December 7, 2000

DN-6657 • A-50

AFC-600

Intelligent Addressable Fire Panel with FlashScan®

Section: Intelligent Fire Alarm Control Panels

GENERAL

The AFC-600 is an intelligent Fire Alarm Control Panel that supports up to 636 devices on two addressable Signaling Line Circuits (SLC). The heart of the AFC-600 is an advanced 16-bit RISC (Reduced Instructions Set Computer) based microprocessor and a new line of high-speed intelligent addressable devices, FlashScan®. With flexibility in mind, the AFC-600 can be field-configured for a variety of mid-sized applications. Programming is a snap with the panel's built-in QWERTY (PC computer-style) keyboard or off-line Windows®-based programming utility.

FEATURES

- Two intelligent Signaling Line Circuits (SLC) Style 4, 6 or 7.
- 636 intelligent device capacity (318 intelligent detectors and 318 monitor/control modules).
- Up to 68 internal circuits/relays, plus 99 programmable zone output relays for a total capacity of 803 points.
- VeriFire[™] off-line program option. Sort Maintenance Reports by compensation value (dirty detector), peak alarm value, or address.
- FlashScan® intelligent features:
 - ✔ Poll 318 devices in less than one second.
 - ✓ Activate up to 159 outputs in less than one second.
 - ✓ Multicolor LEDs blink device address during Walk Test.
 - New fully digital, high-precision protocol (U.S. Patent 5,539,389).
 - ✓ Manual sensitivity adjustment nine levels.
 - ✓ Pre-alarm AWACS™ 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 - 0.03 to 1.0%/foot obscuration.

MULTI-SENSOR - 0.71 to 4.0%/foot obscuration. HARSHTM - 0.5 to 2.35%/foot obscuration.

- ✓ Drift compensation (U.S. Patent 5,764,142).
- Multi-detector algorithm involves nearby detectors in alarm decision (U.S. Patent 5,627,515).
- ✓ Auto detector test (meets NFPA 72).
- ✓ Maintenance alert (two levels).
- ✓ Self-optimizing pre-alarm.

The Fire VIEW[™] System:

- ✓ Revolutionary spot laser design.
- ✓ Advanced AWACS™ 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.

· Releasing features:

- ✓ Ten independent hazards.
- ✓ Sophisticated cross-zone (three options).
- ✓ Delay timer and Discharge timers (adjustable).
- Abort (four options).
- ✓ Low-pressure CO, listed.

Voice and telephone features:

- ✓ Solid state message generation.
- ✓ Hard-wired voice control module options.

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- Firefighter telephone option.
- ✓ 30- to 120-watt high-efficiency amplifiers.
- ✓ Backup tone generator and amplifier option.
- · High-efficiency offline switching 6.0 Amp power supply.
 - ✓ 120 or 220/240 VAC field selectable.
 - ✓ Display battery current/voltage on panel display.
- · Optional universal 636 channel DACT.
- 80-character remote annunciators (up to 32).
- · EIA-485 annunciators, including custom graphics.
- Printer interface (80-column and 40-column printers).
- 6.0 A usable regulated output power, plus 6.0 A expanders.
- 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.
- Positive Alarm Sequence (PAS) Presignal.
- · Silence inhibit and Auto Silence timer options.
- · March time/temporal/California/two-stage coding.
- Field-programmable on panel or on PC, with VeriFire[™] program check, compare, simulate.
- · Full QWERTY keypad behind flip-down door.
- Dual rate charger for up to 90 hours of standby power.
- · Non-alarm points for lower priority functions.
- Remote ACK/Silence/Reset/Drill via monitor modules.
- · Automatic time control functions, with holiday exceptions.
- Surface Mount Technology (SMT) electronics.
- Extensive, built-in transient protection.
- Combo zone. Connect tamper and waterflow detectors to a common monitor module.
- Powerful Boolean equations.

