleek, low-profile design.
- Addressable-analog communication.
- Stable communication technique with noise immunity.
- Low standby current.
- Two-wire SLC connection.
- FlashScan (NFS-320, NFS-640, NFS2-640, NFS-3030, NFS2-3030) and classic CLIP systems (AFP-100, AFP-200, AFP-300, AFP-400, NFS-640, AM2020/AFP1010, NFS-3030) compatible.
- 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 Bayblend®, 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

Size: 2.1" (5.3cm) high x 4.1" (10.4cm) diameter installed in B501 base, 6.1" (15.5cm) diameter installed in B710LPbase.

Shipping Weight: 5.2oz. (147g).

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

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

Relative Humidity: 10%-93% noncondensing.

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

DETECTOR SPACING AND APPLICATIONS

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

ELECTRICAL SPECIFICATIONS

Voltage Range: 15-32 volts DC peak.

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

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

BASES AVAILABLE

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

B710LP(A): 6.1" (15.5cm) diameter.

B501(A): 4.1" (10.4cm) diameter.

B200SR(A): Intelligent sounder base, configurable for temp-3 or steady sound.

B224RB(A) Relay Base: *Screw Terminals,* up to 14AWG (2.0mm²); *Relay Type,* Form-C; *Rating,* 2.0A @ 30VDC resistive, 0.3A @ 110VDC inductive, 1.0A @ 30VDC inductive; *Dimensions,* 6.2" (15.748cm) x 1.2" (3.048cm) x 1.2" (3.048cm).

B224BI(A) Isolator Base: *Dimensions,* 6.2" (15.748cm) x 1.2" (3.048cm) x 1.2" (3.048cm); *Maximum,* 25 devices between isolator bases.

Installation

FSP-851 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 on an electrical backbox which is at least 1.5" (3.81cm) deep. Suitable mounting base boxes include:

- 4.0" (10.16cm) square box.
- 3.5" (8.89cm) or 4.0" (10.16cm) octagonal box.
- Single-gang box (except relay or isolator base).
- With B200SR base, use an appropriate junction box.
- With B224RB or B224BI base, use a 3.5" (8.89cm) octagonal box, or a 4.0" (10.16cm) octagonal or square box.

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 data sheet DN-2243 (ISO-X) 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-851TA)
- **MEA Listed:** 225-02-E
- **FM Approved**
- **CSFM:** 7272-0028:206
- **Maryland State Fire Marshal:** Permit # 2122
- **BSMI:** CI313066760036
- **CCCF:** Certif. # 2004081801000017 (FSP-851T)
      Certif. # 2004081801000016 (FSP-851)
- **Lloyd's Register:** 03/60011

Product Line Information

NOTE: "A or "CDN" 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 DNRW.

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

BASES

B710LP: Standard U.S. low-profile base.

B710LPBP: Standard U.S. low-profile base, pkg. of 10.

B710LPA: Standard U.S. low-profile base, ULC listing.

B501BP: Standard European flangeless base, pkg. of 10.

B501A: Standard European flangeless base, ULC listing.

B200SR(A): Intelligent sounder base, configurable for temp-3 or steady sound.

B224RB(A): Intelligent relay base.

B224BI(A): Intelligent isolator base. Isolates SLC from loop shorts.

ACCESSORIES

F110: Retrofit replacement flange for older style bases. Converts older high profile base for use with FlashScan detectors.

RA100Z(A): Remote LED annunciator. 3-32VDC. Fits U.S. single-gang electrical box. *Supported by* B710LP(A) *and* B501(A) *bases only.*

SMK400E: Surface mounting kit provides for entry of surface wiring conduit. *For use with* B501(A) *base only.*

RMK400: Recessed mounting kit. *For use with* B501(A) *base only.*

SMB600: Surface mounting kit for use with B710LP(A).

BCK-200B: Black detector covers, box of 10. For use with FSP-851 only.

WCK-200B: White detector covers, box of 10. For use with FSP-851 only.

M02-04-00: Test magnet.

M02-09-00: Test magnet with telescope stick.

