1. **Safety Equipment**
   A. **Sprinkler System**

   1. Install a hydraulically designed wet pipe sprinkler system throughout the building in accordance with NFPA13 (NFPA13R for residences) guidelines.
   2. The sprinkler system shall have its own distinct and separate main originating from the street main and not be part of the domestic water supply to the building.
   3. Sprinkler zones shall be dedicated by floor and building wing or section, each zone having its own floor control valve, drain, inspector’s test valve, and tamper and flow switches reporting to the main fire alarm panel.
   4. Test valves and drains are to be directed to sanitary sewer system if practical; otherwise, system must drain directly to exterior of building. When drained directly to the exterior, thrust blocks or pads (minimum size 2 ft. X 2 ft. X 3 in. thick) are required beneath each orifice to prevent washouts of soil, etc.
   5. Clean-outs (ball valve with 1” pipe thread end cap) for flushing out or draining lines are required at end of each long run and wherever water might become trapped in system.
   6. All piping throughout the system shall be steel pipe designed for automatic fire sprinkler use – plastic piping is not recommended. Victaulic joints/fitting are permitted.
   7. All valves, except at clean-outs, are to be supervised electrically and report to main fire alarm panel. They shall also be labeled with metallic discs for ready identification.
   8. A post indicator valve is preferred by the College (even if not required by AHJ), 24VDC electric water gong (no 120VAC gongs are permitted), and fire department Siamese connection/monument (provided with placard indicating “Fire Dept. Sprinkler Connection” or equivalent) are to be installed in a prominent location at exterior of building readily accessible by fire department apparatus. The post indicator valve (PIV) is required to be positioned near sprinkler water main’s entry point to the building and secured with a break-away padlock of type and manufacture matching owner’s current master key system.
   9. Sprinkler riser(s) must be installed inside riser closets or cabinets (use only those manufactured by Larsen’s Manufacturing Co., which can be obtained from various vendors) for security and aesthetics, and must be marked with signage (i.e., arrows) indicating the direction of water flow. The door to each riser closet must be clearly posted with a sign stating “Sprinkler Valve Room”, preferably including the floor and/or section served by the riser. If riser closets are not practicable for some reason, then appropriate
valve lockouts and break-away padlocks of type and manufacture matching owner’s current master key system must be provided.

B. Standpipe System
1. Standpipe risers will be provided in all exit stairways in accordance with the NFPA and the International Building Code (IBC) and International Fire Code (IFC), with 2½” fire department valves provided on intermediate landings. Connection threads (NST) must match those in use by local township’s fire department. The standpipe risers should be dry standpipes, unless wet standpipes are required by code or local AHJ.
2. Dry standpipes must have a fire department Siamese connection, with placard indicating “Fire Dept. Dry Standpipe Connection” in a prominent location and in close proximity to the sprinkler Siamese.
3. Wet standpipe risers shall be supplied by the sprinkler system water supply main and shall be controlled by a supervised valve separate from the sprinkler zone valves with a separate flow switch for each stairwell. Fire department connection valves on wet standpipes must be secured within a cabinet with a break-away locking mechanism (use only those manufactured by Larsen’s Manufacturing Co., which can be obtained from various vendors) with valve lock-outs and break-away padlocks of type and manufacture matching owner’s current master key system.

C. Fire Pump
1. If a fire pump is required by the AHJ, it is to be of the electric type – not diesel.
2. Only the following companies’ fire pumps are recommended:
   -- If horizontal-mount: Patterson (available from various vendors)
   -- If vertical-mount: Aurora (available from various vendors)
3. The pump controller is to be manufactured by Joslyn Clark out of Lancaster, SC – DO NOT use Metron Fire Pump Controllers.
4. An ITT Centrifugal Pump motor is acceptable.

D. Emergency Lighting
1. Emergency lighting shall be provided throughout the facility, including specifically all corridors, stairs, mechanical/electrical/telecommunications rooms, toilets/shower rooms, and exterior porches.
2. All exit signs shall be of the LED or LEC type powered by the same source as the emergency lighting, which shall be an
emergency generator fueled by LP-gas. Battery inverter systems are not acceptable.

Example: EI Products, Inc.
Egress Technologies Div.
55 2nd Street
PO Box 9
Maxwell, TX 78656

Item #16200B (TM) Black, Double Face, 120/277 VAC Exit Sign, Top Mount
Item #16000B (TM) Black, Single Face, 120/277 VAC Exit Sign, Top Mount
Item #1600B (BM) Black, Single Face, 120/277 VAC Exit Sign, Back Mount

E. Fire Alarm System

1. As specified below, a complete addressable fire alarm system, or a zoned system depending on building size, shall be provided throughout the building in accordance with the requirements of NFPA72, the IBC, the IFC, and ADAAG (Americans with Disabilities Act Accessibility Guidelines).

2. The latest fire alarm system technology shall be implemented after review by Messiah College Fire and Safety Systems Coordinator (of the Dept. of Facility Services). Buildings under 5,000 gross sq. ft. shall have a fire alarm panel installed with zoned alarm initiating devices, with a minimum of eight (8) available zones. Buildings over 5,000 gross sq. ft. total shall have a fire alarm panel installed with addressable alarm initiating devices and either non-addressable or addressable signaling devices.

3. For campus as well as fire department emergency responders’ access, the fire alarm system shall include a control panel located near the main entrance to the building in a readily accessible area (e.g., lobby or lounge, but not in a foyer) free from interference by traffic flow patterns. Installation of the main fire alarm panel in a mechanical room, electrical room, foyer, stairwell, or enclosed space (e.g., office or storage room) is not acceptable. Annunciators are acceptable for remotely located areas of the building (e.g., rear foyers or service entrances), but are not required except in buildings over 50,000 sq. ft. If annunciators are used, they must be readily disabled by pushing the sonalert inhibit button (“trouble” condition silencing button) on the main fire alarm panel in order to prevent nuisance trouble alarms. Any NAC (notification appliance circuit) panels or power supply
panels shall be located in proximity to the main fire alarm control panel when possible and be readily accessible for servicing; where wire runs exceed recommended distances, NAC panels located remotely from the main panel are to be installed in utility closets, etc., but must remain readily accessible for servicing – the locations of these NAC panels must be recorded in a clear manner at the main control panel.

4. The fire alarm system shall be capable of being interfaced and be compatible with Messiah College’s in-house remote central alarm monitoring system (specific network connections shall be by means of an Omnitronix interface unit to the college’s existing fiber-optics infrastructure). At a minimum, all fire alarms, trouble conditions, supervisory troubles, and LP-gas alarms shall report to Dispatch Services in the Eisenhower Campus Center via the central alarm monitoring system.

5. The latest fire alarm system initiating and signaling devices technology shall be implemented after review by Messiah College Fire and Safety Systems Coordinator (of the Dept. of Facility Services). Alarm initiation and signaling devices shall be installed per NFPA72 and NEC, IBC/IFC, and ADA requirements. Initiation of the fire alarm will be from, but not limited to, manual pull stations, smoke detectors, heat detectors, duct detectors, beam detectors (if required due to large open spaces), LP-gas detectors, fire suppression systems (halon 1301, hood protection systems, etc.) and sprinkler workflow switches. Signaling devices shall include horns and strobes, or a combination of both. In cases where audibility might be affected by decibel reduction through walls or doors, minihorns (particularly in living quarters) will be required and located in such a manner as to be just outside of sleeping rooms and showers/bathrooms, in accordance with NFPA72, Chapter 7.4.

6. Wherever facilities plan to utilize LP-gas, the gas shall be monitored by combustible gas detectors via the fire alarm system, and upon alarm initiation, shall activate the fire alarm system with a signaling pattern distinct from that used for fire alarm initiation. (The recommended pattern, as standardized on campus, is known as “Generic Code” that sounds a 3 – 3 – 3 signal until acknowledged.). In addition to the audible signals, all strobe lights shall also activate throughout the building; however, doorholders are not to release and close doors automatically, unless required by the AHJ. Messiah College has standardized on the use of Mine Safety Appliances (MSA) model 487811 Combustible Sensor/Transmitter (4-20 ma output) – only MSA, substitutions/alternates are allowed. MSA is phasing out model
487811, but their Ultra-X 4-20 ma output may be a viable alternative. MSA products are available from various vendors.

7. Sprinkler valve position/tamper switches shall be provided and supervised by the fire alarm control panel. Potter is the preferred manufacturer.

8. Duct detectors shall shut down only their respective air handler, unless required otherwise by the AHJ, and shall be installed per NFPA72.

9. In order to comply with the ASME A17.1 (Safety Code for Elevators and Escalators) requirement to automatically disconnect the main power supply to elevator machinery prior to the application of water from an automatic sprinkler system, heat detectors will be provided in the elevator shaft(s) and machine room(s) to initiate a shunt trip of the feeder circuit breaker for the elevator. Smoke detectors installed in each machine room, the top and bottom of each elevator shaft, and in each elevator lobby will initiate elevator alternate floor recall.

10. All fire alarm wiring shall either be FPLP or FPLR cable (depending on where it is intended to be used), or be installed in EMT conduit. The fire alarm system’s vendor will be consulted for the appropriate wire gauge and other specifics.

11. In apartment-style housing: individual living units shall have tandem-wired 120VAC single-station smoke alarms installed in them to meet NFPA, IBC/IFC, and ADAAG requirements. Wiring shall be enclosed in metallic conduit wherever possible. Messiah College has standardized on Gentex model 9123T or 710CS with strobe for hearing-impaired living quarters – no alternates/substitutions are allowed. All alarm devices must have battery back-up to comply with NFPA72 and IFC (9-volt battery or emergency generator power are acceptable).

12. In single-family dwellings: converted for office use, they shall be installed with Firex (from Maple Chase, available from various vendors) smoke detectors in order to meet the demand for more detectors wired in tandem than Gentex provides and to operate individual Firex strobe lights as needed per ADAAG and NFPA. Wiring shall be installed in metallic conduit wherever possible. All alarm devices must have battery back-up.

F. Fire Extinguishers and Cabinets

1. Messiah College has fully standardized on the use of Amerex Corporation’s fire extinguishers. They are available through various vendors. The following extinguisher models are allowed for the type of fire classification/hazard indicated:
   - **ABC**: model B441 or B456, or B500 for apartments
- **BC**: model B447 or B409
- For special hazard situations, other types of recommended Amerex extinguishers include: **CO2, class K** (for commercial kitchens), and **Halotron I** (for computer labs).

2. Suggested fire extinguisher cabinet manufacturers include:
   - JL Industries and Larsens Manufacturing Co., specifically the Larsen’s Cameo Series is the preferred model.

G. **Fire Suppression Systems (Other Than Fire Sprinkler Systems)**

1. Range hood fire protection systems: Messiah College has standardized on the use of Range-Guard Fire Suppression Systems (as manufactured by Badger Fire Protection of Charlottesville, VA). They are available through various vendors and are our preferred system manufacturer.

2. Computer room fire protection systems: Messiah College has standardized on the use of Fike systems, supplied through various vendors and are our preferred manufacturer.

H. **Rescue Assistance System**

1. Cornell Rescue Assistance Systems is the manufacturer of choice (consistent with the existing in Boyer Hall). Cornell Systems are available from various electrical contractors.

2. The power supply cabinet shall be located in close proximity to the main fire alarm panel and be readily accessible for servicing.

3. The main annunciator shall be located in a main lobby/front entrance area (but not in a foyer), preferably in close proximity to a fire alarm annunciator.
Features

Master Controller (top) bay:
- Master controller assembly with operator interface and 4100 Software Revision 11.03
- Enhanced CPU with dual configuration programs, convenient service port access, and capacity for up to 2000 points
- System power supply (SPS) and charger (9 A total) with on-board: NACs, IDNet™ addressable device interface, and programmable auxiliary output and alarm relay
- Operator interface that is conveniently color coded with raised switches providing high confidence feedback
- Module level ground fault search locates and isolates faults to assist installation and service (with 11.03)
- Available with redundant CPU (requires two bays)

Standard addressable interfaces include:
- IDNet addressable device interface with 250 points
- Remote annunciator module support via RUI (remote unit interface) communications port

Optional modules include:
- MAPNET II® or IDNet addressable interfaces that support TrueAlarm® analog sensing operation and operate with either shielded or unshielded twisted pair wiring**
- MAPNET II panel mounted isolators and TrueAlert™ addressable notification appliance power supplies
- DACT, City Connect, and Network interfaces
- RS-232 ports for printers or maintenance terminals
- Alarm relays, auxiliary relays, additional power supplies, IDC modules, and NAC expansion modules
- Service modems, VESDA® Air Aspiration Systems interface, and coded manual station interface
- LED/switch modules (refer to data sheet S4100-0032)
- Audio amplifiers, firefighter master phones, and control modules (refer to data sheet S4100-0034)

Compatible with Simplex® remotely located:
- TrueAlert Addressable Controllers and both Addressable and Conventional NAC Extenders
- 4003 Voice Control Panels and the BACpac® BACnet® portal

Master controller upgrade kits are available for existing fire alarm control panels

4100U and upgrade kits are UL Listed to:
- UL Std. 684, Fire Detection and Control (UOIJ), and Smoke Control Service (UUKL)
- UL Std. 2017, Process Management Equipment (QVAX)
- UL Std. 1076, Proprietary Alarm Units-Burglar (APOU)
- UL Std. 1730, Smoke Detector Monitor (UULH)
- ULC Std. S527-99

Revision 11 Software Feature Summary

CPU provides two on-board configuration programs:
- Two programs allow for reduced service programming time with one active program and one reserve
- Downtime is reduced because the system stays running during download

PC based programmer features:
- Convenient front panel access port for quick and easy download of site-specific programming
- Modifications can be uploaded as well as downloaded for greater service flexibility
- AND, firmware enhancements are made via software downloads to the EPROM – service personnel are not required to exchange board level components

Introduction

Building on the established success of the 4100 Series products, the 4100U Series offers additional operator, installation, and service features. These new features include both new hardware and new software designs that provide high performance and convenient operation, installation, and maintenance. (Additional features are found in documents referenced on page 7.)

Module Bay Description

4100U Control Panels provide point and module capacities that are suitable for a wide range of small to medium size applications. They accept a variety of interface modules and can be configured for either Stand-Alone or Networked fire control panel operation.

** Simplex fire alarm technology is protected by the following U.S. Patent Numbers: TrueAlarm analog smoke detection: 5,155,468, 5,173,683 and 5,543,777, IDNet and MAPNET II addressable communications: 4,796,025. TrueAlert addressable notification; 6,313,744 and 6,426,897. SmartSync horn/strobe control; 6,281,789.
Module Bay Description (Continued)

The Master Controller Bay (top) includes a standard multi-featured system power supply, the master controller board, and operator interface equipment.

The Expansion Bays include a Power Distribution Interface (PDI) for new 4" x 5" flat design option modules and also accommodate 4100-style modules.

The Battery Compartment (bottom) accepts two batteries, up to 50 Ah, to be mounted within the cabinet without interfering with module space.

The following illustration identifies bay locations using a three bay cabinet for reference.

Mechanical Description (Continued)

- The latching dress panel (retainer) assembly easily lifts off for internal access
- NACs are mounted directly on power supply assemblies providing minimized wiring loss, compact size, and readily accessible terminations
- Packaging supports traditional 4100-style motherboard with daughter cards
- Modules are power-limited (except as noted, such as relay modules)
- The NEMA 1 box is ordered separately and available for early installation
- Boxes, doors, and dress panels are available in beige or red (ordered separately)
- Doors are available with tempered glass inserts or solid, in beige or red
- Refer to document S4100-0037 for enclosure details

Operator Interface Detail Reference

The following illustration identifies the primary functions of the operator interface.

Software Feature Summary

- TrueAlarm individual analog sensing with front panel information and selection access
- “Dirty” TrueAlarm sensor maintenance alerts, service and status reports including “almost dirty”
- TrueAlarm magnet test indication appears as distinct “test abnormal” message on display when in test mode
- TrueAlarm sensor peak value performance report
- Selectable service override allows authorized operators to clear alarm conditions during System Reset even if status has gone to trouble before reset occurred
- Module level ground fault searching assists installation and service by locating and isolating modules with grounded wiring (software revision 11.03 and higher)
- WALKTEST™ silent or audible system test performs an automatic self-resetting test cycle (WALKTEST is protected under U.S. patent No. 4,725,818)
Operator Interface

Convenient Status Information. With the locking door closed, the glass window allows viewing of the display, status LEDs, and available operator switches. Features include a two-line by 40-character, wide viewing angle (super-twist) LCD with status LEDs and switches as shown in the illustration below.

LED indicators describe the general category of activity being displayed with the LCD providing more detail. For the authorized user, unlocking the door provides access to the control switches and allows further inquiry by scrolling the display for additional detail.

Operator Interface Features

- Convenient and extensive operator information is provided using a logical, menu-driven display
- Multiple automatic and manual diagnostics for maintenance reduction
- History Logs are available from the LCD or capable of being printed
- Convenient PC programmer label editing
- Password access control
Compatible Peripheral Devices

The 4100U is compatible with an extensive list of 4100 Series peripheral devices including printers, CRT/keyboard, and both conventional and addressable devices including TrueAlarm analog sensors.

Addressable Device Control

Overview. The 4100U provides standard addressable device communications for IDNet compatible devices and accepts optional modules for communications with MAPNET II compatible devices. Using a two wire communications circuit, individual devices such as manual fire alarm stations, TrueAlarm sensors, conventional IDC zones, and sprinkler waterflow switches can be interfaced to the addressable controller to communicate their identity and status.

Addressability allows the location and condition of the connected device to be displayed on the operator interface LCD and on remote system annunciators. Additionally, control circuits (fans, dampers, etc.) may be individually controlled by using a relay IAM (individual addressable module).

Address Operation. Each addressable device on the communication channel is continuously interrogated for status condition such as: normal, off-normal, alarm, supervisory, or trouble. Sophisticated poll and response communication techniques ensure supervision integrity and allow for “T-tapping” of the circuit for Class B (Style 4) operation. The device LED blinks to indicate receipt of a communications poll and is ready on to indicate an alarm (or trouble) condition.

IDNet Channel Capacity. The CPU bay system power supply (SPS) provides an IDNet signaling line circuit (SLC) that supports up to 250 addressable monitor and control points intermixed on the same pair of wires. Additional IDNet circuit modules are available for 64, 127, or 250 addressable devices.

MAPNET II Channel Capacity. A total of 127 addressable monitor and control points may be intermixed on the same pair of wires supporting a single MAPNET II signaling line circuit (SLC).

Wiring Requirements for MAPNET II or IDNet Communications. Refer to the specifications chart below. Distances are for shielded or unshielded wire. Shielded wire may provide protection from unexpected sources of interference.

Wiring Specifications

<table>
<thead>
<tr>
<th>Size</th>
<th>18 AWG minimum (0.82 mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Preferred</td>
</tr>
<tr>
<td></td>
<td>Acceptable*</td>
</tr>
<tr>
<td>Farthest Distance from Control Panel to Device</td>
<td>Up to 2500 feet (762 m)</td>
</tr>
<tr>
<td>Total Wire Length Allowed With “T” Taps for Class B Wiring</td>
<td>Up to 10,000 ft (3 km).</td>
</tr>
</tbody>
</table>

* Some applications may require shielded wiring. Review system with your local Simplex product supplier.

TrueAlert Addressable Notification

The 4100U can be equipped with a TrueAlert Power Supply that provides three 3 A Signaling Line Circuits (SLCs) for both controlling and powering addressable notification appliances. With addressable appliances, Class B wiring can be “T-tapped” for both easier wiring and reduced wire run lengths. Extensive details concerning TrueAlert addressable notification are found on data sheet S4009-0003. Appliances are documented separately and include horns, strobes, and combination units.

TrueAlarm System Operation

Addressable device communications include operation of TrueAlarm smoke and temperature sensors. Smoke sensors transmit an output value based on their smoke chamber condition and the CPU maintains a current value, peak value, and an average value for each sensor. Status is determined by comparing the current sensor value to its average value. Tracking this average value as a continuously shifting reference point filters out environmental factors that cause shifts in sensitivity.

Programmable sensitivity of each sensor can be field selected at the control panel for different levels of smoke obscuration (shown directly in percent) or for specific heat detection levels. In order to evaluate whether the sensitivity should be revised, the peak value is stored in memory and can be easily read and compared to the alarm threshold directly in percent.

TrueAlarm heat sensors can be selected for a fixed temperature detection, with or without rate-of-rise detection. Utility temperature sensing is also available, typically to provide freeze warnings or alert to HVAC system problems. The temperature readings can be programmed to be read in either Fahrenheit or Celsius.

TrueSense® Early Fire Detection. Multi-sensor 4098-9754 provides photoelectric and heat sensor data using a single 4100U IDNet address. With revision 11 software, the panel evaluates smoke activity, heat activity, and their combination, to provide TrueSense early detection. For more details on this patented operation, refer to data sheet S4098-0024.

Diagnostics and Default Device Type

Sensor Status. TrueAlarm operation allows the control panel to automatically indicate when a sensor is almost dirty, dirty, and excessively dirty. The NFPA 72 (National Fire Alarm Code) requirement for a test of the sensitivity range of the sensors is fulfilled by the ability of TrueAlarm operation to maintain the sensitivity level of each sensor.

Modular TrueAlarm sensors use the same base and different sensor types (smoke or heat sensor) and can be easily interchanged to meet specific location requirements. This allows intentional sensor substitution during building construction when conditions are temporarily dusty. Instead of covering smoke sensors (causing them to be disabled), heat sensors may be installed without reprogramming the control panel. The control panel will indicate an incorrect sensor type, but the heat sensor will operate at a default sensitivity to provide heat detection for building protection at that location.
CPU Bay Module Details

Master Controller & Motherboard:
- The master controller mounts in Slot 4 of a two slot motherboard (Slots 3 and 4 of the Master Controller Bay) and provides a standard RUI communications channel, selectable as Style 4 or Style 7, available at Slot 4
- RUI communications control up to 31 remote annunciators/MINIPLEX® transponders per channel including the 4603-9101 LCD Annunciator, the 4602-9101 Status Command Unit (SCU), and 4602-9102 Remote Command Unit (RCU)
- Up to four RUI channels are supported; use up to three 4100-1291 RUI expansion modules as required
- Optional Service Modem 4100-6030 mounts onto the master controller board with its own on-board connections
- Slot 3 of the motherboard is primarily used for the 4100-6014 Network Interface Board with media modules, and secondarily can accommodate the 4100-6038 Dual RS-232 Board

System Power Supply:
- Rating is 9 A total, including module currents
- Outputs are power-limited, except for the battery charger
- Provides system power, battery charging, auxiliary power, auxiliary relay, earth detection, on-board IDNet communications channel for 250 points, three on-board NACs, and provisions for either an optional City Connect Module or an optional Alarm Relay Module
- Dual rate, temperature compensated battery charger charges up to 50 Ah sealed lead-acid batteries mounted in the battery compartment

System Power Supply (Continued):
- The charger is UL listed for charging up to 110 Ah batteries mounted in an external cabinet (refer to data sheet S2081-0012 for batteries and cabinet details)
- Performs battery monitor including low battery warning
- Provides status information to the master controller and analog values for battery voltage, charger voltage and current, actual system voltage and current, and individual NAC currents
- 2 A Auxiliary Power Output is selectable for detector reset, door holder, or coded output operation
- Auxiliary Relay is selectable as N.O. or N.C., rated 2 A @ 32 VDC, and is programmable as a trouble relay, either normally energized or normally de-energized, or as an auxiliary control
- Optional City Connect Module (4100-6031, with disconnect switches, or 4100-6032, without disconnect switches) can be selected for conventional dual circuit city connections
- Optional Alarm Relay Module (4100-6033) provides three Form C relays that are used for Alarm, Trouble, and Supervisory, rated 2 A resistive @ 32 VDC
- IDNet SLC Output provides Style 4 or Style 7 communications for up to 250 addressable devices (as described on page 4)
- Three, 3 A On-Board NACs, conventional reverse polarity operation, selectable as Class A or Class B, with electronic control and overcurrent protection; operation is selectable for synchronized strobe or SmartSync™ horn/strobe operation over two wires
- NACs can be selected as auxiliary power outputs derated to 2 A for continuous duty, the total of all auxiliary power output per SPS is limited to 5 A maximum

Master Controller Selection Information

Master Controller and Expansion Bay Selection (Canadian models have low battery cutout)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>4100 Panel Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-9111</td>
<td>120 VAC Input</td>
<td>UL</td>
<td></td>
</tr>
<tr>
<td>4100-9112</td>
<td>English</td>
<td>120 VAC, Canadian</td>
<td>UL</td>
</tr>
<tr>
<td>4100-9113</td>
<td>French</td>
<td>120 VAC, Canadian</td>
<td>ULC</td>
</tr>
<tr>
<td>4100-9211</td>
<td>220-240 VAC Input</td>
<td>UL</td>
<td></td>
</tr>
<tr>
<td>4100-9131</td>
<td>120 VAC Input</td>
<td>UL</td>
<td></td>
</tr>
<tr>
<td>4100-9132</td>
<td>English</td>
<td>120 VAC, Canadian</td>
<td>ULC</td>
</tr>
<tr>
<td>4100-9133</td>
<td>French</td>
<td>120 VAC, Canadian</td>
<td>ULC</td>
</tr>
<tr>
<td>4100-9230</td>
<td>220-240 VAC Input</td>
<td>UL</td>
<td></td>
</tr>
<tr>
<td>4100-9121</td>
<td>Redundant Master Controller, two bay assembly; top bay contains LCD and operator interface, CPU card assembly, and 4100U, 9 A system power supply/battery charger (SPS); second bay contains CPU card in Slot 2, and LCD and operator interface; 120 VAC, 60 Hz input.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-2300</td>
<td>Expansion Bay Assembly; order for each required expansion bay (not required for 4100-9121)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Master Controller Upgrades for Existing 4100 Series Fire Alarm Control Panels

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>4100 Panel Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-7150</td>
<td>Master Controller Upgrade with LCD and operator interface assembly</td>
<td>1000 point</td>
<td>Upgrades existing 4100 panel to revision 11 operation</td>
</tr>
<tr>
<td>4100-7151</td>
<td>Master Controller Upgrade without LCD or operator interface</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-7152</td>
<td>Master Controller Upgrade with LCD, operator interface, and power supply</td>
<td>512 point</td>
<td></td>
</tr>
<tr>
<td>4100-2301</td>
<td>Expansion Bay Upgrade Kit for mounting 4100U style (4&quot; x 5&quot;) modules in existing 4100 style panels</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Master Controller Upgrades for Existing 4020 Series Fire Alarm Control Panel

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-9833</td>
<td>4020 Master Controller Upgrade with LCD &amp; operator interface assembly; mounts as an adjunct panel; single bay size with locking glass door and retainer; cabinet dimensions are 24&quot; W x 22&quot; H x 8-3/8&quot; D (610 mm x 559 mm x 213 mm)</td>
</tr>
</tbody>
</table>
### Module Selection Information

#### Communication Modules

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Size</th>
<th>Supv.</th>
<th>Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-6014</td>
<td>Modular Network Interface; each requires two media modules (below)</td>
<td>1 Slot</td>
<td>28 mA</td>
<td>28 mA</td>
</tr>
<tr>
<td>4100-6061</td>
<td>For Master Controller; mounts in Slot 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6056</td>
<td>Wired Media Module</td>
<td>1 Slot</td>
<td>28 mA</td>
<td>28 mA</td>
</tr>
<tr>
<td>4100-6057</td>
<td>Select two media cards as required; mounts on 4100-6014 or 4100-6061</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6058</td>
<td>Fiber Optic Media Module</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6059</td>
<td>Network Access Dial-in Service Modem, mounts to 4100-6014 or 4100-6061 Network Interface Card, requires telephone line connection</td>
<td>1 Slot</td>
<td>55 mA</td>
<td>55 mA</td>
</tr>
<tr>
<td>4100-6060</td>
<td>Service Port Module, local panel access only, mounts to Master Controller Module, requires telephone line access, accesses same information as front panel port</td>
<td>1 Slot</td>
<td>25 mA</td>
<td>25 mA</td>
</tr>
<tr>
<td>4100-6061</td>
<td>Select one per SPS (fits on SPS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6062</td>
<td>City Circuit, with disconnect switches</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6063</td>
<td>For use with SPS only, not RPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6064</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6065</td>
<td>Alarm Relay, 3 Form C relays, 2 A @ 32 VDC, for SPS or RPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6066</td>
<td>Physical Bridge, Style 4, includes 1 modem module and 2 wired modules</td>
<td>1 Slot</td>
<td>20 mA</td>
<td>36 mA</td>
</tr>
<tr>
<td>4100-6067</td>
<td>Physical Bridge, Style 7, includes 2 modem and 2 wired modules</td>
<td>2 Slots</td>
<td>304 mA</td>
<td>304 mA</td>
</tr>
<tr>
<td>4100-6068</td>
<td>Dual RS-232 Interface, mounts in Slot 3 or Slot 2</td>
<td>1 Slot</td>
<td>132 mA</td>
<td>132 mA</td>
</tr>
<tr>
<td>4100-6069</td>
<td>Decoder Module</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6070</td>
<td>VESDA Aspiration System Interface</td>
<td>1 Slot</td>
<td>132 mA</td>
<td>132 mA</td>
</tr>
<tr>
<td>4100-6071</td>
<td>Master Clock Interface Module with one standard RS-232 port (see S4100-0033)</td>
<td>1 Slot</td>
<td>132 mA</td>
<td>132 mA</td>
</tr>
<tr>
<td>4100-6072</td>
<td>DACT, Point or Event Reporting; one shipped standard unless 4100-7908 is selected, maximum of 2 per system, includes 2 2080-9047 cables, 14 ft (4.3 m) long with RJ45 plug on one end, spade lugs on wire ends</td>
<td>1 Slot</td>
<td>30 mA</td>
<td>40 mA</td>
</tr>
</tbody>
</table>

#### Expansion, System, Remote, and TrueAlert Power Supplies and Accessories*

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Size</th>
<th>Supv.</th>
<th>Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-5101</td>
<td>120 VAC</td>
<td>2 Blocks</td>
<td>50 mA</td>
<td>50 mA</td>
</tr>
<tr>
<td>4100-5103</td>
<td>120 VAC, Canadian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5102</td>
<td>220-240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5115</td>
<td>NAC Expansion Module, 3 NACs, Class A/B, mounts on XPS only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5111</td>
<td>120 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5112</td>
<td>120 VAC, Canadian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5113</td>
<td>220-240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5115</td>
<td>NAC Expansion Module, 3 NACs, Class A/B, mounts on XPS only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5111</td>
<td>120 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5112</td>
<td>120 VAC, Canadian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5113</td>
<td>220-240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5122</td>
<td>220-240 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-5124</td>
<td>TrueAlert SLC Class A Adapter for all 3 SLCS, mounts on TPS only</td>
<td>N.A.</td>
<td>7 mA</td>
<td>7 mA</td>
</tr>
<tr>
<td>4100-5152</td>
<td>12 VDC Power Option, 2 A maximum</td>
<td>1 Block</td>
<td>1.5 A</td>
<td>maximum</td>
</tr>
<tr>
<td>4100-5166</td>
<td>8 VDC Converter, required for multiple Physical Bridge Modules, 3 A maximum</td>
<td>1 Block</td>
<td>1.5 A</td>
<td>maximum</td>
</tr>
<tr>
<td>4100-6036</td>
<td>Box Interconnection Harness Kit (non-audio); order one for each close-nipped cabinet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4100-6038</td>
<td>4100 Slot Module Additional 24 VDC Harness; need when 4100 Slot module requirements exceed 2 A from SPS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Miscellaneous Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-1279</td>
<td>Single blank 2&quot; display cover, order as required (8 are required to fill a bay front)</td>
</tr>
<tr>
<td>4100-2210</td>
<td>Appliqué, Canadian French, 4100U Fire Control</td>
</tr>
<tr>
<td>4100-9835</td>
<td>Termination and Address Label Kit (for module marking); provides additional labels for field installed modules</td>
</tr>
<tr>
<td>4100-6029</td>
<td>Smoke Management Application Guide; required for UUUL listing</td>
</tr>
<tr>
<td>4100-6034</td>
<td>Door Tamper Switch with built-in addressable IDNet IAM, one per cabinet assembly if required</td>
</tr>
<tr>
<td>2081-9031</td>
<td>Series resistor for WSO, IDCs (N.O. water flow and tamper on same circuit, wires after water flow and before tamper)</td>
</tr>
</tbody>
</table>

#### Initiating Device Circuits (IDCs)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-5005</td>
<td>Eight zones, Class B</td>
</tr>
<tr>
<td>4100-5015</td>
<td>Eight zones, Class A</td>
</tr>
</tbody>
</table>

* Canadian models have low battery cutout. XPS and RPS NACs operate like SPS, see page 5.
Module Selection Information (Continued)

Addressable Interface Modules (refer to location reference on page 8)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Size</th>
<th>Supv.</th>
<th>Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-3101</td>
<td>IDNet Module, 250 point capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With 250 IDNet devices, add</td>
<td>200 mA</td>
<td>250 mA</td>
<td></td>
</tr>
<tr>
<td>4100-3104</td>
<td>IDNet Module, 127 point capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With 127 IDNet devices, add</td>
<td>102 mA</td>
<td>127 mA</td>
<td></td>
</tr>
<tr>
<td>4100-3105</td>
<td>IDNet Module, 64 point capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>With 64 IDNet devices, add</td>
<td>51 mA</td>
<td>64 mA</td>
<td></td>
</tr>
</tbody>
</table>

**IDNet Modules, Specifications for each capacity**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Size</th>
<th>Supv.</th>
<th>Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-3102</td>
<td>MAPNET II Module, 127 point capacity, add devices separately</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module size</td>
<td>1 Block</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module without devices</td>
<td>75 mA</td>
<td>115 mA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loading per IDNet device</td>
<td>0.8 mA</td>
<td>1 mA</td>
<td></td>
</tr>
</tbody>
</table>

**Relay Modules; Nonpower-limited** (for mounting in expansion bay only, refer to location reference on page 8)

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Make/Model</th>
<th>Max Load</th>
<th>Max Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>4100-3202</td>
<td>10 A</td>
<td>DPDT w/feedback</td>
<td>250 VAC</td>
<td>250 VAC</td>
</tr>
<tr>
<td>4100-3204</td>
<td>2 A</td>
<td>4 DPDT w/feedback</td>
<td>30 VDC/VAC</td>
<td>30 VDC/120 VAC</td>
</tr>
<tr>
<td>4100-3206</td>
<td>3 A</td>
<td>8 SPDT</td>
<td>30 VDC/120 VAC</td>
<td>30 VDC/120 VAC</td>
</tr>
</tbody>
</table>

**Current Calculation Notes:**
1. To determine total supervisory current, add currents of modules in panel to base system value and all external loads powered by panel power supplies.
2. To determine total alarm current, add currents of modules in panel to base system alarm current and all panel NAC loads and all external loads powered from panel power supplies.

