MS-9600LS(E)/MS-9600UDLS(E)

Intelligent Addressable FACP with Optional 2nd Loop

FIRE·LITE ALARMS by Honeywell

Addressable

General

Fire•Lite's MS-9600LS(E) and MS-9600UDLS(E) are compact, cost effective, intelligent addressable FACPs (Fire Alarm Control Panels) with an extensive list of powerful features. The combination of Fire•Lite's newer series devices and legacy 300 Series devices, along with the MS-9600LS(E) or MS-9600UDLSE FACP, offer the latest in fire protection technology. LiteSpeed™ is a patented technology that polls 10 devices at a time looking for new or different information. When new information is found at a specific address, the system polls that device several times for any new data. This improvement allows a fully loaded panel with up to 636 devices to report an incident and activate the notification circuits in under 10 seconds. With this new polling scheme, devices can be wired on standard twisted, unshielded wire up to a distance of 10,000 feet per loop. Each Signaling Line Circuit (SLC) loop supports up to 159 addressable detectors including photoelectric, photoelectric with heat, beam, ionization, photoelectric duct, fixed heat, fixed heat with rate-of-rise, and fixed high-heat detectors. It also supports up to 159 addressable modules including monitor (two-wire detector, normally open devices), dual-monitor functions (two monitor circuits from one module, two addresses used), multimonitor (multiple monitor circuits from one module, multiple addresses used), control (for Notification Appliance Circuits), and relay (two Form-C) modules.

The FLPS-7 power supply is a separate board while all other electronics are contained on a single main circuit board. Both boards are mounted to a quick-removable chassis and housed in a metal cabinet. The backbox can be installed allowing field wiring to be pulled. When construction is completed, the chassis with the electronics can be quickly installed with two bolts.

The MS-9600UDLS(E) includes a factory-installed DACT-UD2 Digital Alarm Communicator Transmitter. The DACT transmits system status (alarm, troubles, AC loss, etc.) to a Central Station via internet (optional IPDACT installed) or the public switched telephone network.

Optional modules, which plug into the main circuit board, are available for special functions. Available accessories include LED, graphic and LCD annunciators, reverse polarity/city box transmitter, digital alarm communicator/transmitter, SLC expansion module, local and remote upload/download software and remote power expansion.

FM APPROVED to UL ANSI 864.

Controls And Indicators

LED INDICATORS

- AC POWER (green)
- FIRE ALARM (red)
- SUPERVISORY (yellow)
- ALARM SILENCED (yellow)
- SYSTEM TROUBLE (yellow)
- MAINTENANCE/PRESIGNAL (yellow)
- DISABLED (yellow)
- BATTERY FAULT (yellow)
- GROUND FAULT (yellow)

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MEMBRANE SWITCH CONTROLS

- ACKNOWLEDGE/STEP
- ALARM SILENCE
- DRILL
- SYSTEM RESET (lamp test)
- 12-key pad with full alphabet
- 4 cursor keys
- ENTER

Special Features

- Easy mount chassis.
- 7 amp switching power supply.
- Large enclosure allows 18 amp-hour batteries
- DACT-UD2 plug-in communicator standard with MS-9600UDLS/E.
- Optional IPDACT Internet Protocol Digital Alarm Communicator/Transmitter
- Four Style Y (Class B) or two Style Z (Class A) NAC circuits.
- Selectable strobe synchronization per NAC for System Sensor, Wheelock, and Gentex devices.
- Automated control of ACC-25/50(ZS/T) audio speaker circuits
- ANN-BUS for connection to following optional modules
  Note: cannot be used if ACS annunciators are used.
  - ANN-80(-W) Remote LCD Annunciator
  - ANN-I/O LED Driver Module
  - ANN-S/PG Serial/Parallel Printer Module
  - ANN-RLY Relay Module
  - ANN-LED Annunciator Module
  - ANN-RLED Annunciator Module (alarms only)

Standard Features

SLC LOOP

- SLC can be configured for NFPA Style 4, 6, or 7 operation.
- SLC supports up to 318 addressable devices per loop (159 detectors and 159 monitor, control, or relay modules).
- SLC loop maximum length 10,000 ft. (3,048 m) @ 12 AWG (3.1 mm²) using twisted, unshielded wire (see Wire Table on page 5).

NOTIFICATION APPLIANCE CIRCUITS (NACS):

- Four onboard NACs with additional NAC capability using output control modules (CMF-300 or CMF-300-6). The four Class B NACs can be converted to two Class A NACs with the NACKEY (included).
- Silence Inhibit and Auto Silence timer options.
- Continuous, March Time, Temporal or California code for main circuit board NACs with two-stage capability.
- Selectable strobe synchronization per NAC.
- 3.0 amps maximum per each NAC circuit
  Note: *Maximum 24 VDC system power output is shared among all NAC circuits and 24 VDC special application auxiliary power outputs. Total available output is 7.0 amps.*

ADVANCED FIRE TECHNOLOGY:

- Sensitivity testing with printable results, onsite or offsite.
- Automatic drift compensation.

PROGRAMMING AND SOFTWARE:

- Autoprogram (learn mode) reduces installation time.
- Fully programmable from local keypad, local PS/2 keyboard or PC (using the standard PS-TOOLS Windows® utility).
- Two-level user-programmable passwords.
- Custom English labels (per point) may be manually entered or selected from an internal library file.
- Three Form-C relay outputs (two programmable).
- 99 software zones.

USER INTERFACE:

- Optional plug-in DACT-UD2 communicator (standard with MS-9600UDLS(E) with USB port for local upload/download.
- Remote Acknowledge, Silence, Reset and Drill via addressable monitor modules, ACS Series annunciators, LCD-80F remote annunciator, or ANN-80 Series Annunciators.
- EIA-232 printer/PC interface (variable baud rate) on main circuit board.
- Integral 80-character LCD display with backlighting.
- Real-time clock/calendar with automatic daylight savings adjustments.
- History file with 1,000-event capacity.
- EIA-485/ANN-BUS supporting up to 8 ANN Series Annunciators or 32 ACS Series annunciators.
- EIA-485 supporting up to 32 ACS annunciators.
- Maintenance alert warns when smoke detector dust accumulation is excessive.
- Automatic device type-code verification.
- One person audible or silent walk test with walk-test log and printout.
- Point trouble identification.
- Local piezo sounder.
- Waterflow (nonsilenceable) selection per monitor point.
- System alarm verification selection per detector point.
- PAS (Positive Alarm Sequence) and presignal delay per point (NFPA 72 compliant).
- Optional 4XTMF module (conventional reverse polarity/city box transmitter).

Field-programming Features

Off-line Programming: Create the entire program in your office using a Windows®-based software package (order programming kit PK-CD, containing PS-TOOLS, separately). Upload/download system programming locally to the MS-9600LS/E in less than one minute.

Autoprogramming: Command the MS-9600LS(E) to program itself (takes less than 30 seconds). In the Auto-Program mode, the MS-9600LS(E) scans for all possible devices at all addresses, stores the device types, and addresses found, and then loads default values for all options (General Alarm). It also checks for two or more devices set to the same address.

Online Editing: While still providing fire protection, the MS-9600LS/E may be programmed from the front panel. Simple menu trees displayed on the LCD allow the trained user to perform all functions without referring back to the programming manual.

English Label Library: Quickly select labels from a standard library of more than 50 adjectives/nouns, such as "FLR 3 HALLWAY," or enter custom labels letter-by-letter. Use recall function to repeat previously used label.

Program Check: Automatically catch common errors, such as control modules not linked to any zone or input point.

Maintenance Alert

The MS-9600LS(E) continuously monitors each smoke detector and is capable of reporting maintenance conditions. This reduces the risk of false alarms due to dust accumulation. Refer to the control panel installation manual for more information.

Automatic Test Operation

The MS-9600LS(E) performs an automatic test of each detector every two hours. Failure to meet the test limits causes an AUTO TEST FAIL trouble type. System Reset clears this trouble.

Terminal Blocks

AC Power – TB1: 120 VAC, 60 Hz, 3.0 amps or 240 VAC, 50 Hz, 1.5 amps. Wire size: minimum 14 AWG (2.00 mm²) with 600 V insulation.

Battery (lead acid only) – TB2: Maximum charging circuit: Normal flat charge 27.6 VDC @ 1.0 amp. Maximum battery charger capacity: 26 AH. Minimum battery 12 AH. MS-9600LS(E) cabinet holds maximum of two 18 AH batteries. For 26 – 120 AH batteries, use the CHG-120F or CHG-75 Battery Charger and BB-55F Battery Box.

NOTE: *Jumper JP3, on the FACP main circuit board, must be cut to disable the FACP battery charger when using the CHG-120F or CHG-75.*

Communication Loop – (standard) TB8: 24 VDC nominal, 27.6 VDC maximum. Maximum length: 10,000 ft. (3048 m) total twisted, unshielded pair length. Maximum loop current: 400 mA (short circuit) or 100 mA (normal). Maximum loop resistance: 40 ohms. Supervised and power-limited.

Notification Appliance Circuits – TB4: Power-limited circuitry. Nominal operating voltage: 24 VDC. Current limit: fuseless, electronic, power-limited circuitry. Maximum signaling current per circuit: 3.0 amps. End-of-Line Resistor: 4.7K ohm, 1/2 watt (P/N 71252 UL listed) for NACs. Refer to *Fire•Lite Device Compatibility Document* for listed compatible devices.

Programmable and Trouble Output Relays – TB5: Contact rating: 2.0 amps @ 30 VDC (resistive), 0.5 amps @ 30 VAC (resistive). Form-C relays.

Four-Wire Resettable Smoke Detector Power (24 VDC nominal) – TB3, Terminals 1(+) & 2(–): Maximum ripple voltage: 10 mVRMS. Up to 1.5 amps for powering four-wire smoke detectors. Power-limited circuit. Refer to *Fire•Lite Device Compatibility Document* for listed compatible devices.

Nonresettable Power #1 (24 VDC Nominal) –TB3, Terminals 3 (+) & 4 (–): Maximum ripple voltage: 10 mVRMS. Up to 1.5 amps total DC current available from each output. Power-limited circuit. TB3, Terminals 5 (+) & 6 (–): non-resettable power #2.

