

# NFS-320SYS(E)

## Intelligent Addressable Fire Alarm System



### Intelligent Fire Alarm Control Panels

#### General

The NFS-320SYS intelligent Fire Alarm Control Panel is part of the ONYX® Series of Fire Alarm Controls from NOTIFIER.

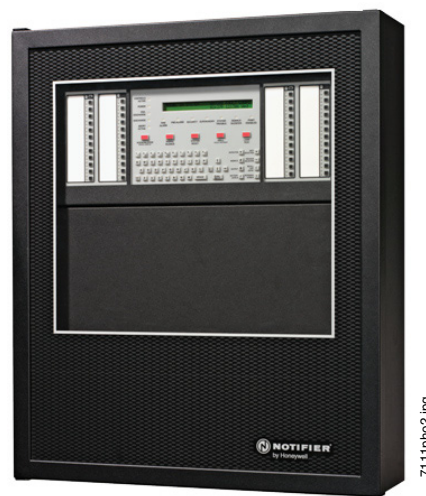
As a stand-alone small-to-large system, or as a large network, the ONYX Series of products meet virtually every application requirement.

The modular design of the ONYX Series makes system planning easier. The panel can be configured with just a few devices for small building applications, or networked with many devices to protect a large campus or a high-rise office block. Simply add additional peripheral equipment to suit the application. Wireless fire protection can be added with the SWIFT wireless gateway and devices.

**NOTE:** Unless called out with a version-specific "E" at the end of the part number, "NFS-320SYS" refers to models NFS-320SYS and NFS-320SYSE; similarly, "CPU-320SYS" refers to models CPU-320SYS and CPU-320SYSE.

#### Features

- Certified for seismic applications when used with the appropriate seismic mounting kit.
- Approved for Marine applications when used with listed compatible equipment. See DN-60688.
- One isolated intelligent Signaling Line Circuit (SLC) Style 4, 6 or 7.
- Up to 159 detectors and 159 modules per SLC; 318 devices maximum.
  - Detectors can be any mix of ion, photo, thermal, or multi-sensor; wireless detectors are available for use with the FWSG.
  - Modules include addressable pull stations, normally open contact devices, two-wire smoke detectors, notification, or relay; wireless modules are available for use with the FWSG.
- Optional **FWSG** Wireless SWIFT Gateway supports wireless SLC devices.
- Standard 80-character display.
- Network options:
  - High-speed network for up to 200 nodes (NFS2-3030, NFS2-640, NFS-320(C), NFS-320SYS, NCA-2, DVC-EM, ONYXWorks, NFS-3030, NFS-640, and NCA).
  - Standard network for up to 103 nodes (NFS2-3030, NFS2-640, NFS-320(C), NFS-320SYS, NCA-2, DVC-EM, ONYXWorks, NCS, NFS-3030, NFS-640, NCA, AFP-200, AFP-300/400, AFP-1010, and AM2020). Up to 54 nodes when DVC-EM is used in network paging.
- 6.0 A 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, and Supervisory relays.
- VeriFire® Tools online/offline program option. Sort Maintenance Reports by compensation value (dirty detector), peak alarm value, or address.
- Autoprogramming and Walk Test reports.
- Multiple central station communication options:
  - Standard UDACT
  - Internet
  - Internet/GSM
- 80-character remote annunciators (up to 32).



NFS-320SYS

- 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 automatic counter.
- Positive Alarm Sequence (PAS) Presignal.
- Silence inhibit and Auto Silence timer options.
- 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.
- Charger for up to 200 hours of standby power.
- 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.

#### FLASHSCAN® INTELLIGENT FEATURES

- Polls up to 318 devices in less than two seconds.
- Activates 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 — up to nine levels.
- Pre-alarm ONYX intelligent sensing — up to 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
  - **IntelliQuad™ PLUS** – 1.0 to 4.0%/foot obscuration
- Drift compensation (U.S. Patent 5,764,142).

