

# NFS-320

## Intelligent Addressable Fire Alarm System



### Intelligent Fire Alarm Control Panels

#### General

The NFS-320 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 meet virtually every application requirement.

The NFS-320's modular design 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.

For installations using NFS-320C, an optional ACM Series annunciator can be mounted in the same cabinet (up to 48 zones/points, order separately; see DN-60085).

**NOTE:** Unless called out with a version-specific "R", "C" or "E" at the end of the part number, "NFS-320" refers to models NFS-320, NFS-320R, NFS-320C, and NFS-320E.



NFS-320

#### 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 (any mix of ion, photo, thermal, or multi-sensor) and 159 modules (Addressable pull stations, normally open contact devices, two-wire smoke detectors, notification, or relay). 318 devices maximum.
  - 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 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.
  - Multiple central station communication options:
    - Standard UDACT
    - Internet
    - Internet/GSM
  - 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 automatic counter.
  - Presignal/Positive Alarm Sequence (PAS).
  - Silence inhibit and Auto Silence timer options.
  - NAC coding functions:
    - March time.
    - Temporal.
    - California two-stage coding.
    - Canadian two-stage.
    - Strobe synchronization.
  - Field-programmable on panel or on PC, with VeriFire® Tools program check, compare, simulate.
  - Full QWERTY keypad.
  - Battery charger supports 18 – 200 AH 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.
  - 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 NFS-320's primary microprocessor fails, FlashScan detectors revert to degraded operation and can activate the control panel's 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.