Nonresettable Special Application Power #2 (24 VDC Nominal) - TB3, Terminals 5 (+) & 6 (-): Maximum ripple voltage: 10mVRMS. Total DC current available from each output is up to 1.5 amps. Power-limited circuit, nonsupervised.

EIA-485 (ACS/ANN) – TB6: Annunciator connector, programmable for type ANN or ACS. Terminal 1 (+) and Terminal 2 (–).

EIA-485 (TERM) – TB7: Terminal mode annunciator connector, Terminal 1 (Out +), 2 (In +), 3 (Out –), 4 (In –).

EIA-232 – TB8: PC/printer connector, Terminal 1 (Transmit), 2 (Receive), 3 (DTR), 4 (Ground).

Ordering Options

MS-9600LS(E): 318-point addressable Fire Alarm Control Panel, one SLC loop. Includes 80-character LCD display, single printed circuit board, and cabinet.

MS-9600UDLS(E): 318-point addressable Fire Alarm Control Panel, one SLC loop. Includes DACT-UD2, 80-character LCD display, single printed circuit board, and cabinet.

DACT-UD2: Optional communicator for remote monitoring (standard with MS-9600UDLS).

4XTMF: Optional Transmitter Module provides a supervised output for local energy municipal box transmitter, alarm and trouble reverse polarity. It includes a disable switch and disable trouble.

IPDACT-2/2UD, IPDACT Internet Monitoring Module: Mounts in bottom of enclosure with optional mounting kit (P/N: IPBRKT). Connects to primary and secondary DACT telephone output ports for internet communications over customer provided ethernet internet connection. Requires compatible Teldat VisorALARM Central Station Receiver. Can use DHCP or static IP. (See data sheet DF-60407 or DF-52424 for additional information.

IPBRKT: Optional mounting bracket kit consisting of screws and battery shield with standoffs required when mounting the IPDACT in lower enclosure section of FACP.

IPSPLT: Optional Y-Adaptor which allows connection of both panel dialer outputs to one cable input to IPDACT (sold separately).

ACM-8RF: Optional plug-in relay module provides 8 Form-C 5.0 amp relays.

PK-CD: Contains PS-TOOLS programming software for Windows®-based PC computer (cable not included).

SLC-2LS: Optional expander module, enables second SLC loop.

DP-9692: Optional dress panel for MS-9600LS(E).

TR-CE: Optional Trim Ring for semi-flush mounting.

BB-55F: Battery box, required to house two 25 AH batteries and one CHG-120F battery charger. For batteries greater than 25 AH, consult factory for housing/mounting arrangements.

BB-26: Battery backbox, holds up to two 25 AH batteries.

CHG-120F: Remote battery charging system for lead-acid batteries with a rating of 25 to 120 AH. CHG-120F or CHG-75 required for charging greater than 25 AH batteries.

CHG-75: Battery charger for lead-acid batteries with a rating of 25 to 75 AH. CHG-120F or CHG-75 required for charging greater than 25 AH batteries.

BAT Series: Batteries, see data sheet DF-52397.

PRT/PK-CABLE: Cable printer/personal computer interface cable.

PRN-6F: UL listed compatible event printer which uses tractor-fed paper.

Compatible Addressable Devices

All feature a polling LED and rotary switches for addressing.

CP355: Addressable low-profile ionization smoke detector.

SD355: Addressable low-profile photoelectric smoke detector.

SD355T: Addressable low-profile photoelectric smoke detector with thermal sensor.

H355: Fast-response, low-profile heat detector.

H355R: Fast-response, low-profile heat detector with rate-of-rise option.

H355HT: Fast-response, low-profile heat detector that activates at190° F (88°C).

AD355: Low-profile, intelligent, "Adapt" multi-sensor detector; B350LP base included.

BEAM355: Intelligent beam smoke detector.

BEAM355S: Intelligent beam smoke detector with integral sensitivity test.

D350PL: Photoelectric low-flow duct smoke detector.

D350RPL: Photoelectric low-flow duct smoke detector with relay option.

MMF-300: Addressable Monitor Module for one zone of normally-open dry-contact initiating devices. Mounts in standard 4.0" (10.16 cm.) box. Includes plastic cover plate and end-of-line resistor. Module may be configured for either a Style B (Class B) or Style D (Class A) IDC.

MDF-300: Dual Monitor Module. Same as MMF-300 except it provides two Style B (Class B) only IDCs.

MMF-301: Miniature version of MMF-300. Excludes LED and Style D option. Connects with wire pigtails. May mount in device backbox.

MMF-302: Similar to MMF-300, but may monitor up to 20 conventional two-wire detectors. Requires resettable 24 VDC power. Consult factory for compatible smoke detectors.

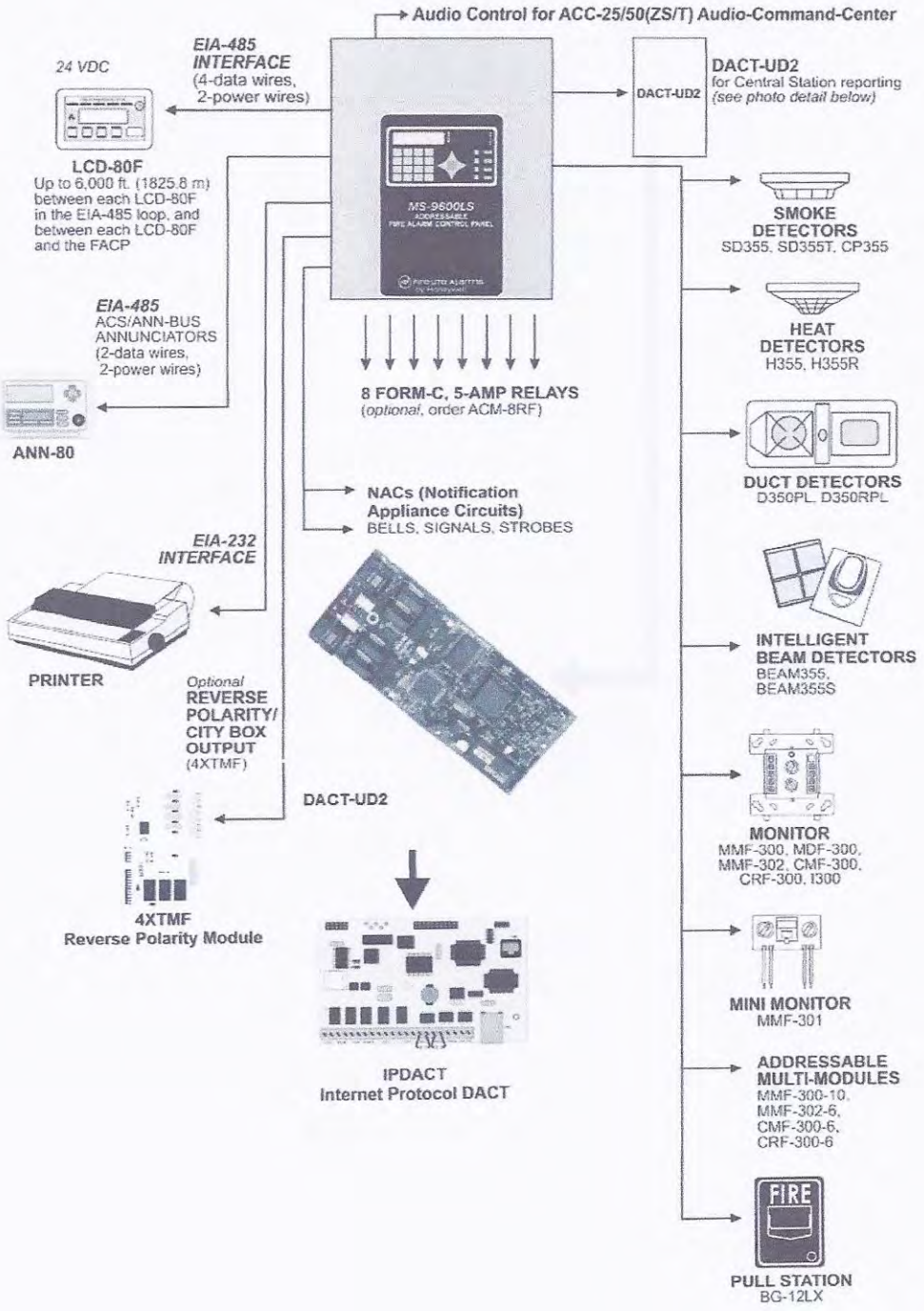
CMF-300: Addressable Control Module for one Style Y/Z (Class B/A) zone of supervised polarized Notification Appliances. Mounts directly to a 4.0" (10.16 cm.) electrical box. Notification Appliance Circuit option requires external 24 VDC to power notification appliances.

CRF-300: Addressable relay module containing two isolated sets of Form-C contacts, which operate as a DPDT switch. Mounts directly to a 4.0" (10.16 cm.) box, surface mount using the SMB500.

BG-12LX: Addressable manual pull station with interface module mounted inside.

I300: This module isolates the SLC loop from short circuit conditions (required for Style 6 or 7 operation).

SMB500: Used to mount all modules except the MMF-301 and M301.


Audio Control for ACC-25/50(ZS/T) Audio-Command-Center
EIA-485 INTERFACE
(4-data wires, 2-power wires)
24 VDC
LCD-80F
Up to 6,000 ft. (1825.8 m) between each LCD-80F in the EIA-485 loop, and between each LCD-80F and the FACP
DACT-UD2
DACT-UD2
for Central Station reporting
(see photo detail below)
MS-9600LS
SMOKE DETECTORS
SD355, SD355T, CP355
HEAT DETECTORS
H355, H355R
EIA-485
ACS/ANN-BUS ANNUNCIATORS
(2-data wires, 2-power wires)
ANN-80
8 FORM-C, 5-AMP RELAYS
(optional, order ACM-8RF)
DUCT DETECTORS
D350PL, D350RPL
NACs (Notification Appliance Circuits)
BELLS, SIGNALS, STROBES
EIA-232 INTERFACE
PRINTER
INTELLIGENT BEAM DETECTORS
BEAM355, BEAM355S
Optional
REVERSE POLARITY/ CITY BOX OUTPUT
(4XTMF)
DACT-UD2
MONITOR
MMF-300, MDF-300, MMF-302, CMF-300, CRF-300, I300
4XTMF
Reverse Polarity Module
MINI MONITOR
MMF-301
ADDRESSABLE MULTI-MODULES
MMF-300-10, MMF-302-6, CMF-300-6, CRF-300-6
FIRE
PULL STATION
BG-12LX
IPDACT
Internet Protocol DACT

MMF-300-10: Ten-input monitor module. Mount one or two modules in a BB-2F cabinet (optional). Mount up to six modules on a CHS-6 chassis in a BB-6F.