- Degraded mode — in the unlikely event that the CPU-320SYS microprocessor fails, FlashScan detectors revert to degraded operation and can activate the CPU-320SYS 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.
- Maintenance alert (two levels).
- Self-optimizing pre-alarm.

**FSL-751 (VERY INTELLIGENT EARLY WARNING)**

**SMOKE DETECTION TECHNOLOGY**

- Advanced ONYX intelligent sensing algorithms differentiate between smoke and non-smoke signals (U.S. Patent 5,831,524).
- Addressable operation pinpoints the fire location.
- Early warning performance comparable to the best aspiration systems at a fraction of the lifetime cost.

**FAPT-851 ACCLIMATE® PLUS™**

**LOW-PROFILE INTELLIGENT MULTI-SENSOR**

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

**FSC-851 INTELLIQUAD™**

**ADVANCED MULTI-CRITERIA DETECTOR**

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

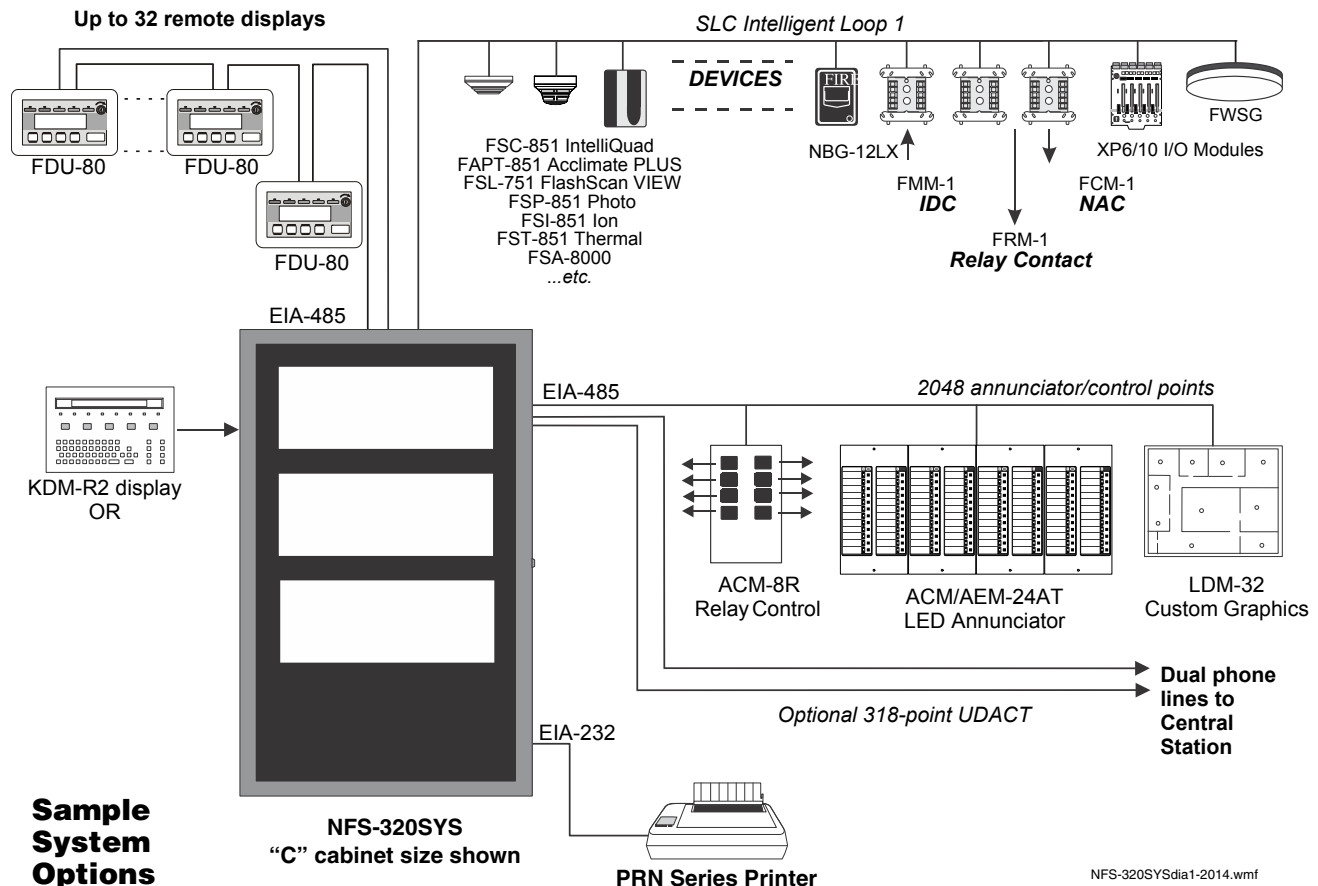
**INTELLIGENT FAAST® DETECTORS FSA-5000, FSA-8000, FSA-20000 AND FSA-20000P**

- Connects directly to the SLC loop of compatible ONYX series panels.
- Provides five event thresholds that can be individually programmed with descriptive labels for control-by-event programming; uses five detector addresses.
- Uses patented particle separator and field-replaceable filter to remove contaminants.
- Advanced algorithms reject common nuisance conditions
- FSA-5000 covers 5,000 square feet through one pipe.
- FSA-8000 covers 8,000 square feet through one pipe.
- FSA-20000 covers 28,800 square feet through one to four pipes.
- FSA-20000P covers 28,800 square feet through one to four addressable pipes. Supports addressable pipes to pinpoint location of alarm events.

**FCO-851 INTELLIQUAD™ PLUS**

**ADVANCED MULTI-CRITERIA FIRE/CO DETECTOR**

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



- High nuisance-alarm immunity.

### SWIFT WIRELESS

- Self-healing mesh wireless protocol.
- Each SWIFT Gateway supports up to 50 devices: 1 wireless gateway and up to 49 SWIFT devices.
- Up to 4 wireless gateways can be installed with overlapping network coverage.

### RELEASING FEATURES

- Ten independent hazards.
- Sophisticated cross-zone (three options).
- Delay timer and Discharge timers (adjustable).
- Abort (four options).
- Low-pressure CO<sub>2</sub> listed.