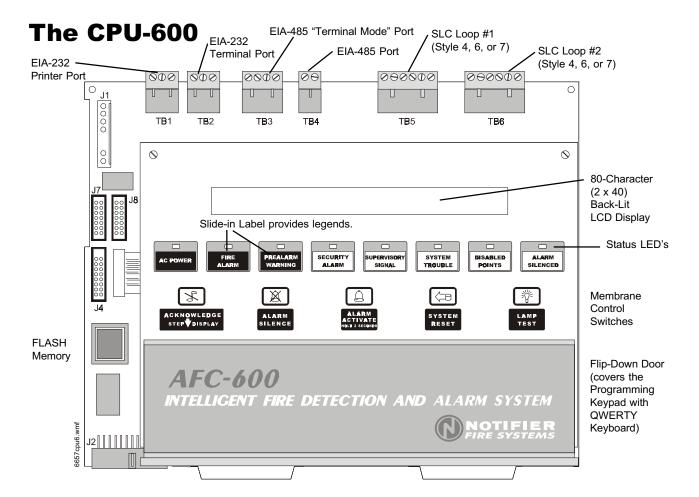
This document is not intended to be used for installation purposes. We try to keep our product information up-to-date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice. For more information, contact **NOTIFIER**. Phone: (203) 484-7161 FAX: (203) 484-7118



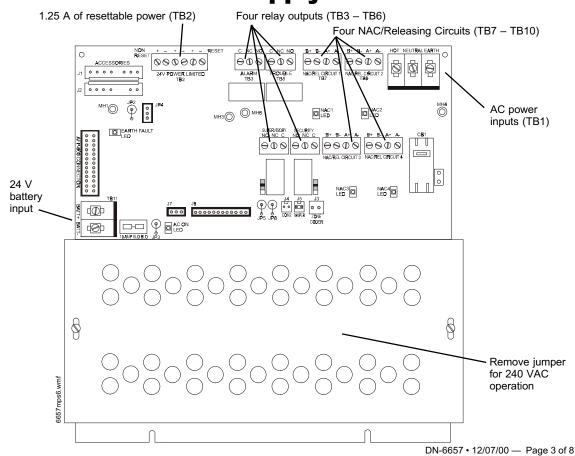
12 Clintonville Road, Northford, Connecticut 06472







The MPS-6 Main Power Supply



FlashScan® Exclusive New World-Leading Detector Protocol

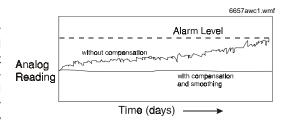
At the heart of the AFC-600 is a totally new set of detection devices and new device protocol — FlashScan® (U.S. Patent 5,539,389). This new protocol operates at over five times the speed of NOTIFIER's present Classic Loop Interface Protocol (CLIP). FlashScan® is an all-digital protocol that gives superior precision and high noise immunity. For retrofit applications, the protocol may function in CLIP mode on a loop or half-loop basis, mixing FlashScan® and CLIP devices.

As well as 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 AFC-600 to have the largest device per loop capacity in the industry — 318 points — yet every input and output device is sampled in less than one second. The microprocessor-based FlashScan® detectors have bicolor LEDs that can be coded to provide diagnostic information, such as device address during Walk Test.

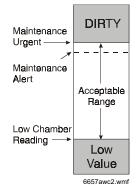
AWACS™ Advanced Warning Addressable Combustion Sensing

AWACS™ is a set of software algorithms that provide the AFC-600 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 AFC-600.

O 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 Standard 72. Smoothing filters are also provided by software to remove transient noise signals, usually caused by electrical interference.

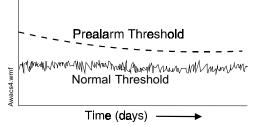


Q Maintenance Warnings. When the drift compensation performed for a detector reaches a certain level, the performance of the detector may be compromised, and special warnings are given. There are three warning levels: (1) Low Chamber value, usually indicative of a hardware problem in the detector; (2) 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.

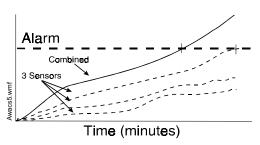


3 Sensitivity Adjust. Nine sensitivity levels are provided for alarm detection. These levels can be set manually, or can change automatically between day and night. Nine levels of pre-alarm sensitivity can also be selected, based on predetermined levels of alarm. Pre-alarm operation can be latching or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

② 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.