MMF-302-6: Six-zone interface module. Mount one or two modules in a BB-2F cabinet (optional). Mount up to six modules on a CHS-6 chassis in a BB-6F.

CMF-300-6: Six-circuit supervised control module. Mount one or two modules in a BB-2F cabinet (optional). Mount up to six modules on a CHS-6 chassis in a BB-6F.

CRF-300-6: Six Form-C relay control module. Mount one or two modules in a BB-2F cabinet (optional). Mount up to six modules on a CHS-6 chassis in a BB-6F.

Compatible Annunciators

ANN-80(-W): Remote LCD annunciator that mimics the information displayed on the FACP's LCD display. Recommended wire type is unshielded. (Basic model is red; order -W version for white; *see DF-52417*).

ANN-LED: Annunciator Module provides three LEDs for each zone: Alarm, Trouble and Supervisory. Ships with red enclosure *(see DF-60241)*.

ANN-RLED: Provides alarm (red) indicators for up to 30 input zones or addressable points *(see DF-60241)*.

ANN-RLY: Relay Module, which can be mounted inside the cabinet, provides 10 programmable Form-C relays *(see DF-52431)*.

ANN-S/PG: Serial/Parallel Printer Gateway module provides a connection for a Serial or Parallel printer *(see DF-52429)*.

ANN-I/O: I/O Driver Module provides connections to a user supplied graphic annunciator *(see DF-52430)*.

ACS-LED Zone Series: LED-type fire annunciators capable of providing up to 99 software zones of annunciation. Available in increments of 16 or 32 points to meet a variety of applications.

ACS-LDM Graphic Series: Lamp Driver Module series for use with custom graphic annunciators.

TERM MODE LCD-80F (Liquid Crystal Display) point annunciator: 80-character, backlit LCD-type fire annunciators capable of displaying English-language text. Up to 32 LCD-80F annunciators may be connected to the EIA-485 terminal mode serial interface on the MS-9600LS(E) motherboard.

*NOTE: For more information on **Compatible Annunciators** for use with the MS-9600LS(E), see the following data sheets (document numbers) ACM-8RF (DF-51555), ACS/ACM Series (DF-52378), LDM Series (DF-51384), LCD-80F (DF-52185).*

Wiring Requirements

While shielded wire is not required, it is recommended that all SLC wiring be twisted-pair to minimize the effects of electrical interference. Refer to the panel manual for wiring details.

SYSTEM SPECIFICATIONS

System Capacity

- Intelligent Signalling Line Circuits.....1 expandable to 2
- Intelligent detectors .....159 per loop
- Addressable monitor/control modules .....159 per loop
- Programmable software zones 99
- ANN-BUS devices 8
- ACS Annunciators 32
- LCD Annunciators 32

Electrical Specifications

- Primary input power:
  120 VAC, 50/60 Hz, 3.0 A.
  240 VAC, 50 Hz, 1.5 A.
- Battery: 27.6 VDC @ 1.0 A (max).
  Maximum battery charger capacity: 26 AH.
  Minimum battery: 12 AH.
  MS 9600LS cabinet holds maximum of two 18 AH batteries.
- Communication Loop: 24 VDC nominal, supervised and power-limited.
- Notification Appliance Circuits: terminal block provides connections for four Style Y (Class B) or two Style Z (Class A) NACs.
  Maximum signaling current per circuit: 3.0 A.
  End-of-Line Resistor: 4.7 K ohms, ½ watt (P/N 71252 UL listed) for Style Y (Class B) NAC.
  Supervised and power-limited.
  Refer to panel documentation and *Fire Lite Device Compatibility Document* for listed compatible devices.
- Two Programmable Form-C Relays and One Fixed Trouble Form-C Relay: Contact rating: 2.0 A @ 30 VDC (resistive) 0.5 A @ 30 VAC (resistive).
- Four-wire Resettable Special Application Power (24 VDC nominal): Up to 1.5 A for powering four-wire smoke detectors. Power-Limited, nonsupervised.
  Refer to *Fire Lite Device Compatibility Document* for listed compatible devices.
- Nonresettable Special Application Power #1 (24VDC nominal) TB3, Terminals 3 (+) & 4 (-):
  Maximum ripple voltage: 10 mV_{RMS}
  Total DC current available from each output is up to 1.5 A.
  Power-limited, nonsupervised.
- Nonresettable Special Application Power #2 (24VDC nominal) TB3, Terminals 5 (+) & 6 (-):
  Maximum ripple voltage: 10 mV_{RMS}
  Total DC current available from each output is up to 1.5 A.
  Power-limited, nonsupervised.

NOTE: *Although each Special Application power output can deliver 1.5 A individually, the total power output from these circuits cannot exceed 1.5 A in standby. The total Alarm output for all Special Application power and NAC circuits cannot exceed 7 A.*

Cabinet Specifications

Door: 19.26" (48.92 cm.) high x 16.82" (42.73 cm.) wide x 0.67" (1.70 cm.) deep. **Backbox:** 19.00" (48.26 cm.) high x 16.65" (42.29 cm.) wide x 5.21" (13.23 cm.) deep. **Trim Ring (TR-CE):** 22.00" (55.88 cm.) high x 19.65" (49.91 cm.) wide.

Shipping Specifications

Dimensions: 20.00" (50.80 cm) high, 22.5" (57.15 cm) wide, 8.5" (21.59 cm) deep. **Weight:** 27.3 lbs (12.38 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 MS-9600LS(E) and MS-9600UDLS(E) control panels. 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.

- **ULC: S624** (MS-9600LSC only; see DF-60438)
- **FM APPROVED:** to UL ANSI 864
- **CSFM:** 7170-0075:217
- **MEA:** 87-08-E

NFPA Standards

The MS-9600LS(E) and MS-9600UDLS(E) control panels comply with the following NFPA 72 Fire Alarm Systems requirements:

- **LOCAL** (Automatic, Manual, Waterflow and Sprinkler Supervisory).
- **AUXILIARY** (Automatic, Manual and Waterflow) (requires 4XTMF).
- **REMOTE STATION** (Automatic, Manual and Waterflow) (Requires 4XTMF where DACT-UD2 is not accepted.)
- **PROPRIETARY** (Automatic, Manual and Waterflow).
- **CENTRAL STATION** (Automatic, Manual and Waterflow, and Sprinkler Supervised).
- **OT (Other Technologies-PSDN)** For use with IPDACT.

ISO 9001 CERTIFIED 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.

Made in the U.S.A.

For more information, contact Fire•Lite Alarms. Phone: (800) 627-3473, FAX: (877) 699-4105.

LCD-80F

80-Character Liquid Crystal Display Remote Fire Annunciators

FIRE·LITE ALARMS by Honeywell

Annunciators

General

The **LCD-80F** is a compact, cost effective, 80 character, backlit LCD remote Fire Annunciator for use with the Fire•Lite **MS-9200UD Series** and **MS-9600 Series** Fire Alarm Control Panels (FACPs). The LCD-80F displays complete system point status information and includes control switches for remote control of critical system functions.

Up to 32 LCD-80Fs may be connected onto the EIA-485 terminal port of each FACP. The LCD-80F requires no programming, which saves time during system commissioning.

Features

- 80-character Liquid Crystal Display.
- Mimics all display information from the host panel.
- Control switches for System Acknowledge, Signal Silence, Drill and Reset with enable key.
- System status LEDs for Power, Alarm, Trouble, Supervisory and Alarm Silenced.
- No programming necessary — LCD-80F connects to the terminal port (TB7).
- Displays device type identifiers, individual point alarm, trouble or supervisory, zone and custom alpha labels.
- Time-and-date display field.
- Aesthetically pleasing design.
- May be powered from the host FACP or by remote power supply (requires 24 VDC).
- Up to 32 LCD-80F annunciators per FACP.
- Plug-in terminal blocks for ease of installation and service.
- Can be remotely located up to 6,000 feet (1828.8 m) from the FACP.
- Local piezo sounder with alarm and trouble resound.
- Semi-flush mounts to 2.188" (5.556 cm) minimum deep, three-gang electrical box (Fire•Lite PN **10103**) or three-gangable electrical switchbox.
- Surface-mounts to Fire•Lite PN **SBB-3** surface backbox.

Operation

The LCD-80F annunciator provides the FACP with point annunciation with full display text on an 80 character LCD display. The LCD-80F also provides an array of LEDs to indicate system status, and includes control switches for remote control of critical system functions.

The LCD-80F provides the FACP with up to 32 remote serially connected annunciators. All field-wiring terminations on the LCD-80F use removable, compression-type terminal blocks for ease of wiring and circuit testing.

Communication between the FACP and the annunciators is accomplished over an EIA-485 serial interface, which greatly reduces wire and installation cost over traditional systems. Six wires total are required: four for the EIA-485 communications (two in and two return), and two for the 24 VDC regulated power. Dip switches control local functions such as: piezo disable, control switches/key-switch disable, transmit/receive mode.

LCD-80F

Installation

The LCD-80F can be semi-flush mounted to a 2.188" (5.556 cm) minimum deep, three gang electrical box (Fire•Lite PN 10103) or three-gangable electrical switchboxes. Alternately, an SBB-3 surface backbox is available for surface mount applications.

Product Line Information

LCD-80F: 80 character, backlit, LCD Fire Annunciator with control switches for remote control of system functions, and key-switch lock.

LCD-80FC: ULC listed version; see DF-60576 for details.

10103: Three-gang electrical box, minimum 2.188" (5.556 cm) deep, for semi-flush mount applications.

SBB-3: Three-gang surface backbox for surface mount applications.