General Specifications

**Input Power**

- System Power Supplies (SPS)
- Expansion Power Supplies (XPS)
- Remote Power Supplies (RPS)
- TrueAlert Power Supplies (TPS)

<table>
<thead>
<tr>
<th>Power Supply Type</th>
<th>Models</th>
<th>Current Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 VAC</td>
<td>3.5 A maximum @ 102 to 132 VAC, 60 Hz</td>
<td></td>
</tr>
<tr>
<td>220-240 VAC</td>
<td>1.75 A maximum @ 204 to 264 VAC, 50/60 Hz; separate taps for 220/230/240 VAC</td>
<td></td>
</tr>
</tbody>
</table>

**Power Supply Output Ratings, System, Expansion, and Remote Power Supplies**

- Total Power Supply Output Rating: 9 A total @ nominal 28 VDC, including module current and auxiliary power outputs
- Auxiliary Power Tap: 2 A maximum @ nominal 28 VDC
- NACs Programmed for Auxiliary Power: 2 A maximum per NAC, 5 A maximum @ nominal 28 VDC

**Battery Charger, System and Remote Power Supply**

- Battery capacity range: 6.2 Ah to 50 Ah; selectable via programming for batteries below 18 Ah; the SPS is UL listed for up to 110 Ah battery charging for remotely located batteries
- Charger characteristics and performance: Temperature compensated, dual rate, recharges depleted batteries within 48 hours per UL Standard 864; to 70% capacity in 12 hours per ULC Standard S527

**Environmental**

- Operating Temperature Range: 32° to 120°F (0° to 49° C)
- Operating Humidity Range: Up to 93% RH, non-condensing @ 90° F (32° C) maximum

**Additional 4100U Data Sheet Reference**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Data Sheet</th>
<th>Subject</th>
<th>Data Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosures</td>
<td>S4100-0037</td>
<td>MINIPLEX Transponders</td>
<td>S4100-0035</td>
</tr>
<tr>
<td>LED/Switch Modules</td>
<td>S4100-0032</td>
<td>Network Display Unit (NDU)</td>
<td>S4100-0036</td>
</tr>
<tr>
<td>4100U Audio/Phone Modules</td>
<td>S4100-0034</td>
<td>Remote Annunciators</td>
<td>S4100-0038</td>
</tr>
<tr>
<td>TrueAlert Addressable Products</td>
<td>S4009-0003</td>
<td>Remote Battery Charger</td>
<td>S4081-0002</td>
</tr>
</tbody>
</table>
NOTE: A system ground must be provided for Earth Detection and transient protection devices. This connection shall be made to an approved, dedicated Earth connection per NFPA 70, Article 250, and NFPA 780.

Expansion Bay Module Loading Reference

<table>
<thead>
<tr>
<th>Slot 1</th>
<th>Slot 2</th>
<th>Slot 3</th>
<th>Slot 4</th>
<th>Slot 5</th>
<th>Slot 6</th>
<th>Slot 7</th>
<th>Slot 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block A</td>
<td>Block C</td>
<td>Block E</td>
<td>Block G</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block B</td>
<td>Block D</td>
<td>Block F</td>
<td>Block H</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Size Definitions: Block = 4" W x 5" H card area
Slot = 2" W x 8" H motherboard with daughter card

Description | Mounting
---|---
IDNet Modules | 4" x 5", 1 block
4, 2 A Relays | 4" x 5", 1 block
4, 10 A Relays | 4", 2 slots
8, 3 A Relays | 4" x 5", 1 block
VESDA Interface | 2", 1 slot
Class B IDC | 2", 1 slot
Class A IDC | 2", 1 slot
MAPNET II Module | 4", 2 slots
MAPNET II Isolator | 2", 1 slot, next to MAPNET II Module
Style 4 Physical Bridge | 2", 1 slot
Style 7 Physical Bridge | 4", 2 slots
Decoder Module | 6", 3 slots
System, Remote, or TrueAlert Power Supply | Blocks E, F, G, & H ONLY
Expansion Power Supply | Blocks G & H ONLY
NAC Expansion Module | On XPS ONLY

Tyco, Simplex, the Simplex logo, MAPNET II, IDNet, TrueAlarm, SmartSync, WALKTEST, MINIPLEX, TrueAlert, TrueSense and BACnet are trademarks of Tyco International Services AG or its affiliates in the U.S. and/or other countries. Microsoft and Windows are registered trademarks of Microsoft Corporation. VESDA is a trademark of Vision Products Pty Ltd. BACnet is a registered trademark of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE).
STANDARD FEATURES

- 80 Character, alphanumeric LCD readout with wide viewing angle
- Eight, Initiating Device Circuits (IDCs), Style B (Class B)
- Four, Notification Appliance Circuits (NACs), Style Y (Class B)
- Four amp power supply/battery charger
- Power limited design
- Pluggable terminal blocks
- Internal DACT
- Simplex® system accessory compatibility:
  - 4602 Series Remote Control Unit (RCU) and Status Command Unit (SCU), two-wire serial communications
  - 4601 Series Annunciators
  - 4003 Voice Control Panels
  - 4009 NAC Power Extenders

SOFTWARE FEATURES

- Menu-driven programming
- On-site programmable custom labels
- Four operator access levels
- Historical event logs
- Circuit selectable alarm verification
- WALKTEST™ performance testing**
- Selectable active status reminder

OPTIONAL FEATURES

- Expansion modules:
  - Two circuit IDC, two circuit NAC/relay
  - Four circuit NAC/relay
  - Four circuit IDC (low current and high current versions)
  - Four circuit Style D/Style Z (Class A) NAC or IDC zone conversion
  - Eight circuit I/O module
  - Remote station/city connection
- Additional five amp power supply

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7165-0026.212 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancelation. Accepted for use – City of New York Department of Buildings – MEA35-83E. See page 7 for ULC designations. Additional listings may be applicable; contact your local Simplex product supplier for the latest status.

** WALKTEST performance testing is protected under US Patent No. 4,725,818.

† NACs may be individually configured for dry contact relay operation.

NOTE: Contact your local Simplex product supplier for fire alarm control panels suitable for Release Control applications.
4005 STANDARD CONFIGURATION INCLUDES:

4005 Central Processing (CPU) Board:
- Contains the main microprocessor and 4005 programming, evaluates the status of all I/O modules, processes the required responses, and provides a watchdog timer that resets the panel in the event of an abnormal operation.
- Controls the LCD readout and switches that comprise the operator interface.
- Controls the flash EPROM that contains the non-volatile site-specific programming information.
- 4-Wire Smoke Detector Power. Dedicated terminals, 5 second reset, rated 24 VDC, 500 mA, open collector type, power limited and short circuit protected.
- Remote Unit Serial Interface (RUI). Connections for up to 16, style 4 (class B), supervised remote annunciators model 4602-9102, Remote Control Unit (RCU), or 4602-9101, Status Command Unit (SCU). (Further described under Accessories on page 5.)

Power Distribution Board:
- Connections for up to 5 plug-in module cards
- Auxiliary power connections. Two, 24 VDC, each rated for 2 A, power limited. Connections are isolated from NAC power.

Power Supply/Battery Charger:
- Switch Selectable for 120 or 240 VAC
- 24 VDC Power. 4 A, regulated and power limited, is available specifically for notification appliances and auxiliary output use, via two taps of 2 A each.
- Internal System Operating Power is supplied via separate power limited connections.
- Battery Charging for up to 18 Ah batteries mounted within the 4005 cabinet and up to 33 Ah batteries when mounted in an external battery cabinet.
- Function Monitoring. Includes: missing, depleted, and low battery, Earth fault detection, AC power loss, AC power brownout (low input voltage), signal power overload, supply voltage monitoring, and charger failure.
- Depleted Battery Trouble Indication advises when standby operation has exceeded battery capacity.

Internal DACT Module:
- Reports Alarm, Supervisory, Trouble, and AC Failure
- Dual line operation with automatic 24 hour test and programmable fail report delay

Eight, Initiating Device Circuits (IDCs):
- Two, 4 circuit IDC plug-in modules are standard, providing 8, Style B (Class B) IDCs
- Standard IDCs are low current, support up to 20 Simplex detectors per IDC, 2 mA maximum (for detectors with relay bases, use high current expansion modules, see chart on page 7).

IDCs (Continued):
- IDC operation is individually programmable with the following operating mode choices (an abbreviated mode description is part of the IDC display information):
  - Combination Fire/Emergency
  - Combination Smoke/Fire Zone
  - Combination Smoke/Manual Station
  - Current Limit=Fire Alarm, Short/Open=Trouble
  - Duct Detector
  - Fire Alarm Generic
  - Fire Pump Monitor
  - Flame Detector
  - Generator Monitor
  - Heat Detector
  - Latching Supervisory
  - Manual Station
  - Non-Alarm Utility
  - Smoke Detector
  - Sprinkler Supervision, Normally Open
  - Sprinkler Supervision, Normally Closed
  - Supervisory Fire Pump Monitor
  - Supervisory Generator Monitor
  - Supervisory, Generic
  - Trouble Monitor
  - Verified Generic
  - Verified Smoke Zone
  - Verified Combination Smoke/Fire Zone
  - Verified Combination Smoke/Manual Station
  - Waterflow Switch
  - Waterflow/Sprinkler Supv., Normally Open (WSO)
  - Waterflow/Sprinkler Supv., Normally Closed (WSC)

Four, Notification Appliance Circuits (NACs):
- One, 4 circuit NAC/Relay plug-in module is standard, providing 4, Style Y (Class B) NACs that can be individually reconfigured for dry contact relay operation.
- NAC operation is individually programmable as Steady Signaling, Temporal Coded, March Time @ 20 BPM, or March Time @ 120 BPM, and with the following operating modes (an abbreviated mode description is part of the NAC display information):
  - AHU On/Off Relay, Single Relay Control
  - AHU On Relay, Dual Relay Control
  - AHU Off Relay, Dual Relay Control
  - Audible Signal, On-Until-Silenced
  - Audible Signal, On-Until-Reset
  - Doorholder Control
  - Elevator Capture, Primary
  - Elevator Capture, Alternate
  - Generic Signal
  - Sprinkler Supervisory Signal, On-Until-ACK
  - Trouble/Supervisory Signal, On-Until-ACK
  - Trouble/Supervisory Signal, On-Until-Clear
  - Visible Signal, On-Until-Silenced
  - Visible Signal, On-Until-Reset
  - Waterflow Signal, On-Until-Silenced
  - Waterflow Signal, On-Until-Reset
Notification Appliance Circuit (NAC) Relay Mode Operation:

- **NAC/Relay Selection.** Each NAC can be on-site selected for NAC operation or for unsupervised, dry contact, auxiliary relay operation. When operating in the relay mode, either the normally open or the normally closed contact can be connected to the output terminal block. Contacts are rated at 2 A, 32 VDC, for transient suppressed loads.

- **Relay Operation** is individually programmable with the following operating mode choices (an abbreviated mode description is part of the relay display information).

<table>
<thead>
<tr>
<th>RELAY MODES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHU On/Off Relay, Single Relay Control</td>
</tr>
<tr>
<td>AHU On Relay, Dual Relay Control</td>
</tr>
<tr>
<td>AHU Off Relay, Dual Relay Control</td>
</tr>
<tr>
<td>Alarm Relay, On-Until-Silenced</td>
</tr>
<tr>
<td>Alarm Relay, On-Until-Reset</td>
</tr>
<tr>
<td>Doorholder Control</td>
</tr>
<tr>
<td>Elevator Capture, Primary</td>
</tr>
<tr>
<td>Elevator Capture, Alternate</td>
</tr>
<tr>
<td>Generic Relay</td>
</tr>
<tr>
<td>Sprinkler Supervisory Signal, On-Until-Acknowledged</td>
</tr>
<tr>
<td>Trouble/Supervisory Signal, On-Until-Acknowledged</td>
</tr>
<tr>
<td>Trouble/Supervisory Signal, On-Until-Clear</td>
</tr>
<tr>
<td>Visible Signal, On-Until-Silenced</td>
</tr>
<tr>
<td>Visible Signal, On-Until-Reset</td>
</tr>
<tr>
<td>Waterflow Signal, On-Until-Silenced</td>
</tr>
<tr>
<td>Waterflow Signal, On-Until-Reset</td>
</tr>
</tbody>
</table>

### 4005 BASIC OPERATOR FUNCTIONS

**Display Indications**

Upon receiving an abnormal condition of alarm, supervisory, or trouble, the 80 character backlit LCD will identify the quantity and type of abnormal indications. With the locked door closed, the display, status LEDs and primary operator switches are visible through the transparent door viewing panel as shown in **FIGURE 1**. This figure represents the LCD during normal conditions showing normal status, time, and date.

**FIGURE 2** represents typical fire alarm display screens.

**FIGURE 1. Basic Operator Function Keys with Normal Display of Status, Time, and Date**

For this example, the presence of three fire alarm conditions is shown in the top screen – fire zones 2, 7, and 6, displayed in chronological order of occurrence (up to 10 zones may be shown). The display will alternate with the one shown below it as the operator is prompted to assist with the next required action.

**FIGURE 2. Typical 4005 Displays with Alarm Activity**

**Alarm ACK, Supervisory ACK, Trouble ACK**

The ALARM ACK, Supervisor ACK, or TROUBLE ACK key will silence the local tone-alert, corresponding to the type of abnormal condition. Subsequent entry of the appropriate ACK key will chronologically scroll through the specifics for each abnormal condition. Screen information includes custom labels for each zone that provides a detailed report of the location, device type description, device condition, and list count for the first point in the Alarm, Supervisory, or Trouble list.

**FIGURE 3** represents a typical screen that would appear after using the ALARM ACK key to scroll to the first fire condition. It displays the zone location as “First Floor East Wing Room 12”, the device type as “Smoke Detector” and the device condition of “Alarm”. The 1/3 indicates that the displayed alarm is the first of three alarms present in the panel at this time. Site-specific labels can be upper or lower case and can provide a discrete annunciation that can assist fire response with clearly defined zone locations and device types.

**FIGURE 3. Typical 4005 Fire Alarm Information Custom Label Display**

**Alarm Silence**

The ALARM SILENCE key will silence the notification appliances programmed for on-until-silence (typically audible notification appliances) and the ALARM SILENCED LED will remain illuminated until the panel is reset.

**System Reset**

When the source of the abnormal condition is corrected, the SYSTEM RESET key will reset the panel and return the status to normal.
Passcode Access
The 4005 has four levels of passcode access:
**Level 1** is basic access and is available by unlocking the door. Access includes the standard operator functions and historical log information.

**Levels 2 and 3** are on-site programmable to control functions required by local needs such as clock set, enable/disable, Walk Test, and custom label changes.

**Level 4** access provides passcode programming of critical life safety functions, access level programming, and service level diagnostics and programming.

Expanded Operator Functions
Unlocking the door provides access to the operator control panel and reveals nine additional keys used for expanded operator functions and for circuit type and programming selections (refer to FIGURE 4).

The following expanded operator functions are available:
- **Circuit Disable/Enable**, available for each individual IDC, NAC, or relay circuit.
- **WALKTEST Performance Testing** allows a single fire alarm system tester to manually initiate remote alarms and troubles and obtain a verification output from the NACs with an automatic Reset. Alarms are initiated to produce a pulse count that identifies the zone. With the zone number confirmed, troubles can be then initiated with a common pulse output for a complete functional test of each zone.
- **Indicator Test** confirms that all panel LED and LCD indicators are properly functioning.
- **History Logs** provide up to 50 fire alarm logs and up to 100 trouble logs. They are available for chronological review as fire, trouble, or fire and trouble combined.

Programming
**NOTE:** During programming, monitoring remains active and the 4005 will perform enabled responses.

**Programming Operations Include:**
- Abort Enable, 30 second delay allows zone status confirmation before enabling.
- Alarm Cutout time delay.
- Active Status Reminder (Alarm/Supervisory/Trouble Resound every 8 hours).
- Alarm Silence Inhibit Timer.
- Assignment and selection of passcodes and access levels.
- Custom control equations.
- Custom label generation and revision.
- Doorholder time delay (drop upon Alarm, drop upon AC power loss).
- IDC circuit type (reference list on page 2).
- Module allocation and identification.
- NAC or Relay circuit type (reference lists on pages 2 and 3).
- NAC/Relay output coding of: Steady Signaling, Temporal Coded, March Time @ 20 BPM, or March Time @ 120 BPM.
- Setting of time and date, and selection of 12 or 24 hour format.

**Menu Selection and Response Keys:**
The 4005 LCD provides menu driven prompts for performing functions. Navigating through the menu is easily performed by using the operator keys at the bottom of the interface panel (see FIGURE 4).

- **Menu** always produces the main menu.
- **Function** provides a list of the available actions that can be performed depending on which programming or functional area is being displayed.

(continued next page)
Menu Selection and Response Keys (Continued):
- Disable/Enable toggles status of the displayed circuit.
- Exit/Clear provides a path out of the chosen menu and allows manual entries to be cleared.
- Enter confirms the selection made and enters program changes into memory.
- Left, Previous, Next, and Right arrow keys move the display cursor or select screens or specific choices, depending on the displayed functional area.

4005 SYSTEM OPTIONAL MODULES
Class A (Style D/Style Z), 4 Circuit Adaptor Module for either IDCs or NACs (4005-9806):
- Individually isolated circuit design adapts either IDCs or NACs for Class A operation allowing a combination of circuit types
- Mounts on top of the module, maintaining full module capacity

Power Distribution Module (4005-9807):
- Extends 4005 capacity to ten plug-in modules
- Mounts on left side of 4005 chassis
- Required when plug-in module requirements extend beyond five and/or for connection of expansion power supply 4005-9813

City Circuit Module (4005-9809):
- Single circuit, selectable as local energy, reverse polarity, or form "C" contact

City Circuit Module (Continued):
- Reverse polarity is selectable for Alarm/Trouble, Alarm, Supervisory, or Trouble only reporting
- Up to two modules mount directly to 4005 chassis below the CPU assembly

Expansion Power Supply (4005-9813):
- Regulated 24 VDC, rated at 5 A
- Power Limited Design
- Installs on the left side of the 4005 chassis and fits behind expansion modules, allowing full module capacity
- Switch selectable for 120 VAC or 240 VAC
- Provides additional power for notification appliances, 4-wire detectors, annunciator power, or other fire alarm auxiliary functions

4005 SYSTEM CAPACITY EXPANSION MODULES
Optional and expansion modules can be easily installed and programmed on-site. Their "snap-in-place" design installs without tools or hardware, allowing configuration for the initial system capacity or for later system expansion.

2 Circuit IDC with 2 Circuit NAC/Relay (4005-9803):
- Two, standard low current IDCs, for up to 20 detectors per IDC, 2 mA maximum
- Two circuits, individually on-site selectable as either Style B (Class B) NAC, or N.O. or N.C. relay circuits
- Combined on one plug-in module
- Operation and programming is the same as the standard control panel IDCs and NAC/Relay circuits

4 Circuit IDC Module (4005-9804):
- Four, standard low current IDCs on one plug-in module, for up to 20 detectors per IDC, 2 mA maximum
- Operation and programming is the same as the standard control panel IDCs

4 Circuit NAC/Relay Module (4005-9805):
- Four, NAC/Relay Circuits on one plug-in module

ACCESSORIES
4602 Series Annunciators:
- Supervised Serial communications with twisted, shielded pair
- SCU has 16 LED zone status indicators
- RCU has 8 LED zone status indicators, Power-On LED and Trouble LED, Local tone-alert, and

4601 Series Annunciators:
- Provides LED status indications and switches for acknowledge, silence, and reset
- Modular design allows sizing as needed

keys switch enabling of Trouble and Alarm Silence, System Reset, and Manual Evacuation

4 Circuit NAC/Relay Module (Continued):
- Operation and programming is the same as the standard control panel NAC/Relay circuits

8 Circuit I/O Module (4005-9808):
- Select each circuit as either an input or output
- Input mode supervises hard wired connections to 4601 Series annunciator switches or utility switch inputs
- Output mode is rated 24 VDC, 150 mA open collector driver, short circuit protected, UL listed for pilot duty
- Output mode provides supervised auxiliary control of a compatible annunciator or remote relay for emergency control in accordance with NFPA 72 and NFPA 101

4 Circuit IDC, High Current, Required for Detectors with Relay Bases (4005-9824):
- Four, high current IDCs on one plug-in module
- High current operation for up to 30 detectors per IDC, 3 mA maximum detector power (required for detectors with relay bases)
- Operation and programming is the same as the standard control panel IDCs
### ACCESSORIES (Continued)

#### 4001-9810 Fire Alarm System Control Relays
- Four Alarm Relays mounted on a 6 gang plate, coils rated 20 mA each at 24 VDC
- Contacts rated 1/2 A at 120 VAC, 2 A at 30 VDC, for transient suppressed loads

#### 4005-9150 and 4002 Adapter Kits for Retrofit:
- Replace existing 4002 Fire Alarm Control Panels with the 4005 panel features, supplied with high current IDC modules for convenient retrofit
- Cabinet, door, and electronics may be ordered separately to satisfy early cabinet (backbox) installation requirements

### Specifications

#### Electrical

<table>
<thead>
<tr>
<th>Component</th>
<th>Standard Panel Input (Switch Selectable)</th>
<th>Main Power Supply Output*</th>
<th>Expansion Power Supply Input (Switch Selectable)</th>
<th>Expansion Power Supply Output*</th>
</tr>
</thead>
<tbody>
<tr>
<td>规格</td>
<td>102–132 VAC, 60 Hz; 2 A maximum</td>
<td>204–264 VAC, 50/60 Hz; 1 A maximum</td>
<td>102–132 VAC, 60 Hz; 3 A maximum</td>
<td>204–264 VAC, 50/60 Hz; 1.5 A maximum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 A @ 24 VDC (Regulated)</td>
<td>204–264 VAC, 50/60 Hz; 1.5 A maximum</td>
<td>5 A @ 24 VDC (Regulated)</td>
</tr>
</tbody>
</table>

**Input Mode**
- Dry Contact, supervised with 2.2 kΩ end-of-line resistor

**Output Mode**
- 24 VDC, 150 mA, open collector

<table>
<thead>
<tr>
<th>Component</th>
<th>NAC Operation, Per Circuit</th>
<th>Relay Operation, N.O./N.C.</th>
<th>Resettable 4-Wire Smoke Detector Power</th>
<th>Auxiliary Power Connections (two taps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>规格</td>
<td>24 VDC nominal, 2A maximum</td>
<td>2 A @ 32 VDC</td>
<td>24 VDC, 500 mA, open collector</td>
<td>2 A @ 24 VDC maximum each tap, power limited</td>
</tr>
</tbody>
</table>

#### General

<table>
<thead>
<tr>
<th>Component</th>
<th>On-Site Wiring Terminal Blocks</th>
<th>Operating Temperature</th>
<th>Operating Humidity Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>规格</td>
<td>Pluggable type, wire size is 18 to 12 AWG (0.82 mm² to 3.31 mm²)</td>
<td>32°F to 120°F (0°C to 49°C)</td>
<td>up to 93% RH, non-condensing @ 90°F (32°C)</td>
</tr>
</tbody>
</table>

*NOTE: Power supply output currents listed are entirely available for NAC appliances and auxiliary equipment. 4005 modules are powered from separate circuits.

### Battery Requirements (refer to document 900-012 for battery selection)

#### Standard Panel
- Includes 2, 4005-9804 & 1, 4005-9805

<table>
<thead>
<tr>
<th>Standard Panel</th>
<th>Supv. (mA)</th>
<th>Supv. Total</th>
<th>Alarm (mA)</th>
<th>Alarm Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select one</td>
<td>135</td>
<td>293</td>
<td>330</td>
</tr>
</tbody>
</table>

#### 4005-9150, Electronics Only
- Includes 2, 4005-9824 & 1, 4005-9805

<table>
<thead>
<tr>
<th>4005-9150, Electronics Only</th>
<th>Supv. (mA)</th>
<th>Supv. Total</th>
<th>Alarm (mA)</th>
<th>Alarm Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select one</td>
<td>148</td>
<td>330</td>
<td></td>
</tr>
</tbody>
</table>

#### Separate Modules; Standard, Optional, and Expansion; see NOTES ( ) below

<table>
<thead>
<tr>
<th>Module Description</th>
<th>Supv. (mA)</th>
<th>Supv. Total</th>
<th>Alarm (mA)</th>
<th>Alarm Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4005-9806, Class A Adapter</td>
<td>1 x</td>
<td>=</td>
<td>33 x</td>
<td>=</td>
</tr>
<tr>
<td>4005-9807, Expansion Power Distribution Module</td>
<td>1 x</td>
<td>=</td>
<td>1 x</td>
<td>=</td>
</tr>
<tr>
<td>4005-9809, 1 Circuit Remote Station/City Connect</td>
<td>10 x</td>
<td>=</td>
<td>10 x</td>
<td>=</td>
</tr>
<tr>
<td>4005-9813, Expansion Power Supply</td>
<td>12 x</td>
<td>=</td>
<td>12 x</td>
<td>=</td>
</tr>
<tr>
<td>4005-9803, 2 IDC, Low Current, and 2 NAC/Relay (1, 2, 3, 4, 5)</td>
<td>14 x</td>
<td>=</td>
<td>34 x</td>
<td>=</td>
</tr>
<tr>
<td>4005-9804, 4 IDC, Low Current (1, 2, 3)</td>
<td>23 x</td>
<td>=</td>
<td>57 x</td>
<td>=</td>
</tr>
<tr>
<td>4005-9805, 4 NAC/Relay</td>
<td>(5)</td>
<td>x</td>
<td>34 x</td>
<td>=</td>
</tr>
<tr>
<td>4005-9808, 8 Circuit I/O Module</td>
<td>1 x</td>
<td>=</td>
<td>1 x</td>
<td>=</td>
</tr>
<tr>
<td>4005-9824, 4 IDC, High Current (1, 2, 4)</td>
<td>40 x</td>
<td>=</td>
<td>94 x</td>
<td>=</td>
</tr>
<tr>
<td>Internal DACT (aftermarket PID 4005-9810)</td>
<td>(6)</td>
<td>30 x</td>
<td>30 x</td>
<td>=</td>
</tr>
</tbody>
</table>

† Standard panels and 4005-9150 include IDC loop currents for both supervisory and alarm.

#### Total, 4005 Modules
- Total, 4-Wire Detector Power +
- Total, Other Auxiliary Power +
- Total, Notification Appliance Power +
- Total Supervisory Current
- Total Alarm Current

#### NOTES:
1. IDC supervisory currents include loop currents of 2 mA/circuit for "low" current IDCs and 3 mA/circuit for "high" current IDCs.
2. IDC Alarm currents, add as required. Low current IDCs = 30 mA/circuit; High current IDCs = 65 mA/circuit.
3. Add 8 mA supervisory current per SC, WSC point used.
4. Add 10 mA supervisory current per SC point used.
5. Add 8 mA supervisory current per circuit if used as auxiliary relay and programmed for normally on.
6. DACT Current is 45 mA when reporting.
### 4005 Product Selection Chart

<table>
<thead>
<tr>
<th>Category</th>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Control Panels</strong></td>
<td>4005-9101*</td>
<td>Beige cabinet 4005 Fire Alarm Control Panel; includes 8 standard IDCs, 4 NAC/Relay circuits, 4 A power supply, internal Dual Line DACT, cabinet and door (DACT requires one cable per line, see Accessories on page 8)</td>
</tr>
<tr>
<td></td>
<td>4005-9102*</td>
<td>Red cabinet 4005 Fire Alarm Control Panel, 8 high current IDCs, 4 NAC/Relay Circuits, 4 A power supply, requires 4002 Adapter Kit or separately ordered cabinet and door</td>
</tr>
<tr>
<td><strong>Electronics Only</strong></td>
<td>4005-9150</td>
<td>4000 Fire Alarm Control Panel, 8 high current IDCs, 4 NAC/Relay Circuits, 4 A power supply, requires 4002 Adapter Kit or separately ordered cabinet and door</td>
</tr>
<tr>
<td></td>
<td>4005-9806</td>
<td>Four Circuit A (Style Z/Style D) Adapter Module for use with IDC and/or NAC modules, standard or expansion; mounts on top of plug-in IDC/NAC module; circuits convert either NAC or IDC, or combination, compatible with module being adapted</td>
</tr>
<tr>
<td></td>
<td>4005-9807</td>
<td>Additional Five Slot Power Distribution Module, required when plug-in module count exceeds five, or for connection of Expansion Power Supply</td>
</tr>
<tr>
<td></td>
<td>4005-9809**</td>
<td>Single (1) Circuit City Module, chassis mounted, below CPU Qty, 2 Max.**</td>
</tr>
<tr>
<td></td>
<td>4005-9810**</td>
<td>Internal Dual Line DACT; aftermarket add-on; for connecting to RJ31X Telco jacks, requires one DACT cable per line (see 4005 Accessories on page 8)</td>
</tr>
<tr>
<td></td>
<td>4005-9813</td>
<td>Expansion Power Supply, 24 VDC, 5 A, regulated; chassis mounted beneath left side modules; requires 4005-9807 Power Distribution Module Qty, 1 Max.</td>
</tr>
<tr>
<td><strong>Optional Modules</strong></td>
<td>4005-9803</td>
<td>Standard Operation, 2 Circuit IDC with 2 NAC/Relay circuits</td>
</tr>
<tr>
<td></td>
<td>4005-9804</td>
<td>Standard Operation, 4 Circuit IDC Module</td>
</tr>
<tr>
<td></td>
<td>4005-9805</td>
<td>4 Circuit NAC/Relay Module</td>
</tr>
<tr>
<td></td>
<td>4005-9808</td>
<td>8 Circuit Programmable I/O Module</td>
</tr>
<tr>
<td></td>
<td>4005-9824</td>
<td>4 Circuit IDC Module, high current operation, Class B, for detectors with relay bases</td>
</tr>
<tr>
<td><strong>Expansion Modules</strong></td>
<td>2975-9209</td>
<td>Beige 4005 Cabinet</td>
</tr>
<tr>
<td></td>
<td>2975-9210</td>
<td>Red 4005 Cabinet</td>
</tr>
<tr>
<td><strong>Cabinets</strong></td>
<td>4005-9857</td>
<td>Beige Door</td>
</tr>
<tr>
<td></td>
<td>4005-9858</td>
<td>Red Door</td>
</tr>
<tr>
<td><strong>Doors</strong></td>
<td>2081-9272</td>
<td>6.2 Ah Battery, 12 VDC</td>
</tr>
<tr>
<td></td>
<td>2081-9274</td>
<td>10 Ah Battery, 12 VDC</td>
</tr>
<tr>
<td></td>
<td>2081-9288</td>
<td>12.7 Ah Battery, 12 VDC</td>
</tr>
<tr>
<td></td>
<td>2081-9275</td>
<td>18 Ah Battery, 12 VDC</td>
</tr>
<tr>
<td></td>
<td>2081-9271</td>
<td>33 Ah Battery, 12 VDC Requires External Battery Cabinet 4009-9802</td>
</tr>
<tr>
<td></td>
<td>4009-9802</td>
<td>External Battery Cabinet, beige with solid door; includes battery harness for mounting close-ripomed to 4005 cabinet. Cabinet size: 25-3/4&quot; W x 20-3/4&quot; H x 4-1/8&quot; D (654 mm x 527 mm x 105 mm)</td>
</tr>
<tr>
<td><strong>Batteries</strong></td>
<td>4005-9850</td>
<td>Two Unit 4002 Cabinet size Includes 4005 chassis adapter plate with beige retainer panel</td>
</tr>
<tr>
<td></td>
<td>4005-9851</td>
<td>Four Unit 4002 Cabinet size Includes 4005 chassis adapter plate with beige retainer panel</td>
</tr>
<tr>
<td></td>
<td>4005-9852</td>
<td>Six Unit 4002 Cabinet size Includes 4005 chassis adapter plate with beige retainer panel</td>
</tr>
<tr>
<td></td>
<td>4005-9853</td>
<td>Two Unit 4002 Cabinet size Includes 4005 chassis adapter plate with red retainer panel</td>
</tr>
<tr>
<td></td>
<td>4005-9854</td>
<td>Four Unit 4002 Cabinet size Includes 4005 chassis adapter plate with red retainer panel</td>
</tr>
<tr>
<td></td>
<td>4005-9855</td>
<td>Six Unit</td>
</tr>
</tbody>
</table>

* ULC listed models are designated with a suffix of "C" for English and "CF" for French (example: 4005-9101CF).

** DACT module is standard equipment on 4005-9101 and 4005-9102. Operation allows for either a DACT module or one or two City Connection modules. The DACT is programmed using a terminal or a laptop computer in terminal emulation mode. Connection and programming details are provided with the Installation Instructions (publication 574-049).