⑤ Cooperating Multi-Detector Sensing. A patented feature of AWACS™ 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



Field Programming Options

AUTOPROGRAM

Autoprogram is a timesaving feature of the AFC-600. It is a special software routine that allows the AFC-600 to "learn" what devices are physically connected and automatically load them in the program with default values for all parameters. Requiring less than 30 seconds 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. The routine will find all intelligent detectors and modules, and present them to the installer for edit of

AUTOPROGRAM PLEASE WAIT

L1:80 DETS, 15 MODS L2:93 DETS, 35 MODS PANEL OUTPUTS:24 BELLS: 04

the default option selections, if desired. If a device is found that already exists in memory, autoprogram skips over that device (only new devices or missing devices are presented to the installer). Often the installer will perform autoprogram as a first step in a new installation, then upload the program into VeriFire™ to add all custom labels and other information, then download from VeriFire™ to the AFC-600.

KEYPAD PROGRAM EDIT

The AFC-600, like all NOTIFIER intelligent panels, has the exclusive feature of full program creation and edit capability from the front panel keypad, *while continuing to provide fire protection*. The architecture of the AFC-600 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 perpoint segments, while the AFC-600 simultaneously monitors other (already installed) points for alarm conditions.

ENTER PROG OR STAT PASSWORD, THEN ENTER
(ESCAPE TO ABORT) *****

0=CLR 1=AUTO 2=POINT 3=PASSWD 4=MESSAGE 5=ZONES 6=SPL FUNCT 7=SYSTEM 8=CHECK PRG

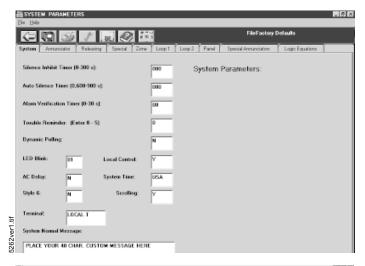
In addition to avoiding system shutdown, program edit from the panel keypad has the advantage of not requiring an on-site PC. This can save significant installation time for minor program changes. The AFC-600 site-specific program is password protected, and all information is stored in nonvolatile memory. Menu "trees" are provided to lead the trained installer through the program steps without the necessity to refer to the programming manual.

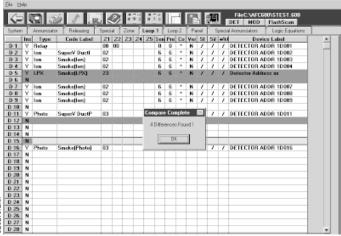
VeriFire™

VeriFire™ is an off-line 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 AFC-600 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.

The program includes error checks for common programming mistakes, such as an input point that does not activate any outputs, or an output point that is not linked to any inputs. It also includes a simulation routine that will list all of the output points that are activated by a particular input point (alternatively, it will list all the input points that are linked to a particular output). Although this does not eliminate on-site testing, it greatly increases confidence in the final installation. For example, a 200-input and 100-output point system, without using VeriFire™, could require 20,000 test observations to verify all possible I/O links.

VeriFire™ includes a compare routine, pictured at right, that can also greatly help the installer. When a new program is created, it may be compared with a previous version and differences are highlighted. If the program is modified from the panel keypad, it may be uploaded into VeriFire™, and compared with the previous version stored on disk. The identification of program *differences* greatly helps the installer in testing the installation. NFPA 72 requires that reacceptance test of a fire alarm system be performed on 100% of all points that are "known" to be modified. VeriFire™ allows the installer to determine the exact points that are changed.





BASIC EQUIPMENT PACKAGES

There are two packages available to configure an AFC-600 system. The standard model, BE-600, is designed to mount in a NOTIFIER full-sized cabinet in the CAB-3 Series. The BE-600AA is a miniature package designed for a smaller cabinet, the CAB-600AA. Order one of the following:

BE-600: Base Equipment includes the CPU module (CPU-600), an 80-character display, programming keypad, MPS-6 main power supply, installation instructions, chassis and required hardware. Order CAB- 3 cabinet separately.

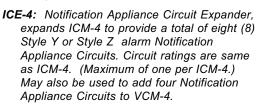
BE-600AA: Base Equipment for use with CAB-600AA mini cabinet. Similar to BE-600, but for use in CAB-600AA. Includes MPS-6 power supply. Supports one output option module. Order CAB-600AA cabinet separately.

SYSTEM MODULES

The AFC-600 includes the ability to communicate with up to 8 conventional modules each with up to 8 circuits. Any mix of notification, relay, speaker, or telephone may be used.

Choose any combination of up to eight output modules: ICM/ICE, CRM/CRE, DCM-4 or VCM/VCE.