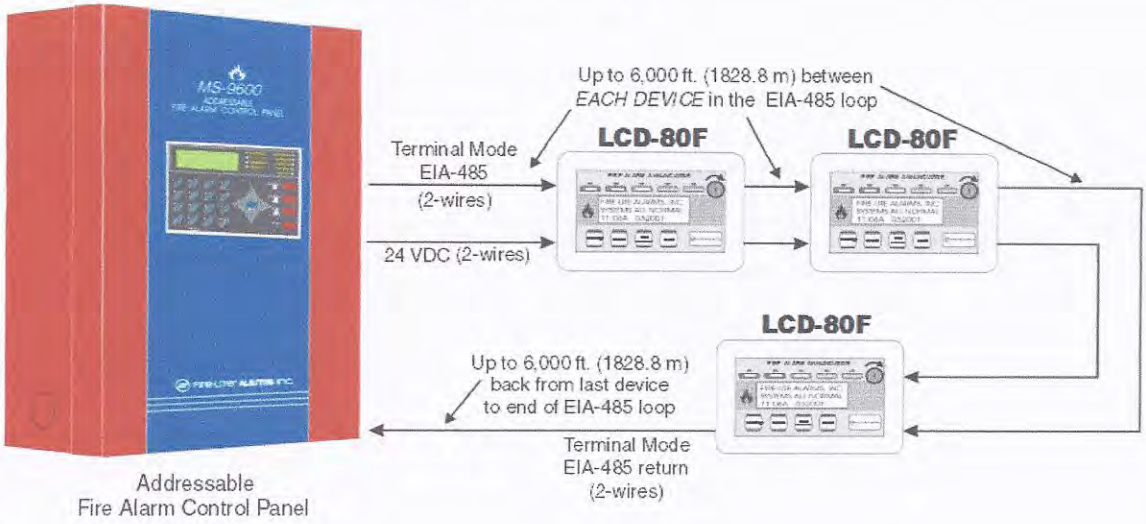
Agency Listings And Approvals

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:** S232
- **MEA Listed:** 72-01-E
- **CSFM: 7120-1574:179**
- **FM Approved**

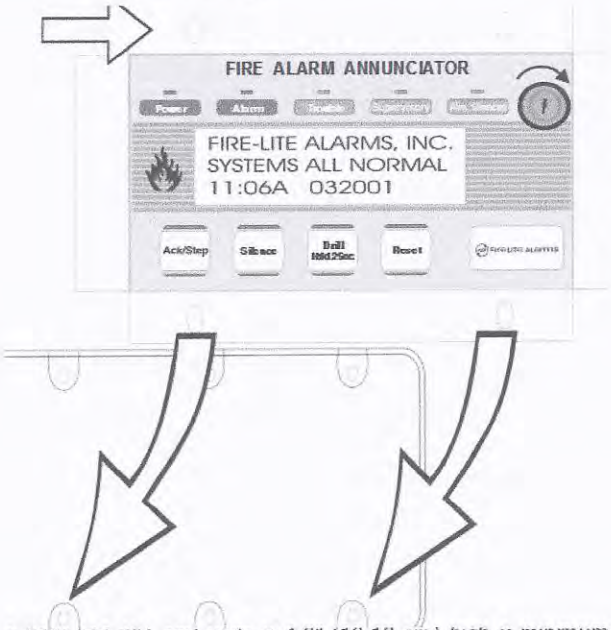
NOTE: For ULC-listed version, see DF-60576.

LCD-80F TERMINAL MODE WIRING EXAMPLE



NOTE:

- EIA-485: Maximum of 6,000 feet (1828.8 m) cable length from FACP to LCD-80F annunciators, 6,000 feet cable length between each LCD-80F and 6,000 feet from the last LCD-80F back to the FACP. Circuit is power-limited.
- Up to 32 LCD-80F annunciators may be used on the EIA-485 circuit. When multiple LCD-80Fs are used, the FACP will require additional power supplies (refer to panel documentation).
- Between each LCD-80F annunciator are four wires: a twisted-shielded pair for data communications and a pair for 24 VDC power. The return circuit only requires two wires (twisted) for data communication supervision, wired from the last LCD-80F annunciator on the loop.



5.813" (14.764 cm) wide x 4.0" (10.16 cm) high x minimum 2.188" (5.556 cm) deep, three-gang electrical box (Fire•Lite PN 10103, shown above).

Mounting To Backbox(es)

The LCD-80F annunciators can be semi-flush mounted in a three gang electrical box with a minimum depth of 2.188" (5.556 cm) (Fire•Lite PN 10103).

The LCD-80F annunciators can be mounted in three-gangable electrical switchboxes connected together.

NOTE: *Alternately, LCD-80F annunciators can be mounted to the SBB-3 surface backbox for surface-mount applications.*

NOTE: *This annunciator may not fit easily into a standard 3-gang electrical box if locking clamps are used to secure wiring entering the rear or side knockouts. Only use the TOP or BOTTOM knock-outs to bring wiring into a standard 3-gang electrical box.*

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Made in the U.S.A.

For more information, contact Fire•Lite Alarms. Phone: (800) 627-3473, FAX: (877) 699-4105.
www.firelite.com

BG-12LX

Addressable Manual Pull Station

FIRE-LITE ALARMS by Honeywell

Addressable Devices

General

The Fire-Lite BG-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 (mounted inside) for Fire-Lite's addressable fire alarm control panels (FACPs). Because the BG-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.

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:** 230 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**

Installation

The BG-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 BG-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).

FLPullStation.jpg

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 with Breakaway Tab removed for MS-9600 Series, 1 – 99and MS-9200UDLS, 1 – 50 for MS-9050UD).

Architectural/Engineering Specifications

Manual Fire Alarm Stations shall be non-coded, with a key-operated reset lock in order that they may be tested, and so designed that after actual Emergency Operation, they cannot be restored to normal except by use of a key. An operated station shall automatically condition itself so as to be visually detected as activated. Manual stations shall be constructed of red-colored polycarbonate material with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in white letters, 1.00 inches (2.54 cm) or larger. Stations shall be suitable for surface mounting on matching backbox SB-10 or SB-I/O; or semi-flush mounting on a standard single-gang, double-gang, or 4" (10.16 cm) square electrical box, and shall be installed within

the limits defined by the Americans with Disabilities Act (ADA) or per national/local requirements. Manual Stations shall be Underwriters Laboratories listed.

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

Product Line Information

BG-12LX: Dual-action addressable pull station. Includes key locking feature.

SB-10: Surface backbox; metal.

SB-I/O: Surface backbox; plastic.

BG12TR: Optional trim ring.

17003: Keys, set of two.

Agency Listings and Approvals

In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL Listed:** S711
- **MEA:** 67-02-E
- **CSFM:** 7150-0075:184
- **FM** Approved

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

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www.firelite.com

FCPS-24FS8

8-Amp, 24-Volt Power Supply

FIRE-LITE ALARMS by Honeywell

Power Supplies/Accessories

General

The **Fire•Lite FCPS-24FS8(C/E)** is a compact, cost-effective, 8-amp remote power supplies with battery charger. The FCPS-24FS8C/E) may be connected to any 12 or 24 volt fire alarm control panel (FACP) or may stand-alone. Primary applications include notification appliance (bell) circuit (NAC) expansion (to support ADA requirements and NAC synchronization) or auxiliary power to support 24 volt system accessories. The FCPS provides *regulated and filtered* 24 VDC power to four notification appliance circuits configured as either two Class B (Style Y) and Class A (Style Z, with ZNAC-4 option module) or four class B only. Alternately, the four outputs may be configured as any combination of resettable/non-resettable power outputs (optimal for powering four-wire smoke detectors. The FFCPS-24FS8(C/E) also contains a battery charger capable of charging up to 18.0 Amp hour batteries. FCPS-24FS8C/E) is ULC-listed.

***NOTE:** Unless otherwise specified, the term FCPS-24FS8 used in this document refers to the standard FCPS-24FS8, FCPS-24FS8C, FCPS-24FS8E*

Features

- UL-Listed Notification Appliance Circuit (NAC) synchronization using System Sensor, Wheelock, or Gentex "Commander^2" appliances.
- Operates as a "sync-follower" or as a "sync-generator" (default). *See note on page 2.*
- Contains two fully-isolated input/control circuits - triggered from FACP NAC (NAC expander mode) or jumped permanently "ON" (stand-alone mode).
- Two Class B (Style Y) or Class A (Style Z, with ZNAC-4 module) NACs (circuits 1 & 3)
- 8-amp full load output, with 3 amps maximum/circuit, in NAC expander mode (UL 864).
- 6-amp continuous output in stand-alone mode (UL 1481).
- Compatible with coded inputs; signals passed through.
- Optional power-supervision relay (EOLR-1).
- In stand-alone mode, output power circuits may be configured as: resettable, (reset line from FACP required), non-resettable, or a mix of two and two.
- Fully regulated and filtered power output - optimal for powering four-wire smoke detectors, annunciators, and other system peripherals requiring regulated/filtered power.
- Power-limiting technology meets UL power-limiting requirements.
- Form-C normally-closed trouble relay.
- Fully supervised power supply, battery, and NACs.
- Selectable earth fault detection.
- AC trouble report selectable for immediate 2-hour delay.
- Works with virtually any UL 864 fire alarm control which utilizes an industry-standard reverse-polarity notification circuit (including unfiltered and unregulated bell power).
- Requires input trigger voltage of 9 - 32 VDC.
- Self-contained in compact, locking cabinet - 15"H x 14.5"W x 2.75"D (cm: 38.1H x 36.83W x 6.985D).
- Includes integral battery charger capable of charging up to 18 AH batteries. Cabinet capable of housing 7.0 AH batteries.
- Battery charger may be disabled via DIP switch for applications requiring larger batteries.
- Fixed, clamp-type terminal blocks accommodate up to 12 AWG (3.1mm^2) wire.

Specifications

Primary (AC) Power:

- FCPS-24FS8: 120 VAC, 60 Hz, 3.2A maximum.
- FCPS-24FS8/E: 240 VAC, 50 Hz, 1.6A maximum.
- Wire Size: minimum #14 AWG (2.0mm^2) with 600 V insulation.