For further 4005 information, refer to Field Wiring Diagram 841-990 and Installation instructions 574-068.
### 4005 Accessories Selection Chart

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4602-9101</td>
<td>Status Command Unit (SCU), 16 LED serial connection annunciator</td>
</tr>
<tr>
<td>4602-9102</td>
<td>Remote Command Unit (RCU), 8 LED serial connection annunciator with remote tone-alert and control panel status LEDs, and switch control for Trouble and Alarm Silence, System Reset, and Manual Evacuation (4602 Series Annunciators are available for multiple packaging applications, for further information, refer to data sheets S4602-0001, S4602-0004, and S4602-0005)</td>
</tr>
<tr>
<td>4601 Series</td>
<td>LED/Switch Annunciators, modular design allows selection of required LEDs and control switches (refer to data sheet S4601-0002)</td>
</tr>
<tr>
<td>4001-9810</td>
<td>Four Alarm Relays mounted on a 6 gang plate, Coils: 20 mA each at 24 VDC, Contacts: 1/2 A at 120 VAC, 2 A at 30 VDC, for transient suppressed loads</td>
</tr>
<tr>
<td>2080-9047</td>
<td>DACT Cable with RJ45 Plug, 14 ft long (4.3 m); <strong>required</strong> for DACT use</td>
</tr>
</tbody>
</table>

### MOUNTING DIMENSIONS

- Conduit knockouts are provided on top and bottom
- Reference, 24" stud centers
- Box width = 22-1/2" (572 mm)
- Knockouts are provided for nailing. Two on each side and one each on top and bottom.
- Drywall markers indicate 1/2" (13 mm) depth, two on each side
- Box includes an 0.048" (1.2 mm) thick trim for semi-flush mounting. Height and width are same as door.
- 23" (584 mm)
- 1/2" (13 mm)
- 3-7/8" (98 mm)

### NOTE
A system ground must be provided for Earth Detection and transient protection devices. This connection shall be made to an approved, dedicated Earth connection per NFPA 70, article 250, and NFPA 780.

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Tyco, Simplex, the Simplex logo, Life Alarm, and WALKEST are trademarks of Tyco International AG or its affiliates in the U.S. and/or other countries. NFPA 70, NFPA 72, and National Fire Alarm Code are registered trademarks of the National Fire Protection Association (NFPA).
Multi-Application Peripherals

MAPNET II® or IDNet™ Communicating Devices
Addressable Manual Stations

Features

Individually addressable manual fire alarm stations with:

- Power and data supplied via MAPNET II or IDNet addressable communications using a single wire pair**
- Operation that complies with ADA requirements
- Pull lever that protrudes when alarmed
- Break-rod supplied (use is optional)
- Models are available with single or double action (breakglass or push) operation
- UL listed to Standard 38

Compatible with Simplex:

- Model Series 4010/4100/4120/4020 fire alarm control panels equipped with either IDNet or MAPNET II communications
- Model Series 2120 communicating device transponders (CDTs) equipped with MAPNET II communications

Compact, sealed construction:

- NEMA 2 enclosure rating for minimal dust infiltration
- Allows mounting in standard electrical boxes
- Screw terminals for wiring connections

Tamper resistant reset key lock (keyed same as Simplex fire alarm cabinets)

Multiple mounting options:

- Surface or semi-flush with standard boxes or matching Simplex boxes
- Flush mount adapter kit
- Adapters are available for retrofitting to commonly available existing boxes

Description

The Simplex model 4099-9001 addressable station combines the familiar Simplex manual station housing with a compact communication module that is easily installed to satisfy demanding applications. Its integral individual addressable module (IAM) constantly monitors status and communicates changes to the connected control panel via MAPNET II or IDNet communications wiring.

Operation

Activation of the Simplex 4099-9001 single manual station requires a firm downward pull to activate the alarm switch. Completing the action breaks an internal plastic break-rod (visible below the pull lever, use is optional). The use of a break-rod can be a deterrent to vandalism without interfering with the minimum pull requirements needed for easy activation. The pull lever latches into the alarm position and remains extended out of the housing to provide a visible indication.

Double Action Stations (Breakglass) require the operator to strike the front mounted hammer to break the glass and expose the recessed pull lever. The pull lever then operates as a single action station.

Double Action Stations (Push Type) require that a spring loaded interference plate (marked PUSH) be pushed back to access the pull lever of the single action station.

Station reset requires the use of a key to reset the manual station lever and deactivate the alarm switch. (If the break-rod is used, it must be replaced.)

Station testing is performed by physical activation of the pull lever. Electrical testing can be also performed by unlocking the station housing to activate the alarm switch.

** MAPNET II and IDNet addressable communications designs are protected by U.S. Patent No. 4,796,023.
Addressable Manual Station Product Selection

Addressable Manual Stations

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Addressable manual station, red housing with white letters and white pull lever</th>
</tr>
</thead>
<tbody>
<tr>
<td>4099-9001</td>
<td>Single action</td>
<td></td>
</tr>
<tr>
<td>4099-9002</td>
<td>Double action, Breakglass operation</td>
<td></td>
</tr>
<tr>
<td>4099-9003</td>
<td>Double action, Push operation</td>
<td></td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2975-9178</td>
<td>Surface mount steel box, red</td>
<td>Refer to page 3 for dimensions</td>
</tr>
<tr>
<td>2975-9022</td>
<td>Cast aluminum surface mount box, red</td>
<td>Typically for retrofit, refer to page 4</td>
</tr>
<tr>
<td>2099-9813</td>
<td>Semi-flush trim plate for double gang switch box, red</td>
<td></td>
</tr>
<tr>
<td>2099-9814</td>
<td>Surface trim plate for Wiremold box V5744-2, red</td>
<td></td>
</tr>
<tr>
<td>2099-9819</td>
<td>Flush mount adapter kit, black</td>
<td>Refer to page 4 for details</td>
</tr>
<tr>
<td>2099-9820</td>
<td>Flush mount adapter kit, beige</td>
<td></td>
</tr>
<tr>
<td>2099-9803</td>
<td>Replacement breakglass</td>
<td></td>
</tr>
<tr>
<td>2099-9804</td>
<td>Replacement break-rod</td>
<td></td>
</tr>
<tr>
<td>2099-9828</td>
<td>Institutional cover kit for field installation on 4099-9001</td>
<td></td>
</tr>
</tbody>
</table>

Specifications

<table>
<thead>
<tr>
<th>Power and Communications</th>
<th>MAPNET II or IDNet, 1 address per station, up to 2500 ft (762 m) from fire alarm control panel, up to 10,000 ft (3048 m) total wiring distance (including T-Taps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address Means</td>
<td>Dipswitch, 8 position</td>
</tr>
<tr>
<td>Wire Connections</td>
<td>Screw terminal for in/out wiring, for 18 to 14 AWG wire</td>
</tr>
<tr>
<td>UL Listed Temperature Range</td>
<td>32° to 120° F (0° to 49° C) intended for indoor operation</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>Up to 93% RH at 100° F (38° F)</td>
</tr>
<tr>
<td>Housing Color</td>
<td>Red with white raised lettering</td>
</tr>
<tr>
<td>Material</td>
<td>Housing and pull lever are Lexan® polycarbonate</td>
</tr>
<tr>
<td>Pull Lever Color</td>
<td>White with red raised lettering</td>
</tr>
<tr>
<td>Housing Dimensions</td>
<td>5&quot; H x 3 3/4&quot; W x 1&quot; D (127 mm x 95 mm x 25 mm)</td>
</tr>
</tbody>
</table>

Addressable Manual Station Semi-Flush Mounting

![Single Gang Box Mount](image1)

Single gang box, 2 1/2" deep (64 mm), RACO #500 or equal (supplied by others).

![4" Square Box Mount](image2)

4" (102 mm) square box, 2 1/8" (54 mm) minimum depth, RACO #231 or equal (supplied by others).

Mount flush or with 1/16" (2 mm) maximum extension. DO NOT RECESS.

Wall surface

Station side view

Single gang cover plate, 3/4" (19 mm) extension, RACO #773 or equal (supplied by others).

Semi-Flush Mount Side View
Preferred Mounting. For surface mounting of these addressable manual stations, the preferred electrical boxes are shown in the illustration to the right.

Additional Mounting Reference. Refer to page 4 for Wiremold box mounting compatibility.

Surface Mount Side View with Internal Detail

Application Reference

Refer to NFPA 72, the National Fire Alarm Code (reference section 5-8), and all applicable local codes for complete requirements for manual stations. The following summarizes the basic requirements.

1. Stations shall be located in the normal path of exit and distributed in the protected area such that they are unobstructed and readily accessible.

2. Mounting shall be with the operable part not less than 3 1/2 ft (1.1 m) and not more than 4 1/2 ft (1.37 m) above floor level.

3. At least one station shall be provided on each floor. Additional stations shall be provided to obtain a travel distance not more than 200 ft (61 m) to the nearest station from any point in the building.

4. When manual station coverage appears limited in any way, additional stations should be installed.
Addressable Manual Station, Additional Mounting Information

For retrofit and new installations, additional compatible mounting boxes and the required adapter plates are shown in the illustration to the right.

Please note that these addressable manual stations will also install onto single gang Wiremold® box model V5747 but will overlap the box. Wiremold V5747 dimensions are: 4 5/8" H x 2 7/8" W x 1 3/8" D (117 mm x 73 mm x 35 mm).

Addressable Manual Station, Flush Mounting Information

Flush mount adapter kit 2099-9819, Black 2099-9820, Beige

Hole cutout must be a minimum of 6" H by 5" W (152 mm by 127 mm)

Box must be recessed into wall 1" to 1 1/8" (25.4 mm to 29 mm)

Wall surface

4 11/16" (119 mm) square box, 2 1/8" (54 mm) minimum depth (by others)
Multi-Application Peripherals and Accessories

UL Listed, CSFM and FM Approved*

Non-Coded Manual Stations
2099 Series Single and Double Action Operation

FEATURES
- Single action models
- Double action models available as:
  - Breakglass
  - Push Type
- Institutional model
  - Key operated only
- Pull lever protrudes when alarmed
- Tamper resistant reset key lock:
  - Keyed same as fire alarm cabinet
- Pre-signal and annunciator contact options
- Local alarm cover option
- Surface, flush, or semi-flush mounting
- Complies with ADA requirements

OPERATION
Single Action Stations require a firm downward pull to activate the alarm switch. Completing the action breaks an internal plastic break-rod (visible below the pull lever). The pull lever latches into the alarm position and remains extended out of the cover to provide a visible indication of which station was alarmed.

Double Action Stations (Breakglass) require the operator to strike the front mounted hammer to break the glass and expose the recessed pull lever. The pull lever then operates as a single action station.

Double Action Stations (Push Type) require that a spring loaded interference plate (marked PUSH) be pushed back to access the pull lever of the single action station.

Institutional Stations are designed to activate by key operation only. This allows access for manual alarms to be initiated by authorized personnel. Operation requires key insertion and opening of the station cover.

Pre-Signal Option activates when the lever is pulled. General alarm initiation requires a key to activate a keyswitch located behind the pull lever.

Station Reset requires the use of a key to reset the manual station lever and deactivate the alarm switch. If the break-rod is used, it must be replaced.

Testing requires physical activation of the pull lever (except for institutional stations).

* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7150-0026:175 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Additional listings may be applicable, contact Simplex for the latest status. Refer to data sheet S2099-0009 for stations specifically intended for use in New York City. UL Listed stations are documented separately, contact Simplex for assistance.

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APPLICATIONS
Refer to NFPA 72, the National Fire Alarm Code, (reference section 5-9), and all applicable local codes for complete requirements for manual stations. The following summarizes the basic requirements.

Stations shall be located in the normal path of exit and distributed in the protected area such that they are unobstructed and readily accessible.

Mounting shall be with the operable part not less than 3 1/2 ft (1.1 m) and not more than 4 1/2 ft (1.37 m) above floor level.

At least one station shall be provided on each floor.

Additional stations shall be provided to obtain a travel distance not more than 200 ft (61 m) to the nearest station from any point in the building. When manual station coverage appears limited in any way, additional stations should be installed.

Construction. Covers and pull levers are constructed of chip resistant and dirt resistant, high impact Lexan polycarbonate. Covers are red with white lettering and pull levers are white with red lettering.

ENVIRONMENTAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>32° to 140° F (0° to 60° C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humidity Range</td>
<td>up to 90% RH at 90° F (32° C)</td>
</tr>
</tbody>
</table>

NON-ADDRESSABLE MANUAL STATION FEATURE SELECTION CHART
(see note 3 for addressable station reference)

<table>
<thead>
<tr>
<th>Single Action Models (General Alarm)</th>
<th>Annunciator Contacts N.O.</th>
<th>Annunciator Contacts N.C.</th>
<th>&quot;Local&quot; Alarm Cover</th>
<th>Institutional Cover</th>
<th>Mounting Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2099-9754</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>2099-9101</td>
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<td></td>
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<tr>
<td>2099-9102</td>
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<td>2099-9107</td>
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<td>2099-9755</td>
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<td>2099-9762</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Double Action Models (General Alarm)</th>
<th>Annunciator Contacts N.O.</th>
<th>Annunciator Contacts N.C.</th>
<th>&quot;Local&quot; Alarm Cover</th>
<th>Institutional Cover</th>
<th>Mounting Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2099-9103</td>
<td>✓</td>
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<td>2099-9105</td>
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<td>2099-9108</td>
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ACCESSORIES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2099-9803</td>
<td>Replacement breakglass (standard, English)</td>
</tr>
<tr>
<td>2099-9804</td>
<td>Replacement break-rod</td>
</tr>
<tr>
<td>2099-9819</td>
<td>Flush adapter kit, black (refer to page 4)</td>
</tr>
<tr>
<td>2099-9820</td>
<td>Flush adapter kit, beige (refer to page 4)</td>
</tr>
<tr>
<td>2099-9822</td>
<td>Replacement retaining clip for breakglass</td>
</tr>
<tr>
<td>2099-9828</td>
<td>Institutional cover kit</td>
</tr>
<tr>
<td>2975-9178</td>
<td>Red, surface mount box, sheet metal, 5 3/16&quot; H x 4&quot; W x 2 3/16&quot; D (127 mm x 102 mm x 56 mm)</td>
</tr>
<tr>
<td>2975-9022</td>
<td>Red, cast aluminum surface mount box, 5&quot; H x 3 7/8&quot; W x 2 3/16&quot; D (127 mm x 98 mm x 56 mm)</td>
</tr>
</tbody>
</table>

NOTES:
1. These models can be semi-flush mounted using a standard single gang 2 1/2" (64 mm) deep switch box. DO NOT RECESS BOX, mount box flush or with 1/16" (2 mm) maximum protrusion. These models can also be surface mounted on a Wiremold box model number V5744S, 4 5/8" H x 2 7/8" W x 2 1/4" D (117 mm x 73 mm x 57 mm).
2. For surface mount, these models require 2975-9178 or 2099-9022 boxes. For semi-flush mount, these models require a 4" (102 mm) square box with a single gang cover plate (see diagram on page 3).
3. For information on Simplex addressable manual stations, refer to data sheet S2190-0012 for MAPNET II addressable stations and data sheet S4099-0001 for IDNet™ addressable stations.
MOUNTING INFORMATION
Refer to installation instructions 574-656 (PER-21-502) for additional information.

SURFACE MOUNTING

 Knockouts located top and bottom

2975-9178 Box

4" (102 mm)

5" (127 mm)

3 3/4" (95 mm)

FIRE ALARM

PULL DOWN

Station cover hinges open for installation access

2 3/16" (56 mm)

5 3/16" (132 mm)

Side View, Surface Mounting

SEMI-FLUSH MOUNTING, 4” BOX
(refer to selection chart for requirements)

4" (102 mm) square box, 2 1/8" (54 mm) minimum depth RACO #231 or equal (supplied separately)

Single gang cover plate, 3/4" (19 mm) extension, RACO #773 or equal (supplied separately)

Mount flush or with 1/16" (2 mm) maximum extension DO NOT RECESS

Station side view

Wall surface

Side View, Semi-Flush Mounting
TrueAlarm® Analog Sensing

TrueAlarm Analog Sensors – Photoelectric, Ionization, and Heat; Compatible Bases and Accessories

Features

TrueAlarm® analog sensing provides digital transmission of analog sensor values via MAPNET II® or IDNet™, two-wire communications**

Fire alarm control panel provides:
- Individual sensitivity selection for each sensor
- Sensitivity monitoring that satisfies NFPA 72 sensitivity testing requirements
- Peak value logging allowing accurate analysis for sensitivity selection
- Automatic, once per minute individual sensor calibration check that verifies sensor integrity
- Automatic environmental compensation
- Display of sensitivity directly in percent per foot
- Multi-stage alarm operation
- Ability to display and print detailed sensor information in plain English language

Photoelectric smoke sensors:
- Seven levels of sensitivity from 0.2% to 3.7%

Heat sensors:
- Fixed temperature sensing
- Rate-of-rise temperature sensing
- Utility temperature sensing

Ionization smoke sensors*:
- Three levels of sensitivity; 0.5%, 0.9% and 1.3%

For use with Simplex®:
- 4010, 4020, 4100, and 4120 Series control panels
- Universal Transponders and 2120 TrueAlarm CDTs equipped for MAPNET II operation

Magnetic test feature

Functional and architecturally styled chamber enclosure:
- Louvered design enhances smoke capture by directing flow to chamber
- Entrance areas are minimally visible when ceiling mounted

Optional accessories include remote LED alarm indicator and output relays

UL listed to Standard 268

* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listings 7272-0026-216, 7272-0026-231, 7270-0026-216, and 7300-0026-217 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA-35-585. Refer to page 4 for UL listing status. Additional listings may be applicable, contact your local Simplex product supplier for the latest status.

** TrueAlarm analog sensors and MAPNET II and IDNet communications are protected by one or more of the following U.S. Patents: 5,155,468; 5,173,683; 5,543,777; 5,400,014; 5,552,765; 5,552,763; 4,796,025; DES 377,460.

Description

Digital Communication of Analog Sensing.

TrueAlarm analog sensors provide an analog measurement that is digitally communicated to the host control panel using Simplex addressable communications. At the control panel, the data is analyzed and an average value is determined and stored. An alarm or other abnormal condition is determined by comparing the sensor’s present value against its average value and time.

Intelligent Data Evaluation.

Monitoring each sensor’s average value provides a continuously shifting reference point. This software filtering process compensates for environmental factors (dust, dirt, etc.) and component aging, providing an accurate reference for evaluating new activity. With this filtering, there is a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity, either up or down.

Control Panel Selection.

Peak activity per sensor is stored to assist in evaluating specific locations. The alarm set point for each TrueAlarm sensor is determined at the host control panel, selectable as more or less sensitive as the individual application requires.

Timed/Multi-Stage Selection.

Sensor alarm set points can be programmed for timed automatic sensitivity selection (such as more sensitive at night, less sensitive during day). Control panel programming can also provide multi-stage operation per sensor. For example, a 0.2% level may cause a warning to prompt investigation while a 2.5% level may initiate an alarm.

Sensor Alarm and Trouble LED Indication.

Each sensor base’s LED pulses to indicate communications with the panel. If the control panel determines that a sensor is in alarm, or that it is dirty or has some other type of trouble, the details are annunciated at the control panel and that sensor base’s LED will be turned on steadily. During a system alarm, the control panel will control the LEDs such that an LED indicating a trouble will return to pulsing to help identify the alarmed sensors.
**TrueAlarm Sensor Bases and Accessories**

**Sensor Base Features**
- **Base mounted address selection:**
  - Address remains with its programmed location
  - Accessible from front (dipswitch under sensor)
- **Automatic identification provides default sensitivity when substituting sensor types**
  - Integral red LED for power-on (pulsing), or alarm or trouble (steady on)
  - Locking anti-tamper design
  - Magnetically operated functional test
  - Mounts on standard outlet box

**Sensor Bases**

**4098-9792, Standard sensor base**
**4098-9789, Sensor base with wired connections for:**
- 2098-9808 Remote LED alarm indicator or 4098-9822 relay (unsupervised)

**4098-9791, Sensor base with supervised relay driver output** (not compatible with 2120 CDT):
- Relay operation is programmable and can be manually operated from control panel
- Use with remote mount 2098-9737 relay
- Also includes wired connections for remote LED alarm indicator or 4098-9822 relay

**Sensor Base Options**

**2098-9737, Remote or local mount supervised relay:**
- DPDT contacts for resistive/suppressed loads, power limited rating of 3 A @ 28 VDC; non-power limited rating of 3 A @ 120 VAC (requires external 24 VDC coil power)

**4098-9822, LED Annunciator Relay:**
- Activates when base LED is on steady, indicating local alarm or trouble
- DPDT contacts for resistive/suppressed loads, power limited rating of 2 A @ 28 VDC; non-power limited rating of 1/2 A @ 120 VAC, (requires external 24 VDC coil power)

**4098-9832, Adapter plate:**
- Required for surface or semi-flush mounting to 4" square electrical box and for surface mounting to 4" octagonal box
- Can be used for cosmetic retrofitting to existing 6-3/8" diameter base product

**2098-9808, Remote red LED Alarm Indicator:**
- Mounts on single gang box (shown in illustration to right)

**Description**

TrueAlarm sensor bases contain integral addressable electronics that constantly monitor the status of the detachable photoelectric, ionization, or heat sensors. Each sensor’s output is digitized and transmitted to the system fire alarm control panel every four seconds.

Since TrueAlarm sensors use the same base, different sensor types can be easily interchanged to meet specific location requirements. This feature also allows intentional sensor substitution during building construction. When conditions are temporarily dusty, instead of covering the smoke sensors (causing them to be disabled), heat sensors may be installed without reprogramming the control panel. Although the control panel will indicate an incorrect sensor type, the heat sensor will operate at a default sensitivity providing heat detection for building protection at that location.

**Mounting Reference**

**Electrical Box Requirements:**
- (boxes are by others)
  - **Without relay:** 4" octagonal or 4" square, 1-1/2" deep, single gang, 2" deep
  - **With relay:** 4" octagonal or 4" square, 1-1/2" deep, with 1-1/2" extension ring

**4" (102 mm) Square Box**
**4" (102 mm) Octagonal Box**
**TrueAlarm Sensors**

**Features**

- Sealed against rear air flow entry
- Interchangeable mounting
- EMI/RFI shielded electronics

**Heat sensors:**
- Selectable rate compensated, fixed temperature sensing with or without rate-of-rise operation
- Listed to UL Standard 521 for 60 ft (18.3 m) spacing for 155°F (57.2°C) alarm, and 40 ft (12.2 m) spacing for 155°F (68°C) alarm

**Smoke Sensors:**
- Photoelectric or ionization technology sensing
- 360° smoke entry for optimum response

---

**4098-9733 Heat Sensor**

TrueAlarm heat sensors are self-restoring and provide rate compensated, fixed temperature sensing, selectable with or without rate-of-rise temperature sensing. Due to its small thermal mass, the sensor accurately and quickly measures the local temperature for analysis at the fire alarm control panel.

Rate-of-rise temperature detection is selectable at the control panel for either 15°F (8.3°C) or 20°F (11.1°C) per minute. Fixed temperature sensing is independent of rate-of-rise sensing and programmable to operate at 135°F (57.2°C) or 155°F (68°C). In a slow developing fire, the temperature may not increase rapidly enough to operate the rate-of-rise feature. However, an alarm will be initiated when the temperature reaches its rated fixed temperature setting.

TrueAlarm heat sensors can be programmed as a utility device to monitor for temperature extremes in the range from 32°F to 155°F (0°C to 68°C). This feature can provide freeze warnings or alert to HVAC system problems. (Refer to specific panels for availability.)

---

**4098-9714 Photoelectric Sensor**

TrueAlarm photoelectric sensors use a stable, pulsed infrared LED light source and a silicon photodiode receiver to provide consistent and accurate low power smoke sensing. Seven levels of sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of smoke obscuration. Sensitivity is selected and monitored at the fire alarm control panel.

The sensor head design provides 360° smoke entry for optimum response to smoke from any direction. A built-in screen keeps insects from entering the smoke chamber. Due to its photoelectric operation, air velocity is not normally a factor, except for impact on area smoke flow.

---

**4098-9714 Photoelectric Sensor with Base**

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**4098-9717 Ionization Sensor**

TrueAlarm ionization sensors use a single radioactive source with an outer sampling ionization chamber and an inner reference ionization chamber to provide stable operation under fluctuations in environmental conditions such as temperature and humidity. Smoke and invisible combustion gases can freely penetrate the outer chamber. With both chambers ionized by a small radioactive source [Am 241 (Americium)], a very small current flows in the circuit. The presence of particles of combustion will cause a change in the voltage ratio between chambers. This difference is measured by the electronics in the sensor base and digitally transmitted back to the control panel for processing.

Three levels of sensitivity are available for each ionization sensor: 0.5, 0.9, and 1.3% per foot of smoke obscuration.

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**4098-9717 Ionization Sensor with Base**

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**Application Reference**

Sensor locations should be determined only after careful consideration of the physical layout and contents of the area to be protected. Refer to NFPA 72, the National Fire Alarm Code. On smooth ceilings, smoke sensor spacing of 30 ft (9.1 m) may be used as a guide. For detailed application information, refer to 4098 Detectors, Sensors, and Bases Application Manual (574-709).

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**WARNING:** In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where fire safety is a factor, the use of smoke detection is highly recommended.

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S4098-0019-8 12/01
## TrueAlarm Analog Sensing Product Selection Chart

### TrueAlarm Sensor Bases

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9792 (C)</td>
<td>Standard Sensor Base, no options</td>
<td>Sensors 4098-9714, -9733, &amp; -9717</td>
<td>4&quot; octagonal or 4&quot; square box, 1-1/2&quot; min. depth, or single gang box, 2&quot; min. depth</td>
</tr>
<tr>
<td>4098-9789 (C)</td>
<td>Sensor Base with connections for Remote LED Alarm Indicator or Unsupervised Relay</td>
<td>Sensors 4098-9714, -9733, &amp; -9717</td>
<td>4&quot; octagonal or 4&quot; square box</td>
</tr>
<tr>
<td>4098-9791 (C)</td>
<td>Sensor Base with connections for Supervised Remote Relay and connections for Remote Alarm Indicator or Unsupervised Relay</td>
<td>Sensors 4098-9737 remote relay (supervised) 2098-9808 remote alarm indicator or 4098-9822 relay (unsupervised)</td>
<td>Note: Box depth requirements depend on total wire count and wire size. Refer to accessories list below for reference.</td>
</tr>
</tbody>
</table>

### TrueAlarm Sensors

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9714 (C)</td>
<td>Photoelectric Smoke Sensor</td>
<td>Bases 4098-9792, 4098-9789, and 4098-9791</td>
<td>Refer to base requirements</td>
</tr>
<tr>
<td>4098-9717 (C)</td>
<td>Ionization Smoke Sensor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4098-9733 (C)</td>
<td>Heat Sensor</td>
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</table>

### TrueAlarm Sensor/Base Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>2098-9737</td>
<td>Supervised Relay, mounts remote or in base electrical box</td>
<td>For use with 4098-9791 base</td>
<td>Remote Mounting requires 4&quot; octagonal or 4&quot; square box, 1-1/2&quot; minimum depth Base Mounting requires 4&quot; octagonal box, 2-1/8&quot; deep with 1-1/2&quot; extension ring</td>
</tr>
<tr>
<td>2098-9808</td>
<td>Remote Red LED Alarm Indicator on single gang stainless steel plate</td>
<td></td>
<td>Single gang box, 1-1/2&quot; minimum depth</td>
</tr>
<tr>
<td>4098-9822 (C)</td>
<td>Relay, tracks base LED status (un supervised, mounts only in base electrical box)</td>
<td>Bases 4098-9789 and 4098-9791</td>
<td>4&quot; octagonal box, 2-1/8&quot; deep with 1-1/2&quot; extension ring</td>
</tr>
<tr>
<td>4098-9832</td>
<td>Adapter Plate</td>
<td>Bases 4098-9792, -9789, &amp; -9791</td>
<td>Required for surface or semi-flush mounted 4&quot; square box and for surface mounted 4&quot; octagonal box</td>
</tr>
</tbody>
</table>

Refer to publication 4098 Detectors, Sensors, and Bases Application Manual (574-709) for additional information. ULC listed model numbers are designated by (C) and require a "C" suffix such as 4098-9794C.

### Specifications

#### General Operating Specifications

- **Communications and Sensor Supervisory Power**: MAPNET II or IDNet, auto-select, 24-40 VDC w/data, 400 μA typical, 1 address per base
- **Communications Connections**: Screw terminals for in/out wiring, 18 to 14 AWG
- **Remote LED Alarm Indicator Current**: 1 mA typical, no impact to alarm current
- **Remote LED Alarm Indicator and Relay Connections**: Color coded wire leads, 18 AWG
- **UL Listed Temperature Range**: 32°F to 100°F (0°C to 38°C)
- **Operating Temperature Range**: with 4098-9717 or 4098-9733 32°F to 122°F (0°C to 50°C) with 4098-9714 15°F to 122°F (-9°C to 50°C)
- **Humidity Range**: 10 to 95% RH
- **Smoke Sensor Ambient Ratings**: 4098-9714, Photoelectric Sensor Air velocity is 0-2000 ft/min (0-610 m/min)
- **4098-9717, Ionization Sensor**: Air velocity is 0-100 ft/min (0-30 m/min); Altitude is up to 8000 ft (2.4 km)
- **Housing Color**: Frost White
- **4098-9791 Base With Supervised Remote Relay 2098-9737** (see page 2 for contact ratings)
- **Externally Supplied Relay Coil Voltage**: 18-32 VDC (nominal 24 VDC)
- **Supervisory Current**: 270 μA, from 24 VDC supply
- **Alarm Current with 2098-9737 Relay**: 28 mA, from 24 VDC supply

#### 4098-9822 Unsupervised Relay, Requirements for Bases 4098-9789 and 4098-9791 (see page 2 for contact ratings)

- **Externally Supplied Relay Coil Voltage**: 18-32 VDC (nominal 24 VDC)
- **Supervisory Current**: Supplied from communications
- **Alarm Current**: 13 mA from separate 24 VDC supply

Tyco, Simplex, the Simplex logo, TrueAlarm, MAPNET II, and IDNet are trademarks of Tyco International Services AG or its affiliates in the U.S. and/or other countries. NFPA 72 is a registered trademark of the National Fire Protection Association (NFPA).
TrueAlarm® Smoke Detectors

TrueAlarm Photoelectric Smoke Detectors for Two-Wire and Four-Wire Bases

Features

Photoelectric smoke detector with on-board TrueAlarm sensitivity drift compensation
UL listed to Standard 268

Functional chamber enclosure:
- Louvered design enhances smoke capture by directing flow to chamber
- Entrance areas are minimally visible when ceiling mounted

Multi-function indicator LED indicates normal and alarm conditions

Magnetically operated functional test:
- Initiates alarm and verifies performance
- Identifies general sensitivity status using detector LED

Models available in two sensitivity settings:
- 4098-9601, Standard Sensitivity, nominal 2.8%/ft obscuration
- 4098-9605, Special Application Sensitivity, nominal 3.5%/ft obscuration

Available base options:
- Bases for 2-wire or 4-wire operation
- Auxiliary alarm relay output

Optional remote alarm indicating LED

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>15 to 32 VDC from Fire Alarm Control Panel IDC</td>
</tr>
<tr>
<td>Standby Current</td>
<td>100 µA @ 24 VDC</td>
</tr>
<tr>
<td>Alarm Current, 2-Wire Operation</td>
<td>Up to 86 mA maximum, exact current is determined by alarm current limiting of connected IDC</td>
</tr>
<tr>
<td>Alarm Current, 4-Wire Operation</td>
<td>24 mA typical @ 24 VDC</td>
</tr>
<tr>
<td>Auxiliary Relay Ratings</td>
<td>Refer to page 2 under Product Selection</td>
</tr>
<tr>
<td>Air Velocity Range</td>
<td>C-2000 ft/min (0-610 m/min)</td>
</tr>
<tr>
<td>UL Listed Temp. Range</td>
<td>32° F to 100° F (0° to 38° C)</td>
</tr>
<tr>
<td>Operating Temp. Range</td>
<td>15° to 122° F (-9° to + 50° C)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>10% to 95% RH from 32° to 122° F (0° to 50° C) non-condensing</td>
</tr>
<tr>
<td>Color</td>
<td>Frost White</td>
</tr>
<tr>
<td>Dimensions</td>
<td>4-7/8&quot; Dia. x 1-7/8&quot; H, mounted in base (124 mm x 48 mm), refer to page 3 for detail</td>
</tr>
</tbody>
</table>

* UL listed models are designated with a "C" suffix such as 4098-9601C. This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 722-0028 219 for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use – City of New York Department of Buildings – MEA35-93E. Additional listings may be applicable, contact your local Simplex product supplier for the latest status.

† TrueAlarm smoke detector operation is protected by one or more of the following U.S. Patents: 5,155,468, 5,173,683, 5,400,014, 5,543,777, 5,710,541; D383,407; D388,382, D382,573.
TrueAlarm Smoke Detector Features

Intelligent Data Evaluation. Conventional smoke detectors will typically drift toward being too sensitive due to the accumulation of dust and dirt. With TrueAlarm analog detection, data from the photoelectric chamber is monitored and analyzed at the detector to provide a continuously shifting reference point.

Drift Compensation. The data evaluation and its shifting reference point provide a software filtering process that compensates for environmental factors (dust, dirt, etc.) and component aging, establishing an accurate reference for evaluating new activity. With this filtering, the resulting drift compensation provides a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity – either up or down.

Magnetic Test Information. Status information is available by performing the magnetic test and observing the detector LED pulses. The LED will normally go directly into alarm with the magnetic test. If there is an off-normal condition, the LED pulses first to indicate the condition and then goes into alarm. (See page 3.)

Application Reference

Detector Locations. Locations should be determined only after careful consideration of the physical layout and contents of the area to be protected. Refer to NFPA 72, the National Fire Alarm Code. On smooth ceilings, smoke detector spacing of 30 ft (9.1 m) may be used as a guide. For detailed installation information, refer to 4098 Detectors, Sensors, and Bases Application Manual (574-709).

Sensitivity Selection. The 4098-9601 standard sensitivity detector is recommended for most applications. When a special application for a reduced sensitivity detector is required, the 4098-9605 should be considered. Consult your local Simplex product supplier for assistance in determining the proper selection.