ICM-4: Notification Appliance Circuit Module, provides four Style Y or Style Z alarm Notification Appliance Circuits. Maximum signaling current is 3.0 amps per circuit or 6.0 amps per module, subject to power supply limitations (includes auxiliary power harness, ELRs and slide-in labels). Includes ON/OFF controls and ON/OFF LEDs.



CRM-4: Control Relay Module, four (4) Form-C relay contacts, rated at 5.0 A, 120 VAC or 28 VDC (resistive) per circuit. Includes manual ON/OFF controls and LEDs.

> CRE-4: (at right) Control Relay Expander, expands CRM-4 to provide a total of eight (8) Form-C relay contacts. (Maximum of one per CRM-4.) May also be connected to add four relays to ICM-4, TCM-2, TCM-4, or VCM-4. # 500 T 400 # 500 A 800

0669cre4.wmf VCM-4: Voice Control Module provides four Style Y or Style Z speaker circuits, eight manual select switches and indicators, slide-in labels, and plug-in terminal blocks. Move jumper to convert to telephone circuits with remote ring signal and local call-in flash. May be expanded to 8 circuits with VCE-4, ICE-4, or CRE-4.

VCE-4: Voice Control Expander adds four circuits to VCM-4. (Note: VCM-4/ 0010icm4 wmf VCE-4 combination must be 8 ************* speaker or 8 phone circuits.) - Inc.

DCM-4: (at right) Dual Channel Module provides 4 Class B (Style Y) or Class A (Style Z) speaker circuits plus 4 channel A/B select relays. Not expandable.

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OTHER OPTION MODULES

ARM-4: Auxiliary Relay Module, four (4) Form-C relays controlled by a relay module (CRM-4 or CRE-4). N.O. contacts rated 20 amps, N.C. contacts rated 10 amps at 125 VAC and 30 VDC. (Maximum of one for each CRM-4 or CRE-4.)



VCC-1: Voice Control Center. Provides a variety of user selectable tones on a single channel. Up to two different tones or messages may be selected on a single channel. Also provides optional digital voice message capability and on-site programmable voice messages. Includes Audio Message Generator (AMG-1) microphone, cables, dress panels, and instructions.

VTCC-1: Voice/Telephone Control Center. Provides all that the VCC-1 provides plus two-way Fire Fighter's Telephone (FFT-7) capability.

TCC-1: Telephone Control Center. Provides a standalone two-way Fire Fighter's telephone (FFT-7S). Includes cables, dress panel and instructions.

AMG-E: Audio Message Generator (without microphone). Order in addition to VCC-1 or VTCC-1 if two-channel system is required.

FFT-7/FFT-7S: Fire Fighter's Telephone control with master handset.

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0 0 Space 0 0 Space

O D Space O D Space

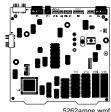
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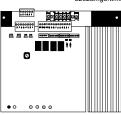
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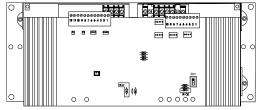
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AA-30: Audio Amplifier - 30 watts. Switch-mode power. Includes amplifier and audio input supervision, backup input, and automatic switchover, power supply, cables.





AA-120/AA-100: Audio Amplifier provides up to 120 watts of 25 VRMs audio power for the AFC-600. The amplifier contains an integral chassis for mounting to a CAB-B3, -C3, or -D3 backbox (consumes one row). Switchmode power. Includes audio input and amplified output supervision, backup input, and automatic switchover to backup tone. Order the AA-100 for 70.7 VRMs systems and 100 watts of power.



3224a120.wmf

3576vrom.wmf VROM-(n): Factory-programmed message for installation in AMG-1. Provides up to 24 seconds of evacuation message on nonvolatile memory chip. Choose one of many standard messages available. Up to two of these messages may be installed in one AMG. Includes VROM, instructions for installation and operation, and written text of message.

VRAM-1: Field-programmed memory to 0740vram.wm be installed in AMG-1. Provides up to 24 seconds of field-programmable evacuation message on nonvolatile memory chip. Message is programmed from microphone or cassette tape. Up to two of these nonvolatile memory chips may be installed in one AMG. Includes VRAM and instructions for installation and operation.