Control Input Circuit:

- **Trigger Input Voltage:** 9 to 32 VDC.
- **Trigger Current:** 2.0 mA (16 - 32 V); Per Input: 1.0 mA (9 - 16 V).

Trouble Contact Rating: 5 A at 24 VDC.

Auxiliary Power Output: Specific application power 500 mA maximum.

Output Circuits:

- +24 VDC filtered, regulated.
- 3.0 A maximum for any one circuit.
- Total continuous current for all outputs (stand-alone mode):
  – FCPS-24FS8: 6.0 A maximum.
- Total short-term current for all outputs (NAC expander mode):
  – FCPS-24FS8: 8.0 A maximum.

Secondary Power (Battery) Charging Circuit:

- Supports lead-acid batteries only.
- Float-charge voltage: 27.6 VDC.
- Maximum current charge: 250 mA.
- Maximum battery capacity: 7.0 AH.

Applications

Example 1: Expand notification appliance power an additional 8.0 A. Use up to four Class B (Style Y) outputs or four Class A (Style Z) outputs (using ZNAC-4). For example, the FACP notification appliance circuits will activate the FCPS when reverse-polarity activation occurs. Trouble conditions on the FCPS are sensed by the FACP through the notification appliance circuit.

Example 2: Use the FCPS to expand auxiliary regulated 24-volt system power up to 6.0 A. Both resettable and non-resettable power options are available. Resettable outputs are created by connecting the resettable output from the FACP to one or both of the FCPS inputs.

Example 3: Use addressable control modules to activate the FCPS instead of activating it through the FACP notification appliance circuits. This typically allows for mounting the FCPS at greater distances* away from the FACP while expanding system architecture in various applications.

For example, an addressable control module is used to activate the FCPS, and an addressable monitor module is used to sense FCPS trouble conditions. Local auxiliary power output from the FCPS provides power to the addressable control module.

**NOTE: Addressable FACPs are capable of locating control and monitor modules at distances of up to 10,000 feet (3,046 meters).*

Sync Follower/Generator Note

In some installations, it is necessary to synchronize the flash timing of all strobes in the system for ADA compliance. Strobes accomplish this by monitoring very short timing pulses on the NAC power which are created by the FACP. When installed at the end of a NAC wire run, the FCPS-24FS8 can track (i.e. "follow") the strobe synchronization timing pulses on the existing NAC wire run. This maintains the overall system flash timing of the additional strobes attaches to the FCPS.

When the FCPS-24FS8 is configured (via DIP switch settings) as a "sync follower," the FCPS's NAC outputs track the strobe synchronization pulses present at the FCPS's sync input terminal. The pulses originate from an upstream FACP or other power supply.

When the FCPS-24FS8 is configured (via DIP switch settings) as a "sync generator," the FCPS's sync input terminals are not used. Rather, the FCPS is the originator of the strobe synchronization pulses on the FCPS's NAC outputs. In "sync generator" mode, the sync type (System Sensor, Wheelock, or Gentex) is selectable via DIP switch settings.

Standards and Codes

The FCPS-24FS8 complies with the following standards:

- **NFPA 72** National Fire Alarm Code.
- **UL 864** Standard for Control Units for Fire Alarm Systems (NAC expander mode).
- **UL 1481** Power Supplies for Fire Alarm Systems.

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:** S2424
- **ULC Listed:** S2424
- **CSFM Approved: 7315-0075:206**
- **MEA:** 219-02E
- **FM Listed**

Ordering Information

FCPS-24FS8: 6.0 A, 120 VAC remote charger power supply. Includes main printed circuit board, transformers, enclosure (15"H x 14.5"W x 2.75"D [cm: 38.1H x 36.83W x 6.985D]), and installation instructions.

FCPS-24FS8 is ULC-listed.

FCPS-24FS8E: 6.0 A, 240 VAC remote charger power supply. Includes main printed circuit board, transformers, enclosure (15"H x 14.5"W x 2.75"D [cm: 38.1H x 36.83W x 6.985D]), and installation instructions.

ZNAC-4: Class A (Style Y) NAC option module.

EOLR-1: 12/24 VDC end-of-line relay for monitoring four-wire smoke detector power.

BAT-1270: Battery, 12-volt, 7.0 AH (two required).

PS-1270: Battery, 12-volt, 7.0 AH (two required).

90286: Optional module mounting kit, is required to install an addressable module on the power supply main circuit board.

H355(A) Series

Intelligent Addressable Thermal Detectors

FIRE-LITE ALARMS by Honeywell

Addressable Devices

General

The **Fire•Lite Alarms H355 Series** thermal detectors are addressable sensors that use a state-of-the-art thermistor sensing circuit for fast response. These sensors are designed to provide open-area protection and are intended for use with the **Fire•Lite's** addresable Fire Alarm Control Panels (FACPs).

The **H355(A)** and **H355R(A)** sensors provide fixed temperature alarm detection at 135°F (57°C). The **H355R(A)** sensor also responds to rate-of-rise conditions of greater than 15°F (8.3°C) per minute. The **H355HT(A)** is a fixed high-temperature detector that activates at 190°F (88°C). These thermal detectors provide cost effective, addressable property protection in a variety of applications.

Two LEDs on each sensor light to provide a local, visible sensor indication. Remote LED annunciator capability is available as an optional accessory (P/N **RA400Z**).

Features

SLC loop:

- Two-wire SLC loop connection.
- Unit uses base for wiring.

Addressing:

- Addressable by device.
- Direct Decade entry of address: 01 – 159 with MS-9600, 01 – 99 with MS-9200UD.

Architecture:

- Sleek, low-profile, stylish design.
- State-of-the-art thermistor technology for fast response.
- Integral communications and built-in device-type identification.
- Built-in tamper resistant feature.
- Built-in functional test switch activated by external magnet.

Operation:

- Factory preset at 135°F (57°C) for the H355(A) and H355R(A); 190°F (88°C) for the H355HT(A).
- Rate-of-rise triggers at 15°F (8.3°C) per minute for the H355R(A).
- 360°-field viewing angle of the visual alarm indicators (two bicolor LEDs). LEDs blink green in Normal condition and turn on steady red in Alarm.
- Visible LEDs "blink" every time the unit is addressed.

Mechanicals:

- Sealed against back pressure.
- SEMS screws for wiring of the separate base.
- Designed for direct-surface or electrical-box mounting.
- Plugs into separate base for ease of installation and maintenance.
- Separate base allows interchange of photoelectric, ionization and thermal sensors.

Other system features:

- Remote test feature from the panel.
- Walk test with address display.
- Low standby current.

H355 with B350LP base

- 94-5V plastic flammability rating.

Options:

- Remote LED output connection to optional RA400Z remote LED annunciator.
- Recessed (**RMK400**) or surface (**SMK400E**) base mounting kits.

Installation

H355(A) Series plug-in intelligent thermal detectors use a detachable base to simplify installation, service and maintenance. Installation instructions are shipped with each detector.

Mount base (all base types) on box that is at least 1.5" (3.81 cm) deep. Suitable boxes include:

- 4.0" (10.16 cm) square box.
- 3.5" (8.89 cm) or 4.0" (10.16 cm) octagonal box.
- Single-gang box (except relay or isolator base).

NOTE: *Because of the inherent supervision provided by the SLC loop, end-of-line resistors are not required. Wiring "T-taps" or branches are permitted for Style 4 (Class "B") wiring only.*

Applications

Use thermal detectors for protection of property.

Construction

These detectors are constructed of off-white Bayblend®. The H355(A) Series plug-in intelligent thermal detectors are designed to commercial standards and offer an attractive appearance.

Operation

Each H355(A) Series detector uses one of 159 (MS-9600) or 99 (MS-9200UD) possible addresses on a control panel SLC loop. It responds to regular polls from the control panel and reports its type and the status. If it receives a test command from the panel (or a local magnet test), it stimulates its electronics and reports an alarm. It blinks its LEDs when polled and turns the LEDs on when commanded by the panel. The H355(A) Series offers features and performance that represent the latest in thermal detector technology.

Specifications

Diameter: 6.1" (15.5 cm) installed in B350LP(A).

Height: 2.1" (5.33 cm).

Weight: 4.8 oz. (137 g).

Installation temperature: –4°F to 100°F (–20°C to 38°C).

Humidity range: 10% to 93% relative humidity (noncondensing).

Voltage range: 15 to 32 VDC peak.

Standby current: 300 µA @ 24 VDC (one communication every five seconds with LED blink enabled).

LED current: 6.5 mA @ 24 VDC.

Mounting: B350LP(A) flanged base, included.

Fixed-temperature setpoint: 135°F (57°C) for the H355(A) and H355R(A); 190°F (88°C) for the H355HT(A).

Rate-of-rise detection: responds to greater than 15°F (8.3°C) per minute.

Listings and Approvals

Listings and approvals below apply to the H355(A) Series detectors. 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.

- MEA approved: file 387-02-E
- UL Listed, file S2517
- ULC Listed (models H355A, H355RA, H355HTA)
- CSFM approved: file 7270-0075:195
- FM approved

Product Line Information

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

H355: Intelligent thermal sensor; B350LP base included.

H355A: Same as H355 but with ULC Listing (B350LPA base included).

H355R: Same as H355 with *rate-of-rise* feature; B350LP base included.

H355RA: Same as H355R but with ULC Listing (B350LPA base included).

H355HT: Intelligent fixed high-temperature thermal detector; B350LP base included.

H355HTA: Same as H355HT but with ULC Listing (B350LPA base included).

B350LP(A): Plug-in detector base (included). ***Dimensions:*** 6.1" (15.5 cm). ***Mounting:*** 4.0" (10.16 cm) square box with or without plaster ring, 4.0" (10.16 cm) octagonal box, 3.5" (8.89 cm) octagonal box, or single-gang box. All mounting boxes have a minimum depth of 1.5" (3.81 cm).

B224RB(A): Plug-in System Sensor ***relay*** detector base. ***Diameter:*** 6.2" (15.75 cm). ***Mounting:*** 4.0" (10.16 cm) square box with or without plaster ring, 4.0" (10.16 cm) octagonal box, or 3.5" (8.89 cm) octagonal box. All mounting boxes have a minimum depth of 1.5" (3.81 cm).