**FSL-751 VIEW (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.

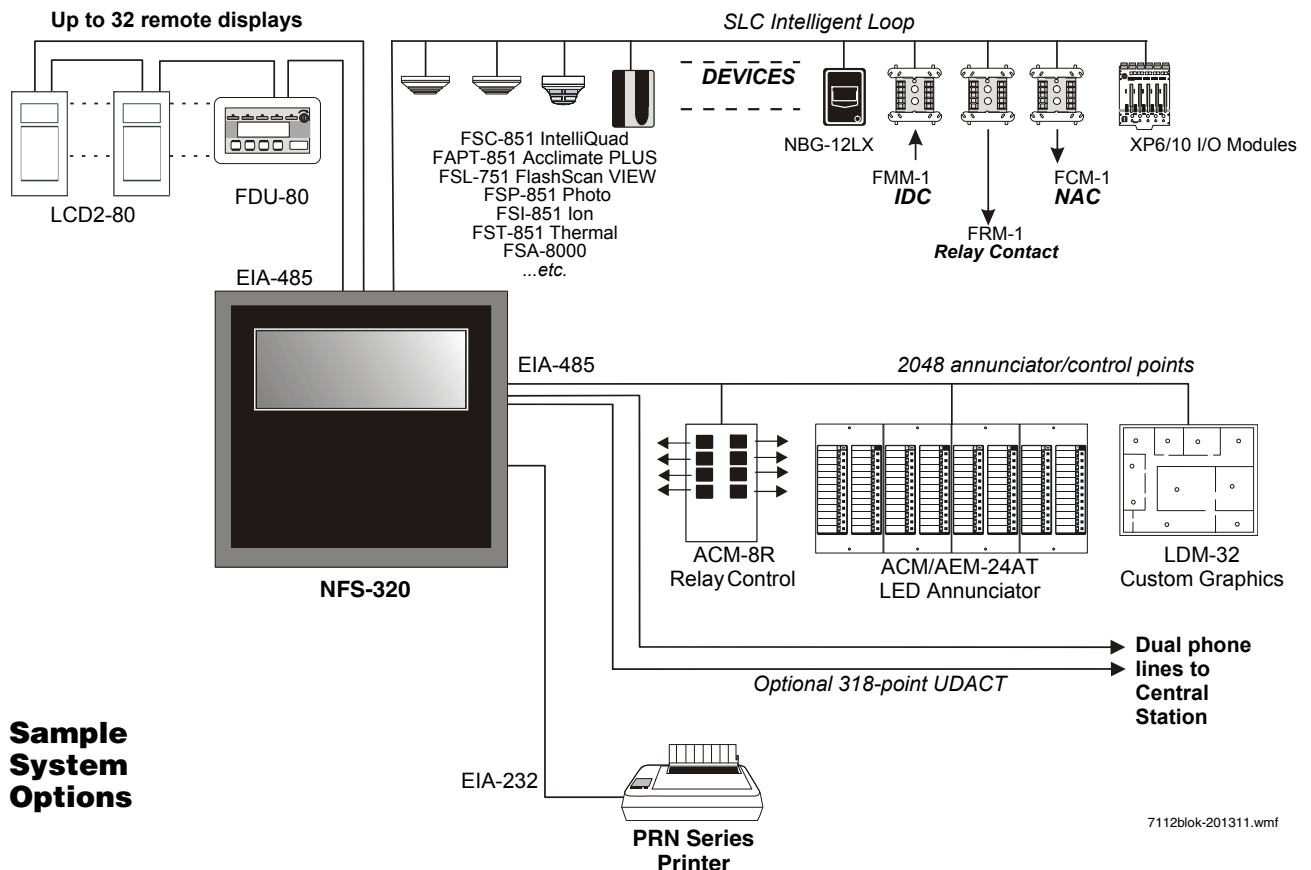
**FSA-8000 INTELLIGENT FAAST DETECTOR**

- 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

**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.



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- 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.

#### **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 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 VAC (NFS-320/NFS-320C); 240 VAC (NFS-320E).
- Displays battery current/voltage on panel (with display).

### **FlashScan, Exclusive World-Leading Detector Protocol**

At the heart of the NFS-320 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-320 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-320 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 NFS-320.

**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** is a timesaving feature. 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 NFS-320, 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-320 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-320 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 NFS-320 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-320’s flexible system design.

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

It is critical that all mounting holes of the NFS-320 are secured with a screw or standoff to ensure continuity of Earth Ground.

**Networking:** If networking two or more control panels, each unit requires a Network Communication Module or High-Speed Network Communication Module (HS-NCM) can support two nodes; see “Networking Options” on page 4). These modules can be installed in any option board position (see manual), and additional option boards can be mounted in front of them.

## KDM-R2 Controls and Indicators

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

**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.

## Product Line Information

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

### CONFIGURATION GUIDELINES

The NFS-320 system ships assembled; description and some options follow. See “Enclosures, Chassis, and Dress Plates” on page 5 for information about mounting peripherals.

**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. (For NCA-2, see DN-7047.)

**NFS-320:** The standard, factory-assembled NFS-320 system includes the following components: one control panel mounted on chassis (120 V operation — ships with grounding cable, battery interconnect cables, and document kit); includes integral power supply mounted to the main circuit board; one primary display KDM-R2 keypad/display; and one cabinet for surface or semi-flush mounting. *Purchase batteries separately. One or two option boards may be mounted inside the NFS-320 cabinet; additional option boards can be used in remote cabinets. (Non-English versions also available. NFS-320-SP, NFS-320-PO.)*

**NFS-320R:** Same as NFS-320, but in red enclosure.

**NFS-320C:** Based on NFS-320 above. NFS-320C supports installation of an optional ACM-series annunciator in the same cabinet. UL- and ULC-listed. (Non-English version also available: NFS-320C-FR.) For NFS-320C, see DN-60085.

**NFS-320CR:** Same as NFS-320C but in a red enclosure. For NFS-320C, see DN-60085.

**NFS-320E:** Same as NFS-320, but with 240 V operation. (Non-English versions also available. NFS-320E-SP, NFS-320E-PO.)

**TR-320:** Trim ring for the NFS-320 cabinet.

### 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. 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-60576.

**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 A or 10.0 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/S8:** Remote 6 A and 8 A power supplies with battery charger. See DN-6927.

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

### AUDIO OPTIONS

**NFC-50/100:** 25 watt, 25 VRMS, emergency Voice Evacuation Control Panel (VECP) with integral commercial microphone, digital message generator, and Class A or Class B speaker circuits. See DN-60772.