Product Selection

Smoke Detectors

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Nominal Sensitivity</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9601</td>
<td>TrueAlarm Photoelectric Detector</td>
<td>2.8%/ft (standard) 3.5%/ft</td>
<td>Compatible with bases: 4098-9788, 4098-9682, and 4098-9683</td>
</tr>
<tr>
<td>4098-9605</td>
<td>TrueAlarm Photoelectric Detector</td>
<td>2.8%/ft (standard) 3.5%/ft</td>
<td>Compatible with bases: 4098-9788, 4098-9682, and 4098-9683</td>
</tr>
</tbody>
</table>

Compatible Bases

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Details*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9788</td>
<td>2-Wire Base with connections for Remote Alarm LED Indicator</td>
<td>IDC and LED connections are screw terminals for in/out wiring, 18 to 14 AWG</td>
</tr>
<tr>
<td>4098-9682</td>
<td>4-Wire Base with Auxiliary Alarm Relay Contacts and connections for Remote LED Alarm Indicator</td>
<td>Relay Ratings, Single Form &quot;C&quot;, For Suppressed Loads: Power limited, 3 A @ 28 VDC; Non-power limited, 3 A @ 120 VAC Wiring Connections (In/Out where required): Relay contacts and IDC wiring, color coded 18 AWG leads; LED wiring, screw terminals for 18 to 14 AWG</td>
</tr>
<tr>
<td>4098-9683</td>
<td>2-Wire Base with Auxiliary Alarm Relay &amp; connections for Remote LED Indicator</td>
<td>Relay Ratings, Dual Form &quot;C&quot;, For Suppressed Loads: Power limited, 1 A @ 28 VDC; Non-power limited, 1/2 A @ 120 VAC Wiring Connections (In/Out where required): Relay contacts and IDC (+), color coded 18 AWG leads; IDC (+) and LED wiring, screw terminals for 18 to 14 AWG</td>
</tr>
</tbody>
</table>

Detector Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Details*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9832</td>
<td>Adapter Plate</td>
<td>Required for mounting to surface mounted 4&quot; (102 mm) square or 4&quot; octagonal boxes, and to 4&quot; square flush mounted boxes May be used when retrofitting existing bases Compatible with detector bases 4098-9788, -9682, &amp; -9683</td>
</tr>
<tr>
<td>4098-9830</td>
<td>Remote LED Indicator</td>
<td>Mounted on single gang stainless steel plate</td>
</tr>
<tr>
<td>2098-9739</td>
<td>Encapsulated 24 VDC End-of-Line Relay</td>
<td>Dimensions: 2-1/2&quot; x 1-1/2&quot; x 1&quot; (64 mm x 38 mm x 25.4 mm) Required for 4-wire circuits using 4098-9682 base, one per circuit; select mounting type as required; wiring is color coded 18 AWG wire leads</td>
</tr>
<tr>
<td>2098-9735</td>
<td>Plate Mounted</td>
<td>Mounted on single gang stainless steel plate</td>
</tr>
</tbody>
</table>

* Refer to pages 3 and 4 for dimensions and additional mounting details; 18 AWG = 0.82 mm², 14 AWG = 2.08 mm²
### Detector Status LED Indications

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses approximately every 4 seconds</td>
<td>Normal</td>
</tr>
<tr>
<td>Steady On</td>
<td>Alarm</td>
</tr>
</tbody>
</table>

### LED Response to Magnetic Test *

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Followed By</th>
<th>Status</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED turns ON</td>
<td>Alarm is initiated</td>
<td>Normal, sensitivity is within compensation range</td>
<td>None</td>
</tr>
<tr>
<td>LED pulses quickly, 6 times in 3 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td>More sensitive, out of normal compensation range</td>
<td>Cleaning or other service is required</td>
</tr>
<tr>
<td>LED pulses slowly, 4 times in 8 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td>Less sensitive, out of normal compensation range</td>
<td>Service is required</td>
</tr>
<tr>
<td>Does not initiate Alarm</td>
<td>Detector is malfunctioning</td>
<td>Service is required</td>
<td></td>
</tr>
</tbody>
</table>

* Testing requires placing a magnet at the designated location on the detector cover for 4 seconds. Refer to Application Manual 574-709 for further test and maintenance information.

### Dimensions and Reference Information

**4098-9832 Adapter Plate**

**4098-9601 & -9605 Dimensions Mounted on Base**

**4098-9830 Remote LED Indicator (not to scale)**
Mounting Information

(Electrical boxes are supplied by others.)

Electrical Box Requirements:

**Without relay** (base 4098-9788):
- 4" octagonal or 4" square, 1-1/2" deep
- Single gang, 2" deep

**With relay** (bases 4098-9682 and 4098-9683):
- 4" octagonal, 1-1/2" deep, with 1-1/2" extension ring
- 4" square, 1-1/2" deep, with 1-1/2" extension ring

**Surface mount reference**
- 4" (102 mm) square box
- 1-1/2" (38 mm) minimum box depth

**Flush mount reference**, mount even with final surface, or with up to 1/4" (6.4 mm) maximum recess

- 4098-9832 Adapter Plate, required for mounting to surface mounted boxes and to 4" square flush mount boxes

- 4098-9682 and 4098-9683 include a relay module that mounts in base electrical box

- Smoke Detector Bases 4098-9788, 9682, & -9683

- 4098-9601, -9605 Smoke Detector
TrueAlarm® Smoke Detectors

Duct Detector Housings with TrueAlarm Photoelectric Detector for 2-Wire or 4-Wire Operation

Features

- Compact air duct detector housing with clear cover to monitor for the presence of smoke**
- Includes factory installed TrueAlarm photoelectric smoke detector† and features:
  - On-board TrueAlarm sensitivity drift compensation and dirt accumulation tracking
  - Multi-function status LED indicator
  - Magnetic test that initiates an alarm and provides detailed diagnostic information
  - Cover allowing visual inspection
  - Test ports provide functional smoke testing access with cover in place
  - UL listed to Standard 268A

Model availability:
- 2-Wire standard operation (4098-9685)
- 2-Wire with supervised control for a single remote relay (4098-9688)
- 4-Wire operation with supervised control for multiple remote relays (4098-9686)

Mounts to rectangular ducts or round ducts
- Minimum size is 8" (203 mm) square or 18" (457 mm) diameter

Magnetically operated functional test:
- Initiates alarm and displays dirt accumulation status using the detector status LED
- Assists with maintenance priorities by categorizing detector status and identifying dirty detectors

Sampling tubes (ordered separately):
- Available in multiple lengths to match duct size
- Installed and serviced with housing in place

Remote module options (ordered separately):
- Red alarm LED (4098-9830)
- Test stations with LED(s) and keyswitch (refer to page 2 for compatibility)
- Relays for remote control applications

Introduction

Operation. Simplex® air duct smoke detector housings provide a TrueAlarm smoke detector for monitoring air conditioning or ventilating ducts. Sampling tubes are installed into the duct allowing air to be directed to the smoke detector mounted in the housing. These duct detector housings with smoke detectors are compatible with Simplex fire alarm control panels that provide conventional two-wire or four-wire initiating device circuits (IDCs).

Model Details

Each supports a remote red alarm LED or a remote test station with LED(s). Models with relay output provide relay coil wiring supervision that will transfer a trouble to the IDC if supervision is lost.

2-Wire Model 4098-9685 provides basic smoke detection for applications that do not require a remote relay. Power is from the IDC.

2-Wire Model 4098-9688 provides a supervised relay output for connection to a single 4098-9841 relay. This model is powered from the IDC and requires connection as the only device to ensure relay operation.

4-Wire Model 4098-9686 provides a supervised relay output that can control up to 15, PAM-SD control relays. Relay supervision troubles are indicated by a yellow LED on the interface board. (Resettable 24 VDC is required, see page 4.) Remote test station 4098-9835 is available for use with this model to provide a test keyswitch, a red LED alarm indicator and a green power-on LED.

** Please note that smoke detection in air ducts is intended to provide notification of the presence of smoke in the duct. It is not intended to, and will not, replace smoke detection requirements for open areas or other non-duct applications.

† TrueAlarm smoke detector operation is protected by one or more of the following US Patents: 5,155,468; 5,173,483; 5,400,014; 5,543,777; 5,552,765; 5,710,541; D383,407; D389,352; D392,573.

S4098-0029-3 11/02
Duct Detector Selection Chart

**Duct Smoke Detector Housing with Photoelectric Detector**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9685</td>
<td>2-Wire standard operation duct detector</td>
<td>No relay(s)</td>
<td></td>
</tr>
<tr>
<td>4098-9668</td>
<td>2-Wire duct detector with supervised single remote relay NOTE: Must be only device on IDC for proper relay operation (When used with the Simplex 4004 or 4005 fire alarm control panel, connect to &quot;high current&quot; IDCs only)</td>
<td>Requires one, 4098-9841 Relay (ordered separately)</td>
<td>Remote LED indicator and test stations per below</td>
</tr>
<tr>
<td>4098-9686</td>
<td>4-Wire duct detector with supervised multiple relay control, requires resettable 24 VDC fire alarm power and relay end-of-line resistor</td>
<td>Up to 15, PAM-SD Relays (ordered separately)</td>
<td></td>
</tr>
</tbody>
</table>

**LED Indicator and Remote Test Stations (Select one if required)**

Each assembly is on a single gang stainless steel plate, wiring is 18 AWG (0.82 mm²) color coded wire leads

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9830</td>
<td>Red LED alarm indicator</td>
<td>4098-9865 4098-9888 4098-9866</td>
<td>Use single gang box, 3&quot; H x 2&quot; W x 2&quot; D (76 mm x 51 mm x 51 mm)</td>
</tr>
<tr>
<td>4098-9834</td>
<td>Test Station with keyswitch and red LED alarm indicator (turning switch to &quot;TEST&quot; initiates alarm for system testing)</td>
<td>4098-9866 only</td>
<td></td>
</tr>
<tr>
<td>4098-9835</td>
<td>Test Station with keyswitch, red LED alarm indicator, and green power-on LED</td>
<td>4098-9866 only</td>
<td></td>
</tr>
</tbody>
</table>

**Epoxy Encapsulated Remote Relays** (wiring is 18 AWG (0.82 mm²) color coded wire leads)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9841</td>
<td>Relay, dual Form C (1/2 A @ 120 VAC)</td>
<td>Refer to pages 3 and 4 for additional relay information</td>
<td>Locate relays within 3 ft (1 m) of device being controlled, per NFPA 72, Section 3-9.2.1</td>
</tr>
<tr>
<td>PAM-SD</td>
<td>Relay, single Form C (10 A @ 120 VAC); order separately from Air Products &amp; Controls, Ltd.</td>
<td>4098-9866 only, one maximum</td>
<td></td>
</tr>
</tbody>
</table>

* Each duct housing includes an internally mounted model 4098-9601 TrueAlarm photoelectric detector and an exhaust tube. A correctly sized sampling tube (ordered per application) is required, refer to chart below.

**Sampling Tube Selection Chart, Ordered Separately Per Duct Width, Select One**

<table>
<thead>
<tr>
<th>Overall Duct Width</th>
<th>Tube Required</th>
<th>Suggested Cut Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot; (305 mm)</td>
<td>2098-9796</td>
<td>1/2 in. (12.7 mm) longer than duct width</td>
</tr>
<tr>
<td>13&quot; to 23&quot; (330 mm to 584 mm)</td>
<td>2098-9804</td>
<td>1/2 in. (12.7 mm) longer than duct width</td>
</tr>
<tr>
<td>24&quot; to 46&quot; (610 mm to 1168 mm)</td>
<td>2098-9797</td>
<td>2 in. (51 mm) longer than duct width</td>
</tr>
<tr>
<td>46&quot; to 71&quot; (1168 mm to 1803 mm)</td>
<td>2098-9798</td>
<td>2 in. (51 mm) longer than duct width</td>
</tr>
<tr>
<td>71&quot; to 95&quot; (1803 mm to 2413 mm)</td>
<td>2098-9799</td>
<td>2 in. (51 mm) longer than duct width</td>
</tr>
</tbody>
</table>

**TrueAlarm Detector Status LED Indications**

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Status</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses approximately every 4 seconds</td>
<td>Normal</td>
<td>None</td>
</tr>
<tr>
<td>Steady On</td>
<td>Normal</td>
<td></td>
</tr>
<tr>
<td>Alarm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Detector LED Response to Magnetic Test**

<table>
<thead>
<tr>
<th>LED Indication</th>
<th>Followed By</th>
<th>Status</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED turns ON</td>
<td>Alarm is initiated</td>
<td>Normal, sensitivity is within compensation range</td>
<td>None</td>
</tr>
<tr>
<td>LED pulses quickly, 6 times in 3 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td>More sensitive, out of normal compensation range</td>
<td>Cleaning or other service is required</td>
</tr>
<tr>
<td>LED pulses slowly, 4 times in 8 seconds, then turns ON</td>
<td>Alarm is initiated</td>
<td>Less sensitive, out of normal compensation range</td>
<td>Service is required</td>
</tr>
<tr>
<td>Does not initiate Alarm</td>
<td></td>
<td>Detector is malfunctioning</td>
<td></td>
</tr>
</tbody>
</table>

**Testing requires placing a magnet at the designated location on the duct housing cover for 4 seconds and referring to the response from the red LED status indicator on the detector. Refer to Installation Instructions 574-776 for further test and maintenance information.**
Duct Detector Housing Detail Reference

NOTE: Refer to Installation Instructions 574-776 for additional detail and maintenance information.
Duct Detector Location Reference

Preferred Duct Detector Locations:
1. A minimum of six duct widths downstream from bends or inlets to avoid air turbulence.
2. On the downstream side of filters to detect fires in the filters.
3. In return ducts, ahead of mixing areas.
4. Upstream of air humidifier and cooling coil.
5. With accessibility for test and service.
6. For additional information, refer to NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems.

Locations to Avoid:
1. Where dampers closed for comfort control would interfere with airflow.
2. Next to outside air inlets (unless the intent is to monitor smoke entry from that area).
3. In return air damper branch ducts and mixing areas where airflow may be restricted.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Velocity Range (linear ft/min)</td>
<td>300 to 4000 ft/min (91 to 1220 m/min)</td>
</tr>
<tr>
<td>UL Listed Temperature Range</td>
<td>32°F to 100°F (0°C to 38°C)</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>32°F to 122°F (0°C to 50°C)</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>0°F to 140°F (-18°C to 60°C)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>10% to 95% RH, non-condensing</td>
</tr>
<tr>
<td>Wiring Connections</td>
<td>Terminal blocks, 18 to 12 AWG (0.82 mm² to 3.31 mm²)</td>
</tr>
<tr>
<td>Housing Color</td>
<td>Black base with clear cover</td>
</tr>
<tr>
<td>Two-Wire Operation, Models 4098-9685 and 4098-9688</td>
<td></td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>18-32 VDC, from compatible IDC</td>
</tr>
<tr>
<td>4098-9685 (no relay)</td>
<td>Standby Current: 100 µA @ 24 VDC</td>
</tr>
<tr>
<td></td>
<td>Alarm Current: 40 mA maximum @ 24 VDC</td>
</tr>
<tr>
<td>4098-9688 (with single relay control)</td>
<td>Standby Current: 2.7 mA @ 24 VDC (includes relay supervision current)</td>
</tr>
<tr>
<td>NOTE: Only one 4098-9688 per IDC</td>
<td>Alarm Current: 40 mA maximum @ 24 VDC</td>
</tr>
<tr>
<td></td>
<td>Relay Control: 4098-9841 relay only, one maximum</td>
</tr>
<tr>
<td></td>
<td>Relay Rating: Dual Form C, 1 A @ 28 VDC, 1/2 A @ 120 VAC, Resistive</td>
</tr>
<tr>
<td></td>
<td>Relay Location: 100 ft (30 m) maximum to relay coil, relay must be within 3 ft (1 m) of device being controlled per NFPA 72, Section 3-9.2.1</td>
</tr>
<tr>
<td>Four-Wire Operation, Model 4098-9886, Requires Resettable and Fused 24 VDC from Fire Alarm Power Supply</td>
<td></td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>18-32 VDC (24 VDC nominal)</td>
</tr>
<tr>
<td>Standby Current</td>
<td>12 mA @ 24 VDC, 32 mA @ 24 VDC with 4098-9835 Test Station</td>
</tr>
<tr>
<td>Alarm Current</td>
<td>45 mA @ 24 VDC, 65 mA @ 24 VDC with 4098-9835 Test Station</td>
</tr>
<tr>
<td>Supervised Remote Relay Control</td>
<td>For use with relay PAM-SD, quantity of 15 maximum, distance of 500 ft (152 m) maximum, requires 10 kΩ, 1/2 W end-of-line resistor</td>
</tr>
<tr>
<td>PAM-SD Relay Output Ratings, Single Form C, use with Model 4098-9688 Only</td>
<td></td>
</tr>
<tr>
<td>Coil Current</td>
<td>15 mA @ 24 VDC, up to 15 maximum per relay control output</td>
</tr>
<tr>
<td>Relay Contacts, Resistive Ratings</td>
<td>7 A @ 28 VDC, 10 A @ 120 VAC; 250 µA @ 5 VDC</td>
</tr>
<tr>
<td>Location Distance</td>
<td>500 ft (152 m) maximum to relay coils, relays must be within 3 ft (1 m) of device being controlled per NFPA 72, Section 3-9.2.1</td>
</tr>
<tr>
<td>Remote Alarm LED (4098-9830, -9834, &amp; -9835)</td>
<td>1.7 mA, no impact to alarm current</td>
</tr>
<tr>
<td>Remote Alarm LED and Test Station Distance</td>
<td>250 ft (76 m) maximum</td>
</tr>
</tbody>
</table>

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S4098-0029-3 11/02
www.tepg.com
TrueAlarm® Analog Sensing

Addressable Duct Sensor Housings with TrueAlarm Photoelectric Sensor; Available with Multiple Relay Control

Features

Compact air duct sensor housing with clear cover to monitor for the presence of smoke**

Includes factory installed TrueAlarm photoelectric smoke sensor and features:

- Individual sensor information processed by the host control panel to determine sensor status
- Digital transmission of analog sensor values via MAPNET II® or IDNet™, 2-wire communications†
- Programmable sensitivity, consistent accuracy, environmental compensation, status testing, and monitoring of sensor dirt accumulation

Model 4098-9755:

- Basic duct sensor housing (no relay output) powered by MAPNET II/IDNet communications

Model 4098-9756:

- Duct sensor housing with supervised output for multiple remote relays; requires separate 24 VDC
- Relay output is under panel control
- At the panel, relay output can be activated manually or in response to a separate alarm or other input

General features:

- UL listed to Standard 268A
- Clear cover allows visual inspection
- Test ports provide functional smoke testing access with cover in place
- Mounts to rectangular ducts or round ducts; minimum size is 8" (203 mm) square or 18" (457 mm) diameter
- Magnetic test feature for alarm initiation at housing
- Optional weatherproof enclosure is available separately (refer to data sheet S4098-0032)

Diagnostic LEDs (on interface board):

- Red Alarm/Trouble LED for sensor status and communications polling display
- Yellow LED for open or shorted trouble indication of supervised relay control (4098-9756 only)

Sampling tubes (ordered separately):

- Available in multiple lengths to match duct size
- Installed and serviced with housing in place

Remote module options (ordered separately):

- Remote red status/alarm LED (2098-9808)
- Remote test station with LED (2098-9806)
- PAM-SD remote relays (refer to page 2 for details)

Introduction

Operation. Simplex® compact air duct smoke sensor housings provide TrueAlarm operation for the detection of smoke in air conditioning or ventilating ducts. Sampling tubes are installed into the duct allowing air to be directed to the smoke sensor mounted in the housing.

TrueAlarm Sensor Operation

Digital Communication of Analog Sensing.

Analog information from the sensor is digitally communicated to the control panel where it is analyzed. Sensor input is stored and tracked as an average value with an alarm or abnormal condition being determined by comparing the sensor’s present value against its average.

Intelligent Data Evaluation. Monitoring each photoelectric sensor’s average value provides a software filtering process that compensates for environmental factors (dust, dirt, etc.) and component aging, providing an accurate reference for evaluating new activity. The result is a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity, either up or down.

** Please note that smoke detection in air ducts is intended to provide notification of the presence of smoke in the duct. It is not intended to, and will not, replace smoke detection requirements for open areas or other non-duct applications.

† TrueAlarm sensors and MAPNET II and IDNet communications are protected by one or more of the following U.S. Patents: 5,155,466; 5,173,683; 5,543,777; 5,400,014; 5,543,777; 5,710,541; D383,407; D383,352; D392,573; 4,796,925.

S4098-0030-3 11/02
**TrueAlarm Sensor Operation (Continued)**

**Control Panel Selection.** Peak activity per sensor is stored to assist in evaluating specific locations. The alarm set point for each sensor is determined at the control panel, selectable as the individual application requires.

**Sensor Status LED.** Each sensor housing’s red status LED (located on the electrical interface board) pulses to indicate communications with the panel. If the control panel determines that a sensor is in alarm, or that it is dirty or has some other type of trouble, the details are annunciated at the control panel and that sensor housing’s status LED will be turned on steadily. During a system alarm, the control panel will control the LEDs such that an LED indicating a trouble will return to pulsing to help identify any alarmed sensors. (Remote Status/Alarm LEDs track the operation of the sensor housing LED.)

**Photoelectric Sensing**

TrueAlarm photoelectric sensors use a stable, pulsed infrared LED light source and a silicon photodiode receiver to provide consistent and accurate low power smoke sensing.

**Duct Sensor Selection Chart**

**Duct Smoke Sensor Housing with Photoelectric Sensor**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9755</td>
<td>Basic duct sensor housing; operating power is supplied by either MAPNET II or idNet communications (no relay output)</td>
<td>Simplex fire alarm control panel models 4010, 4020, 4100, 4100U, and 4120. Also 2120 CDT if configured for MAPNET II, TrueAlarm operation</td>
<td>Use single gang box, 3” H x 2” W x 2” D (76 mm x 51 mm x 51 mm)</td>
</tr>
<tr>
<td>4098-9756</td>
<td>Duct housing with supervised multiple relay control for up to 15, PAM-SD Relays (ordered separately); requires separate 24 VDC fire alarm power and relay end-of-line resistor</td>
<td>Same as above except relay operation is not compatible with 2120 CDT</td>
<td></td>
</tr>
</tbody>
</table>

**Remote LED Indicator and Test Station, Select One if Required**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2098-9808</td>
<td>Red LED status indicator</td>
<td>4098-9755, 4098-9756</td>
<td>Use single gang box, 3” H x 2” W x 2” D (76 mm x 51 mm x 51 mm)</td>
</tr>
<tr>
<td>2098-9806</td>
<td>Test Station with keyswitch and red LED status indicator (turning switch to &quot;TEST&quot; initiates alarm for system testing)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Epoxy Encapsulated Remote Relay** (wiring is 18 AWG (0.82 mm²) color coded wire leads)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Compatibility</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAM-SD</td>
<td>Relay; single Form C (10 A @ 120 VAC); refer to pages 3 and 4 for additional relay information; order separately from Air Products &amp; Controls Ltd.</td>
<td>4098-9756 only, connect up to 15</td>
<td>Locate relays within 3 ft (1 m) of device being controlled, per NFPA 72, Section 3-9.2.1</td>
</tr>
</tbody>
</table>

* Each duct housing includes an internally mounted model 4098-9714 TrueAlarm photoelectric sensor and an exhaust tube. A correctly sized sampling tube (ordered per application) is required, refer to chart below.

**Photoelectric Sensing (Continued)**

Typically duct sensor applications require less sensitive settings (such as 2.5% per foot obscuration) due to the ducts being a relatively dirty environment. However, the standard seven levels of TrueAlarm sensor sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of smoke obscuration. Sensitivity is selected and monitored at the fire alarm control panel.

**Fire Alarm Control Panel Features**

- Individual smoke sensitivity selection
- Sensitivity monitoring that satisfies NFPA 72 sensitivity testing requirements
- Peak value logging allows accurate analysis for sensitivity selection
- Automatic, once per minute individual sensor calibration check verifies sensor integrity
- Automatic environmental compensation
- Smoke sensitivity is displayed in percent per foot
- Ability to display and print detailed sensor information in plain English language
- Relays of model 4098-9756 are under panel control for ON, OFF, or override

**Sampling Tube Selection Chart, Ordered Separately Per Duct Width, Select One**

<table>
<thead>
<tr>
<th>Overall Duct Width</th>
<th>Tube Required</th>
<th>Suggested Cut Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot; (305 mm)</td>
<td>2098-9796</td>
<td>1/2 in. (12.7 mm) longer than duct width</td>
</tr>
<tr>
<td>13&quot; to 23&quot; (330 mm to 584 mm)</td>
<td>2098-9804</td>
<td>1/2 in. (12.7 mm) longer than duct width</td>
</tr>
<tr>
<td>24&quot; to 46&quot; (610 mm to 1168 mm)</td>
<td>2098-9797</td>
<td>2 in. (51 mm) longer than duct width</td>
</tr>
<tr>
<td>46&quot; to 71&quot; (1168 mm to 1803 mm)</td>
<td>2098-9798</td>
<td>2 in. (51 mm) longer than duct width</td>
</tr>
<tr>
<td>71&quot; to 95&quot; (1803 mm to 2413 mm)</td>
<td>2098-9799</td>
<td>2 in. (51 mm) longer than duct width</td>
</tr>
</tbody>
</table>
Duct Sensor Housing Detail Reference

**NOTE:** Refer to Installation Instructions 574-776 for additional detail and maintenance information.

---

**Front View**
- 4098-9714 Smoke sensor, mounted in special interface base (supplied)
- Metal plate with dual holes for 3/4" (19 mm) conduit, plug supplied for unused hole
- Yellow LED, relay control trouble indicator (4098-9756 only)
- Red sensor status LED
- Side of duct

**Bottom View**
- Transparent cover
- Gasketed sensor area
- Test ports (2) provided for measuring airflow and for aerosol injection
- Gaskets (supplied)
- Exhaust tube (supplied)

**End View with Duct and Tubes**
- Duct housing
- 18" Round duct outline (minimum diameter)
- 6" Square duct outline (minimum width)
- Exhaust tube
- Sampling tube, keyed for proper hole alignment with holes facing into airflow (template is provided for proper tube installation)

**PAM-SD Remote Relay**
(10 A @ 120 VAC, for use with 4098-9756 only)

**NOTE:** Mount in separate electrical box within 3 ft (1 m) of device being controlled per NFPA 72, Section 3.9.2.1
Preferred Duct Sensor Locations:
1. A minimum of six duct widths downstream from bends or inlets to avoid air turbulence.
2. On the downstream side of filters to detect fires in the filters.
3. In return ducts, ahead of mixing areas.
4. Upstream of air humidifier and cooling coil.
5. With accessibility for test and service.
6. For additional information, refer to NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*.

Locations to Avoid:
1. Where dampers closed for comfort control would interfere with airflow.
2. Next to outside air inlets (unless the intent is to monitor smoke entry from that area).
3. In return air damper branch ducts and mixing areas where airflow may be restricted.

Outdoor Applications Note:
For outdoor applications, refer to data sheet S4098-0032 for information on weatherproof enclosure 4098-9845.

---

**Specifications**

**General**
- **Air Velocity Range (liner ft/min)**: 300 to 4000 ft/min (91 to 1220 m/min)
- **Sensor Sensitivity Range**: 0.2% to 3.7% per foot of obscuration, selectable at host control panel
- **UL Listed Temperature Range**: 32° F to 100° F (0° C to 38° C)
- **Operating Temperature Range**: 32° F to 122° F (0° C to 50° C)
- **Storage Temperature Range**: 0° F to 140° F (-18° C to 60° C)
- **Humidity Range**: 10% to 95% RH, non-condensing
- **Wiring Connections**: Terminal blocks, 18 to 12 AWG (0.82 mm² to 3.31 mm²)
- **Housing Color**: Black base with clear cover

**Remote Status/Alarm LED and Test Station with Remote Status/Alarm LED**
- **Remote Alarm LED Current**: 1.2 mA, no impact to alarm current (2098-9806 or 2098-9806)
- **Test Station Keystwitch Current**
- **Remote Alarm LED and Test Station Distance**: 250 ft (76 m) maximum

**Addressable Operation**
- **Data Communications**: MAPNET II or IDNet communications, auto-select, one address per housing; provides operating power to model 4098-9755

**Model 4098-9756 with Supervised Multiple Relay Control, Requires Separate Fused 24 VDC from Fire Alarm Power Supply**
- **Input Voltage**: 18-32 VDC (24 VDC nominal)
- **Standby Current**: 2.4 mA @ 24 VDC
- **Alarm Current**: 15 mA @ 24 VDC; add 15 mA additional for each remote PAM-SD relay
- **Supervised Remote Relay Control Output**: For use with PAM-SD relay only, quantity of 15 maximum, distance of 500 ft (152 m) maximum; requires 10 kΩ, 1/2 W end-of-line resistor

**PAM-SD Relay Output Ratings, Single Form C, use with Model 4098-9756 Only**
- **Coil Current**: 15 mA @ 24 VDC, up to 15 maximum per relay control output
- **Relay Contacts, Resistive Ratings**
- **Location Distance**: 500 ft (152 m) maximum to relay coils; relays must be within 3 ft (1 m) of device being controlled per NFPA 72, Section 3.9.2.1
Multi-Application Peripherals

Electronic Heat Detectors for Two-Wire and Four-Wire Bases

Features

Accurate and reliable heat detection for protection of property**

UL listed to Standard 521 as a rate compensated heat detector

Fixed temperature operation is suitable for most applications:
- Thermistor based design is inherently rate compensated due to minimal thermal lag
- Available for 135°F (57°C) or 200°F (93°C)
- UL and ULC spacing distance is 70 ft (21.3 m)

Available with rate-of-rise temperature detection:
- Dual thermistor rate-of-rise operation
- For use where anticipated ambient temperature changes are less than 6°F/minute (3.33°C/minute)
- UL and ULC spacing distance is 70 ft (21.3 m)

Epoxy encapsulated electronic design provides:
- Easily tested, self-restoring operation with repeatable accuracy
- Alarm indicating LED located on detector
- Current limited alarm that is compatible with two wire initiating device circuits (IDCs)

Optional remote alarm indicating LED

Available base options:
- Bases for 2-wire or 4-wire operation
- Auxiliary relay output (refer to selection chart on page 2 for relay ratings)
- Remote alarm indicating LED output

Description

Accurate Electronic Design. Simplex® electronic heat detectors use a fast response, thermistor based design to provide temperature sensing that quickly, accurately, and consistently identifies when fixed temperatures are exceeded. The fixed temperature sensing thermistor readily tracks the local ambient temperature. This eliminates the time required to melt a lead pellet or heat a bimetallic element as occurs in mechanical heat detector designs and provides the required heat detection for most applications.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>15 to 32 VDC (filtered DC with 30% maximum ripple)</td>
</tr>
<tr>
<td>Standby Current</td>
<td>30 μA typical, 100 μA maximum</td>
</tr>
<tr>
<td>Alarm Current, 2-Wire Operation</td>
<td>Up to 86 mA maximum, exact current is determined by alarm current limiting of connected IDC</td>
</tr>
<tr>
<td>Alarm Current, 4-Wire Operation</td>
<td>24 mA typical @ 24 VDC</td>
</tr>
<tr>
<td>Rate-of-Rise Operation</td>
<td>Meets FM requirements for operation between 15°F and 25°F F/min (8.33°F and 13.88°C/min)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>10% to 95% RH from 32°F to 122°F (0°C to 50°C), not intended for outdoor applications</td>
</tr>
<tr>
<td>Color</td>
<td>Frost-White</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Refer to diagram on page 3</td>
</tr>
<tr>
<td>Ambient Temperature Operating Range</td>
<td>135°F Models 32°F to 100°F (0°C to 38°C)</td>
</tr>
<tr>
<td></td>
<td>200°F Models 32°F to 150°F (0°C to 66°C)</td>
</tr>
</tbody>
</table>

** WARNING: In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where Life Safety is a factor, the use of smoke detection is highly recommended.

† Simplex® electronic heat detector design is protected by the following U.S. Patents: 5,450,066; DES. 377,480.

S4098-0014-6 10/01
Applications Reference

Heat detectors are used where property protection is desired and where life safety protection is not required or is performed by other equipment. Typical heat detector applications are satisfied by use of these fixed temperature electronic detectors.

The addition of rate-of-rise operation provides two forms of heat detection for use where temperature fluctuations are controlled and are less than 6°F/minute (3.33°C/C/minute). Where temperatures may fluctuate more quickly, use fixed temperature detection.

Refer to NFPA 72, the National Fire Alarm Code and publication 574-709, 4098 Detectors, Sensors, and Bases Application Manual, for additional guidance in applying and locating heat detectors.

Alarm Indicating LED Operation

The heat detector LED turns ON continuously when in alarm. During normal conditions the LED is OFF.

Fixed Temperature Guidelines

135°F (57°C) fixed temperature detectors are for normal temperatures that do not exceed 100°F (38°C).

200°F (93°C) fixed temperature detectors are for normal temperatures that exceed 100°F (38°C) but are less than 150°F (66°C).

Alarm Verification Application Note

When connecting these electronic heat detectors to a 2-wire initiating device circuit (IDC) that is providing Alarm Verification for smoke detectors, use the 4098-9682, 4-wire base. The 4-wire base provides an alarm contact that is not current-limited. (Heat detectors in the 2-wire base present a current-limited alarm condition that is not compatible with Alarm Verification. Initiating devices other than smoke detectors are required to activate the alarm without starting the alarm verification cycle.)