B224BI(A): Plug-in System Sensor ***isolator*** detector base. Maximum 25 devices between isolator bases *(see DF-52389).* ***Diameter:*** 6.2" (15.75 cm). ***Mounting:*** 4.0" (10.16 cm) square box with or without plaster ring, 4.0" (10.16 cm) octagonal box, or 3.5" (8.89 cm) octagonal box. All mounting boxes have a minimum depth of 1.5" (3.81 cm).

B501BH-2(A): Plug-in System Sensor standard ***sounder*** base. ***Diameter:*** 6.0" (15.24 cm). ***Mounting:*** 4.0" (10.16 cm) square box with or without plaster ring. Mounting boxes have a minimum depth of 1.5" (3.81 cm).

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

ACCESSORIES:

RA400Z(A): Remote LED annunciator. 3 – 32 VDC. Mounts to a U.S. single-gang electrical box. For use with B501(A) and B350LP(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.

M02-04-00: Test magnet.

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

XR2B: Detector removal tool. Allows installation and/or removal of detector heads from bases in high ceiling applications.

XP-4: Extension pole for XR2B. Comes in three 5-foot (1.524 m) sections.

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www.firelite.com

MMF-300(A) Series, MDF-300(A)

Addressable Monitor Modules

FIRE-LITE ALARMS by Honeywell

Addressable Devices

General

Four different monitor modules are available for Fire•Lite's intelligent control panels to suit a variety of applications. Monitor modules are used to 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 (MMF-302).

MMF-300 is a standard-sized module (typically mounts to a 4" [10.16 cm] square box) that supervises either a Class A (Style D) or Class B (Style B) circuit of dry-contact input devices.

MMF-301 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) used to supervise a Class B (Style B) circuit of dry-contact input devices. Its compact design allows the MMF-301 to often be mounted in a single-gang box behind the device it monitors.

MMF-302 is a standard-sized module used to monitor and supervise compatible two-wire, 24 volt, smoke detectors on a Class A (Style D) or Class B (Style B) circuit.

MDF-300 is a standard-sized dual monitor module used to monitor and supervise two independent two-wire Style B (Class B) dry-contact initiating device circuits (IDCs) at two separate, consecutive addresses in intelligent, two-wire systems.

LiteSpeed™ is a communication protocol developed by Fire•Lite 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.

MMF-300 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 MS-9600 series panels, 01 – 99 on other compatible systems.
- LED flashes during normal operation and latches on steady to indicate alarm.

The MMF-300 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 MMF-300 can be used to replace M300 modules in existing systems.

MMF-300 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 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.

MMF-300 (Type H)

MMF-300 OPERATION

Each MMF-300 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).

MMF-300 SPECIFICATIONS

Nominal operating voltage: 15 to 32 VDC.

Maximum current draw: 5.0 mA (LED on).

Maximum operating current: 375 µA (LED flashing).

Maximum IDC wiring resistance: 1,500 ohms.

EOL resistance: 47K ohms.

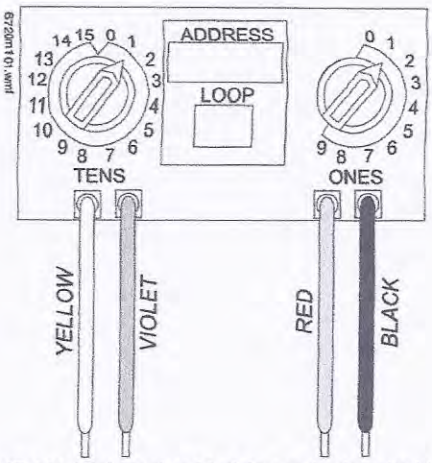
Temperature range: 32°F to 120°F (0°C to 49°C).

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.

MMF-301 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 MS-9600 series panels, 01 – 99 on other compatible systems.



The MMF-301 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 MMF-301 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 devices. The MMF-301 can be used to replace M301 modules in existing systems.

MMF-301 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.

MMF-301 OPERATION

Each MMF-301 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).

MMF-301 SPECIFICATIONS

Nominal operating voltage: 15 to 32 VDC.

Maximum operating current: 375 µA.

Maximum IDC wiring resistance: 1,500 ohms.

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.

MMF-302 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 MS-9600 series panels, 01 – 99 on other compatible systems.
- LED flashes during normal operation.
- LED latches steady to indicate alarm on command from control panel.

The MMF-302 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 MMF-302 can be used to replace M302 modules in existing systems.

MMF-302 APPLICATIONS

Use the MMF-302 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.

MMF-302 OPERATION

Each MMF-302 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).

MMF-302 SPECIFICATIONS

Nominal operating voltage: 15 to 32 VDC.

Maximum current draw: 5.1 mA (LED on).

Maximum IDC wiring resistance: 25 ohms.

Maximum operating current: 270 µA (LED flashing).

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.

MDF-300 Dual Monitor Module

The MDF-300 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. The module has a single panel-controlled LED.

***NOTE:** The MDF-300 provides two Class B (Style B) IDC circuits ONLY. Class A (Style D) IDC circuits are NOT supported in any application.*

MDF-300 SPECIFICATIONS

Normal operating voltage range: 15 to 32 VDC.

Maximum current draw: 6.4 mA (LED on).

Maximum operating current: 750 µA (LED flashing).

Maximum IDC wiring resistance: 1,500 ohms.

EOL resistance: 47K 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.

MDF-300 AUTOMATIC ADDRESSING

The MDF-300 automatically assigns itself to two addressable points, starting with the original address. For example, if the MDF-300 is set to address "26", then it will automatically assign itself to addresses "26" and "27".

NOTE: *"Ones" addresses on the MDF-300 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

MMF-300, MMF-302, and MDF-300 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 MMF-301 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:** *S2424*
- **ULC:** *S3705 ("A" suffix models)*
- **FM Approved**
- **CSFM:** 7300-0075-185
- **MEA:** 72-01-E

Product Line Information

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

MMF-300(A): Monitor module.

MMF-301(A): Monitor module, miniature.

MMF-302(A): Monitor module, two-wire detectors.

MDF-300(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 51309.*

Architects'/Engineers' Specifications

Specifications of these devices and all FireLite products are available from FireLite.

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.

Made in the U.S. A.

For more information, contact Fire-Lite Alarms. Phone: (800) 627-3473, FAX: (877) 699-4105.
www.firelite.com

SD355(A), SD355T(A), SD355R(A)

Addressable Photoelectric Smoke Detectors

FIRE-LITE ALARMS by Honeywell

General

The **SD355(A)** and **SD355T(A)** addressable, low-profile plug-in photoelectric detectors use a state-of-the-art photoelectric sensing chamber with communications to provide open area protection and are used exclusively with Fire•Lite's Addressable Fire Alarm Control Panels (FACPs). The SD355T(A) adds thermal sensors that will alarm at a fixed temperature of 135°F (57°C). Since these detectors are addressable, they will help emergency personnel quickly locate a fire during its early stages, potentially saving precious rescue time while also reducing property damage. Two LEDs on each sensor light to provide a local, visible sensor indication. Remote LED annunciator capability is available as an optional accessory (P/N **RA100Z(A)**). The **SD355R** is a remote test capable detector for use with D355PL or DNR(W) duct smoke detector housings.

Features

SLC loop:

- Two-wire loop connection.
- Unit uses base for wiring.

Addressing:

- Addressable by device.
- Direct Decade entry of address: 01 – 99 with MS-9200 series, and 01 – 159 with MS-9600 series.

Architecture:

- Unique single-source, dual-chamber design to respond quickly and dependably to a broad range of fires.
- Sleek, low-profile design.
- Integral communications and built-in type identification.
- Built-in tamper-resistant feature.
- Removable cover and insect-resistant screen for simple field cleaning.

Operation:

- Withstands air velocities up to 4,000 feet-per-minute (20 m/sec.) without triggering a false alarm.
- Factory preset at 1.5% nominal sensitivity for panel alarm threshold level.
- Visible LED "blinks" when the unit is addressed (communicating with the fire panel) and latches on in alarm.

Mechanicals:

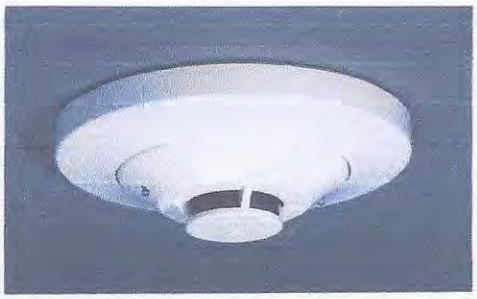
- Sealed against back pressure.
- Direct surface mounting or electrical box mounting.
- Mounts to: single-gang box, 3.5" (8.89 cm) or 4.0" (10.16 cm) octagonal box, or 4.0" (10.16 cm) square electrical box *(using a plaster ring — included).*

Other system features:

- Fully coated circuit boards and superior RF/transient protection.
- 94-V0 plastic flammability rating.
- Low standby current.

Options:

- Remote LED output connection (P/N RA100Z).



SD355 with B350LP base

SD355T with B350LP base

Applications

Use photoelectric detectors in life-safety applications to provide a broad range of fire-sensing capability, especially where smoldering fires are anticipated. Ionization detectors are often better than photoelectric detectors at sensing fast, flaming fires.

Construction

These detectors are constructed of off-white LEXAN®. SD355(T) plug-in, low-profile smoke detectors are designed to commercial standards and offer an attractive appearance.

Installation

SD355(T) plug-in detectors use a detachable mounting base to simplify installation, service and maintenance. Mount base on box which is at least 1.5 inches (3.81 cm) deep. Suitable boxes include:

- 4.0" (10.16 cm) square box with plaster ring.
- 4.0" (10.16 cm) octagonal box.
- 3.5" (8.89 cm) octagonal box.
- Single-gang box.

NOTE: *Because of the inherent supervision provided by the SLC loop,* ***end-of-line resistors*** *are not required. Wiring "T-taps" or branches are permitted for Style 4 (Class B) wiring. SD355R mounts in a D355PL or DNR(W) duct detector housing.*

Operation

Each SD355/T/R uses one of 99 possible addresses on the MS-9200 series and up to 318 (159 on each loop) on the MS-9600 series Signaling Line Circuit (SLC). It responds to regular polls from the system and reports its type and status.