### VOICE AND TELEPHONE FEATURES

- Integrates with FirstCommand Series. *See DN-60772.*
- Telephone applications require NFC-FFT.

### HIGH-EFFICIENCY OFFLINE SWITCHING

#### 3.0 A POWER SUPPLY (6.0 A IN ALARM)

- 120 or 220/240 VAC.
- Displays battery current/voltage on panel (with display).

## FlashScan, Exclusive World-Leading Detector Protocol

At the heart of the NFS-320SYS is a set of detection devices and device protocol — FlashScan (U.S. Patent 5,539,389). FlashScan is an all-digital protocol that gives superior precision and high noise immunity.

In addition to providing quick identification of an active input device, this protocol can also activate many output devices in a fraction of the time required by competitive protocols. This high speed also allows the NFS-320SYS 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 NFS-320SYS with industry-leading smoke detection capability. These complex algorithms require many calculations on each reading of each detector, and are made possible by the very-high-speed microcomputer used by the NFS-320SYS.

**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, usually indicative of a hardware problem in the detector; (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** is a timesaving feature. The NFS-320SYS “learns” what devices are physically connected and automatically load 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 NFS-320SYS, like all NOTIFIER intelligent panels, has the exclusive feature of program creation and editing capability from the front panel keypad, **while continuing to provide fire protection.** The architecture of the NFS-320SYS 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 NFS-320SYS simultaneously monitors other (already installed) points for alarm conditions.

VeriFire<sup>®</sup> 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<sup>®</sup>-based and provides technologically advanced capabilities to aid the installer. The installer may create the entire program for the NFS-320SYS 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 NFS-320SYS’s flexible system design.

**Rows:** The first row of equipment in the cabinet mounts in the chassis shipped with the FACP. Mount the second, third, or fourth rows of equipment in a CHS-4 Series chassis. Other options are available; see your panel’s installation manual.