Heat Detector Selection Chart (compatible with bases listed below)

<table>
<thead>
<tr>
<th>Model</th>
<th>Fixed Temperature Operation at</th>
<th>UL &amp; ULC Maximum Spacing</th>
<th>FM Maximum Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9612</td>
<td>135°F (57°C)</td>
<td>70 ft x 70 ft (21.3 m x 21.3 m)</td>
<td>15 ft x 15 ft (4.6 m x 4.6 m)</td>
</tr>
<tr>
<td>4098-9614</td>
<td>200°F (93°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4098-9613</td>
<td>135°F (57°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4098-9615</td>
<td>200°F (93°C)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Heat Detector Base Selection Chart

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Connection</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9788</td>
<td>2-Wire Base, no options</td>
<td>IDC connections</td>
<td>Screw terminals for in/out wiring, 18 to 14 AWG</td>
</tr>
<tr>
<td>4098-9684</td>
<td>2-Wire Base with connection for remote LED alarm indicator</td>
<td>IDC connections</td>
<td>Screw terminals for 18 to 14 AWG for in/out wiring of zone (+), color coded 18 AWG leads for in/out wiring of zone (-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LED connections</td>
<td>Color coded 18 AWG leads</td>
</tr>
<tr>
<td>4098-9683</td>
<td>2-Wire Base with auxiliary alarm relay output</td>
<td>Relay Operation Type</td>
<td>Relay Ratings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Output Type</td>
<td>Wiring Connections</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power-limited</td>
<td>1 A @ 28 VDC, Dual Form &quot;C&quot; contacts, for suppressed loads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nonpower-limited</td>
<td>3 A @ 120 AC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IDC connections</td>
<td>Screw terminals for 18 to 14 AWG for in/out wiring of zone (+), color coded 18 AWG leads for in/out wiring of zone (-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relay connections</td>
<td>Color coded 18 AWG leads</td>
</tr>
<tr>
<td>4098-9682</td>
<td>4-Wire Base with auxiliary alarm relay output</td>
<td>Relay Operation Type</td>
<td>Relay Ratings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Output Type</td>
<td>Wiring Connections</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power-limited</td>
<td>3 A @ 28 VDC, Single Form &quot;C&quot; contacts, for suppressed loads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nonpower limited</td>
<td>3 A @ 120 AC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IDC connections</td>
<td>Color coded 18 AWG leads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relay connections</td>
<td>Color coded 18 AWG leads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power connections</td>
<td>Screw terminals for 18 to 14 AWG for in/out wiring of power (+), color coded 18 AWG leads for in/out wiring of power (-)</td>
</tr>
</tbody>
</table>

NOTE: Must be connected as the only device on the IDC to ensure relay operation.

NOTE: Requires separate 24 VDC power.

Metric wire equivalents: 18 AWG = 0.82 mm², 14 AWG = 2.08 mm²
# Heat Detector Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Details</th>
<th>Base Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>4098-9832</td>
<td>Adapter Plate</td>
<td>Required for surface or semi-flush mounting to 4&quot; (102 mm) square electrical box or for surface mounting to 4&quot; octagonal box</td>
<td>4098-9682 4098-9683 4098-9684 4098-9788</td>
</tr>
<tr>
<td></td>
<td></td>
<td>May also be used when retrofitting to replace existing larger diameter bases</td>
<td></td>
</tr>
<tr>
<td>4098-9830</td>
<td>Remote Red LED Alarm Indicator</td>
<td>Mounted on single gang stainless steel plate, wiring connections are 18 AWG color coded leads</td>
<td>4098-9684 only</td>
</tr>
<tr>
<td>2098-9739</td>
<td>End-of-Line Relay</td>
<td>Epoxy encapsulated design, 24 VDC operation, wiring connections are 18 AWG color coded leads</td>
<td>For 4-wire IDCs using 4098-9682 base, one per circuit</td>
</tr>
<tr>
<td>2098-9735</td>
<td>End-of-Line Relay</td>
<td>Mounted on single gang stainless steel plate, 24 VDC operation, wiring connections are 18 AWG color coded leads</td>
<td></td>
</tr>
</tbody>
</table>

Metric wire equivalent: 18 AWG = 0.82 mm²

## Dimensions and Reference

4098-9832 Optional Adapter Plate
(required for surface or semi-flush mounting to 4" (102 mm) square box or for surface mounting to 4" octagonal box)

4098-9830 Remote Red LED Alarm Indicator (not to scale)
Mounting Information

4098-9788
4" (102 mm) octagonal or 4" square box, 1-1/2" deep (38 mm)
Single gang box, 2" deep (51 mm)

4098-9682
4" octagonal or 4" square box, 1-1/2" deep with 1-1/2" deep extension

4098-9683
4098-9684

1-1/2" (38 mm) minimum box depth

4" (102 mm) octagonal or square box

Surface mount reference

Flush mount reference, mount even with final surface, or with up to 1/4" (6.4 mm) maximum recess

4098-9832 Adapter Plate, required for surface or semi-flush mounting to 4" square box or for surface mounting to 4" octagonal box

Bases 4098-9682 and 4098-9683 include a relay that mounts in base electrical box

Base 4098-9864 includes a remote LED interface module that mounts in base electrical box

Heat detector bases 4098-9682, 4098-9683, 4098-9864, & 4098-9788

Applications Reference

The following table provides a reference for the maximum rectangular area covered for detectors rated with the given spacing. For additional information, including consideration of ceiling height, refer to NFPA 72, the National Fire Alarm Code.

Maximum Rectangular Area Dimensions for Single Detector Coverage

<table>
<thead>
<tr>
<th>15 ft Rated Spacing (4.5 m)</th>
<th>30 ft Rated Spacing (9.1 m)</th>
<th>70 ft Rated Spacing (21.3 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 ft x 15 ft (4.5 m x 4.5 m)</td>
<td>30 ft x 30 ft (9.1 m x 9.1 m)</td>
<td>70 ft x 70 ft (21.3 m x 21.3 m)</td>
</tr>
<tr>
<td>10 ft x 18.7 ft (3 m x 5.7 m)</td>
<td>25 ft x 34.2 ft (7.6 m x 10.4 m)</td>
<td>65 ft x 74.6 ft (19.8 m x 22.7 m)</td>
</tr>
<tr>
<td>5 ft x 20.6 ft (1.5 m x 6.2 m)</td>
<td>20 ft x 37.4 ft (6.1 m x 11.4 m)</td>
<td>60 ft x 78.7 ft (18.3 m x 24 m)</td>
</tr>
<tr>
<td>1 ft x 27.1 ft (0.3 m x 8.2 m)</td>
<td>1 ft x 39.7 ft (0.3 m x 12.1 m)</td>
<td>55 ft x 82.3 ft (16.7 m x 25.3 m)</td>
</tr>
<tr>
<td>10 ft x 41.2 ft (3.1 m x 12.5 m)</td>
<td>50 ft x 85.4 ft (15.2 m x 26 m)</td>
<td></td>
</tr>
<tr>
<td>5 ft x 42.1 ft (1.5 m x 12.8 m)</td>
<td>45 ft x 88.1 ft (13.7 m x 26.8 m)</td>
<td></td>
</tr>
<tr>
<td>1 ft x 42.4 ft (0.3 m x 12.9 m)</td>
<td>40 ft x 90.5 ft (12.2 m x 27.5 m)</td>
<td></td>
</tr>
<tr>
<td>35 ft x 92.5 ft (10.6 m x 28.2 m)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

30 ft x 94.3 ft (9.1 m x 28.7 m)
25 ft x 95.7 ft (7.6 m x 29.1 m)
20 ft x 96.6 ft (6.1 m x 29.5 m)
15 ft x 97.6 ft (4.5 m x 29.8 m)
10 ft x 98.4 ft (3.05 m x 30 m)
5 ft x 98.8 ft (1.5 m x 30.1 m)
1 ft x 99 ft (0.3 m x 30.2 m)

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## TrueAlert™ Multi-Candela Notification Appliances

The 4906 TrueAlert™ SmartSync™ Multi-Candela Notification appliances are indoor use only non-addressable wall or ceiling-mounted Notification Appliances that provide an visible or audible/visible only warning indication of an alarm condition when activated from the control panel of a UL/ULC Listed, Simplex Fire Alarm System. When the Notification Appliance emits light or sound, it indicates the possibility of an emergency situation that requires immediate attention of all occupants.

Strobe setting for 15, 30, 75, or 110 candela is manually configured by a selection plug located on the back of strobe assembly (see setting the strobe candela rating).

<table>
<thead>
<tr>
<th>Multi-Candela Appliances</th>
<th>Operation</th>
<th>Compatibility</th>
</tr>
</thead>
</table>
| **4906-9101 (Red)**/4906-9103 (White)** | Reverse polarity notification appliance that provides selectable 15, 30, 75, or 110 candela ratings. Synchronized 1 HZ flash with SmartSync 2-wire circuit and separate sync modules. | • 4009-9201, -9301 IDNet NAC Extender  
• 4905-9938 SmartSync Control Module (SCM)  
• 4100U and 4010 Fire Alarm Control Panels (FACPs)  
• 4905-9914, -9922 Strobe Sync Units |
| **Wall-Mount SmartSync Strobe** | | |
| **4906-9127 (Red)**/4906-9129 (White)** | Reverse polarity notification appliance that provides selectable strobe 15, 30, 75, or 110 candela ratings with electronic horn. Synchronized 1 HZ flash with SmartSync 2-wire circuit and separate sync modules. | • 4009-9201, -9301 IDNet NAC Extender  
• 4905-9938 SmartSync Control Module (SCM)  
• 4100U and 4010 Fire Alarm Control Panels (FACPs) |
| **Wall-Mount SmartSync Audible/Visible (AVV)** | | |
| **4906-9151 (Red)**/4906-9153 (White)** | Reverse polarity notification appliance that provides selectable strobe 15, 30, 75, or 110 candela ratings with speaker. Speakers are for 25 or 70.7 VRMS, tapped at ¼ W, ½ W, 1 W, and 2 W. Strobe is Synchronized 1 HZ flash with SmartSync 2-wire circuit and separate sync modules. Speaker is wired separately. | • 4009-9201, -9301 IDNet NAC Extender  
• 4905-9938 SmartSync Control Module (SCM)  
• 4100U and 4010 Fire Alarm Control Panels (FACPs)  
• 4905-9914, -9922 Strobe Sync Units |
| **Wall-Mount Speaker/Visible (S/V)** | | |
| **4906-9102 (Red)**/4906-9104 (White)** | Reverse polarity notification appliance that provides selectable 15, 30, 75, or 110 candela ratings. Synchronized 1 HZ flash with SmartSync 2-wire circuit and separate sync modules. | • 4009-9201, -9301 IDNet NAC Extender  
• 4905-9938 SmartSync Control Module (SCM)  
• 4100U and 4010 Fire Alarm Control Panels (FACPs)  
• 4905-9914, -9922 Strobe Sync Units |
| **Ceiling-Mount SmartSync Strobe** | | |
| **4906-9128 (Red)**/4906-9130 (White)** | Reverse polarity notification appliance that provides selectable strobe 15, 30, 75, or 110 candela ratings with electronic horn. Synchronized 1 HZ flash with SmartSync 2-wire circuit and separate sync modules. | • 4009-9201, -9301 IDNet NAC Extender  
• 4905-9938 SmartSync Control Module (SCM)  
• 4100U and 4010 Fire Alarm Control Panels (FACPs) |
| **Ceiling-Mount SmartSync Audible/Visible (AVV)** | | |
| **4906-9154 (White)** | Reverse polarity notification appliance that provides selectable strobe 15, 30, 75, or 110 candela ratings with speaker. Speakers are for 25 or 70.7 VRMS, tapped at ¼ W, ½ W, 1 W, and 2 W. Strobe is Synchronized 1 HZ flash with SmartSync 2-wire circuit and separate sync modules. Speaker is wired separately. | • 4009-9201, -9301 IDNet NAC Extender  
• 4905-9938 SmartSync Control Module (SCM)  
• 4100U and 4010 Fire Alarm Control Panels (FACPs)  
• 4905-9914, -9922 Strobe Sync Units |
| **Ceiling-Mount Speaker/Visible (S/V)** | | |

**Note:** Not suitable for installation in air handling spaces.
Table 1. General Specifications for Wall/Ceiling Strobes & A/Vs

<table>
<thead>
<tr>
<th>Rated Voltage Range</th>
<th>UL Listed Range – 16 VDC to 33 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ULC Listed Range – 20 VDC to 30 VDC per ULC S526-M878</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>32° to 120° F (0° to 49° C)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>10% to 93%, non-condensing at 100° F (38° C)</td>
</tr>
<tr>
<td>Connections</td>
<td>Terminal for 18 AWG to 12 AWG (0.82 mm² to 3.31 mm²)</td>
</tr>
</tbody>
</table>

Table 2. Wall-Mount 4906-9101, -9103 Strobe, 4906-9151, -9153 S/V, and 4906-9127, -9129 A/V – Strobe Current Rating Charts

<table>
<thead>
<tr>
<th>Candela Rating</th>
<th>Input Voltage Regulated DC</th>
<th>Wall-Mount Strobe &amp; S/V Maximum Operating Current RMS</th>
<th>Wall-Mount A/V* Maximum Operating Current RMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>24 VDC</td>
<td>60 mA</td>
<td>75 mA</td>
</tr>
<tr>
<td>30</td>
<td>24 VDC</td>
<td>94 mA</td>
<td>116 mA</td>
</tr>
<tr>
<td>75</td>
<td>24 VDC</td>
<td>186 mA</td>
<td>221 mA</td>
</tr>
<tr>
<td>110</td>
<td>24 VDC</td>
<td>252 mA</td>
<td>265 mA</td>
</tr>
</tbody>
</table>

*A/V Strobe current is measured with horn circuit steady ON.*

Table 3. Ceiling-Mount 4906-9102, -9104 Strobe, 4906-9154 S/V, and 4906-9128, -9130 A/V – Strobe Current Rating Charts

<table>
<thead>
<tr>
<th>Candela Rating</th>
<th>Input Voltage Regulated DC</th>
<th>Ceiling Mount Strobe &amp; S/V Maximum Operating Current RMS</th>
<th>Ceiling-Mount A/V* Maximum Operating Current RMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>24 VDC</td>
<td>75 mA</td>
<td>86 mA</td>
</tr>
<tr>
<td>30</td>
<td>24 VDC</td>
<td>125 mA</td>
<td>132 mA</td>
</tr>
<tr>
<td>75</td>
<td>24 VDC</td>
<td>233 mA</td>
<td>250 mA</td>
</tr>
<tr>
<td>110</td>
<td>24 VDC</td>
<td>316 mA</td>
<td>320 mA</td>
</tr>
</tbody>
</table>

*A/V Strobe current is measured with horn circuit steady ON.*

Table 4. TrueAlert Multi-Candela Wall and Ceiling Mount A/V Units – Horn Sound Pressure Level Measurements

<table>
<thead>
<tr>
<th>Input Voltage Regulated DC</th>
<th>Horn Mode (See Note 1)</th>
<th>Sound Pressure Level Measurement (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ANECHOIC ROOM AVERAGE AT TEN FEET (SEE NOTE 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wall A/V</td>
</tr>
<tr>
<td>24 VDC</td>
<td>Steady</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>Coded</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. The coded category covers both Temporal and March Time cadences.
2. Average anechoic dBA measurements are measured on axis in a non-reflective test chamber using fast meter response.
3. Reverberant dBA measurements are a minimum UL rating based on sound power level measurements made in UL's reverberant test chamber.

Table 5. General Specifications for Wall/Ceiling Speakers

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>25 or 70.7 VRMS – Speakers are for connection to conventional fire alarm audio circuits.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Taps via Jumper J1</td>
<td>¼, ½, 1, and 2 W</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>Fire Alarm 400 to 4000 Hz</td>
</tr>
<tr>
<td>General Signaling</td>
<td>125 to 12 kHz</td>
</tr>
</tbody>
</table>
Table 6. TrueAlert Non-Addressable Wall and Ceiling Mount S/V Units – Speaker Sound Pressure Level Measurements

<table>
<thead>
<tr>
<th>Voltage in Vrms</th>
<th>Jumper J1 to Tap</th>
<th>Tap Setting in Watts</th>
<th>Sound Pressure Level Measurement (dBA) Reverberant Room at Ten Feet Per UL1480 (See Notes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70.7Vrms</td>
<td></td>
<td></td>
<td>Wall S/V</td>
</tr>
<tr>
<td>A</td>
<td>¼</td>
<td></td>
<td>76</td>
</tr>
<tr>
<td>B</td>
<td>½</td>
<td></td>
<td>79</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td></td>
<td>82</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>25Vrms</td>
<td></td>
<td></td>
<td>Wall S/V</td>
</tr>
<tr>
<td>D</td>
<td>¼</td>
<td></td>
<td>76</td>
</tr>
<tr>
<td>E</td>
<td>½</td>
<td></td>
<td>79</td>
</tr>
<tr>
<td>F</td>
<td>1</td>
<td></td>
<td>82</td>
</tr>
<tr>
<td>G</td>
<td>2</td>
<td></td>
<td>85</td>
</tr>
</tbody>
</table>

Notes: Reverberant dBA measurements are a minimum UL rating based on sound power level measurements made in UL’s reverberant test chamber.

Figure 1. Speaker Directional Characteristics

Figure 2. Strobe Light Output (Horizontal Dispersion)

Figure 3. Strobe Light Output, Wall to Floor

Note: Simplex 4906 Multi-Candela strobe light output meets or exceeds the requirements shown.
Figure 4. Strobe Light Output, Ceiling to Walls and Floor

Note: Simplex 4906 Multi-Candela strobe light output meets or exceeds the requirements shown.

Setting the Strobe Candela Rating

All 4906 Non-Addressable Multi-Candela notification appliances have jumper selectable candela ratings for the strobe. The strobe can be selected to the desired intensity by inserting the jumper in the appropriate position (15, 30, 75, or 110 candela). See Figure 5.

Note: The jumper is pre-installed (15 candela setting) at the factory and needs to be set for your configuration requirements during installation. Selected candela setting can be seen through strobe lens.

Table 8. Vertical and Horizontal Light Dispersion Ratings (Ceiling to Walls and Floor)

<table>
<thead>
<tr>
<th>Percent of Rated Light Output</th>
<th>X-Plane Angle</th>
<th>UL Req Output</th>
<th>Typical Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>0</td>
<td>327%</td>
<td>100%</td>
</tr>
<tr>
<td>±5 90%</td>
<td>±5</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>±10 90%</td>
<td>±10</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>±15 90%</td>
<td>±15</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>±20 90%</td>
<td>±20</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>±25 90%</td>
<td>±25</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>±30 45%</td>
<td>±30</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>±35 45%</td>
<td>±35</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>±40 45%</td>
<td>±40</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>±45 45%</td>
<td>±45</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>±50 45%</td>
<td>±50</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>±55 45%</td>
<td>±55</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>±60 40%</td>
<td>±60</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>±65 35%</td>
<td>±65</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>±70 35%</td>
<td>±70</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>±75 30%</td>
<td>±75</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>±80 30%</td>
<td>±80</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>±85 25%</td>
<td>±85</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>±90 25%</td>
<td>±90</td>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Vertical Dispersion

Horizontal Dispersion

Figure 5. Multi-Candela Intensity Setting
TrueAlert Multi-Candela Notification Appliance Wiring

WARNING: Make sure that all power is disconnected before starting the installation.

CAUTION: Connect wiring to terminals as shown. Do not loop wires under terminals. Break wire runs to provide supervision of connections. Do not bring conduit through the rear of the electrical box. Strip lead insulation to 3/8" maximum.

General Wiring Notes

1. At the enclosure box, run contractor wiring and connect the wires to the terminals at the front (through the cutout slot wall mount only) or rear of the unit. Wall/Ceiling Mount Strobe and A/V units are embossed with CKT+ and CKT- for field wiring terminal connections. Wall/Ceiling Mount S/V units are embossed with Strobe+/Strobe-, and SPKR+/SPKR- for field wiring terminal connections. Torque terminal block screws 12-15 in/lbs. to ensure proper continuity. See Figure 6.

2. Ensure that correct polarity is maintained on each unit.

3. When connecting the last unit (not speaker) on a circuit, connect an end-of-line resistor (EOLR) to the terminals.

4. Configure the speaker wattage setting using Table 6. Ensure that the RMS value of the connected audio circuit matches the RMS value of the connected speaker. An incorrect tap setting may damage the speaker. The factory default setting for the speaker is J1 to Tap E (25Vrms, 1/4 W).

![Diagram of NAC Terminal Wiring](image)

Figure 6. NAC Terminal Wiring

**Wall/Ceiling Mount 4906 Strobe and A/V Wiring**

FROM 16-33 VDC NON-CODED NOTIFICATION APPLIANCE CIRCUIT OR PRECEDEING APPLIANCE (SEE NOTES)

FROM AUDIO NAC CHANNEL (4100/4003) (SEE NOTES)

FROM 16-33 VDC NON-CODED NOTIFICATION APPLIANCE CIRCUIT OR PRECEEDING APPLIANCE (SEE NOTES)

**Wall/Ceiling Mount 4906 S/V Wiring**

**Wiring Notes:**

1. Notification Appliances are rated per individual nameplate label. Maintain correct polarity on terminal connections. Do not loop wires under terminals.

2. Refer to the Field Wiring Diagrams supplied with the FACP for detailed NAC wiring information.

3. All NAC wiring connections are supervised and power-limited.

4. Refer to Table 4 for S/V speaker tap selection.

5. These appliances were only tested to the operating voltage limits of 16 - 33 VDC per UL1971 and 20 - 30 VDC per CAN/ULC S526-M87. Do not operate these appliances outside these limits: doing so may cause appliance to fail to operate, and/or cause permanent damage to this equipment.


![Diagram of Multi-Candela Wiring](image)

Figure 7. Multi-Candela Wiring

5
TrueAlert Multi-Candela Notification Appliance Mounting

Wall-Mount Strobe, A/V and S/V Mounting

See Figure 4 for mounting the notification appliance to the enclosure box. When surface mounting the Strobe or A/V, the 4905-9937 or 4905-9940 TrueAlert Surface Mount Skirt is recommended, when surface mounting the S/V, either the 4905-9946 or 4905-9947 Surface Mount Skirt is required. Refer to the 4905 TrueAlert™ NAC Surface Mount Skirt Installation Instructions 574-790 for this mounting application.

When mounting the wall-mount S/V to a Simplex 2975-9145 electrical box, the 4905-9903 Adapter Plate is required. Refer to the 4905 TrueAlert™ Adapter Plate Installation Instructions (574-791) for this mounting application.

Caution: Do not bring conduit through the rear of the electrical box.

1. Tighten mounting screws snugly (do not over tighten).
2. For semi-flush mounting, install the box either flush with the wall or with a maximum 0.25-inch recess.
3.

![Diagram of Wall-Mount Strobe & A/V with mounting instructions]

**Notes:**
1. 4906 TrueAlert Multi-Candela Strobe, A/V provide compatible mounting with single-gang, double-gang, or 4-inch square electrical box(s) (not supplied) mounted semi-flush or surface to the wall's surface. Reference illustration for mounting screw locations.
2. 4906 TrueAlert Multi-Candela S/V requires mounting to 4-inch square electrical box screws with a 4-inch square box extension (11/2 deep). The two mounting screws are placed cross corner (opposite top and bottom holes) for the installation.
3. To remove cover when assembled to housing, press snap release in (one at a time) with a flat tip screwdriver while pulling up cover with other hand.

**Figure 8. Multi-Candela Wall-Mounting**
TrueAlert Multi-Candela Notification Appliance Mounting, Continued

**Ceiling-Mount Strobe, A/V and S/V Mounting**

**Caution:** Do not bring conduit through the rear of the electrical box.

4. Tighten mounting screws snugly (do not over tighten).
5. For semi-flush mounting, install the box either flush with the wall or with a maximum 0.25-inch recess.

---

**Ceiling Strobe Mounting Notes:**
1. The TrueAlert Ceiling Strobe unit attaches directly to a standard single-gang electrical box (not supplied), semi-flush or surface mounted.
2. There are two holes for electrical box mounting. Secure the housing to the single-gang box using two mounting screws (#6/32-inch x 1 1/8-inch long supplied). Line the mounting tabs of the strobe unit to the housing slots and snap into place.
3. It is recommended that the strobe candela rating be set before the appliance is snapped to the housing.

**Ceiling A/V Mounting Notes:**
1. The TrueAlert Ceiling-Mount A/V attaches directly to a 4-inch square electrical box (not supplied), semi-flush or surface mounted. Ensure correct orientation of the box in relation to the location of the mounting screws and the A/V’s position.
2. For installation in a concrete or plaster ceiling, flush-mount the box (with a 1/8-inch recess, maximum).
3. For installation in a suspended ceiling, use a suitable tile bridge that rests on tile to support the box.
4. It is recommended that the strobe candela rating be set before the appliance is snapped to the housing.

**Ceiling S/V Mounting Notes:**
1. The TrueAlert Ceiling S/V attaches directly to a standard 4-inch square metal electrical box with extension ring (not supplied), flush mounted or surface mounted.
2. Ensure correct orientation of box with extension in relation to location of mounting screws.
3. It is recommended that the strobe candela rating be set before the appliance is snapped to the housing.
4. For installation in plaster or concrete ceiling, mount box with extension flush or with maximum ¼-inch recess; for suspended ceiling, use a suitable bridge that rests on tile to support box with extension.

---

**Figure 9. Multi-Candela Ceiling-Mounting**
READ AND SAVE THESE INSTRUCTIONS. Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depends upon proper installation.

STATIC HAZARD - Static electricity can damage components. Therefore, handle as follows: Ground yourself before opening or installing components (use a Static Control Kit, Part No. 431231). Prior to installation, keep components wrapped in anti-static material at all times.

DO NOT INSTALL ANY PRODUCT THAT APPEARS DAMAGED. Upon unpacking your product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify your product supplier.

ELECTRICAL HAZARD - Disconnect electrical power when making any internal adjustments or repairs. Servicing should be performed by qualified Technical Representatives.

RADIO FREQUENCY ENERGY - This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

SYSTEM REACCEPTANCE TEST AFTER SOFTWARE CHANGES - To ensure proper system operation, this product must be tested in accordance with NFPA72-1996, Chapter 7 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components; or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

Limitations, Safety and Placement of Notification Appliances

Notification Appliances, and the Fire Alarm System itself, have certain limitations and requirements for safety, placement, installation, and test. Since you must know the limitations and adhere to the requirements, keep these instructions at a central location for future reference so that all people who use, maintain, and test the Fire Alarm System have access to this information.

Limitations

Notification Appliances do not sense any hazardous conditions such as smoke, fire, explosion, etc.; they are activated by a control panel as part of a system that does sense such conditions.

Notification Appliances do not provide their own power. They receive their power from the Fire Alarm System. If power is not supplied to the Notification Appliances (for whatever reason), the Notification Appliances will not provide a visible warning. THEREFORE, BACK-UP POWER SUPPLIES, OR OTHER BACK-UP POWER SOURCES, ARE REQUIRED FOR THE FIRE ALARM SYSTEM.

Notification Appliances provide a specific rated output level of light. The output level must meet the requirements of the intended protected area(s). Although the 4904 TrueAlert Strobe Notification Appliances meet the current UL and ULC SS26-M87 standards for light intensity, the protected area(s) may have walls, doors, carpeting, furniture, insulation, or other obstacles that reduce or even block the light. For all applications, the light output must provide enough intensity to alert all occupants of the protected area(s) including those occupants who are sleeping. If these occupants cannot see the effect of the Notification Appliances within the protected area(s), you must increase the intensity of the light output or add additional Notification Appliances so that the occupants can see the effect of the Notification Appliances when activated. Refer to National Fire Protection Association (NFPA) National Fire Alarm Code 72, Chapter 6.

Notification Appliances are not a substitute for insurance coverage. All users should have adequate levels of life and property insurance.

Safety

Always install, maintain, and test Notification Appliances within their specifications. Failure to follow all safety precautions and instructions may result in loss of life and property due to non-functioning Notification Appliances.

Some Notification Appliances use high voltage. To avoid electrical hazards and avoid damage to appliances, make sure that the electrical power for the Notification Appliances Circuit is disconnected at the control panel before installing, repairing, or internally adjusting any Notification Appliances.

Even with electrical power removed, some Notification Appliances (such as visible strobes) store a high voltage charge. The high voltage can cause injury resulting in death from electrical shock. DO NOT TOUCH EXPOSED CIRCUITRY.

Placement

The placement of Notification Appliances must conform to:
- Latest NFPA standards and guidelines (Refer to National Fire Alarm Code 72, Chapter 6), if applicable
- The Canadian Building Code, if applicable
- Light Intensity Analysis of Intended Protected Areas
- Local Authority Having Jurisdiction (AHJ) Requirements

Notification Appliances are not intended for installation within hazardous locations as defined by the National Electrical Code (NEC) or the NFPA. Contact Simplex for information on Explosion-Proof Notification Appliances designed for hazardous environments.
TrueAlert™ Notification Appliances

Non-Addressable Audible/Visible Notification Appliances with SmartSync™ Operation of Strobes and Horns

Features

Wall mount audible/visible notification appliances with efficient electronic horn and high output xenon strobe

Compatible with ADA requirements (refer to important installation instructions on page 5)

Operates over a two-wire SmartSync circuit to provide:

- Horns that are controlled separately from strobes on the same two-wire circuit
- "On-until-silenced" and "on-unti-reset" operation on the same two-wire pair
- Horn control that can be selected to be temporal coded, march time coded, or on continuously
- Strobe appliances on the same circuit operating at a synchronized 1 Hz flash rate
- Class B (Style Y) operation requires connection to a compatible SmartSync NAC or to SmartSync Control Module (SCM) 4905-9938
- Class A (Style Z) operation when connected to the 4905-9938 SCM or with 4100U series fire alarm control panel NACs

Available housing colors:

- Red cover with white "FIRE" lettering
- White cover with red "FIRE" lettering
- Covers are available separately to convert housing color

Flexible, easy, and convenient semi-flush or surface wall mounting:

- Easily mounts to single gang, double gang, or 4-inch square outlet box
- Optional mounting adapters are available to cover surface mounted electrical boxes and to adapt to Simplex® 2975-9145 boxes
- In/out wiring terminals for 18 AWG to 12 AWG, accessible from front of housing, providing easy access for installation, inspection, and testing
- Rear of housing assembly does not extend into box
- Rugged, high impact, flame retardant thermoplastic housing
- Optional UL listed red wire guard is available for semi-flush or surface mounting

Features (Continued)

Visible notification appliance (strobe):

- 24 VDC xenon strobe available with 15, 75, or 110 candela output (strobe candela rating is clearly indicated on reflector)
- UL listed to Standard 1971

Audible notification appliance (horn):

- Low current, 24 VDC electronic horn with harmonically rich output sound suitable for either coded or steady operation
- UL listed to Standard 464

Description

TrueAlert non-addressable audible and visible notification. For applications requiring audible/visible notification with horn tones, these Simplex 4903 series appliances combine a high intensity strobe with a low current electronic horn in a compact package that is easy and quick to install. The horn provides a loud and penetrating, harmonically rich sound suitable for either coded or steady operation as determined by the selected SmartSync mode.

SmartSync two-wire advantage. With both audible and visible controls carried on the same two-wire NAC circuit, using SmartSync operation (U.S. Patent No. 6,281,789) can provide the opportunity for significantly reduced installation time and expense for both retrofit and new construction.

Multiple model choices. These A/V notification appliances are available with three strobe intensity levels and with red or white housings. Mounting can be semi-flush or surface mounted on a standard single gang, double gang, or 4" square (102 mm) electrical box. Optional accessories are available to increase mounting and application flexibility.

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7125-00229 for allowable values and conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. Accepted for use - City of New York Department of Buildings - MEA35-93E. This product was not ULC listed as of document revision date. Additional listings may be applicable; contact your local Simplex product supplier for the latest status.
**SmartSync Two-Wire Control**

**Background.** Typically, fire alarm control panels activate both audible and visible notification upon receipt of an alarm. At the direction of an authorized operator (or by pre-determined program), audible notification appliances may be silenced before the alarm condition is reset (on-until-silenced) while the visible notification appliances are kept activated until the alarm condition is reset (on-until-reset). This operation has traditionally required two different circuits (four-wire operation). SmartSync operation mode provides this function using a single circuit (two-wire operation).

**SmartSync output control** is available from:
- **4009 IDNet™ NAC Extender**, models 4009-9201 and 4009-9301 (refer to data sheet S4009-0002)
- **4100U and 4010 Fire Alarm Control Panels** (4010 panels require operating software Revision 2.X or higher, described on data sheet S4100-0001, see S4100-0031 for 4100U information)
- **SmartSync Control Module (SCM) 4905-9938**, provides a SmartSync interface to conventional NACs and also is used with the 4009 IDNet NAC extender or 4010 Control Panel to provide Class A operation (refer to page 6 for more information)

**Product Selection**

**Audible/Visible Notification Appliances (Horn/Strobe)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Visible Notification Appliance Output</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4903-9417</td>
<td>15 cd</td>
<td>Red with white &quot;FIRE&quot; lettering</td>
</tr>
<tr>
<td>4903-9418</td>
<td>75 cd</td>
<td></td>
</tr>
<tr>
<td>4903-9419</td>
<td>110 cd</td>
<td></td>
</tr>
<tr>
<td>4903-9428</td>
<td>15 cd</td>
<td>White with red &quot;FIRE&quot; lettering</td>
</tr>
<tr>
<td>4903-9429</td>
<td>75 cd</td>
<td></td>
</tr>
<tr>
<td>4903-9430</td>
<td>110 cd</td>
<td></td>
</tr>
</tbody>
</table>

**Adapters**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Use to cover 1-1/2&quot; deep surface mounted boxes</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4905-9937</td>
<td>Surface mount red adapter skirt</td>
<td></td>
<td>5-3/8&quot; H x 5-1/4&quot; W x 1-5/8&quot; D (136 mm x 133 mm x 41 mm)</td>
</tr>
<tr>
<td>4905-9940</td>
<td>Surface mount white adapter skirt</td>
<td></td>
<td>Total depth with strobe = 4-3/8&quot; (111 mm)</td>
</tr>
<tr>
<td>4905-9931</td>
<td>Adapter plate, red, for mounting to Simplex 2975-9145 box (typically for retrofit, may be mounted vertical or horizontal)</td>
<td></td>
<td>8-5/16&quot; x 5-3/4&quot; x 0.060&quot; Thick (211 mm x 146 mm x 1.5 mm)</td>
</tr>
<tr>
<td>2975-9145</td>
<td>Red mounting box, requires Adapter Plate 4905-9931</td>
<td></td>
<td>7-7/8&quot; x 5-1/8&quot; x 2-3/4&quot; D (130 mm x 200 mm x 70 mm)</td>
</tr>
</tbody>
</table>

**Synchronization Modules**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4905-9938</td>
<td>SmartSync Control Module, Class A or Class B (Style Z/Y), installs in 4&quot; square box (refer to diagram on page 6)</td>
<td>4&quot; x 4-1/8&quot; x 1-1/4&quot; D (102 mm x 105 mm x 32 mm)</td>
</tr>
</tbody>
</table>

**Covers and Guard**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4905-9994</td>
<td>Red cover with white &quot;FIRE&quot; lettering</td>
<td>5-1/8&quot; H x 5&quot; W x 1-1/2&quot; D (130 mm x 127 mm x 38 mm)</td>
</tr>
<tr>
<td>4905-9995</td>
<td>White cover with red &quot;FIRE&quot; lettering</td>
<td></td>
</tr>
<tr>
<td>4905-9961*</td>
<td>Wire guard with mounting plate, red, compatible with semi-flush or surface mounted boxes</td>
<td>6-1/16&quot; H x 6-1/16&quot; W x 3-1/8&quot; D (154 mm x 154 mm x 79 mm)</td>
</tr>
</tbody>
</table>

* UL listed by Space Age Electronics Inc.
Strobe Selection

Proper selection of visible notification is dependent on occupancy, location, local codes, and proper applications of: the National Fire Alarm Code (NFPA 72); ANSI A117.1; the appropriate model building code, BOCA, ICBO, or SBCCI, and the application guidelines of the Americans with Disabilities Act (ADA).