The SD355/T/R addressable photoelectric sensor's unique unipolar chamber responds quickly and uniformly to a broad range of smoke conditions and can withstand wind gusts up to 4,000 feet-per-minute (20 m/sec.) without sending an alarm level signal. Because of its unipolar chamber, the SD355/T/R is approximately two times more responsive than most photoelectric sensors. This makes it a more stable detector.

Detector Sensitivity Test

Each detector can have its sensitivity tested (required per NFPA 72, Chapter 14 on *Inspection, Testing and Maintenance*) when installed/connected to a MS-9200 series or MS-9600 series addressable fire alarm control panel. The results of the sensitivity test can be printed off the MS-9200 series or MS-9600 series for record keeping.

Specification

Voltage range: 15 – 32 VDC (peak).

Standby current: 300 µA @ 24 VDC.

LED current: 6.5 mA @ 24 VDC (latched "ON").

Air velocity: 4,000 ft./min. (20 m/sec.) maximum.

Diameter: 6.1" (15.5 cm) installed in B350LP base.

Height: 2.1" (5.33 cm) installed in B350LP base.

Weight: 3.6 oz. (102 g).

Operating temperature range: ***for SD355(A):*** 0°C to 49°C (32°F to 120°F); ***for SD355T(A):*** 0°C to 38°C (32°F to 100°F). ***SD355R(A):*** installed in a DNR(W) -20°C to 70°C (-4°F to 158°F).

Temperature: 0°C – 49°C (32°F – 120°F).

Relative humidity: 10% – 93%, non-condensing.

Listings

Listings and approvals below apply to the SD355(A) and SD355T(A) detectors. 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 S1059.
- ULC Listed, file S1059.
- CSFM approved: file 7272-0075:194.
- MEA approved: file 243-02-E.
- FM approved.

Product Line Information

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

SD355: Adressable photoelectric detector; B350LP base included.

SD355A: Sames as SD355 with ULC Listing (B350LPA base included).

SD355T: Same as SD355 but with ***thermal*** element; B350LP base included.

SD355TA: Same as SD355T with ULC Listing (B350LPA base included).

SD355R: Remote test capable addressable photoelectric detector for use with a D355PL or DNR(W) duct detector housing.

B350LP(A): Plug-in detector base. Dimensions: 6.1" (15.5 cm). Mounting: 4.0" (10.16 cm) square box with or without plaster ring, 4.0" (10.16 cm) octagonal box, 3.5" (8.89 cm) octagonal box, or single-gang box. All mounting boxes have a minimum depth of 1.5" (3.81 cm).

B224RB(A): Plug-in System Sensor ***relay*** detector base. ***Diameter:*** 6.2" (15.75 cm). ***Mounting:*** 4.0" (10.16 cm) square box with or without plaster ring, 4.0" (10.16 cm) octagonal box, or 3.5" (8.89 cm) octagonal box. All mounting boxes have a minimum depth of 1.5" (3.81 cm).

B224BI(A): Plug-in System Sensor ***isolator*** detector base. Maximum 25 devices between isolator bases *(see DF-52389).* ***Diameter:*** 6.2" (15.75 cm). ***Mounting:*** 4.0" (10.16 cm) square box with or without plaster ring, 4.0" (10.16 cm) octagonal box, or 3.5" (8.89 cm) octagonal box. All mounting boxes have a minimum depth of 1.5" (3.81 cm).

B200SR: Sounder base capable of producing temporal-3 or steady sound output.

ACCESSORIES:

RA100Z(A): Remote LED annunciator. 3 – 32 VDC. Mounts to a U.S. single-gang electrical box. *For use with B501(A) and B350LP(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.*

M02-04-00: Test magnet.

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

XR2B: Detector removal tool. Allows installation and/or removal of detector heads from bases in high ceiling applications.

XP-4: Extension pole for XR2B. Comes in three 5-foot (1.524 m) sections.

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

BCK-200B: Black detector covers, box of 10 .

WCK-200B: White detector covers, box of 10 .

CRF-300(A)

Relay Module

FIRE-LITE ALARMS by Honeywell

Addressable Devices

General

The **CRF-300(A)** Addressable Relay Module provides the system with a dry-contact output for activating a variety of auxiliary devices, such as fans, door holders, dampers, control equipment, etc. Addressability allows the dry contact to be activated through panel programming, on a select basis.

LiteSpeed™ is a communication protocol developed by Fire•Lite 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.
- Integral LED "blinks" green each time a communication is received from the control panel and turns on in steady red when activated.
- High noise immunity (EMF/RFI).
- Wide viewing angle of LED.
- SEMS screws with clamping plates for wiring ease.
- Direct-dial entry of address: 01– 159 for MS-9600(A) series panels, 01 – 99 on MS-9200UDLS(A) and MS-9050UD(A).

Applications

The CRF-300(A) may be programmed to operate dry contacts for door holders, Air Handling Unit shutdown, etc., and to reset four-wire smoke detector power.

Construction

- The face plate is made of off-white heat-resistant plastic.
- Controls include two rotary switches for direct-dial entry of address setting.
- The CRF-300(A) is configured for a single Class B (Style Y) or Class A (Style Z) Notification Appliance Circuit.
- The CRF-300(A) provides two Form-C dry contacts that switch together.

Operation

Each CRF-300(A) uses one of the addresses on a SLC loop. 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.

***NOTE:** Open/short supervision is suspended with the CRF-300.*

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 control module and a relay module.

CRF-300(A)

Specifications

Normal operating voltage: 15 to 32 VDC.

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

Average operating current: 230 µA direct poll (CLIP mode), 255 µA group poll (LiteSpeed mode) with LED flashing.

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" (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 mm) deep box.

Relay Contact Ratings

Load Description	Application	Maximum Voltage	Current Rating
Resistive	Non-Coded	30 VDC	3.0 A
Resistive	Coded	30 VDC	2.0 A
Resistive	Non-Coded	110 VDC	0.9 A
Resistive	Non-Coded	125 VAC	0.9 A
Inductive (L/R=5ms)	Coded	30 VDC	0.5 A
Inductive (L/R=2ms)	Coded	30 VDC	1.0 A
Inductive (PF=0.35)	Non-Coded	125 VAC	0.5 A

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:** S2424
- **ULC:** S2424
- **FM approved**
- **CSFM:** 7300-0075:185
- **MEA:** 72-01-E

Product Line Information

CRF-300(A): Intelligent addressable relay module.

: Intelligent addressable relay module, ULC listed model.

SMB500: Optional surface-mount backbox.

NOTE: *For installation instructions, see document I56-1190-005 and refer to the SLC Wiring Manual, document 51309.*

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www.firelite.com

FIRE-LITE ALARMS by Honeywell

MS-9600UDLS Battery Calculation

Secondary Power Source Requirements

Device Type	Standby Current (amps) Qty		Current Draw		Total	Secondary Alarm Current (amps) Qty		Current Draw		Total
Main Circuit Board	1	x	0.103000	=	0.103000	1	x	0.253000	=	0.253000
DACT-UD2	1	x	0.017000	=	0.017000	1	x	0.029000	=	0.029000
SLC-2LS Expander Module	1	x	0.019000	=	0.019000	1	x	0.026000	=	0.026000
4XTMF	0	x	0.005000	=		0	x	0.011000	=	
IPDACT-2	0	x	0.093000	=		0	x	0.136000	=	
IPDACT-2UD	0	x	0.098000	=		0	x	0.155000	=	
ANN-BUS Devices										
ANN-80(-W)	0	x	0.015000	=		0	x	0.040000	=	
ANN-LED	0	x	0.028000	=		0	x	0.068000	=	
ANN-RLED	0	x	0.028000	=		0	x	0.068000	=	
ANN-RLY	0	x	0.015000	=		0	x	0.075000	=	
ANN-I/O	0	x	0.035000	=		0	x	0.200000	=	
ANN-S/PG	0	x	0.045000	=		0	x	0.045000	=	
ACS Annunciators										
ACM-8RF	0	x	0.030000	=		0	x	0.158000	=	
ACM-16ATF	0	x	0.040000	=		0	x	0.056000	=	
ACM-32AF	0	x	0.040000	=		0	x	0.056000	=	
AEM-16ATF	0	x	0.002000	=		0	x	0.018000	=	
AEM-32AF	0	x	0.002000	=		0	x	0.018000	=	
AFM-16ATF	0	x	0.040000	=		0	x	0.056000	=	
AFM-32AF	0	x	0.040000	=		0	x	0.056000	=	
AFM-16AF	0	x	0.025000	=		0	x	0.065000	=	
LDM-32F	0	x	0.040000	=		0	x	0.056000	=	
LDM-E32F	0	x	0.002000	=		0	x	0.018000	=	
LCD-80F	1	x	0.025000	=	0.025000	1	x	0.064000	=	0.064000
Resettable Power										
4-wire Detector Heads	0	x	0.000000	=		0	x	0.000000	=	
Addressable Devices										
BEAM355	0	x	0.002000	=						
BEAM355S	0	x	0.002000	=						
BEAM1224	0	x	0.017000	=						
CP355	0	x	0.000300	=						
SD355	141	x	0.000300	=	0.042300					
SD355T	0	x	0.000300	=						
AD355	0	x	0.000300	=						
H355	0	x	0.000300	=						
H355R	17	x	0.000300	=	0.005100					
H355HT	1	x	0.000300	=	0.000300					
D350P	0	x	0.000300	=						
D350RP	0	x	0.000300	=						
D350PL	0	x	0.000300	=						
D350RPL	2	x	0.000300	=	0.000600					
D355PL	0	x	0.000300	=						
MMF-300	11	x	0.000400	=	0.004400					
MMF-300-10	0	x	0.003500	=						
MDF-300	0	x	0.000750	=						
MMF-301	0	x	0.000375	=						
MMF-302	0	x	0.000270	=						
MMF-302-6	0	x	0.002000	=						

BG-12LX	23	x	0.000300	=	0.006900					
CMF-300	0	x	0.000390	=						
CMF-300-6	17	x	0.002250	=	0.038250					
CRF-300	0	x	0.000270	=						
CRF-300-6	0	x	0.001450	=						
I300	0	x	0.000400	=						
B501BH-2	0	x	0.001000	=						
B501BHT-2	0	x	0.001000	=						
B224RB	0	x	0.000500	=						
B224BI	0	x	0.000450	=						
B200SR	0	x	0.000500	=						
CDRM-300	0	x	0.001300	=						
	Maximum alarm draw for Addressable devices (SLC 1)									0.40000
	Maximum alarm draw for Addressable devices (SLC 2)									0.40000
EOLR-1	0	x	0.020000	=		0	x	0.020000	=	
Miscellaneous Device 1	0	x	0.000000	=		0	x	0.000000	=	
Miscellaneous Device 2	0	x	0.000000	=		0	x	0.000000	=	
Miscellaneous Device 3	0	x	0.000000	=		0	x	0.000000	=	
Miscellaneous Device 4	0	x	0.000000	=		0	x	0.000000	=	
Miscellaneous Device 5	0	x	0.000000	=		0	x	0.000000	=	
NAC #1						0	x	0.000000	=	
NAC #2						0	x	0.000000	=	
NAC #3						0	x	0.000000	=	
NAC #4						0	x	0.000000	=	
Current Draw from TB3 (non-alarm)			0.000000	=				0.000000	=	
Sum each column for totals	**Total Standby Current**				**0.26185**	**Total Alarm Current**				**1.17200**

FIRE-LITE ALARMS by Honeywell

MS-9600UDLS Battery Calculation

Note: You can edit all current draws and are **fully responsible for verifying** these calculations. Only enter values in **yellow** cells.