**Wiring:** When designing the cabinet layout, consider separation of power-limited and non-power-limited wiring as discussed in the NFS-320SYS 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.

## KDM-R2 Controls and Indicators

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

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

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

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

## Ordering Information

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

### CONFIGURATION GUIDELINES

**NOTE:** Stand-alone and network systems require a main display. On stand-alone systems, the panel's keypad provides the required display. On network systems (two or more networked fire panel nodes), at least one NCA-2, NCS, or ONYXWorks annunciation device is required.

**NCA-2:** Network Control Annunciator, 640 characters. On network systems, the NCA-2 connects to (and requires) an NCM or HS-NCM network communications module. Mounts in a row of FACP node or in two annunciator positions. Non-English versions are available. For ULC applications, order NCA-2C; For marine applications, order NCA-2-M; for non-English Marine applications, order NCA-2-M and the appropriate KP-KIT-XX. See DN-7047.

**CPU-320SYS:** FACP with integral 3.0 A (6.0 A in alarm) power supply for an NFS-320SYS system. FACP is factory-mounted on a chassis with one Signaling Line Circuit; includes 80-character display and documentation kit. Order one per system or as necessary on a network system. (Non-English version also available: CPU-320SYS-FR.)

**CPU-320SYSE:** Same as CPU-320SYS but requires 220 VAC, 1.5 A, (3.0 A in alarm).

**CPU-320SYS-C:** Same as CPU-320SYS for ULC applications.

**DP-DISP2:** Dress panel for top row in cabinet with CPU-320SYS/E installed.

**BMP-1:** Blank module for unused module positions.

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

### NETWORKING 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 that can connect to two nodes. Wire, single-mode fiber, multi-mode fiber, and media conversion models are available. See DN-60454.

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

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

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

**NWS-3:** NOTI•FIRE•NET™ Web Server. See DN-6928.

**CAP-GW:** Common Alerting Protocol Gateway. See DN-60756.

**VESDA-HLI-GW:** VESDAnet high-level interface gateway. See DN-60753.

**LEDSIGN-GW:** UL-listed sign gateway. Interfaces with classic and high-speed NOTI•FIRE•NET networks through the NFN Gateway. See DN-60679.

**OAX2-24V:** UL-listed LED sign, used with LEDSIGN-GW. See DN-60679.

### AUXILIARY POWER SUPPLIES AND BATTERIES

**ACPS-610:** 6.0 or 10 A 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/-24S8:** Remote 6 A and 8 A power supplies with battery charger. See DN-6927.

**BAT Series:** Batteries. NFS-320SYS uses two 12 volt, 18 to 200 AH batteries. See DN-6933.

### AUDIO OPTIONS

**NFC-25/50:** 25 watt, 25 VRMS, emergency Voice Evacuation Control Panel (VECP) with integral commercial microphone, digital message generator, and single-/dual-channel Class A or Class B speaker circuits. See DN-60772.

### COMPATIBLE DEVICES, EIA-232 PORTS

**PRN-7:** 80-column printer. See DN-60897.

**VS4095/S2:** Printer, 40-column, 24 V. Mounted in external backbox. See DN-3260.

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

### COMPATIBLE DEVICES, EIA-485 PORTS

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

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

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

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

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

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

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

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

**SCS:** Smoke control stations SCS-8, SCE-8, with lamp drivers SCS-8L, SCE-8L; eight (expandable to 16) circuits (HVAC only). See 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-2:** Universal Digital Alarm Communicator Transmitter, 636 channel. See DN-60686.

**UZC-256:** Programmable Universal Zone Coder provides positive non-interfering successive zone coding. Microprocessor-controlled, field-programmable from IBM®-compatible PCs (requires optional programming kit). Up to 256 programmable codes. See DN-3404.

### COMPATIBLE INTELLIGENT DEVICES

**NOTE:** “A” suffix indicates ULC-Listed model.

**FWSG Wireless SWIFT Gateway:** Addressable gateway supports wireless SLC devices. Not appropriate for ULC applications. See DN-60820.