Specifications

Strobe Specifications

<table>
<thead>
<tr>
<th>Rated Voltage Range</th>
<th>16 VDC to 33 VDC, see Note 1 below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ratings, Strobe Flashing and Horn On, Nominal Average Current (see Note 2 below)</td>
<td></td>
</tr>
<tr>
<td>15 cd</td>
<td>92 mA</td>
</tr>
<tr>
<td>75 cd</td>
<td>217 mA</td>
</tr>
<tr>
<td>110 cd</td>
<td>275 mA</td>
</tr>
<tr>
<td>Flash Rate</td>
<td>1 Hz</td>
</tr>
</tbody>
</table>

Horn Specifications

<table>
<thead>
<tr>
<th>Rated Voltage Range</th>
<th>UL Listed Range</th>
<th>16 VDC to 33 VDC, see Note 1 below</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ULC Listed Range</td>
<td>20 VDC to 30 VDC per ULC S526-M87</td>
</tr>
<tr>
<td>Sound Output Characteristics</td>
<td>Voltage</td>
<td>2400 to 3700 Hz sweep, modulated at 120 Hz rate</td>
</tr>
<tr>
<td>Sound Output Ratings @ 10 ft (3 m)</td>
<td>Sound Type (see Note 3)</td>
<td>Steady</td>
</tr>
<tr>
<td>Reverberant Chamber, UL 464 Test</td>
<td>85 dBA</td>
<td>82 dBA</td>
</tr>
<tr>
<td>Anechoic Chamber</td>
<td>90 dBA</td>
<td>86 dBA</td>
</tr>
</tbody>
</table>

4905-9938 SmartSync Control Module (SCM)

| Rated Input Voltage Range | 17 VDC to 33 VDC with maximum ripple of 2 V peak-to-peak |
| SmartSync NAC Output Capacity (for use only with SmartSync compatible appliances) | 2 A maximum (total device quantity is control panel dependent) |
| Strobe Control NAC Input Current | Output NAC current, plus 30 mA @ 24 VDC for SCM operating power |
| Horn Control NAC Current | 4 mA @ 24 VDC |
| Class A Operation Mounting Requirement | Mount SCM within 20 ft (6 m) of control panel, use metal conduit |

General Specifications

| Housing Dimensions (including lens) | 5-1/8" H x 5" W x 2-3/4" D (130 mm x 127 mm x 70 mm) |
| Temperature Range | 32° to 122° F (0° to 50° C) |
| Humidity Range | 10% to 93%, non-condensing at 100° F (38° C) |
| Connections | Terminal blocks for 18 AWG to 12 AWG |

NOTES:

1. The rated voltage range listed is the absolute operating range. Operation outside of this range may cause permanent damage to the appliance. Please note that 16 VDC is the lowest operating voltage that is allowed at the last appliance on the notification appliance circuit under worst case conditions.

2. Voltage drops and standby battery calculations should be made using anticipated operating conditions. Operation above 24 VDC draws less current.

3. Coded values are typical of the output measured with a Temporal coded or a March Time coded pulse and with a sound level meter reading on a "fast" setting. Under the same test conditions, coded horn output "peak" sound level readings are typically 4 dBA higher.
Mounting is compatible with single gang, double gang, and 4\" (102 mm) square boxes, 1-1/2\" (38 mm) deep, by others.

Wiring access hole

Wiring terminals for SmartSync operation

Mounting Holes:
4\" square (4)
Single gang (2)
Double gang (3)

Transparent housing and lens assembly

Removable cover (tool required)
**Installation Reference, Mounting and Side View**

**IMPORTANT INSTALLATION**
**MOUNTING HEIGHT REFERENCE**

- Electrical box outline
- Bottom of lens is either even with, or slightly above bottom of compatible boxes
- 80" (2.03 m) minimum
- NFPA 72-1999, Section 4-4.4 requires that the entire lens be not less than 80" and not greater than 96" above the finished floor.

**Surface Mounting Reference**
**Showing Optional Wire Guard**

- Surface mount: conduit and box shown for reference
- 4" (102 mm) square box profile, 1-1/2" (38 mm) deep
- Optional 4905-9961 Wire Guard
- TrueAlert Non-Addressable A/V

Optional surface mount adapter skirt, 1-1/2" deep. 4905-9937, Red; 4905-9940, White (conduit knockouts are provided on all four sides)

---

**4905-9931 Adapter Plate Installation Information**

- 4905-9931 Adapter Plate
- 2975-9145 Box
- 4905-9961 Optional Wire Guard
- 4903 Series A/V
- 4905-9931 Adapter Plate

(shown here for reference only, can be used on other mounting options)
**SmartSync Control Module (SCM)**

**Model 4905-9938 SCM** (SmartSync Control Module) provides an interface between standard NAC output and SmartSync two-wire controlled notification appliances. One NAC can be programmed to operate as “on-until-silenced” and would be designated as the horn control (non-coded, on continuously during alarm). A second NAC would be programmed to provide “on-until-reset” operation and would be for the visible appliance (strobe) control (also non-coded, on continuously during alarm).

**Coded Horns and Synchronized Strobes.** In addition to operating the strobe and the horn independently, the SCM can be switch selected to operate the horns as temporal coded, march time coded (60 beats/minute), or on continuously. Strobes are activated with 1 Hz synchronized flashes.

**Additional SCM features:**
- **Multi-Sync Mode.** Up to eight SCMs can be interconnected to synchronize system notification.
- **NAC Powered.** The SCM is powered from the strobe control NAC. Dedicated power wiring is not required.
- **Isolated NAC Inputs.** NAC inputs to the SCM are isolated from each other and can be supplied from different control panels.
- **Class B (Style Y) and Class A (Style Z) operation are both supported.** (SmartSync Class A operation requires a 4100U NAC or the 4905-9938 SCM.)
- **Earth fault detection** protection is provided by the strobe control NAC curing supervision mode.
- **Multi-Sync Isolation.** The horn input NAC powers the Multi-Sync function and is isolated from the strobe NAC wiring.
- **Multi-Sync Supervision.** Multiple SCMs which are interconnected are supervised for proper circuit connection.

---

**4905-9938 SmartSync Control Module Installation Information**

4905-9938 SmartSync Control Module (SCM)

4" square cover plate, RACO 752 or equal (by others)

Mounting Box (by others):
Square box, 4" (102 mm), required depth depends on total conductor requirements.
Minimum depth = 2-1/8" (54 mm), RACO 232 or equal.
Extended depth (for maximum conductors), add 1-1/2" (38 mm) extension ring, RACO 201 or equal.
The TrueAlert wall mount family of notification appliances share a common overall size and appearance. This A/V drawing is shown approximately full size for reference.

5" (127 mm)

Depth including lens, 2-3/4" (70 mm)

5-1/8" (130 mm)
Fireray 2000
Projected Beam Smoke Detector

Description
The system comprises of a transmitter which projects a modulated infrared light beam to a receiver. The received signal is analyzed by a controller usually located at ground level. If smoke is present in the beam path for more than 8—10 seconds, a fire relay is activated in the controller. The system is designed to be mounted so that the beam will project between 1ft. (0.305 m) and 2ft. (0.61m) below and parallel to the ceiling. Lateral detection may be up to 30ft. (9.144m) either side of the beam, providing a maximum total coverage area of up to 19,000 square feet (60ft. x 330ft. or 18.288m x 100m). The control unit must be located within 330ft. cable run of the receiver unit.

Smoke Detection
If smoke is present in the beam's path, the received signal is reduced by a level determined by the density of the smoke. If the smoke reduces the signal strength to between the obscuration threshold and 93% for more than 8 to 10 seconds, the fire alarm relay is activated. The alarm threshold may be set to 25%, 35% or 50% to suit the installation.

Engineering Specification
The projected beam type smoke detector shall be a 4-wire 12/24 VDC device to be used with an U.L. Listed separately supplied 4-wire control panel. Unit shall be listed to U.L. 268 and shall consist of an integrated transmitter and receiver. The detector shall operate between a range of 33ft. to 330 ft. (10m to 100m). The temperature range of the beam shall be -4°F to 131°F (-20°C to +55°C). The beam detector shall feature automatic gain control which will compensate for gradual signal deterioration from dirt accumulation on the lenses. The unit shall include a wall mounting bracket. Testing shall be carried out by using a calibration test filter. The Projected beam type smoke detector shall be a Fire Fighting Enterprises Fireray 2000.

Beam Detector Spacing
On smooth ceilings, up to 60 ft. (18.288m) between projected beams and not more than one-half that spacing between a projected beam and a sidewall. Other spacing may be used depending on ceiling height, airflow characteristics and response requirements. See NFPA 72 for further information.
**Construction Specification**

**Housing-Controller:**
- Double pressed sheet steel

**Housing-Transmitter/Receiver:**
- Zinc Alloy

**IP Rating:**
- IP50

**Finish-Controller/Transmitter/Receiver:**
- White enamel

**Weight-Controller:**
- 4.00 lbs (1.8 kg)

**Weight-Transmitter/Receiver:**
- 12 oz. (650 gms.)

**Dimensions-Controller:**
- 8.5" W x 10.5" H x 3.5" D
- (210mm W x 265mm H x 88mm D)

**Dimensions-Transmitter/Receiver (including mounting brackets):**
- 4" W x 3.25" H x 3.75" D
- (83mm W x 95mm H x 101mm D)

---

**Electrical Specification**

**Primary Input Power:**
- 10.2 to 30 VDC

**Protection:**
- 100 ma Fuse in Control unit

**Standby Current:**
- 8.5mA @ 24VDC

**Alarm Current:**
- 16.5 mA @ 24 VDC

**Relay Contacts:**
- 2A at 30 VDC, resistive

**Reset Time:**
- 5 Seconds maximum

**Start Up Time (Automatic):**
- 45 Seconds

**Optical Wavelength:**
- 880nm

**Sensitivity:**
- 25%, 35%, 50%

**Fire Alarm Thresholds:**
- 1.25dB (25%), 1.87dB (35%), 3dB (50%)

**Beam tolerance to misalignment at 35%:**
- Transmitter +/- 1°
- Receiver +/- 4°

**Temperature Rating:**
- -4°F to 131°F (-20°C to +55°C)
- For UL Listed Installations, 32°F to 100°F (0°C to 38°C)

**Relative Humidity:**
- 0% to 93% RH non-condensing

**Operational Range:**
- 33 ft.- 330 ft. (10m - 100m)

**RFI Immunity:**
- 10V/m @ KHz-1 GHz

**Field wiring size:**
- 14-24 AWG

---

**Operation**

The infrared signal is sent from the transmitter via an optical system. At 330 ft. (100m) the diameter of this infrared signal is approximately 10 ft. (3.05m). The wide angle beam arrangement simplifies alignment and increases stability.

It is important that the projected beam smoke detector is positioned correctly to minimize the detection time.

A fire alarm condition occurs when the smoke obscures the infrared beam. The time to detect a fire condition depends on the location of the smoke beam within the premises, the volume of smoke produced, the construction of the roof, and ventilation considerations.

---

**Ordering Information**

F2000  Projected beam smoke detector
- 33ft. to 330ft. (10m to 100m)  
  (22310-08)

0201  Alignment Tool Aid

23901  Retro Prism

0209  Replacement Obscuration Filter

---

**Listings**

- UL Listed
- ULC Listed
- MEA 293-98-E
- CSFM 7260-1508:101

Specifications and wiring information are provided for information only and are believed to be accurate. Fire Fighting Enterprises assumes no responsibility for their use. Data and design are subject to change without notice. Installation and wiring instructions are shipped with the products and should always be used for actual installation. For more information, contact your Sales Representative.

---

Fire Fighting Enterprises
1314 Ardglass Trail
Corinth, TX 76210
(T) 940-271-0435
(F) 972-534-1526
GENERAL INFORMATION

The Model VSR-F is a vane type workflow switch for use on wet sprinkler systems. It is UL Listed, FM, LPC and VdS approved for use on steel pipe; schedules 10 thru 40, sizes 2" thru 8", as well as 50mm thru 200mm DIN 2458 pipe. 50mm DIN 2440 is also approved.

The unit may also be used as a sectional workflow detector on large systems.

The unit contains two single pole, double throw, snap action switches and an adjustable pneumatic retard. The switches are actuated when a flow of at least 38 liters per minute occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

ENCLOSURE: The unit is enclosed in a general purpose, cast aluminum housing. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin no. 5400775 for installation instructions of this switch.

UL and ULC Listed, FM, LPC and VdS Approved, CE Marked

Service Pressure: Up to 31 BAR (10 BAR per VdS)

Minimum Flow Rate for Alarm: 38 Liters/Min.

Maximum Surge: 10 M/S

Contact Ratings: Two sets of SPDT (Form C)
15.00 Amps at 125/250 VAC
2.00 Amps at 0-30 VDC Resistive

Enclosure Rating: NEMA 4/IP55 Rated Enclosure - when used with proper conduit fittings

Environmental Limitations: 4.5°C/49°C

Caution: This device is not intended for applications in explosive environments.

Sizes Available:
For schedules 10 thru 40, pipe sizes 2" thru 8"
DIN 2458, pipe sizes 50mm thru 200mm

Optional: Cover Tamper Switch Order Stk. No. 0090018

INSTALLATION: See Fig.2

These devices may be mounted on a horizontal or vertical pipe. On horizontal pipe they should be installed on the top side of the pipe where they will be accessible. The units should not be installed within 150mm of a fitting which changes the direction of the workflow or within 600mm of a valve or drain. (Follow the instructions for VdS and FM regulations.)

Drain the system and drill a hole in the pipe using a circular saw in a slow speed drill. The 50mm and 65mm devices require a hole with a diameter of 32mm ±2mm. All other sizes require a hole with a diameter of 50mm ±2mm.

Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole.

Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the workflow. Install the saddle strap and tighten nuts alternately to an eventual 88 N-M of torque. See Fig. 2. The vane must not rub the inside of the pipe or bind in any way.
VSR-F
VANE TYPE WATERFLOW SWITCH WITH RETARD (VDS)

SWITCH TERMINAL CONNECTIONS
CLAMPING PLATE TERMINAL

AUTION:

A uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be soldered, thereby providing supervision of the connection in the event that the wire becomes severed from under the terminal.

FIG. 2

DO NOT LEAVE COVER OFF FOR EXTENDED PERIOD OF TIME

TIGHTEN NUTS ALTERNATELY TO AN EVENTUAL 60NM OF TORQUE

MOUNT ON PIPE SO ARROW ON SADDLE POINTS IN DIRECTION OF WATERFLOW

ROLL PADDLE IN OPPOSITE DIRECTION OF WATERFLOW

APPROX. RETARD SETTINGS (IN SEC.)

<table>
<thead>
<tr>
<th>0</th>
<th>10-25</th>
<th>20-40</th>
<th>35-55</th>
<th>50-70</th>
<th>60-90</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
1. The Model VSR-F has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. A condition of LPC Approval of this product is that the electrical entry must be sealed to exclude moisture.
3. For supervised circuits see “Switch Terminal Connections” drawing and caution (Fig. 1).

FIG. 4

To remove knockouts: Place screwdriver at edge of knockouts, not in the center.

ESTING

The frequency of testing for the model VSR-F and its associated automatic monitoring system should be in accordance with applicable standards, but under no circumstances less than bi-annually.

provided, the “Inspector’s Test” valve, that is usually located at the end of the most remote branch line, should always be used for st purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR— is not recommended or advisable.

minimum flow of 38 liters per minute is required to activate this device.

IMPORTANT NOTICE: Please advise the person responsible for testing of the Fire Protection System that this system must be tested in accordance with the “Testing” Instructions.
OSYSU-1, -2
OUTSIDE SCREW AND YOKE VALVE SUPERVISORY SWITCH

UL and CSFM Listed, FM Approved, NYMEA Accepted, CE Marked
Dimensions: 6.19"L X 2.25"W X 5.88"H
15.7cm L X 5.7cm W X 14.6cm H
Weight: 2 lbs. (.9 kg.)
Enclosure: Cover - Die-Cast
Finish - Red Spatter Enamel
Base - Die Cast Zinc
All parts have corrosion resistant finishes.
Cover Tamper: Tamper resistant screws,
Optional cover tamper kit available.
Contact Ratings:
OSYSU-1: One set of SPDT (Form C)
OSYSU-2: Two sets of SPDT (Form C)
15.00 Amps at 125/250VAC
2.50 Amps at 30VDC resistive
Environmental Limitations:
• NEMA 4 and NEMA 6P Enclosure (IP67) when used
  with appropriate watertight conduit fittings.
• Indoor or Outdoor use (Not for use in hazardous
  locations. See bulletin no. 5400705 OSYS-U-EX
  for hazardous locations.)
• Temperature Range: -40°F to 140°F (-40°C to 60°C)
Conduit Entrances:
2 knockouts for 1/2" conduit provided
Service Use:
Automatic Sprinkler
One or two family dwelling
Residential occupancy up to four stories
National Fire Alarm Code
NFPA-13
NFPA-13D
NFPA-13R
NFPA-72

GENERAL INFORMATION
The OSYSU is used to monitor the open position of an OS & Y (outside screw and yoke) type gate valve. This device is available in two models; the OSYSU-1, containing one set of SPDT (Form C) contacts and the OSYSU-2, containing two sets of SPDT (Form C) contacts. These switches mount conveniently to most OS & Y valves ranging in size from 2" to 12". They will mount on some valves as small as 1/2".
The cover is held in place by two tamper resistant screws that require a special tool to remove. The tool is furnished with each device and should be left with the building owner or responsible party. Replacement or additional cover screws and hex keys are available. See ordering information on page 4.

OPTIONAL COVER TAMPER SWITCH
A field installable cover tamper switch is available as an option which may be used to indicate removal of the cover. See ordering information on page 4.

TESTING
The OSYSU and its associated protective monitoring system should be inspected and tested in accordance with applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).
SMALL VALVE INSTALLATION

1. Remove and discard 'C' washer and roller from the trip rod.

2. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far as possible from the valve gland, so that the trip rod lays against the non-threaded portion of the valve stem.

3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 4). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to hold the trip rod in place.

NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 5). Reinstall trip rod and repeat Step 3 procedure.

4. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied. On valves with limited clearance use J-hooks supplied instead of the carriage bolts and clamp bar to mount the OSYSU.

5. Mark the valve stem at the center of the trip rod.

6. Remove the OSYSU. File a 1/8" deep groove centered on the mark on the valve stem utilizing a 3/16" round, non-tapered file. Round and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.

7. Mount the OSYSU with the trip rod centered in groove.

8. Final adjustment is made by loosening 2 screws (see Fig. 1) and sliding the OSYSU on the bracket. Adjustment is correct when switches are not activated with the trip rod seated in the valve stem groove and that the switches activate when the trip rod moves out of the groove.

9. Tighten the adjustment screws and all mounting hardware. Check to insure that the rod moves out of the groove easily and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.

NOTE: CLOSE THE VALVE FULLY TO DETERMINE THAT THE STEM THREADS DO NOT ACTIVATE THE SWITCH. THE SWITCH BEING ACTIVATED BY THE STEM THREADS COULD RESULT IN A FALSE VALVE OPEN INDICATION.
LARGE VALVE INSTALLATION

1. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far as possible from the valve gland, so that the trip rod lays against the non-threaded portion of the valve stem.

2. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied.

3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 4). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to hold the trip rod in place.

NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 5). Reinstall trip rod and repeat Step 3 procedure.

4. Mark the valve stem at the center of the trip rod.

5. Remove the OSYSU. File a 1/8" deep groove centered on the mark of the valve stem utilizing a 3/8" round, non-tapered file. Round and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.

6. Mount the OSYSU loosely with the trip rod centered in groove.

7. Final adjustment is made by loosening 2 screws (see Fig. 2) and sliding the OSYSU on the bracket. Adjustment is correct when switches are not activated with the trip rod seated in the valve stem groove and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.

8. Tighten the adjustment screws and mounting hardware. Check to insure that the rod moves out of the groove easily and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.

NOTE: CLOSE THE VALVE FULLY TO DETERMINE THAT THE STEM THREADS DO NOT ACTIVATE THE SWITCH. THE SWITCH BEING ACTIVATED BY THE STEM THREADS COULD RESULT IN A FALSE VALVE OPEN INDICATION.
BREAKING EXCESSIVE ROD LENGTH

FIG. 5

SWITCH TERMINAL CONNECTIONS CLAMPING PLATE TERMINAL

CAUTION:
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>MODEL</th>
<th>DESCRIPTION</th>
<th>STOCK NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSYSU-1</td>
<td>Outside Screw &amp; Yoke-Supervisory Switch (Single switch)</td>
<td>1010106</td>
</tr>
<tr>
<td>OSYSU-2</td>
<td>Outside Screw &amp; Yoke-Supervisory Switch (Double switch)</td>
<td>1010206</td>
</tr>
<tr>
<td>--</td>
<td>Cover Screw</td>
<td>5490344</td>
</tr>
<tr>
<td>--</td>
<td>Hex Key for Cover Screws and Installation Adjustments</td>
<td>5250062</td>
</tr>
<tr>
<td>--</td>
<td>Optional Cover Tamper Switch Kit</td>
<td>0090131</td>
</tr>
</tbody>
</table>

For pressure reducer type valve installation kits (if required) contact valve manufacturer.

TYPICAL ELECTRICAL CONNECTIONS

Contacts shown in normal (valve open) condition.

TYPICAL SWITCH ACTION

CLOSED VALVE POSITION

OPEN VALVE POSITION

DWG. #979-2
Photoelectric Smoke Alarm with Visual Signaling Appliance

Applications
The 710/713CS/LS and 7109/7139CS/LS photoelectric single station smoke alarms are designed to give reliable early warning of the presence of smoke where both audible and visual alarms are required. The series features a 90dBA solid state piezo signal and a 177 Candela strobe with "FIRE" lettering. The strobe is listed per UL 1971.

The 713/7139 Series provides the temporal 3 evacuation tone as a standard feature. When testing the 713/7139 Series it may take up to 16 seconds longer to go in or out of alarm.

The smoke alarm operates on the light scattering principle, a superior method of detection in smoldering fires, utilizing a pulsing LED light source and a photodiode sensor in a fully screened sensing chamber.

Every 4 to 5 seconds the pulsing LED emits an infrared beam that by passes the photodiode under normal conditions. However, when smoke enters the sensing chamber, the infrared beam is deflected onto the sensor by the smoke particles. The LED pulse rate increases to 8 times the normal rate, and after the photodiode confirms that smoke is present for 2 consecutive pulses, it will produce the signal necessary to trip an alarm.

Upon activation, the alarm will emit a 90dBA local audible signal and activate the high intensity strobe. During the alarm period the strobe will flash at a brightness of 177 Candela 60 times per minute. After the smoke has cleared from the detector, the unit will revert to the normal stand-by condition.

Standard Features
- Available in 120VAC
- 177 Candela Rating (UL1971)
- Horn Frequency 3100Hz (Nominal)
- Full Function Test Switch—Patented Three Position Test
- Nominal 2.5% Sensitivity
- Quick-Disconnect Wiring Harness (CS Models)
- Form C Auxiliary Relay Contacts for Remote Annunciation (CS Models)
- 9 VDC Battery Back-Up (7109/7139CS/LS) w/Audible Low Battery Chirp (Visual Does Not Operate on Battery Back-Up)
- Solid State 90dBA Horn
- Temporal 3 Evacuation Sounding Device (713CS/LS & 7139CS/LS Series)
- 5-to-1 Signal-to-Noise Ratio
- Fully Insect Screened
- Tandem Connection up to 6 Detectors Per System (CS Models)
- 9 Foot Line Cord (LS Models)
- Mounting Hardware
- Warranty is 1 Year From Date of Purchase
- Dry Contacts Will Activate From the Tandem Wire
- Relays Operate on Battery Back-Up, Visual Does Not Operate

Product Listings
- UL 217
- CAN/ULC 552-02/553-02 Listed (710CS & 7109CS Only)
- BFP (City of Chicago)
- BS+A+MEA #285-91-E
- MSFM Listing #1929
- CSFM Listing #7257-569:104 (710/713CS/LS)
- CSFM Listing #7257-569:118 (7109/7139CS/LS)

Also UL 1730 listed for Commercial Residential and Commercial Residential Multiple-station Smoke Alarms.

Product Compliance
- NFPA 72
- Americans with Disabilities Act (ADA)
### 710 Series Photoelectric Smoke Detector with Signaling Appliance

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Voltage</th>
<th>Local 90dBA Piezo</th>
<th>Wall Mount</th>
<th>Ceiling Mount</th>
<th>9 Foot Line Cord</th>
<th>Tandem Up To 6 Units</th>
<th>Form C Contacts</th>
<th>9VDC Battery Back-Up</th>
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<tr>
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### 713 Series Photoelectric Smoke Detector with Signaling Appliance and Temporal 3 Sounder

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<tr>
<th>Model Number</th>
<th>Part Number</th>
<th>Voltage</th>
<th>Local 90dBA Piezo</th>
<th>Wall Mount</th>
<th>Ceiling Mount</th>
<th>9 Foot Line Cord</th>
<th>Tandem Up To 6 Units</th>
<th>Form C Contacts</th>
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### NOTES:

- **Candela Rating:** 177 Candela UL Listed Strobe Light
- **Flash Rate per Minute:** 60 Minimum

Available in square configuration only.
Ceiling mount not available in line cord models.
The X models have the ability to turn the strobe on from a field mounted relay.

*"W" = Wall Mount
*"C" = Ceiling Mount
Wiring Diagram

710CS 7109CS 713CS 7139CS

710CS 7109CS 713CS 7139CS

Electrical Specifications

Operating Voltage .................................. 120 VAC, 60Hz
Operating Current .................................. 0.400 amps (Peak)
Operating Ambient Temp Range .................. 40°F to 100°F
Alarm Horn Rating .................................. 90 Decibels at 10 Ft.
Nominal Sensitivity .................................. 2.5% Obscuration
Auxiliary Relay (Standard) ......................... .1 Form C (0.6 amp)

*9 VDC alkaline battery (supplied)

The CSX models are used for remote annunciation of the strobe.
Architect & Engineering Specifications
The Photoelectric Detector Shall be a Gentex Model 710/713CS/LS/7109/7139CS/LS or approved equal which shall provide at least the following features and functions.
1. Nominal sensitivity shall be 2.5%.
2. The alarm shall utilize an infrared LED sensing circuit which pulses in 4 to 5 second intervals; when subjected to smoke the pulse rate shall increase 8 times. After 2 consecutive pulses in smoke, the detector will alarm.
3. The alarm shall provide minimum 5-to-1 signal-to-noise ratio in the optics frame to assure stability of operation in environments of high RF and transient conditions.
4. The sensing chamber shall be fully screened to prevent entrance of small insects, thus reducing the probability of false alarms.
5. A solid state piezo alarm rated at 90dBA at 10 ft.
6. A visual LED monitor (condition indicator) will pulse in normal operation and steady on in alarm.
7. The visual signal shall have a minimal light output of 177 Candela.
8. An easily accessible test knob shall be provided. The test knob in the TEST position will simulate an actual smoke condition of approximately 3.5% causing the detector to alarm within 20-36 seconds. Also the alarm shall test for the most sensitive setting. An alarm during this test will be a maintenance indicator.
9. The alarm shall be provided with a 9 foot line cord with a strain relief connection, if a portable unit.
10. Unit must be capable of providing a monitored battery back-up.
11. Unit must be UL 217 listed for wall mount.
12. Unit shall also meet all requirements of the State of California Fire Marshal, Bureau of Standards and Appeals and the Americans with Disabilities Act (ADA).

Architect & Engineering Specifications
The Photoelectric Detector Shall be a Gentex Model 710/713CS/LS/7109/7139CS/LS or approved equal which shall provide at least the following features and functions.
1. Nominal sensitivity shall be 2.5%.
2. The alarm shall utilize an infrared LED sensing circuit which pulses in 4 to 5 second intervals; when subjected to smoke the pulse rate shall increase 8 times. After 2 consecutive pulses in smoke, the detector will alarm.
3. The alarm shall provide minimum 5-to-1 signal-to-noise ratio in the optics frame to assure stability of operation in environments of high RF and transient conditions.
4. The sensing chamber shall be fully screened to prevent entrance of small insects, thus reducing the probability of false alarms.
5. A solid state piezo alarm rated at 90dBA at 10 ft.
6. A visual LED monitor (condition indicator) will pulse in normal operation and will remain solid in alarm.
7. The visual signal shall have a minimal light output of 177 Candela and will flash one time per second.
8. An easily accessible test knob shall be provided. The test knob in the TEST position will simulate an actual smoke condition of approximately 3.5% causing the detector to alarm within 20-36 seconds. Also the detector shall test for the most sensitive setting. An alarm during this test will be a maintenance indicator. Return to Gentex for maintenance.
9. The alarm shall be provided with a Form C contact for remote annunciation purposes.
10. The manufacturer shall provide other compatible detector models with the following optional features: a) auxiliary Form C relay contact for initiating remote functions and annunciation; b) relay option that is capable of activation by tandem interconnect wire.
11. Unit must be capable of providing a monitored battery back-up.
12. Unit must be UL 217 and UL 1971 listed for wall mount.
13. Unit shall also meet all requirements of the State of California Fire Marshal, Bureau of Standards and Appeals and the Americans with Disabilities Act (ADA).

All equipment shall be completely factory assembled, wired and tested, and the contractor shall be prepared to submit a certified letter testifying to this condition. Detectors which do not meet all of the requirements of this specification will not be considered.

Important Notice:
These materials have been prepared by Gentex Corporation ("Gentex") for informational purposes only, and are necessarily summary, and are not purposed to serve as legal advice and should not be used as such. Gentex makes no representations and warranties, express or implied, that these materials are complete and accurate, up-to-date, or in compliance with all relevant local, state and federal laws, regulations and rules. The materials do not address all legal considerations as there is inevitable uncertainty regarding interpretation of laws, regulations and rules and the application of such laws, regulations and rules to particular facts.

Printed on Recycled Paper
12 or 24 VDC, Low Current Mini-Horn, Temporal (GX93) or Continuous (GX91) Tone with Terminal Blocks

Applications
The GX91/GX93 Series mini-horn is a high quality remote signaling appliance that offers dependable remote annunciation. The GX91/GX93 is listed for use with both filtered and unfiltered power.

The GX91 is a continuous tone mini horn. This unit is not syncable with the AVS Series Control Module. It is however syncable from the panel. With the GX93 a jumper is provided to select either the continuous tone or the temporal 3 evacuation tone.

The GX93 can be used on the same sync circuit (AVIS Series Control Module) as other Gentex signals. The GX91/GX93 appliances are UL 464 listed for use with fire protective systems and are warranted for three years from the date of purchase.

Standard Features
- Single Unit is capable of 12 or 24 VDC determined by the input voltage
- Unit Dimensions: 2.84” wide x 4.48” high x 0.5” deep
- Jumper Selectable Temporal 3 or Continuous Tone on the GX93.
- GX91 has a Continuous Tone horn only
- Horn Frequency is 3100Hz
- Terminal Blocks (12 AWG to 18 AWG)
- Low Current Consumption
- Variety of Mounting Options for New Construction and Retrofit Applications
- To Synchronize the GX93 use the Gentex AVS Series Control Module (see Technical Bulletin 015)
- UL 464 Listed for Fire Protective Service
- Textured Finish High Impact Plastic Faceplate, Available in Fire Alarm Red or Off-White

Available Models

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Part Number</th>
</tr>
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<tbody>
<tr>
<td>GX91-R</td>
<td>904-1274-002</td>
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<tr>
<td>GX91-PR</td>
<td>904-1265-002</td>
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<tr>
<td>GX91-W</td>
<td>904-1275-002</td>
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<td>GX91-PW</td>
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<td>GX93-PW</td>
<td>904-1268-002</td>
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</tbody>
</table>

Notes: The sound output for the temporal 3 tone is rated lower since the time the horn is off is averaged into the sound output rating. While the horn is producing a tone in the temporal 3 mode its sound pressure is the same as the continuous mode.