		Required Standby Time in Hours			
		24 Hours			
Standby Load Current (Amps)	**0.262 A**	x	24	=	6.284 AH
		Required Alarm Time in Hours			
		10 Minutes			
Alarm Load Current (Amps)	**1.172 A**	x	0.167	=	0.196 AH
			Standby and Alarm Load Subtotal	=	6.480 AH
			Derating Factor	=	x 1.2
			Total Ampere Hours Required	=	**7.776 AH**

Recommended Batteries:	**BAT-12120 - 12AH Batteries**

Battery Check
The batteries can be charged by the MS-9600UDLS Charger.
The batteries can be housed in the MS-9600UDLS Cabinet.

Current Draw Check
NAC#1 current is within the limitations of the circuit.
NAC#2 current is within the limitations of the circuit.
NAC#3 current is within the limitations of the circuit.
NAC#4 current is within the limitations of the circuit.
The standby current is within the limitations of the panel.
The alarm current is within output limitations of the panel.

Jobsite Information: 1st Fl + Base

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
		STANDBY LOAD		=	0.065

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	25	X	0.112	=	2.8
NAC / Output # 2	16	X	0.112	=	1.792
NAC / Output # 3	10	X	0.112	=	1.12
NAC / Output # 4		X		=	0
		ALARM LOAD		=	5.857

Battery Amp Hour Calculation

Standby Load Current (Amps)		Required Standby Time (Typically 24 or 60 *Hours*)		
0.065	X	24	=	1.56 AH
Alarm Load Current (Amps)		Required Alarm Time (Typically 5 or 10 *Minutes*)		
5.857	X	10	=	0.98 AH
		Sub Total Standby / Alarm Amp Hours		2.54 AH
		Multiply by the Derating Factor	X	1.2 *
		Total Ampere Hours Required	=	**4 AH**

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Jobsite Information: Retail

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
		STANDBY LOAD		=	0.065

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	9	X	0.112	=	1.008
NAC / Output # 2	8	X	0.112	=	0.896
NAC / Output # 3	11	X	0.112	=	1.232
NAC / Output # 4		X		=	0
		ALARM LOAD		=	3.281

Battery Amp Hour Calculation

Standby Load Current (Amps)		Required Standby Time (Typically 24 or 60 *Hours*)		
0.065	X	24	=	1.56 AH
Alarm Load Current (Amps)		**Required Alarm Time (Typically 5 or 10 *Minutes*)**		
3.281	X	10	=	0.55 AH
		Sub Total Standby / Alarm Amp Hours		2.11 AH
		Multiply by the Derating Factor	X	1.2 *
		Total Ampere Hours Required	=	**3 AH**

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Jobsite Information: Retail

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
		STANDBY LOAD		=	0.065

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	9	X	0.112	=	1.008
NAC / Output # 2	8	X	0.112	=	0.896
NAC / Output # 3	11	X	0.112	=	1.232
NAC / Output # 4		X		=	0
		ALARM LOAD		=	3.281

Battery Amp Hour Calculation

Standby Load Current (Amps)		Required Standby Time (Typically 24 or 60 *Hours*)		
0.065	X	24	=	1.56 AH
Alarm Load Current (Amps)		**Required Alarm Time (Typically 5 or 10 *Minutes*)**		
3.281	X	10	=	0.55 AH
		Sub Total Standby / Alarm Amp Hours		2.11 AH
		Multiply by the Derating Factor	X	1.2 *
		Total Ampere Hours Required	=	**3 AH**

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Jobsite Information: FL 2

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
		STANDBY LOAD		=	0.065

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	14	X	0.112	=	1.568
NAC / Output # 2	16	X	0.112	=	1.792
NAC / Output # 3		X		=	0
NAC / Output # 4		X		=	0
		ALARM LOAD		=	3.505

Battery Amp Hour Calculation

Standby Load Current (Amps)			Required Standby Time (Typically 24 or 60 *Hours*)		
0.065	X		24	=	1.56 AH
Alarm Load Current (Amps)			Required Alarm Time (Typically 5 or 10 *Minutes*)		
3.505	X		10	=	0.58 AH
		Sub Total Standby / Alarm Amp Hours			2.14 AH
		Multiply by the Derating Factor		X	1.2 *
		Total Ampere Hours Required		=	**3 AH**

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Jobsite Information: 3rd FL

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
		STANDBY LOAD		=	0.065

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	14	X	0.112	=	1.568
NAC / Output # 2	16	X	0.112	=	1.792
NAC / Output # 3		X		=	0
NAC / Output # 4		X		=	0
		ALARM LOAD		=	3.505

Battery Amp Hour Calculation

Standby Load Current (Amps)		Required Standby Time (Typically 24 or 60 *Hours*)		
0.065	X	24	=	1.56 AH
Alarm Load Current (Amps)		Required Alarm Time (Typically 5 or 10 *Minutes*)		
3.505	X	10	=	0.58 AH
		Sub Total Standby / Alarm Amp Hours		2.14 AH
		Multiply by the Derating Factor	X	1.2 *
		Total Ampere Hours Required	=	**3 AH**

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Jobsite Information: 4th Fl

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
		STANDBY LOAD		=	**0.065**

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	14	X	0.112	=	1.568
NAC / Output # 2	16	X	0.112	=	1.792
NAC / Output # 3		X		=	0
NAC / Output # 4		X		=	0
		ALARM LOAD		=	**3.505**

Battery Amp Hour Calculation

Standby Load Current (Amps)		Required Standby Time (Typically 24 or 60 *Hours*)		
0.065	X	24	=	1.56 AH
Alarm Load Current (Amps)		**Required Alarm Time (Typically 5 or 10 *Minutes*)**		
3.505	X	10	=	0.58 AH
		Sub Total Standby / Alarm Amp Hours		2.14 AH
		Multiply by the Derating Factor	X	1.2 *
		Total Ampere Hours Required	=	**3 AH**

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Jobsite Information: 5th Fl

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
		STANDBY LOAD		=	0.065

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	14	X	0.112	=	1.568
NAC / Output # 2	16	X	0.112	=	1.792
NAC / Output # 3		X		=	0
NAC / Output # 4		X		=	0
		ALARM LOAD		=	3.505

Battery Amp Hour Calculation

Standby Load Current (Amps)		Required Standby Time (Typically 24 or 60 *Hours*)		
0.065	X	24	=	1.56 AH
Alarm Load Current (Amps)		**Required Alarm Time (Typically 5 or 10 *Minutes*)**		
3.505	X	10	=	0.58 AH
		Sub Total Standby / Alarm Amp Hours		2.14 AH
		Multiply by the Derating Factor	X	1.2 *
		Total Ampere Hours Required	=	**3 AH**

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Jobsite Information: CK FT

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
		STANDBY LOAD		=	0.065

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	12	X	0.112	=	1.344
NAC / Output # 2	6	X	0.112	=	0.672
NAC / Output # 3		X		=	0
NAC / Output # 4		X		=	0
		ALARM LOAD		=	2.161

Battery Amp Hour Calculation

Standby Load Current (Amps)		Required Standby Time (Typically 24 or 60 *Hours*)			
0.065	X	24	=	1.56 AH	
Alarm Load Current (Amps)		Required Alarm Time (Typically 5 or 10 *Minutes*)			
2.161	X	10	=	0.36 AH	
		Sub Total Standby / Alarm Amp Hours		1.92 AH	
		Multiply by the Derating Factor	X	1.2 *	
		Total Ampere Hours Required	=	**3 AH**	

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

Jobsite Information: 7th Fl

FCPS-24FS6 / 8 Battery Calculation

Entries only to be made in the Yellow cell locations

Regulated Load in Standby

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board	1	X	0.065	=	0.065
Power Supervision Relays	0	X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
			STANDBY LOAD	=	0.065

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
Main PC Board without AC	1	X	0.145	=	0.145
Power Supervision Relays		X	0.025	=	0
Auxiliary Current Draw from TB4 Terminals 9 & 10		X		=	0
NAC / Output # 1	12	X	0.112	=	1.344
NAC / Output # 2	6	X	0.112	=	0.672
NAC / Output # 3		X		=	0
NAC / Output # 4		X		=	0
			ALARM LOAD	=	2.161

Battery Amp Hour Calculation

Standby Load Current (Amps)		Required Standby Time (Typically 24 or 60 *Hours*)		
0.065	X	24	=	1.56 AH
Alarm Load Current (Amps)		**Required Alarm Time (Typically 5 or 10 *Minutes*)**		
2.161	X	10	=	0.36 AH
		Sub Total Standby / Alarm Amp Hours		1.92 AH
		Multiply by the Derating Factor	X	1.2 *
		Total Ampere Hours Required	=	**3 AH**

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.