APS-6R: Auxiliary Power Supply (expander). Provides up to 6.0 amperes of regulated power for compatible Notification appliance circuits. Includes battery input and transfer relay, and overcurrent protection. Mounts on one of four positions on a CHS-4L or CHS-4 chassis.

FCPS-24: The FCPS-24 is a remote 6-amp (4-amp continuous) repeater/power supply.

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). (See UZC-256 data sheet.)

LCD-80/LCD-80TM: 80-character, backlit LCD display. Mounts up to 6,000 ft. from panel. Up to 32 per AFC-600. (See LCD-80, LCD-80TM data sheets.)

ACS: Annunciator Control Modules ACM-16AT, AEM-16AT, ACM-32A, and AEM-32A. (See ACS data sheet.)

AFM: Annunciator Fixed Modules AFM-16A, AFM-16AT, and AFM-32A. (See AFM data sheet.)

LDM: Lamp Driver Modules LDM-32, LDM-E32, and LDM-R32. (See LDM data sheet.)

ACM-8R: Remote Relay Module with eight Form-C contacts. Can be located up to 6,000 ft. from panel on

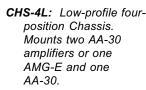
RPT-485: Repeats EIA-485 over twisted pair or converts to fiber-optic medium. (See RPT data sheet.)

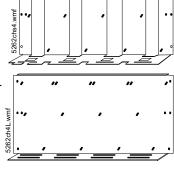
XP5: The XP5-M and XP5-C provide FlashScan® transponder points.

XP: The XP Series Transponder provides conventional monitor and control points. (See XP data sheet.)

XPIQ: The XPIQ is an intelligent voice transponder that accepts up to four 25-watt amplifiers. (See XPIQ data sheet.)

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



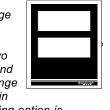


CHS-4M: Expansion Chassis. Mounts up to four modules. Includes CHS-4, MP-1 (Module Dress Panel), and Expander Ribbon Cable.

DP-1: Blank Dress panel. Provides dead-front panel for unused tiers or to cover AA-30, AA-120, or AMG-E.



CAB-3 Series: The CAB-3 Series cabinets are fabricated from 16-gauge steel with unique full-front LEXAN®, reverse silk-screened for durability. The cabinet assembly consists of two basic parts: a Backbox (SBB- 3), and a Locking Door (DR- 3) that may hinge right or left. Cabinets are arranged in four (4) sizes, A through D. A trim ring option is available for semi-flush mounting.

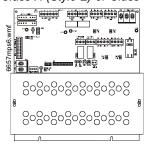


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CAB-600AA: Provides small cabinet for CPU-600 and MPS-6. Use with BE-600AA only. Space for one (only) output circuit module plus expander.

MPS-6: Off-line switching power supply module. The MPS-6 includes four Notification Appliance Circuits (NAC) that can connect four Class A (Style Z) or Class

B (Style Y) circuits. The NAC also can be used for Releasing applications. Includes four built-in system relays (alarm, trouble, security, and supervisory). For BE-600/ BE-600AA replacement only. The MPS-6 is included in the BE kits.



LEXAN® is a registered trademark of GE Plastics. a subsidiary of General Electric Company.

AGENCY LISTINGS AND APPROVALS

See the first page of this catalog sheet for listing agencies and file numbers. These listings and approvals apply to the basic AFC-600 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 sta-

The AFC-600 is UL listed per Standards 864 (Fire) and 1076 (Burglary). It meets NFPA 72 Local, Auxiliary, Remote Station, Proprietary, and Emergency Voice/Alarm Fire System Requirements.

SPECIFICATIONS

- Primary input power, 120 or 220/240 VAC (field selectable), 50/60 Hz, 3.0 Amps.
- Total output 24 V power 6.0 A.*
- Standard notification circuits (4) per MPS-6 2.5 A each.
- Four-wire detector power 1.25 A.
- Two non-resettable regulated power outputs 1.25 A each.
- Battery charger range: 12 AH 60 AH. (Use separate BB-55 cabinet for 60 AH batteries.)
- Optional high-capacity (25 120 AH) battery charger: CHG-120.
- · Charge high rate: 29.1 V. Float Rate: 27.6 V.
- * **Note**: The MPS-6 has a total of 6.0 Amps of available power. This is shared by all internal modules and each MPS-6 circuit.