**FSA-5000:** Intelligent FFAST® XS Fire Alarm Aspiration Sensing Technology. Intelligent aspirating smoke detector for applications up to 5,000 sq.ft. For Canadian applications, order FSA-5000A.

**FSA-8000:** Intelligent FFAST® XM Fire Alarm Aspiration Sensing Technology. Intelligent aspirating smoke detector for applications up to 8,000 sq.ft. For Canadian applications, order FSA-8000A. *See DN-60729*

**FSA-20000:** Intelligent FFAST® XT Fire Alarm Aspiration Sensing Technology. Intelligent aspirating smoke detector for applications up to 28,800 sq.ft. For Canadian applications, order FSA-20000A. *See DN-60849.*

**FSA-20000P** FFAST® XT PRO Intelligent Aspiration Detector For applications up to 28,800 sq. ft. (2601 sq. m.) through one to four addressable pipes. *See DN-60792*

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

**FSB-200S(A):** Intelligent beam smoke detector with integral sensitivity test. *See DN-6895.*

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

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

**FSI-851(A):** Low-profile FlashScan ionization detector. *See DN-6934.*

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

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

**FSP-851R(A):** Remote-test capable photoelectric detector for use with DNR(W) duct detector housings. *See DN-6935.*

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

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

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

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

**FSL-751(A):** FlashScan VIEW laser photo detector. *See DN-6886.*

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

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

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

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

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

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

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

**B200SCOA:** Based on B200SA, with added CO detector markings in English/French. For Canadian applications only.

**B200S-LF:** Low-frequency version of B200S. *See DN-60054.*

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

**B200SR-LF:** Low-frequency version of B200SR. *See DN-60054.*

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

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

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

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

**FCM-1(A):** FlashScan control module. *See DN-6724.*

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

**FRM-(A):** FlashScan relay module. *See DN-6724.*

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

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

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

**ISO-6:** Six Fault isolator module. *See DN-60844.*

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

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

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

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

**SLC-IM:** SLC integration module, for VESDAnet detectors. *See DN-60755.*

#### **ENCLOSURES, CHASSIS, AND DRESS PLATES**

**CAB-4 Series Enclosure:** The NFS-320SYS mounts in a CAB-4 Series enclosure (available in three sizes, B-D). The backbox and door are ordered separately. It requires BP2-4 battery plate. A trim ring is available for semi-flush mounting.

**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.*

**CAB-BM Marine System:** Protects equipment in shipboard and waterfront applications. Also order **BB-MB** for systems using 100 AH batteries. For a full list of required and optional equipment, see *DN-60688.*

**CHS-4:** Chassis for mounting optional equipment.

**CHS-4L:** Low-profile four-position Chassis.

**DP-1B:** Blank Dress panel. Provides dead-front panel for unused tiers.

**NFS-LBB:** Battery Box (required for batteries larger than 26 AH).

**NFS-LBBR:** Same as above but red.

**SEISKIT-CAB:** Seismic mounting kit. Required for seismic-certified applications with NFS-320SYS and other equipment mounted in CAB-4 Series Enclosures. Includes battery bracket for two 26 AH batteries.

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

#### **BACKBOXES**

*NOTE: "C" suffix indicates ULC-Listed model.*

**ABF-1B(C)** Annunciator Flush Box

**ABF-1DB(C)** Annunciator Flush Box with Door

**ABF-2B** Annunciator Flush Box

**ABF-2DB/C** Annunciator Flush Box with Door

**ABF-4B** Annunciator Flush Box

**ABS-1TB** Annunciator Surface Box

**ABS-1B(C)** Annunciator Surface Box

**ABS-2B** Annunciator Surface Box

**ABS-2D(C)** Annunciator Surface Box

**ABS-4D(C)** Annunciator Surface Box

**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.

## OTHER OPTIONS

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

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

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

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

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

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

**IPGSM-4G:** Internet and Digital Cellular Fire Alarm Communicator. Provides selectable configurable paths: cellular only, IP only, or IP primary with cellular backup. Connects to the primary and secondary ports of a DACT. For Canadian applications order IPGSM-4GC. See DH-60769.