XR2B: Detector removal tool. Allows installation and/or removal of FlashScan Series detector heads from base in high ceiling installations.

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

XP-4: Extension pole for XR2B. Comes in three 5-ft. sections.

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

Monitor Modules with FlashScan®

NOTIFIER®
by Honeywell

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 often 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
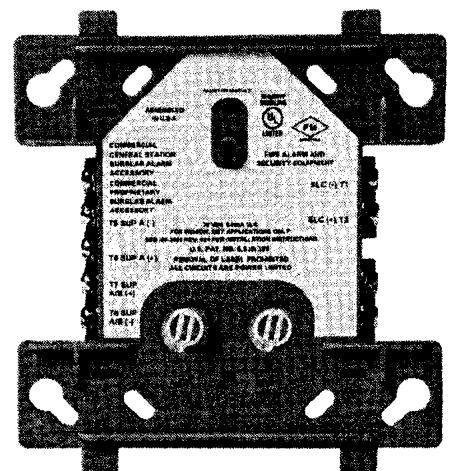
FMM-1(A) (Type H)

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 µA (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.
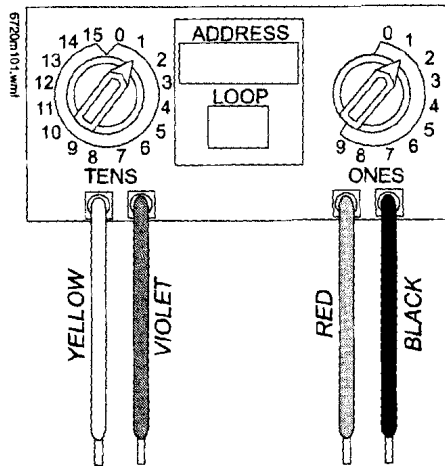
The FMM-101(A) Mini Monitor Module can be installed in a single-gang junction directly behind the monitored unit. Its small size and light weight allow it to be installed without rigid mounting. The FMM-101(A) is intended for use in intelligent, two-wire systems where the individual address of each module 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 µA, 1 communication every 5 seconds, 47k EOL; 600 µA Max. (Communicating, IDC Shorted).

Maximum IDC wiring resistance: 40 ohms.

Maximum IDC Voltage: 11 Volts.

Maximum IDC Current: 400 µA.

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 µA, 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 nor-

Compatible devices: See the documentation for your panel, and the NOTIFER Device Compatibility document. Contact NOTIFER. See also list of devices compatible with SYNC-1 below.

SYNC-1 Accessory Card

The SYNC-1 accessory card is designed to operate with the XP6-C. It works with the SpectrAlert and the SpectrAlert Advance series of horns, strobes, and horn/strobes to provide a means of synchronizing the temporal-coded horns; synchronizing the one-second flash timing of the strobe; and silencing the horns of the horn/strobe combination over a two-wire circuit while leaving the strobes active. Each SYNC-1 accessory card is capable of synchronizing six Class B circuits or three Class A circuits.

Maximum load on a loop: 3 A.

Operating temperature: 32°F to 120°F (0°C to 49°C).

Wire size: 12 to 18 AWG (3.31 to 0.821 mm²).

Operating voltage range: 11 to 30 VDC FWR, filtered or unfiltered. Refer to notification appliance installation instructions for number of notification appliances and wire size.

Compatible A/V devices: The SYNC-1 Accessory Card is compatible with all System Sensor SpectrAlert and SpectrAlert Advance Audio Visual Devices that have synchronization capability. Other manufacturers may be supported as well. Please refer to the latest Device Compatibility Document, PN 15378.

NOTE: *SpectrAlert and SpectrAlert Advance products utilizing SYNC-1 module below.

Product Line Information

XP6-C: Six-circuit supervised control module.

XP6-CA: Same as above with ULC Listing.

SYNC-1: Optional accessory card for synchronization of compatible System Sensor SpectrAlert horns, strobes, and horn/strobes.