Model Designations
- "R" = Red faceplate
- "W" = Off-White faceplate
- "P" = Plain

<table>
<thead>
<tr>
<th>Horn Mode</th>
<th>Minimum dBA@10 Ft.</th>
<th>Minimum dBA@10 Ft.</th>
<th>Reverberant dB@10ft.</th>
<th>In Anechoic Room dB@10ft.</th>
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<tbody>
<tr>
<td>Temporal 3</td>
<td>81</td>
<td>78</td>
<td>78-86</td>
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<tr>
<td>Continuous</td>
<td>86</td>
<td>83</td>
<td>78-86</td>
<td>90</td>
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</table>

1 RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33VDC for 24VDC units) (8-17VDC for 12VDC units). For strobes the UL max current is usually at the minimum listed voltage (16VDC for 24VDC units) (8VDC for 12VDC units). For audibles the max current is usually at the maximum listed voltage. For unfiltered FWR ratings, see installation manual.
Architect & Engineering Specifications

The alarm horns shall be Gentex Model GX91/GX93. The appliance shall be listed with Underwriters Laboratories for use with Fire Protective Signaling Systems and produce a peak sound output of 90dBA or greater as measured in an anechoic chamber. The appliance shall be of solid-state construction and be polarized to operate from 8-33 VDC with a 15 milliamp current drain on the GX91 and a 22 milliamp current drain on the GX93 at 24 VDC. The appliance shall be provided with 2 terminals, and mount to a variety of single-gang back boxes.

24 units per carton
6 pounds per carton
Stand-Alone
Combustible Sensor/Transmitter

instruction manual

WARNING
THIS MANUAL MUST BE CAREFULLY READ BY ALL INDIVIDUALS WHO HAVE OR WILL HAVE THE RESPONSIBILITY FOR INSTALLING, USING OR SERVICING THIS PRODUCT. LIKE ANY TYPE OF COMPLEX EQUIPMENT, THIS PRODUCT WILL PERFORM AS DESIGNED ONLY IF INSTALLED, USED AND SERVICED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. OTHERWISE, IT COULD FAIL TO PERFORM AS DESIGNED AND PERSONS WHO RELY ON THIS PRODUCT FOR THEIR SAFETY COULD SUSTAIN SEVERE PERSONAL INJURY OR DEATH.

The warranties made by Mine Safety Appliances Company with respect to these products are voided if the products are not installed, used and serviced in accordance with the instructions in this manual. Please protect yourself and others by following them. We encourage our customers to write or call regarding this equipment prior to use or for any additional information relative to use or repair.

INSTRUMENT DIVISION 1-800-MSA-INST or FAX (412) 776-9783
IN CANADA, 1-800-267-0572 or FAX (416) 985-6508
MSA INTERNATIONAL (412) 967-3228 or FAX (412) 967-3373

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MSA INSTRUMENT DIVISION
MINE SAFETY APPLIANCES COMPANY
PITTSBURGH, PENNSYLVANIA 15230
(L) REV 4
488538
Section 1
General Information

Introduction

The Stand-Alone Combustible Sensor/Transmitter is used for detecting combustible gases in applications where no further instrumentation is required, or when connecting the Sensor/Transmitter to a process line controller (P.L.C.) such as the HONEYWELL™ Model TDC 3000 or other data acquisition devices.

The Sensor/Transmitter will directly connect to many control instrumentation devices through its 4-20 mA output. A 0-1 volt output is also available to aid in calibration, or to operate a recorder. A single adjustable hazard level with a relay driver output is provided to supply an alarm function. An external customer-supplied relay can be connected to give a contact closure when exceeding the hazard level.

This manual covers several different Sensor/Transmitter models (see FIGURES 1-1 and 1-2). These are designed to directly connect to many P.L.C. data acquisition devices.

- Single Condute 1-S Sensor (P/N 487811)
- Single Condute 1-S Sensor with non-intrusive calibration (P/N 487815)
- Dual Condute 1-S Sensor (P/N 487813)
- Dual Condute 1-S Sensor with non-intrusive calibration (P/N 487817)

WARNING

Use only genuine MSA replacement parts when performing any maintenance procedures provided in this manual. Failure to do so may seriously impair instrument performance. Repair or alteration of the Stand-Alone Combustible Sensor/Transmitter, beyond the scope of these maintenance instructions or by anyone other than an authorized MSA service person, could cause the product to fail to perform as designed and persons who rely on this product for their safety could sustain severe personal injury or death.

Operating Specifications

Electrical Characteristics

Output Signals Generated by Sensor/Transmitter:

All outputs share common (-) with input DC (-).

- Sourcing 4-20 mA into a 250 ohm load
- 0-1 Volt
- Upscale setpoint (user-adjustable)

Relay drive capable of up to 300 mA, coil current

Relay coil voltage must correspond to the DC power source voltage

Power with voltages indicated (currents are measured at the Sensor/Transmitter):

- 100 mA at 24 volts DC without non-intrusive calibration
- 110 mA at 24 volts DC with non-intrusive calibration
- All Sensors: 250 mA at 13.5 VDC
- 13.5 V minimum terminal voltage
- 32 V maximum system voltage
- NOTE: The power supply must allow 450 mA inrush for up to 2 seconds at start-up
- Add 20 mA if 4 to 20 output is used

Range:

- Add relay current, if used
- 0 to 100% LEL (0 to 5% methane, 0 to 4% hydrogen, 0 to 2.1% propane 0 to 1.5% pentane, or as specified)

Physical Characteristics

Operating Temperature Range:

- Single Condute Models:
  - 10°F to 155°F (-20°C to 70°C)
• **Dual Condulet Models:**
  - Condulet A:
    - -10°F to 155°F (-20°C to 70°C)
  - Condulet B:
    - -40°F to 200°F (-40°C to 93°C)

**Sensor Life:**

• Typically 3 years

**Rating:**

• *Single condulet models and condulet A of dual condulet models:*
  - Explosion-proof; suitable for Class I, Groups B, C, D, Division 1 hazardous locations

• *Condulet B of dual condulet models:*
  - Explosion-proof; suitable for Class I, Groups A, B, C, Division 1 hazardous locations

**Dimensions (inlet pointed downwards):**

• *Single Condulet:*
  - 6-1/2" high x 5" wide x 4-9/16" deep (max) (165 mm x 127 mm x 116 mm)

• *Dual Condulet:*
  - Condulet A:
    - 5" high x 5" wide x 4-9/16" deep (max) (127 mm x 127 mm x 116 mm)
  - Condulet B:
    - 6-1/2" high x 3-5/8" wide x 3-1/8" deep (max) (165 mm x 92 mm x 79 mm)

**Weight:**

• Approximately 3-1/2 lbs. (1.6 kg.)

**Meter Display Reading on Sensor with Non-Intrusive Calibration:**

• 0 to 99 (% LEL)
Range Guard
PRODUCTS

Over 37 years of proven performance Range Guard was the first UL-Listed wet chemical fire suppression system. Range Guard systems guard against facility damage, potential injury of personnel and patrons and lost profits due to business interruption. Range Guard systems assure quick fire detection and suppression, 24-hour, continual fire protection, superior wet chemical coverage that quickly suppresses fires and prevents reflash and quick clean up. Range Guard exceeds UL 300 standards and are designed to easily fit in any kitchen layout.

Features:
Six temperature heat detectors available for precise hazard specification
Operating and storage temperature 0°F (-18°C) to 120°F (49°C)
Valves incorporate pressure gauges for at a glance readiness status
Cylinders can be piped together to minimize installation cost

Listings/Approvals:
Listed by Underwriters Laboratories, Inc., tested to UL 300
Listed by Underwriters Laboratories of Canada, tested to UL/ORD-1254C.6
Conforms to NFPA standards 17A 96
New York City MEA approval
DOT rated steel cylinders

Technical Specifications:
Rapid fire detection with state-of-the-art heat detectors
Removal of heat source as Range Guard system automatically turns off appliances
Immediate fire suppression which quickly snuffs flames and prevents reflash
Quick, easy clean up once appliances have cooled, the agent can be easily wiped away from equipment

Universal Control Head

DATASHEET

//www.badgerfire.com/utcfs/Templates/Pages/Template-53/0,8062,pageId%3D5938%26siteId%3D60 2/8/2007
Wet Chemical
"Class K" - Kitchen Use Extinguisher

Stored Pressure

FACTORY CHARGED

Model B260

Model B262

U.L. Listed 2A:K

WET CHEMICAL extinguishers are the best restaurant kitchen appliance hand portable fire extinguishers you can purchase. Both have been tested and approved for the new Class K listing by UL specifically for restaurant kitchen hazards. They contain a special potassium acetate based, low P-I agent developed for use in pre-engineered restaurant kitchen systems. The recent trend to more efficient cooking appliances and use of unsaturated cooking oils dictates the use of a hand portable fire extinguisher with greater fire fighting capacity and cooling effect to combat these very hot and difficult fires. Available in two sizes - 6 liter or 2½ gal. with attractive stainless steel cylinders and easy to use hose and spray application nozzle. The superior fire fighting capability of the Wet Chemical agent is placed exactly where you aim it with no chemical residue to clean up. The Models B260 and B262 are the ideal "KITCHEN USE" fire extinguishers. They supplement existing cooking equipment automatic system protection for an extra margin of safety.

5 YEAR WARRANTY

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>WET CHEMICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Hose and Spray Nozzle</td>
</tr>
<tr>
<td>Agent</td>
<td>POTASSIUM ACETATE SOLUTION</td>
</tr>
<tr>
<td>Model Number</td>
<td>B260</td>
</tr>
<tr>
<td>U/L Rating</td>
<td>2A:K</td>
</tr>
<tr>
<td>Capacity</td>
<td>6 liters</td>
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<td>Shipping Wt. (lbs.)</td>
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<td>Height (in.)</td>
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<td>Depth (Diam. - in.)</td>
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<tr>
<td>Range (ft)</td>
<td>10 - 12</td>
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<tr>
<td>Discharge Time (sec.)</td>
<td>53</td>
</tr>
<tr>
<td>Standard Bracket</td>
<td>Wall</td>
</tr>
</tbody>
</table>
Manufactured and Tested to ANSI/UL Standards
UL LISTED AND USCG APPROVED

- Dependable Drawn Steel Cylinders
- All Metal Valve Construction
- Easy and more economical to maintain and service
- Bar Coded and Bi-lingual Labels

(Temperature Range -65°F to 120°F)

Note: All extinguishers are USCG approved with bracket listed on UL label.

REGULAR extinguishers contain a siliconized sodium bicarbonate based dry chemical with free flowing and non-caking additives. Economical Class B & C protection with lower initial cost and recharging. This chemical smothers fires in flammable liquids and pressurized gases and will not conduct electricity back to the operator. Available in Wheeled and Stationary extinguishers.

6 YEAR WARRANTY

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>REGULAR Dry Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>VALVES</td>
<td>ALUMINUM</td>
</tr>
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<tr>
<td>Application</td>
<td>Nozzle</td>
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<tr>
<td>Model Number</td>
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</tr>
<tr>
<td>U/L Rating</td>
<td>2B:C</td>
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<td>Shipping Wt. (lbs.)</td>
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<tr>
<td>Depth (Diam. - in.)</td>
<td>2¼</td>
</tr>
<tr>
<td>Discharge Time (Sec.)</td>
<td>10</td>
</tr>
<tr>
<td>Available with Chrome Plated Cylinder</td>
<td>Yes</td>
</tr>
<tr>
<td>F. M. Approved</td>
<td>Yes</td>
</tr>
<tr>
<td>Standard Bracket</td>
<td>Vehicle</td>
</tr>
</tbody>
</table>
HALOTRON I is a "Clean Agent" HydroChloroFluoroCarbon (HCFC) discharged as a rapidly evaporating liquid which leaves no residue. It effectively extinguishes Class A and B fires by cooling and smothering and it will not conduct electricity back to the operator. Halotron is pressurized with Argon gas and is an EPA and FAA approved agent suitable for use on Class A, B and C fires. It has a low GWP of 0.04 - 0.24, low ODP of 0.014 (twelve times lower than the EPA maximum allowable ODP of 0.20) and a low Atmospheric Lifetime (3% to 11 years).

Halotron is intended for use in areas formerly protected by Halon 1211 hand portable extinguishers such as computer rooms, telecommunications facilities, clean rooms, data storage areas, offices (for protection of sensitive electronic equipment), boats and vehicles.

AVAILABLE IN WHEELED EXTINGUISHERS
5 YEAR WARRANTY
Carbon Dioxide

Manufactured and Tested to
ANSI/UL Standards
UL LISTED, FM AND USCG APPROVED

★ Rust free aluminum cylinders - up to 30% lighter than steel cylinders
★ All Metal Valve Construction
★ Meets many hospital medical equipment requirements
★ Independently tested and approved for use in MRI facilities (Model 322NM)
★ Bar Coded and Bi-lingual Labels

(Temperature Range -40°F to 120°F)

Note: All extinguishers are USCG approved with bracket listed on UL label

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>CARBON DIOXIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size &amp; Capacity (lbs.)</td>
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<td>Application</td>
<td>Horn</td>
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<tr>
<td>Model Number</td>
<td>322 330 331 332</td>
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<td>Ul. Rating</td>
<td>5B:C 10B:C 10B:C 10B:C</td>
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<tr>
<td>Shipping Weight (lbs.)</td>
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<td>Height (in.)</td>
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<tr>
<td>Width (in.)</td>
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<td>5  7  7  8</td>
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<tr>
<td>Range (ft.)</td>
<td>3  8</td>
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<tr>
<td>Discharge Time (sec.)</td>
<td>10  10  12  19</td>
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<tr>
<td>F. M. Approved</td>
<td>Yes</td>
</tr>
<tr>
<td>Standard Bracket</td>
<td>Wall</td>
</tr>
</tbody>
</table>

Carbon Dioxide is discharged as a white cloud of "snow" which smothers a fire by eliminating oxygen. It is effective for Class B flammable liquids and is electrically non-conductive. Carbon Dioxide is a clean, non-contaminating, odorless gas.

Also available in 50 / 100 lb. wheeled extinguishers and 100 lb. stationary.

5 YEAR WARRANTY
ABC or Multi-Purpose extinguishers utilize a specially fluidized and siliconized mono ammonium phosphate dry chemical. It chemically insulates Class A fires by melting at approximately 350°F and coats surface to which it is applied. It smothers and breaks the chain reaction of Class B fires and will not conduct electricity back to the operator.

*Available in Wheeled and Stationary extinguishers.*

**6 YEAR WARRANTY**

---

### SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>ALUMINUM</th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>VALVES</td>
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<td></td>
<td></td>
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<td></td>
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<td>5</td>
<td>5</td>
<td>6</td>
<td>10 Tall</td>
<td>20</td>
<td>5</td>
<td>6</td>
<td>10 Short</td>
<td>10 Tall</td>
<td>20</td>
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<tr>
<td>Application</td>
<td>Nozzle</td>
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<tr>
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<td>B417 / B417T</td>
<td>B500</td>
<td>B500T</td>
<td>B402 / B402T</td>
<td>B443</td>
<td>B486</td>
<td>A411</td>
<td>A424</td>
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<td>4A:80B:C</td>
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<td>9½ / 9½</td>
<td>9½ / 9½</td>
<td>12½</td>
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<td>38</td>
<td>16½</td>
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<td>7</td>
<td>4½</td>
<td>5</td>
<td>6</td>
<td>5</td>
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<td>14</td>
<td>14½</td>
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<tr>
<td>Available with Chrome Plated Cylinder</td>
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<td>YES</td>
<td>YES</td>
<td>YES</td>
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<td>YES</td>
<td>YES</td>
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<tr>
<td>Standard Bracket</td>
<td>Wall / Vehicle-Marine</td>
<td>Wall</td>
<td>Wall</td>
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<td>Wall</td>
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<td>Wall</td>
<td>Wall</td>
<td>Wall</td>
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</table>
**Fire Extinguisher Cabinets** - No fire extinguisher selected

**Selecting Procedure**
- p 1: Select Cabinet Series
- p 2: Select Fire Rated
- p 3: Select Tub
- p 4: Select Trim Material
- p 5: Select Trim Style
- p 6: Select Door Style
- p 7: Select Door Glazing
- p 8: (Optional) Select Cabinet Options

<table>
<thead>
<tr>
<th>Ambassador</th>
<th>Academy</th>
<th>Cosmopolitan</th>
<th>Cavilier</th>
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<tbody>
<tr>
<td>Select</td>
<td>Select</td>
<td>Select</td>
<td>Select</td>
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<tr>
<td>aluminum</td>
<td>stainless steel</td>
<td>door/frame, #4 satin finish</td>
<td>bronze or brass</td>
</tr>
<tr>
<td>door/frame</td>
<td>door/frame, #4 satin finish</td>
<td>door/frame, US 10 satin</td>
<td>door/frame, US 3 polished</td>
</tr>
<tr>
<td>manner coat sh</td>
<td></td>
<td>finish</td>
<td>brass</td>
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<table>
<thead>
<tr>
<th>Senior Vu</th>
<th>Embassy</th>
<th>Panarama</th>
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<tr>
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<td>and</td>
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<tr>
<td>bubble</td>
<td>door</td>
<td>mirror</td>
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</table>

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Fire Safety

Advanced Life Safety System

ENGINEER AND ARCHITECT SPECIFICATIONS

- FirePrint™ Application
  - Specific Fire Detection
- Capacity for up to 240 Intelligent Analog Detectors
- Expandable Up to a Stand Alone System Capacity of 998 Input and Output Points
- Dynamic Supervision of Intelligent Devices
- Security Device Monitoring
- Sprinkler Supervision
- Intelligent Analog Detection Circuits, Style B (Class A) or Style 4 (Class B)
- Detector Sensitivity Readout/Printout per NFPA 72 Chapter 7
- Style D (Class A) or Style B (Class B) Conventional Initiating Circuits
- Style Z (Class A) or Style Y (Class B) Notification Appliance Circuits
- Upgrade Mode Operation
- Distributed Processing
- 80 Character Backlit Alphanumeric Display
- Supervised Remote Printer
- 32 Character Device Custom Messages
- Multiple Command Stations

Compare System Software
- Fully Field Programmable Via Laptop Computer
- Menu Driven Operator Commands
- Central Architecture
- 800 Event History Logging With On Line & Off Line Reports
- User Help Screens
- Multiple Levels of Password Protection
- One Person Walk Test by Zone or System
- Automatic Environmental Compensation for Smoke Detectors

- Alarm Verification by Device or Zone
- Logic Controlled Output Functions
- Time Base Controlled Output Functions
- Holiday Schedule
- CityWire/Lease Line
- Coded Outputs
- Supervised Serial Annunciator Driver/Input Interface
- Interactive VOI - Monochrome & Color
- Color Graphics Option
- Complies with NFPA 72
- NEC 760 Power Limited Circuits (UL 864 Compliant)
- 16 Gauge Steel Enclosure
- Pre-action Releasing and Deluge (NFPA 13)
- FM Approved for Intrinsically Safe Applications
- FM Approved for Sprinkler and Deluge Applications
- Pre-alarm Operation
- Halon and Sinorix™ Releasing Approval (NFPA 12A and NFPA 2001)
- Intelligent Link to Air Sampling Detection Systems
- Multi-Language Display
- Intelligent Interface to Building Management Systems
- Operates as an Interactive Peer with Other MXL-IQs, MXLs or MXLVs in a LifeLINK Network
- CXL Command Center Monitoring
- Listed, UL Listed, FM, CSFM, NYMEA, and City of Chicago Approved
- FireFinder Graphics

Description

The MXL-IQ is a microprocessor based advanced Life Safety system. Its use of unique multiprocessor “Network” design along with its ability to utilize both intelligent analog and conventional detection devices make it the most flexible and reliable system in the life safety field. The MXL-IQ is the system for projects such as schools, nursing homes, small office buildings, strip malls, hotels, apartment buildings and dormitories.

MXL-IQ is designed for stand alone or networked special hazard applications that call for extinguishing agent releasing (Sinorix™, Halon, Pre-Action Sprinkler or Deluge). MXL-IQ provides the earliest detection possible via its intelligent link to air sampling detection systems. It complies with the requirements of NFPA 72. It is UL 864 and UL 1076 security listed. It is also UL listed for agent releasing per NFPA 12A and NFPA 13.

CATALOG NUMBER 5054
The basic MXLiQ control unit consists of the following subassemblies: SMB-2 Main Control Board; MPS-6 Power Supply; MKB-4 Annunciator and Keyboard; MSE-3L Enclosure. Optional modules which can be installed with the MXLiQ System include: MPS-12 Power Supply; MOM-2 or MOM-4 Expansion Card Cage; CRM-4 Controllable Relay Module; CZM-4 Conventional Zone Module; CSM-4 Controllable Signal Module; PIM-1 Peripheral Interface Module; CMI-300 CXL Modem Interface Module; NIM-1R LifeLINK Network Interface Module; MOD-16 Output Driver; MOI-7 Network Interface; MID-16 Input Module; MXLiLVDT Interactive Video Display Terminal; MXLiG Color Graphic; MXLiGT Color Terminal; a full range of intelligent/analog detectors and devices (see table 1).

**SMB-2 Main Control Board**

The function control of the MXLiQ is contained on the SMB-2 Main Control Board. The on-board 16 bit microprocessor along with nonvolatile EPROM and Flash memory allow the system to be custom configured to meet a wide range of customer requirements. The SMB-2 controls operating sequences and monitors input device identity, detector sensitivity, network communication and operator commands entered through the MKB-4 Annunciator/Keyboard. The SMB-2 also provides 2 ALD (Analog Loop Driver) circuits. Each ALD loop can be configured as Style 4 (Class B) or Style 6 (Class A) and can monitor and control up to 60 Siemens Fire Safety intelligent input devices and 60 programmable device output relays.

The SMB-2 is equipped with 2 programmable and codeable Style Y (Class B) or Style Z (Class A) notification appliance circuits. Each circuit can activate up to 1.5 amps of listed audible or visual notification appliances.

Auxiliary relays are provided for external monitoring for Common System Alarm, and Common System Trouble.

The SMB-2 includes a built-in battery charger and transfer circuit. The charger is microprocessor controlled and incorporates a brown out circuit which switches the system to optional standby batteries during loss or reduction of the primary source AC. Upon command, the system is capable of displaying the real time battery voltage, AC voltage, charge current and other power data on the MKB-4 Alphanumeric display. It also includes a 1 Amp, 24 VDC, output.

The SMB-2 is fully FIELD PROGRAMMABLE off line using a laptop computer. Complete system configuration can be easily uploaded, downloaded or edited using CSGM custom programming software. Program options include but are not limited to smoke detector environmental compensation, Detector Pre-alarm, History Logging, Output Control by Event; Check and Change Time Based Control, Detector Sensitivity, Alarm Verification by Device or Zone, 32 Character Custom Alphanumeric Messages per device, System Operation Passwords and NAC Coding. The SMB-2 provides a port for connection of the programming laptop computer.

**MKB-4 Annunciator/Keypad**

The MKB-4 mounts on a hinged frame in the MSE-3L enclosure and provides an 80 character backlit LCD alphanumeric annunciator which continuously scrolls to display information concerning system status along with 32 character user defined device messages. When multiple events occur, the MKB-4 displays the last event of the highest priority. Additional data can be viewed by depressing the NEXT key. At any time, the display scroll can be stopped by depressing the HOLD button.

Switches are provided for acknowledging fire alarms, supervisories, security conditions, and system troubles. An individual switch is also provided for silencing the system notification appliance circuits. A separate switch is used for resetting the control panel.

A 10 digit numeric keypad is supplied to allow entry of the user passwords, as well as perform a wide variety of specific menu driven operation, programming and maintenance functions.

A set of 12 user assignable “Function” keys provide single button access to a variety of system commands. These switches may be used to perform system operation such as “Drill,” manual relay control, zone disconnect, etc.

Contained on the MKB-4 annunciator are system status indicator LED’s which can function even if the main system microprocessor fails. They provide indication of Main Power On, Fire Alarm, Security Condition, System Trouble, Supervisories, System Audibles Active/Silenced and Partial System Disable.

The MKB-4 Annunciator communicates with the SMB-1 Main Control Board through the system network link.

**MPS-6 Power Supply**

The MPS-6 is a fully supervised power supply which provides the system with primary DC power. It is rated at 6.5 Amps and is unfiltered and unregulated. It supplies the MXLiQ Control Unit and its expansion modules with power required for normal operation. The unit incorporates a resettable circuit breaker on the primary input and includes a built in AC line filter for surge and noise suppression. The MPS-6 mounts in the MXLiQ enclosure backbox. (MSE-3L)
MPS-12 Power Supply
The MPS-12 is a fully supervised power supply which provides the system with primary DC power. It is rated at 12 Amps, and is unfiltered and unregulated. It supplies the MXLiQ Control Unit and their expansion modules with power required for normal operation. The unit incorporates a resettable circuit breaker on the primary input and includes a built-in AC line filter for surge and noise suppression. The MPS-12 mounts in the MXL enclosure backbox.

CZM-4 Conventional Zone Module
The Conventional Zone Module CZM-4 is used with the MXLiQ to provide four Class A (Style D) or Class B (Style B) conventional initiating device circuits. Each circuit can monitor up to 30 Siemens Building Technologies, Inc. Fire Safety two wire photoelectric or ionization smoke detectors and an unlimited number of normally open contact devices. Projected Beam Detectors may also be used. The CZM-4 circuits will support the use of detector relay bases, and remote indicator lamps. Activation of any device on a circuit will initiate a zone alarm condition resulting in the operation of programmed functions. The CZM-4 module plugs into one full slot in the MOM-2 or MOM-4 expansion card cage.

CSM-4 Controllable Signal Module
The Controllable Signal Module CSM-4 provides two fully supervised, programmable notification appliance circuits. The CSM-4 supplies two Class B (Style Y) or Class A (Style Z) type output circuits for the supervision and control of listed audible or visual notification appliances such as horns, bells, strobes, etc. Each circuit can provide up to 1.5 Amps (24 VDC) of current to power notification appliances. CSM-4 is also used for pre-action or deluge application as well as for applications that call for municipal tie or leased line operation. Sinorix™ and Halon cylinder solenoid activation is also controlled by the CSM-4.

CRM-4 Controllable Relay Module
The Controllable Relay Module CRM-4 is designed to provide auxiliary control of building functions such as door holder release, elevator capture, smoke control, lock release, etc. The CRM-4 plugs into one of the slots in the MOM-2 or MOM-4 expansion card cage. It provides four fully programmable relays. Each relay contains one set of SPDT contacts rated at 2 Amps 30 VDC/120 VAC resistive.
PIM-1 Interface Module
The PIM-1 is an MXL-IQ option module which provides a bi-directional isolated RS-232 port for connection to peripheral devices such as printers, CRT’s, VDT’s, diagnostics, pocket pagers and Color Graphics. The PIM-1 mounts on the MKB-4. It connects to the SMB-1 and provides a screw terminal block for connection of RS-232 devices. A number of supervised and non-supervised formats are available.

ALD-2I Analog Loop Driver
The ALD-2I is an MXL-IQ Network option module which supplies two intelligent analog circuits utilizing Fire Safety “l” type intelligent devices. It occupies two addresses on the MXL-IQ local network and through the use of a unique communication protocol, devices connected to the ALD-2I circuits are dynamically supervised by the MXL-IQ control panel. Up to 60 programmable input and output devices may be connected to each of its two circuits. Each circuit may be wired as Style 4 or Style 6. See Table 1 for a list of compatible devices.

MOI-7 Output/Input Module
The MOI-7 is an MXL-IQ RS-485 Network module which provides a fully programmable serial interface to the MOD-16 output drivers and MID-16 input drivers. When used with the MOD-16’s, it provides a serial annunciator or relay driver. When used with MID-16, it provides programmable inputs. Each MOI-7 can operate up to eight MOD-16’s and eight MID-16’s simultaneously. Each MOD-16 output and MID-16 input is independently programmable via the MXL-IQ custom software.

MOD-16 Output Driver
The MOD-16 is an output driver module used in conjunction with the MOI-7 as a part of the Fire Safety MXL-IQ System. Up to eight (8) MOD-16’s can be connected to an MOI-7 interface module. Each MOD-16 provides 16 open collector current sinking outputs rated at 24 VDC, 50mA. MOD-16 outputs are programmable through the MXL-IQ custom software.

MID-16 Programmable Input Driver
The MID-16 is an input module used in conjunction with the MOI-7 as a part of the Fire Safety MXL-IQ System. Up to eight MID-16’s can be connected to a single MOI-7 along with eight MOD-16 output driver modules. Each MID-16 provides a non-supervised input which can monitor contact devices. Each individual MID-16 input can be separately used as a part of the MXL-IQ custom programming logic. These inputs can be individually set for either Alarm, Supervisory, Trouble, Security or Status usage. They can also be configured to provide supervision for lamps driven by MOD-16 outputs. Screw terminals and connectors are provided on the MID-16 modules for interface to monitored devices.
MXL-VDT Interactive Video Display Terminal
The MXL-VDT is a 14" amber monitor with detachable keyboard. It provides an interactive terminal for secondary display of MXLiQ information, and operation of MXLiQ functions such as Acknowledge, Silence and Reset, as well as arming and disarming devices. It also provides a means for generating system reports such as listing smoke detector sensitivity settings and voltages, battery and power supply voltages and current and displaying the history event log. An unsupervised printer may be connected to the MXL-VDT.

RCC-1 Remote Command Console
The RCC-1 is a remotely located MXLiQ annunciator display module. The RCC-1 contains an 80 character LCD display and control keypad (MKB) and a PS-5N7 network interface. RCC-1s can be located anywhere that control or annunciation is required. RCC-1 can be programmed for display only or can provide display and system control. If a PIM-1 is added to the RCC-1, remote printers, VDT, or graphics computers can be located throughout a facility.

RSE-1 Remote Serial Enclosure
The RSE-1 is a remotely located MXLiQ module that allows a connection to a printer, video display terminal, alphanumeric pager interface, or remote diagnostic module. It contains an annunciator board and a PS-5N7 interface board, with space in the enclosure for a PIM-1 printer driver board.

RCC-2 Remote Command Console
The RCC-2 is a remotely located MXLiQ annunciator display module mounted in a small enclosure (8-1/2" W x 7" H x 2-7/8" D). The RCC-2 can be located anywhere that control or annunciation are required. It contains an 80 character LCD display, a control keypad for system controls, and a PS-5N7 network interface. No function keys are included with the RCC-2. It can be programmed for display and control or display only. If a PIM-1 is added to the RCC-2, remote printers, VDT, or graphics computers can be located throughout a facility.

PIM-2 Parallel Printer Interface
The PIM-2 is an MXLiQ or CXL parallel printer interface module. PIM-2 connects to PIM-1 to allow MXLiQ connection and supervision of any EDP listed printer.

PAL-1 UL Listed Parallel Printer
The PAL-1 is a UL listed supervised parallel system printer for MXLiQ or CXL. The PAL-1 connects to the PIM-2 and PIM-1 to provide MXLiQ with a UL listed parallel printer that is supervised.

ICP-B6 Intelligent Control Point
The ICP-B6 is a field mounted output module capable of being programmed to be either a remote bell, horn, or strobe circuit. The ICP-B6 communicates with the MXLiQ via the ALD loop.
LIM-1 Line Isolator Module
The LIM-1 is a short circuit isolator module for use on the MXLiQ's analog loops. The LIM-1 is capable of providing Style 4, Style 6 wiring of ALD loops. Multiple short circuit isolators can be used on a single ALD loop to prevent loss of protection in the event of a short circuit.

MOM-2 Network Option Module Card Cage
The MOM-2 provides the MXLiQ main unit with card slots for optional modules. Each MOM-2 provides space for one full-width (ALD-2I, NIM-1W or CZM-4) or two half-width option modules (CSM-4, CRM-4, CMI-300, REP-1).

MOM-4 Network Option Module Card Cage
The MOM-4 Card Cage provides the MXLiQ with card slots for option modules. Each MOM-4 supplies connection space for either two full width option modules (ALD-2I, CZM-4, NIM-1W) or four half width option modules (CSM-4, CRM-4, CMI-300, REP-1) or a combination of one full and two half width modules.

PS-5N7 5 Volt Power Supply/Network Interface
The PS-5N7 is a 5V power supply and MXLiQ local network interface module. The PS-5N7 is an integral part of the RCC-1.

FireFinder — Network Color Graphics
FireFinder is a PC based color graphics display and control package designed for use with the LifeLINK network and provides full control and annunciation for a LifeLINK network of up to 63 MXLiQ or MXL systems. The NCC-G is used to monitor and control alarms, troubles, security, supervisory and all system events from one of many MXL series systems. The NCC-G maintains an extensive history log of all system events and has extensive report generation capabilities. User programmable function buttons are programmable to allow site specific control function configuration. Multiple NCC-Gs may be connected to a LifeLINK network.

The NCC-GL serves as a graphical command center for a single MXLiQ system. All of the FireFinder controls utilize a friendly design which intuitively guides the operator through all system conditions.

NIM-1W Network Interface Module
The NIM-1W is a full sized slot MXLiQ module that allows the interconnection or networking of up to 63 MXL/MXLiQ systems. The NIM-1W provides an RS-485 communication path in either Style 4 or Style 7 wiring configurations. The NIM-1W allows MXL/MXLiQs to have interpanel logic and communicate in a peer to peer fashion. The NIM-1W can be programmed via CSGM logic as an FSI (Foreign System Interface) to communicate with external building control and annunciation systems. The NIM-1W is programmable to serve as an intelligent link to the air sampling detection system.
MSE-3L MXL-IQ Enclosure/Door
The MSE-3L is a sheet metal backbox for the MXL-IQ system. The MSE-3L supports mounting for the SMB-2, MPS-6, MPS-12, MPS-12-220, MPS-12-240, MKB-4 and either one MOM-2 or one MOM-4 cardage. The MSE-3L dimensions are 27\(\frac{1}{4}\)"H x 21\(\frac{3}{4}\)"W x 6"D. The IQ-DFL plate (500-695436) is also available for use with the MSE-3L to provide full deadfront construction. The MET-3L (500-695437) flush trim mounting kit is also available for use with the MSE-3L enclosure. The MET-3L provides an optional 1" trim mounting ring around the MSE-3L. The MSE-3L enclosure also has provision for mounting a PSR-1 remote power supply, for use in place of the SMB-2 for MXL and MXLV applications. When the PSR-1 is mounted in the MSE-3L enclosure the IQ-BLANK (500-695438) blank plate is available to cover the cutout in the MSE-3L door. Other versions of the MSE-3L include; MSE-3LR - Red version of the MSE-3L and the MET-3LR - Red version of the MET-3L trim ring kit.