SYSTEM CAPACITY

•	Intelligent Signaling Line Circuits	2
•	Intelligent Detectors	318
•	Addressable monitor/control modules	318
•	Programmable internal hardware and output circuits (4 standard)	. 68
•	Programmable software zones	. 99
•	Special Programming zones	. 14
•	Programmable remote relay/annunciator points	. 99
•	LCD-80 annunciators per system (observe power)	. 32
•	ACS annunciators per system 32 Address x 64 pc	ints

CONTROLS AND INDICATORS

Program Keypad: QWERTY type (keyboard layout). **8 LED indicators:** AC Power; Fire Alarm; Pre-Alarm; Security Alarm; Supervisory Signal; System Trouble, Disabled points, Alarm Silenced.

Membrane Switch Controls: Acknowledge/Step; Silence; Evacuate; System Reset; Lamp Test.

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

See separate data sheets for many products listed below.

COMPATIBLE DEVICES, EIA-232 Ports

PRN-5	80-column	printer.
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VS4095/S2 Printer, 40-column, 24 V. Mounted in external backbox (Order from Keltron, Inc.).

CRT-2 Video display terminal.

COMPATIBLE INTELLIGENT DEVICES

FSI-751	Low-profile FlashScan® ionization detector.
FSP-751	$Low-profile\ Flash Scan @\ photoelectric\ detector.$
FSP-751T	Low-profile FlashScan® photoelectric detector with 135°F (57°C) thermal.
FST-751	FlashScan® thermal detector 135°F (57°C).
FST-751R	FlashScan® thermal detector 135°F (57°C) with rate-of-rise.
FSD-751P	FlashScan® photo duct detector with housing.
FSD-751RP	FlashScan® photo duct detector with relay and housing.
LPX-751	Low-profile laser photo detector.
IPX-751	Low-profile Advanced Multi-Sensor detector.

HARSH™ Hostile Area Smoke Head.

B224RB Low-profile relay base.

B224BIIsolator base for low-profile detectors.B710LPLow-profile base. Standard U.S. style.B501European-style, 4" (10.16 cm) base.

FMM-1 FlashScan® monitor module.

FDM-1 FlashScan® dual monitor module.

FZM-1 FlashScan® two-wire detector monitor module.

FMM-101 FlashScan® miniature monitor module. **FCM-1** FlashScan® NAC control module.

FRM-1 FlashScan® relay module.

NBG-12LX Manual fire alarm station, addressable.

ISO-X Isolator module.

XP Series Transponder.

XP5-M FlashScan® transponder, five monitor points.

XP5-C FlashScan® transponder, five control points or

Form-C relays.

XPIQ Intelligent quad transponder.

COMPATIBLE DEVICES, RS-485 Ports

(see data sheets)

ACS Series Remote Serial Annunciator/Control sys-

tems.

FDU-80 Remote LCD display, 80 characters, with

LEDs.

LCD-80TM Remote LCD display, 80 characters, ter-

minal mode.

LDM Series Remote custom graphic driver modules. **ACM-8R** Remote relay module. 8 Form-C relays.

RPT-485 Series Repeater, isolator and/or fiber optic mo-

dem.

UDACT Universal Digital Alarm Communicator

Transmitter, 636 channel.

UZC-256 Zone Coder. Up to 256 programmable

codes.

PRODUCT LINE INFORMATION

BE-600 Basic Equipment package for an AFC-600

in a CAB-3 cabinet.

BE-600AA Basic Equipment package for an AFC-600

when mounted in a CAB-600AA cabinet.

CAB-3 Series CAB-A3, CAB-B3, CAB-C3, and CAB-D3

cabinets (see separate data sheet).

CAB-600AA Mini cabinet for AFC-600. Supports one

option card.

4XTM Plug-in Transmitter Module. Provides mu-

nicipal box & remote station connection.

PS Series Utilizes 12 volt, 12 to 60 AH batteries (see

separate data sheet).

BB-55 Battery Box (required for 60 AH).

VeriFire-CD Programming kit for PC. Includes Veri-

Fire™ for the AFC-600, AFP-400/300, AFP-200, and AFP-100. Includes hardware kit and PK-UZC-256 for universal

zone coder.

VeriFire-CDUG Upgrade software only: includes Veri-Fire™ for the AFP-600, AFP-300/400,

AFP-200, and AFP-100; and PK-UZC-256.

Other options as listed in previous sections.

HPX-751