### COMPATIBLE DEVICES, EIA-232 PORTS

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

**VS4095/5:** 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; mount on NFS-320 chassis. 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:** Terminal mode. 80-character, backlit LCD display. Mounts up to 6,000 ft. (1828.8 m) from panel. Up to 32 per FACP. *See 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 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; mount on NFS-320 chassis or remotely. *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). Mounts in **BB-UZC**. *See DN-3404.*

#### **COMPATIBLE INTELLIGENT DEVICES**

**FSA-8000:** Intelligent FFAST Fire Alarm Aspiration Sensing Technology®. Intelligent aspirating smoke detector. For Canadian applications, order FSA-8000A. *See DN-60792.*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**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*.

**BB-UZC:** Backbox for housing the UZC-256. Required for NFS-320 applications. Black. For red, order BB-UZC-R.

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

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

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

**SEISKIT-BB25:** Seismic mounting kit for the BB-25. Includes battery bracket for two 26 AH batteries.

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

#### 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.

**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. See DH-60769.

**NFS-320-RB:** Replacement board with central processing unit (CPU). *NOTE: Keypad must be removed before shipping old unit out for repair.*

- NFS-320-RBE: Replacement CPU, Export.
- NFS-320-RB-PO: Replacement CPU, Portuguese.
- NFS-320-RB-POE: Replacement CPU, Export, Portuguese.
- NFS-320-RBC-FR: Replacement CPU, Canadian French.
- NFS-320-RB-SP: Replacement CPU, Spanish.
- NFS-320-RB-SPE: Replacement CPU, Export, Spanish.

*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 internal hardware and output circuits ..... 4
- Programmable software zones ..... 99
- Special programming zones ..... 14
- LCD annunciators per NFS-320/-320E ..... 32
- ACS annunciators per NFS-320/-320E ..... 32 addresses x 64 points

#### SPECIFICATIONS

- Primary input power
  - NFS-320: 120 VAC, 50/60 Hz, 5.0 A.
  - NFS-320E: 220/240 VAC, 50/60 Hz, 2.5 A.

- Current draw (standby/alarm):
  - NFS-320(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 A 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.
- 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 26 AH.
- Float rate: 27.6 V.

#### CABINET SPECIFICATIONS

NFS-320 cabinet dimensions:

- Backbox: 18.12 in. (46.025 cm) width; 18.12 in. (46.025 cm) height; 5.81 in. (14.76 cm) depth.
- Door: 18.187 in. (46.195 cm) width; 18.40 in. (46.736 cm) height; 0.75 in. (1.905 cm) depth.
- Trim ring: Molding width is 0.905 in. (2.299 cm).
- Shipping weight (without batteries): 36.15 lb. (16.4 kg).

#### TEMPERATURE AND HUMIDITY RANGES

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

#### AGENCY LISTINGS AND APPROVALS

The listings and approvals below apply to the basic NFS-320 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 (NFS-320C only, excludes IPDACT).
- **FM Approved.**
- **CSFM:** 7165-0028:0243.
- **MEA:** 128-07-E.
- **FDNY:** COA#6085, #6121.
- **City of Chicago.**

*NOTE: For additional information on UL- and ULC-listed model NFS-320C, see DN-60085. For information on NFS-320SYS, see DN-60637.*

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

- **UL 864** (Fire).
- **UL 1076** (Burglary).
- **UL 2572** (Mass Notification Systems).
- **LOCAL** (Automatic, Manual, Waterflow and Sprinkler Supervisory).
- **AUXILIARY** (Automatic, Manual and Waterflow) (requires TM-4).
- **REMOTE STATION** (Automatic, Manual, Waterflow and Sprinkler Supervisory) (requires TM-4).
- **PROPRIETARY** (Automatic, Manual, Waterflow and Sprinkler Supervisory). *Not applicable for FM.*
- **CENTRAL STATION** (Automatic, Manual, Waterflow and Sprinkler Supervisory) (requires DACT).
- **EMERGENCY VOICE/ALARM.**
- **OT, PSDN** (Other Technologies, Packet-switched Data Network).
- **IBC 2012, IBC 2009, IBC 2006, IBC 2003, IBC 2000** (Seismic).
- **CBC 2007** (Seismic).

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