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

## System Specifications

### SYSTEM CAPACITY

- Intelligent Signaling Line Circuits ..... 1
- Intelligent detectors ..... 159
- Addressable monitor/control modules ..... 159
- Programmable software zones ..... 99
- Special programming zones ..... 14
- LCD annunciators per CPU-320SYS/E (observe power) ..... 32
- ACS annunciators per CPU-320SYS/E ..... 32 addresses x 64 points

### SPECIFICATIONS

- Primary input power, **CPU-320SYS board:** 120 VAC, 50/60 Hz, 5.0 A. **CPU-320SYS/E board:** 220/240 VAC, 50/60 Hz, 2.5 A.
- Current draw (standby/alarm):
  - CPU-320SYS(E) board: 0.250 A. Add 0.035 A for each NAC in use.
  - KDM-R2 (Backlight on): 0.100 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. See Installation Manual for a complete current draw calculation sheet.

- Standard notification circuits (4): 1.5 A each.
- Four-wire detector power: 1.25 A.
- Non-resettable regulated power outputs: 1.25 A each.
- Battery charger range: 18 AH – 200 AH. Use separate cabinet for batteries over 26 AH.
- Float rate: 27.6 V.

### CABINET SPECIFICATIONS

NFS-320SYS systems can be installed in CAB-4 Series cabinets (three sizes with various door options, see DN-6857).

- **Shipping Weight:**
  - CPU-320SYS: 16.95 lb (7.69 kg).
  - CPU-320SYSE: 17.2 lb (7.80 kg).

## TEMPERATURE AND HUMIDITY RANGES

This system meets NFPA requirements for operation at 0 – 49°C and at a relative humidity 93% ± 2% RH (noncondensing) at 32°C ± 2°C. 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.

## AGENCY LISTINGS AND APPROVALS

The listings and approvals below apply to the basic 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:** S527-11.
- **FM Approved.**
- **CSFM:** 7165-0028:0243.
- **Fire Dept. of New York:** COA #6212.

**NOTE:** For additional information on UL-listed model NFS-320 see DN-7112. For additional information on UL- and ULC-listed model NFS-320C, see DN-60085.

**Marine Applications:** Marine approved systems must be configured using components itemized in this document. (See Main System Components, in "Product Line Information.") Specific connections and requirements for those components are described in the installation document, PN 54756. When these requirements are followed, systems are approved by the following agencies:

- **US Coast Guard** 161.002/50/0, 161.002/55/0 (Standard 46 CFR and 161.002).
- **Lloyd's Register** 11/600013 (ENV 3 category).
- **American Bureau of Shipping (ABS)** Type Approval.

**NOTE:** For information on marine applications, see DN-60688.

## STANDARDS

The NFS-320SYS complies with the following UL Standards and NFPA 72, International Building Code (IBC), and California Building Code (CBC) Fire Alarm Systems requirements:

- **UL 864, 9th Edition** (Fire).
- **UL 1076** (Burglary).
- **UL 2572** (Mass Notification Systems). (NFS-320SYS version 20 or higher.)
- **ULC S527-11**
- **LOCAL** (Automatic, Manual, Waterflow and Sprinkler Supervisory).
- **AUXILIARY** (Automatic, Manual and Waterflow) (requires 4XTMF).
- **REMOTE STATION** (Automatic, Manual and Waterflow) (requires 4XTMF).
- **PROPRIETARY** (Automatic, Manual and Waterflow). Not applicable for FM.
- **EMERGENCY VOICE/ALARM.**
- **OT, PSDN** (other technologies, packet switches, data network).
- **IBC 2012, IBC 2009, IBC 2006, IBC 2003, IBC 2000** (Seismic).
- **CBC 2007** (Seismic).

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