BB-XP: Optional cabinet for one or two modules. *Dimensions, DOOR:* 9.234" (23.454 cm) wide (9.484" [24.089 cm] including hinges), x 12.218" (31.0337 cm) high, x 0.672" (1.7068 cm) deep; *BACKBOX:* 9.0" (22.860 cm) wide (9.25" [23.495 cm] including hinges), x 12.0" (30.480 cm) high x 2.75" (6.985 cm); *CHASSIS (installed):* 7.150" (18.161 cm) wide overall x 7.312" (18.5725 cm) high interior overall x 2.156" (5.4762 cm) deep overall.

BB-25: Optional cabinet for up to six modules mounted on CHS-6 chassis *(below). Dimensions, DOOR:* 24.0" (60.96 cm) wide x 12.632" (32.0852 cm) high, x 1.25" (3.175 cm) deep, hinged at bottom; *BACKBOX:* 24.0" (60.96 cm) wide x 12.550" (31.877 cm) high x 5.218" (13.2537 cm) deep.

➡ CHS-6: Chassis, mounts up to six modules in a CAB-3 Series (see DN-3549), CAB-4 Series (see DN-6857) cabinet, or EQ Series cabinet.

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:** S3705 (S3705 SYNC-1)
- **ULC Listed:** S635/CS118 (XP6-CA)
- **MEA Listed:** 43-02-E / 226-03-E (SYNC-1)
- **FM Approved** (Local Protective Signaling)
- **CSFM:** 7300-0028:219 7300-1653:100 (SYNC-1)
- **Maryland State Fire Marshal:** Permit # 2106 (XP6-C)
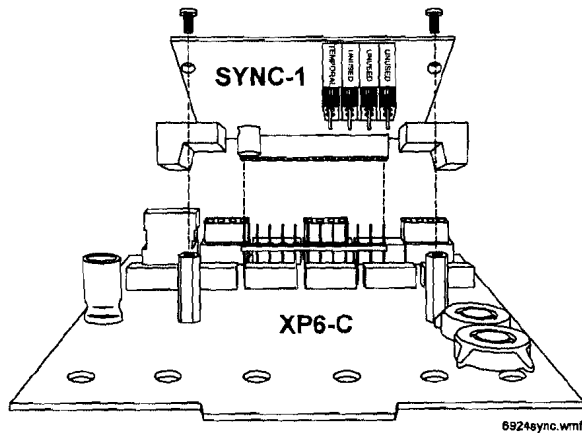
Module setup: Before installing the accessory card on the XP6-C module, add the shunt to the board where indicated if any horns are required to sound in temporal pattern.
Parts included with SYNC-1: Two shunts, four screws, and two standoffs. See installation instructions for details on mounting and wiring the accessory card and module.

Figure 1 Mounting the SYNC-1 accessory card to the XP6-C module

CONTROL UNIT ACTIVATION | **NOTIFICATION** | **REQUIRED FIRE SAFETY CONTROL**

Column legend (diagonal headers):
- B — ACTUATE COMMON ALARM SIGNAL INDICATOR
- C — ACTUATE AUDIBLE ALARM SIGNAL
- D — ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR
- E — ACTUATE AUDIBLE SUPERVISORY SIGNAL
- F — ACTUATE COMMON TROUBLE SIGNAL INDICATOR
- G — ACTUATE AUDIBLE COMMON TROUBLE SIGNAL
- H — DISPLAY ALPHA-NUMERIC SYSTEM STATUS MESSAGE
- I — RECORD EVENTS IN THE SYSTEM MEMORY
- J — ACTUATE GENERAL VOICE EVACUATION SIGNALS
- K — SEND FIREFIGHTERS WARNING SIGNAL TO ELEVATOR CONTROLS
- L — TRANSMIT FIRE ALARM SIGNAL TO REMOTE ALARM RECEIVING STATION
- M — TRANSMIT SUPERVISORY SIGNAL TO REMOTE ALARM RECEIVING STATION
- N — TRANSMIT TROUBLE SIGNAL TO REMOTE ALARM RECEIVING STATION
- O/P — RECALL ELEVATORS TO PRIMARY RECALL FLOOR
- Q — RECALL ELEVATORS TO ALTERNATE RECALL FLOOR
- U/V — SHUTDOWN POWER TO ELEVATOR

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	U	V	#
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