CCU/M Alphanumeric Pager Interface
The CCU/M is a ancillary module that connects to the PIM-1 to transmit MXL-IQ status information in text message format to an alphanumeric pocket pager. The CCU/M can be connected to an existing phone line and can dial out to a pager using its onboard modem to transmit information via a paging service. The CCU/M can also connect directly to an existing on-site paging system. Through programming the CCU/M can send different types of events to different pagers. Up to 8 different messages can be sent to pagers directly from the CCU/M. Alarms, Troubles, Supervisory, Security, Arm/Disarm, Status Points, Audible Status, and Reset can be directed to all or only certain alphanumeric pocket pagers.

RDM-MXL, RDM-PC
The RDM-MXL in combination with the RDM-PC provides the ability to call up an MXL, MXL-IQ or MXLV system to check on the system status. The RDM-PC connects a remote computer to the MXL equipped with the RDM-MXL. The RDM-PC initiates a call to the MXL’s RDM-MXL module. The RDM-MXL answers the call. The RDM-PC identifies itself with the login name. As a built-in security measure, when the login name is recognized by the RDM-MXL, it then hangs up and initiates a call back to verify the login and password. Once the login and password is verified, the operator is on-line with the MXL. The operator can list system status, alarms, troubles, supervisories, and/or security events!

REP-1
The REP-1 is an optional MXL module that extends the distance of the MXL's RS-485 network. The REP-1 provides the ability to support various wiring configurations, including series and star configurations. The REP-1 provides the ability to support NFPA Style 4 or Style 7 network communications wiring. The REP-1 can be used to provide network wiring between MXL panels or MXLR panels. The REP-1 is a one-half slot card that plugs into a MOM-4 or MOM-2 cardcase. The REP-1 allows MXL network distances to be expanded to allow greater application flexibility. The REP-1 is an RS-485 repeater module capable of being configured as one Style 7 or two Style 4 network communication lines.
Electrical Specifications
SMB-2 Analog Device Loops (TB2 and TB3)

1. **Electrical Ratings:**
   - Supervisory: 30 VDC max, 66mA max.
   - Alarm: 30 VDC max, 66mA max.
   - (60 devices in alarm)

2. All wiring must be in accordance with Article 760 of NEC or local building codes.

3. Only the following list of devices may be used. A maximum of 60 devices in any combination may be connected to a single analog loop. The UL identifiers for compatibility are the same as the model names specified in Table 1.

4. No end of line device is required.
5. Both circuits are power limited to NFPA 70/NEC 760. Each detector, or group of detectors, requires a two wire circuit of minimum 18 AWG thermoplastic fixture wire.
6. Total circuit resistance must not exceed 100 ohms.
   - Maximum capacitance: 0.4μF between loop+ and loop-
   - 0.8μF between loop+ and chassis
   - 0.8μF between loop- and chassis

7. T-tapping is not allowed on Style 6 loops.
8. See P/N 315-092772 for more information on wiring.

### SMB-2 AUX Power (TB5, 9-12)

1. AUX power is available on TB5 terminals 9-12.
2. All wiring must be in accordance with Article 760 of NEC or local building codes.
3. Aux power is power limited to NFPA 70/NEC 760.
4. **Electrical Ratings:** 18-31 VDC, 1A max.
5. See P/N 315-092772 for more information on wiring.

### SMB-2 Notification Appliance Circuits (TB-5, 1-4 and TB5, 5-8)

1. These notification appliance circuits are for alarm notification appliances only (NFPA 72). For Municipal Tie (NFPA 72, Chap 4), Releasing (NFPA 13) or Leased Line (NFPA 72, Chapter 4), use model CSM-4.
2. All wiring must be in accordance with Article 760 of NEC or local building codes.
3. Both notification appliance circuits are power limited to NFPA 70/NEC 760.
4. **Electrical Ratings:**
   - Supervisory: 18-31 VDC, 12mA max.
   - Alarm: 18-31 VDC, 1.5A max
5. **End of Line Device:** Use Siemens Fire Safety EOL 2.2K, 1/2W, P/N 140-820380
6. **Line Resistance:** Not to exceed 3 ohms total.
7. See P/N 315-092772 for more information on wiring.

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*The FP-11/FPT-11 is only compatible with MXU/Q Rev. 6.0 or greater firmware.
**The ILP-2 is only compatible with MXU/Q Rev. 3.0 or greater firmware.

---

**TABLE 1**

<table>
<thead>
<tr>
<th>COMPATIBLE DEVICES</th>
<th>BASE</th>
<th>INSTALLATION INSTRUCTIONS</th>
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<tr>
<td>CZM-1</td>
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<td>CZM-185</td>
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<td>ICP-BS</td>
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<td>ILI-1/1H</td>
<td>DB-3S, DB-X3RS</td>
<td>P/N 315-095387</td>
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<td>DB-3S, DB-X3RS</td>
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<td>ILI-1B/1BH</td>
<td>AD-3I/3II</td>
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<td>ILP-2**</td>
<td>AD-3II/3II/3II</td>
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<td>ILP-2***</td>
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<td>LIN-1</td>
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<td>MSI-10/2E</td>
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<td>MSI-MBB</td>
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<tr>
<td>TRI-S, TRI-D, TRI-R</td>
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**NOTICE:** The use of other than Fire Safety detectors and bases with Fire Safety equipment will be considered a misapplication of Fire Safety equipment and as such void all warranties either expressed or implied with regard to loss, damage, liabilities and/or service problems.

Fire Safety
8 Fernwood Road
Florham Park, NJ 07932
Tel: (973) 593-2800
FAX: (973) 593-6870
Website: www.sbt.siemens.com/fis

Siemens Building Technologies
Fire Safety

Fire Safety
2 Kenview Boulevard
Brampton, Ontario
1/06
Tel: (905) 799-9370
FAX: (905) 799-9958

Canada: CTL 5E4
SFS4
Tel: (905) 799-9370
FAX: (905) 799-9958

January 2006
Supersedes sheet dated 5/03
Intelligent Initiating Devices
Manual Fire Alarm Boxes
MSI-10B and MSI-20B Intelligent Manual Fire Alarm Boxes for MXL, IXL, and XL3 Control Panels

ENGINEER AND ARCHITECT SPECIFICATIONS
- Durable Design
- Shock and Vibration Resistant
- Pull Down Lever Remains Down Until Reset
- Custom Microcomputer Chip Technology
- Dynamic Supervision
- Reset with Allen Key
- No Break Rods Necessary
- Two-Wire Operation
- Surface or Semiflush Installation
- DPU or FPI-32 Programs and Verifies Device's Address and Tests Device's Functionality
- Electronic Address Programming is Easier and More Dependable
- Single and Double Action Models Available
- UL, Listed, CSFM, FM and NYMEA Approved

Introduction
Siemens Building Technologies, Fire Safety MSI-10B and 20B intelligent manual fire alarm boxes provide the market's most advanced method of address programming and supervision, combined with sophisticated control panel communication. Each MSI manual fire alarm box incorporates a new custom microcomputer chip. The microcomputer chip technology, and its sophisticated bi-directional communication capabilities with the control panel, achieves the state of an "Intelligent Initiating Device."

Description
The MSI-10B and 20B are constructed of durable molded polycarbonate material which is matte finished in red with raised white lettering. The housing accommodates a "pull-down" lever which, when operated, locks in position indicating the manual fire alarm box has been activated. The pull down lever remains down and locked until the manual fire alarm box is reset. The manual fire alarm box is reset only by opening the hinged housing cover with an allen key and then closing and locking the cover.

The MSI-10B and 20B manual fire alarm boxes operate with the MXL, IXL/ICON-1 and XL3 control panels.

The manual fire alarm box's microcomputer chip has the capacity of storing, in memory, identification information as well as important operating status information.

Fire Safety's innovative technology also allows all MSI Series Intelligent manual fire alarm boxes to be programmed by using the Model DPU or FPI-32 Programmer/Tester. The Programmer/Tester is a compact, portable, menu driven accessory which makes programming and testing a manual fire alarm box device faster, easier and more dependable than previous methods. The DPU or FPI-32 eliminates the need for the device's mechanical addressing mechanisms, such as program jumpers, dipswitches or rotary dials because the Programmer/Tester electronically sets the manual fire alarm box's address into its microcomputer chip, nonvolatile memory. Vibration, corrosion and
other conditions which deteriorate mechanical addressing mechanisms are no longer a cause for concern.

The MSI-10B and 20B are fitted with screw terminals for connection to an addressable circuit. They can be either surface or semiflush mounted.

The MSI Series manual fire alarm boxes derive their power, communicate information and receive commands over a single pair of wires.

The MSI Series is compatible on the same circuit with all IL and ID-60 Series ionization, photoelectric or thermal detectors, TRI Series interfaces or CZM Series addressable conventional zone modules.

The MSI-10B and 20B intelligent manual fire alarm boxes are Underwriters Laboratories, Inc. listed.

**Current Draw**

1mA

**Mounting Data**

![Diagram of Mounting Data](image)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Shipping Wt.</th>
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<tr>
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<td>Addressable Manual Fire Alarm Box, Single Action</td>
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<td>MSI-20B</td>
<td>Addressable Manual Fire Alarm Box, Double Action</td>
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<td>SB-5R</td>
<td>Surface Mounting Box</td>
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<tr>
<td>LTP</td>
<td>Reset Tool Package (Contains 2 Tools)</td>
<td>5</td>
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</tbody>
</table>
SIEMENS
FP-11 FirePrint™ Detector
Intelligent Fire Detector for MXL, MXL-IQ, and MXLV Control Panels

ENGINEER AND ARCHITECT SPECIFICATIONS

- Most Sophisticated “Detector Intelligence” available today
- Multi-Criteria fire detection for the price of a photoelectric detector
- FirePrint™ Technology to discriminate between deceptive phenomena and an actual fire
- Easily programmed to match specific hazard profiles from the control panel
- Pre-Alarm reporting based on fire profile selected
- Remote sensitivity measurement capability
- System logic activation based on any of three inputs from detector (smoke, heat or neural network)
- Field cleanable chamber with replaceable chamber parts available
- Multi-color detector status LED
- Two-wire operation
- Compatible with Model DPU or FPI-32 field programmer/tester
- Supports EnvirolINK software based automatic environmental compensation
- Backward compatible with older MXL systems (Rev. 2 and above)
- Optional fully programmable relay base, audible base, and duct housing
- UL Listed, ULC Listed, CSFM, FM, NYMEA Approved

Introduction

The FP-11 Intelligent Fire Detector provides the life safety industry with the most highly evolved detection system available today. The FP-11 utilizes advanced detection technology that allows the detector to distinguish nonthreatening deceptive phenomena, such as cigarette smoke, from actual fire hazards, while optimizing detection for the area in which it is installed. No other detection system available today offers a higher level of protection or nuisance alarm immunity. The FP-11 uses state-of-the-art microprocessor circuitry with error check, detector self-diagnostics and supervision programs.

The FP-11 intelligent fire detector is compatible with the Siemens Building Technologies, Fire Safety Division, Model DPU or FPI-32 field programmer/tester, which is a compact, portable, menu-driven accessory for electronically programming and testing detectors, easily and reliably. The DPU or FPI-32 eliminates the need for cumbersome, unreliable mechanical programming methods and reduces installation and service costs by electronically programming and testing the detector prior to installation.

The FP-11 fire detector is compatible with the MXL family of control panels including the MXL, MXL-IQ, and MXLV.

The FP-11 detector is Underwriters Laboratories and Underwriters Laboratories of Canada Listed.

Description

The FP-11 is a plug-in, two-wire, multi-sensor detector with both photoelectric and thermal inputs and is compatible with the MXL family of control panel systems. Each detector consists of a dust resistant, field cleanable photo chamber, a solid state.
non-mechanical thermal sensor, microprocessor based electronics with a low-profile plastic cover and base. The FP-11 utilizes state-of-the-art ASIC and surface mount technology for maximum reliability. Every FP-11 fire detector is shipped with a protective dust cover.

The FP-11 fire detector utilizes an infrared light emitting diode (IRLED), and light sensing photodiode. Under normal conditions, light transmitted by the LED is directed away from the photodiode and scattered through the smoke chamber in a controlled pattern. The smoke chamber is designed to manage light dissipation and extraneous reflections from dust particles or other non-smoke airborne contaminants in such a way as to maintain stable, consistent detector operation. When smoke enters the detector chamber, light emitted from the IRLED is scattered by the smoke particles and is received by the photodiode.

The FP-11 also utilizes a modern, accurate, shock-resistant thermistor to sense temperature changes. The on-board FirePrint technology allows the detector to gather smoke and thermal data, and to analyze this information in the detector’s “neural network.” By comparing data received with the common characteristics of fires, or fire fingerprints, the FP-11 can compare these “Fire Prints” to those of deceptive phenomena that cause other detectors to alarm. The advanced FirePrint technology allows the FP-11 to accurately determine a true fire hazard from a non-threatening deceptive phenomena WITHOUT needing to use alarm delaying verification and confirmation techniques, which can increase the probability of losses due to fire.

The FP-11 provides the highest level of detector intelligence available today with a detector/control panel link that allows the user to program the detector for the specific hazard profile. Detectors are optimized by selecting one of the following applications:

- Office/Retail
- Lobby
- Computer Room
- Dormitory
- Healthcare
- Parking Garage
- Utility/Transformer Room
- Hostile Environment
- Precious Storage
- Air Duct
- Warehouse/Light Manufacturing

The software does the rest; no guessing on detector sensitivities or alarm verification; the control panel programs the FP-11 detector for the protected area without hassle and without confirmation delays. Once optimized for the hazards in the protected area, the FP-11 provides the best detection you can buy. Should the operator or installer forget to program the detector, the FP-11 will revert to a default setting that allows it to operate as a standard photoelectric or photothermal detector.

The FP-11’s FirePrint technology monitors input from both the photo chamber and the thermal sensor, evaluating this information with sophisticated mathematical formulas, or algorithms, comparing this input to characteristics of both threatening fires and deceptive phenomena that would “fool” any ordinary detector. This technology was developed over years of research and reviewing the results of over 20 years of fire test data in one of the world’s most advanced fire research centers. The results of this research are the mathematical models that form the algorithms used in FirePrint. No other fire detector has this level of intelligence or this amount of research and development supporting it’s design.

The microprocessor’s software can identify and disregard false input caused by radio frequency (RFI) and electromagnetic (EMI) interference, and validates all trouble conditions before annunciating or reporting to the control panel. The FP-11 detector’s microprocessor uses an integral EEPROM to store the detector’s address and other critical operating parameters which include the assigned program values for alarm and trouble thresholds. Communications within the detector itself and between the FP-11 and the control panel, or with the FP-32 field programmer/tester, are supervised and safeguarded against disruption by reliable, microprocessor based error checking routines. Additionally, the microprocessor supervises all EEPROM memory locations and provides a high degree of EEPROM failure fault tolerance.

In MXL(V) applications, the FP-11 determines its operating status to be normal, in alarm, or in trouble depending on the difference between the alarm threshold values stored in the detector’s memory and the detector’s latest analog measurements. The detector then communicates changes in its status to the control panel.

In addition, the MXL(V) control panel will sample the value of the FP-11’s analog signal over a period of time in order to determine if those values indicate excessive buildup in the photo chamber; if so, the MXL(V) will indicate that the particular detector requires maintenance.

The FP-11 is listed as a self-testing device. The FP-11’s visible light emitting diode (LED) flashes green every 4 seconds to indicate it is communicating with the control panel and that it has passed its internal self-test. Should the detector sense a fault or failure within its systems, the LED will flash amber and the detector will transmit that information to the control panel. A quick visual inspection is sufficient to indicate the condition of the detector at any time. If more detailed information is required, a printed report can be provided from the MXL panel indicating the status and settings assigned to each individual detector.

When the FP-11 moves to the alarm mode, it will flash amber and transmit that information to the control panel. When the MXL(V) confirms the detectors condition, the panel will instruct the FP-11 to flash red and to continue flashing until the system is reset at the control panel. At that same time, any user defined
system alarm functions programmed into the system are activated. Each FP-11 detector can operate one remote alarm indicator, one auxiliary relay, or one audible base.

Detector sensitivity, calibration, and identification are dynamically supervised by the control panel. Detector sensitivity and pre-alarm levels are a function of the application chosen at the control panel and are controlled by the panel. If an alternate, non-FirePrint mode is selected, then the sensitivity can be changed from the control panel.

The DPU or FPI-32 Program/Test accessory is used to program and verify the detector's address. The technician selects the accessory's program mode to enter the desired address. The DPU or FPI-32 automatically sets and verifies the address and tests the detector. It also allows the user to change the device ID from that of an FP-11 to an older detector ID such as an ILP-1, ILPT-1, ILP-2, ID-60P or ID-60PT to allow for easy replacement of older detectors without the need of reprogramming the control panel.

The FPI-32 operates on AC power or rechargeable batteries, providing flexibility and convenience in programming and testing equipment almost anywhere. When in the test mode, the DPU or FPI-32 will perform a series of diagnostic tests without altering the address or other stored data, allowing technicians to determine if the detector is operating properly.

The FP-11 fire detector may be installed on the same initiating circuit with IL or ID series detectors (Photoelectric, thermal, or ionization), MSI series manual stations, TRI series interfaces, ICP output control devices, or CZM series of addressable, conventional zone modules.

All FP-11 detectors can be cleaned in the field, when required, by simply removing the detector cover and unsnapping the photo chamber. There is also the option of cleaning the interior of the detector with a clean, soft cloth or brush, or replacing the labyrinth and bug screen included in the detector maintenance kit, model DMK-11.

The FP-11 uses the low profile surface mounting base, model DB-11. This base mounts on a 4-inch octagon, square, or a single gang electrical box. The base utilizes screw clamp contacts for electrical connections and self-wiping contacts for increased reliability. The base can be used with the optional LK-11 detector locking kit which contains 50 detector locks and an installation tool, to prevent unauthorized removal of the detector head. The DB-11 base has integral decorative plugs to cover the outer mounting screw holes.

The FP-11 is electrically compatible with existing MXL detector accessories including relays, remote lamps, duct housings, and audible bases. With duct housings, a base adapter and new detector housing cover are required (order AD-11-UK upgrade kit). To use existing DB-3S base or audible base, the FP-11 requires a DB-ADPT base adapter.

All FP-11 detectors are approved for operation within the UL specified temperature range of 32 to 100 degrees F (0 to 38 degrees C).

**Application Data**

Installation of the FP-11 series of fire detectors requires a two-wire circuit of 18 AWG (minimum) thermoplastic fixture wire enclosed in conduit, or 18 AWG limited energy, shielded cable without conduit, if permitted by local codes. Field wiring should conform to local and National Electric Codes and the control panel wiring specifications.

"Tapping" is permitted only for Style 4 (Class B) wiring.

FP-11 fire detectors can be applied within the maximum 30 foot center spacing (900 sq. ft. areas) as referenced in NFPA 72. This application guideline is based on ideal conditions, specifically, smooth ceiling surfaces, minimal air movement, and no physical obstructions between potential fire sources and the detector. Do not mount detectors in close proximity to ventilation or heating and air conditioning outlets. Exposed joints or beamed ceilings may also affect safe spacing limitations for detectors. Should questions arise regarding detector placement, observe NFPA 72 guidelines.

Good fire protection system engineering and common sense dictate how and when fire detectors are installed and used. Contact your local Siemens Building Technologies, Fire Safety Division authorized sales outlet whenever you need assistance applying FirePrint in unusual applications. Be sure to follow NFPA guidelines, UL/ULC approved installation instructions, which are included with every detector, and local codes as for all fire protection equipment.

**Dimensions**

![FP-11 Dimensions Diagram](image_url)
**Technical Specifications**

Current Requirements: Normal 750 μA Alarm 750 μA

Operating Temperature: +32°F (0°C) to 100°F (38°C) per UL 268/268A

Humidity: 0-93% Relative Humidity Non-Condensing

**Ordering Information**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR-11</td>
<td>Addressable FirePrint Fire Detector</td>
<td>500-095112</td>
</tr>
<tr>
<td>DB-11</td>
<td>Detector Mounting Base for Series 11</td>
<td>500-094151</td>
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<tr>
<td>DB-11E</td>
<td>Detector Base (Small)</td>
<td>500-094151E</td>
</tr>
<tr>
<td>AD2-P</td>
<td>Air Duct Housing for use with FR-11, HFP-11, HFPO-11, PE-11</td>
<td>500-649706</td>
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<tr>
<td>AD2-XHR</td>
<td>Air Duct Housing for use with FR-11, HFP-11, HFPO-11 with relay</td>
<td>500-649708</td>
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<tr>
<td>ADBX-11</td>
<td>Audible Base</td>
<td>500-096181</td>
</tr>
<tr>
<td>DB-X1RS</td>
<td>Relay Base for Series 11 Intelligent Detectors</td>
<td>500-096125</td>
</tr>
<tr>
<td>RLI-1</td>
<td>Remote (red) alarm indicator- 4&quot; octagon box mount</td>
<td>500-390673</td>
</tr>
<tr>
<td>RLI-2</td>
<td>Remote (red) alarm indicator- single gang box mount</td>
<td>500-390674</td>
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<tr>
<td>LK-11</td>
<td>Base Locking Kit for Series 11 detectors</td>
<td>500-695350</td>
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<tr>
<td>DMK-11</td>
<td>Series 11 Maint Kit (replacement labyrinth and bug bug screen)</td>
<td>500-695338</td>
</tr>
<tr>
<td>DB-ADPT</td>
<td>Base Adapter to DB-3S Base</td>
<td>500-094187</td>
</tr>
</tbody>
</table>

In Canada Order:

| FF-11C | Addressable FirePrint Fire Detector (ULC)       | 500-095112C |
| DB-11C | Detector Mounting Base for Series 11 (ULC)      | 500-095987  |
| AD-11PC| Air Duct Housing (ULC)                          | 500-095984  |
| DB-X1RSC| Relay Base for Series 11 Intelligent Detectors (ULC) | 500-098125C |
| ADBX-11C| Audible Base for Series 11 Intelligent Detector (ULC) | 500-098181C |
FPT-11
Intelligent Thermal Detector for MXL, MXL-IQ and MXLV Control Panels

ENGINEER AND ARCHITECT SPECIFICATIONS

FPT-11
• Microprocessor Based Design
• Rate of Rise and Fixed Temperature
• Innovative Technology Provides High Speed, Fault Tolerant System/Detector Communications
• Multi-Color Detector Status LED
• Optional Fully Programmable Relay Base and Audible Base
• Two-Wire Operation
• Backward Compatible with Older MXL Systems (Rev 2 and Above)
• Compatible with DPU or FPI-32 Field Programmer/Tester
• UL Listed, ULC Listed, CSFM, FM, NYMEA Approved

Introduction
The FPT-11 intelligent thermal detector provides an advanced method of detection, address programming and supervision, combined with sophisticated control panel communication. The FPT-11 detector uses a state-of-the-art thermistor providing 135°F fixed temperature and 15° per minute rate-of-rise alarm points. The user also has the option of disabling the rate-of-rise feature leaving just a fixed temperature sensor.

The FPT-11 intelligent thermal detector is compatible with the DPU and FPI-32 field programmer/testers. These testers are compact, portable, menu-driven accessories which make programming and testing detectors faster, easier and more reliable than other methods. They eliminate the need for cumbersome, unreliable mechanical programming methods and reduce installation and service costs by electronically programming addresses and functionally testing the FPT-11’s performance before the detector is installed.

The FPT-11 thermal detector operates with the MXL family of control panels including MXL, MXL-IQ and MXLV.

The FPT-11 intelligent thermal detector is Underwriters Laboratory listed and Underwriters Laboratory of Canada listed.

Description
The FPT-11 is a plug-in, two-wire thermal detector, compatible with the MXL family of control panels. Each FPT-11 has microcomputer chip technology and highly stable solid state electronic circuitry.

The FPT-11 utilizes a modern, accurate, shock-resistant thermistor to sense temperature changes. This electronic sensing method virtually eliminates thermal lag associated with mechanical temperature sensing devices and provides almost instantaneous temperature information to the control panel. The FPT-11, in its default mode, is a combination 135°F fixed temperature and 15° per minute, rate-of-rise detector. It can be programmed from the control panel as a fixed temperature detector without rate-of-rise, at the users option.

CATALOG NUMBER 6176
The FPT-11 detector’s microprocessor uses an integral EEPROM to store the detector’s address. Communications within the detector itself and between the FPT-11 and the control panel, or with the FPI-32 field programmer/tester, are supervised and safeguarded against disruption by reliable, microprocessor-based error checking routines. Additionally, the microprocessor supervises all EEPROM memory locations and provides a high degree of EEPROM failure fault tolerance.

The FPT-11 is listed as a self-testing device. The FPT-11’s visible light emitting diode (LED) flashes green every 4 seconds to indicate it is communicating with the control panel and that it has passed its internal self-test. Should the detector sense a fault or failure within its systems, the LED will flash amber and the detector will transmit that information to the control panel. A quick visual inspection is sufficient to indicate the condition of the detector at any time. If more detailed information is required, a printed report can be provided from the MXL panel indicating the status and settings assigned to each individual detector.

When the FPT-11 moves to the alarm mode, it will flash amber and transmit that information to the control panel. When the MXL(V) confirms the detectors condition, the panel will instruct the FPT-11 to flash red and to continue flashing until the system is reset at the control panel. At that same time, any user defined system alarm functions programmed into the system are activated. Each FPT-11 detector can operate one remote alarm indicator, one auxiliary relay, or one audible base; but only one accessory per detector.

A DPU or FPI-32 programmer/tester is used to program and verify the detector’s address. The user selects the Program Mode to enter the desired address. The programmer/tester then automatically sets and verifies the address as well as tests the detector. The programmer/ tester has rechargeable batteries, so a detector’s address can be programmed by the user from the most convenient location. The user can also separately test the detector for functionality. When the user selects the Test Mode, a series of tests are automatically conducted and the user is informed whether the detector has passed or failed.

The FPT-11 detector is compatible on the same MXL initiating circuit with other IL Series, FP Series or ID-60 Series addressable ionization, photoelectric, or thermal detectors, MSI addressable manual stations, TRi Series addressable interfaces, or CZM Series addressable conventional zone modules.

Each FPT-11 thermal detector is capable of operating one “X” or “I” Series remote alarm indicator or auxiliary relay or audible base. The FPT-11 detectors use a surface mounting base, Model DB-11, which mounts on a 4-inch octagonal, square or single gang electrical box. Relay base Model DB-X11RS mounts to a 4-inch square deep electrical box. Audible base Model ADBX-11 also mounts to a 4-inch square deep electrical box.

The DB-11, and the DB-X1RS and ADBX-11 use screw-clamp terminals for all electrical connections and self-wiping contacts for reliability. The bases also contain a provision for an optional concealed locking mechanism to prevent unauthorized removal of the detector head, Model LK-11.

**Application Data**

The MXL uses ALD loop circuits with each circuit capable of supporting up to sixty FPT-11 intelligent detectors.

The detector, or group of detectors, require a two-wire circuit of minimum 18 AWG thermoplastic fixture wire enclosed in conduit, or minimum 18 AWG limited energy, shielded cable without conduit if permitted by local building codes. Wiring should conform to local and National Electrical Codes, and to the control panel’s wiring specifications. T-tapping is permitted only for Style 4 (Class B) wiring.

Locate the FPT-11 on the ceiling, at least 4 inches from the side walls. For an ideal, smooth ceiling condition, place the detectors at a maximum center spacing of 50 feet (2500 square feet), 25 feet from side walls or room partitions.

Actual job conditions and sound engineering judgment must determine detector spacing. Consider environmental factors including ambient temperature fluctuation, and the nature of the fire hazard. Room or area configuration and ceiling type (sloped or flat, smooth or beamed) also dictates placement.

Should questions arise regarding detector placement, follow the drawings provided and/or approved by Siemens Building Technologies, Fire Safety Division or by its authorized distributors. This is extremely important! The detector placements shown on these drawings were chosen after a careful evaluation of the area being protected. Fire Safety’s extensive experience in design of the system assures the best detector placement by following these drawings.

**Technical Specifications**

<table>
<thead>
<tr>
<th>Current Requirements:</th>
<th>Normal 750 µA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alarm 750 µA</td>
</tr>
</tbody>
</table>

| Operating Temperatures: | +32°F (0°C) to 100°F (38°C) |

| Humidity: | 0-93% Relative Humidity Non-condensing |
### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Part No.</th>
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<tbody>
<tr>
<td>FPT-11</td>
<td>Addressable Thermal Fire Detector</td>
<td>500-095919</td>
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<tr>
<td>DB-11</td>
<td>Detector Mounting Base for Series 11</td>
<td>500-094151</td>
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<tr>
<td>DB-11E</td>
<td>Small 4.5 inch Diameter Detector Base</td>
<td>500-094151E</td>
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<tr>
<td>DB-X11RS</td>
<td>Relay Base for Series 11 Intelligent Detectors</td>
<td>500-096125</td>
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<tr>
<td>ADBX-11</td>
<td>Audible Base for Series 11 Intelligent Detector</td>
<td>500-098181</td>
</tr>
<tr>
<td>RLI-1</td>
<td>Remote (red) alarm indicator-octagon box mount</td>
<td>500-390673</td>
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<tr>
<td>RLI-2</td>
<td>Remote (red) alarm indicator-single gang box mount</td>
<td>500-695350</td>
</tr>
<tr>
<td>LK-11</td>
<td>Base Locking Kit for Series 11</td>
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<tr>
<td>DB-ADPT</td>
<td>Base Adapter to DB-3S Base</td>
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**In Canada Order:**

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<td>Detector Mounting Base for Series 11 (ULC)</td>
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<td>DB-X11RSC</td>
<td>Relay Base for Series 11 Intelligent Detectors (ULC)</td>
<td>500-096125C</td>
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<td>ADBX-11C</td>
<td>Audible Base for Series 11 Intelligent Detector (ULC)</td>
<td>500-098181C</td>
</tr>
</tbody>
</table>

### Dimensions

- 2.3" Overall Height
- 6" Diameter Base
Overview
GE Security Electromagnetic Door Holders are ruggedly constructed and attractively designed. The housing is finished with an aluminum color, durable baked polyester powder paint. The housings and accessories are available in chrome or brass.

The floor or wall section houses the electromagnet while the contact plate attaches to the door. The contact plate has a shock absorbing nylon swivel ball which allows the plate to adjust to any door angle. Floor units are available in single-door or double-door backwards versions. Wall units are available in flush or surface mounted versions. GE door holders should be installed wherever doors may be effectively used to confine smoke and fire, or where the release of a self-closing door from a remote location is desirable for other reasons. Fail-safe operation is an inherent feature of GE Security door holder-releases. If power fails, doors are released automatically but may be opened or closed manually at any time. All units are free of moving parts, are self-contained and require no maintenance. These door holder-releases have a holding force of approximately 15 to 25 Lbf (66 to 111N). The device holds a door open while energized.

When de-energized by a relay controlled by the fire alarm system or other switch, the door is released to a closed position, checking the spread of smoke and flames. Electromagnetic door holders should be used and installed in accordance with local Building Codes and Standards.

Standard Features
- Surface mount, semi-flush, flush, and floor mounted models
- Chrome or brass finishes blend in with other door hardware
- Low power consumption
- AC/DC models
- Completely silent operation 25 Lbf (111N) nominal holding force
- Adjustable, swivel contact plate

Electromagnetic Fire Door Holders
DH Series
Extension Rod Applications and Accessories

Catch Plate Assembly

Voltage Reference
C — Common
L — Low
H — High

Low Voltage

(C+H) High Voltage

Low Voltage

High Voltage

High Voltage

Performance Data

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>DC/mA</th>
<th>AC/mA</th>
<th>Terminals</th>
<th>Coil</th>
<th>lbs</th>
<th>kg. (Nominal)</th>
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<tbody>
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<td>12V</td>
<td>30</td>
<td>30</td>
<td>C&amp;L</td>
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<td>15.9</td>
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<tr>
<td></td>
<td>24V</td>
<td>15</td>
<td>15</td>
<td>C&amp;H</td>
<td>Single</td>
<td>35</td>
<td>15.9</td>
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<tr>
<td>DHX*-24120</td>
<td>24V</td>
<td>15</td>
<td>15</td>
<td>C&amp;L</td>
<td>Single</td>
<td>35</td>
<td>15.9</td>
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<tr>
<td></td>
<td>120V</td>
<td></td>
<td>15</td>
<td>C&amp;H</td>
<td>Single</td>
<td>35</td>
<td>15.9</td>
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<tr>
<td>DHFMF-1224</td>
<td>12V</td>
<td>60</td>
<td>60</td>
<td>C&amp;L</td>
<td>Double</td>
<td>35</td>
<td>15.9</td>
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<tr>
<td></td>
<td>24V</td>
<td>60</td>
<td>60</td>
<td>C&amp;H</td>
<td>Double</td>
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<td>15.9</td>
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<tr>
<td>DHFMF-24120</td>
<td>24V</td>
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<td>30</td>
<td>C&amp;L</td>
<td>Double</td>
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<td>120V</td>
<td></td>
<td>30</td>
<td>C&amp;H</td>
<td>Double</td>
<td>35</td>
<td>15.9</td>
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</table>

* For all models, "K" represents either F (Flush Mount), FFM (Floor Mount single-coil), R (Recessed), or S (Surface Mount).
† For Floor Mount, double coil models.
NOTE: Voltage supplied by a UL listed control panel.
## Ordering Information

<table>
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<th>Description</th>
<th>Case Qty</th>
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<td>Wall Mount</td>
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<tr>
<td>DHR-1224C</td>
<td>12 or 24 V DC/V AC, recess-mount, chrome, with 3&quot; Extension Rod</td>
<td>20/case</td>
</tr>
<tr>
<td>DHR-24120C</td>
<td>24 V DC/V AC 120V AC, recess-mount, chrome, with 3&quot; Extension Rod</td>
<td>20/case</td>
</tr>
<tr>
<td>DHF-1224C</td>
<td>12 or 24 V DC/V AC, semi-flush-mount, chrome</td>
<td>20/case</td>
</tr>
<tr>
<td>DHF-1224B</td>
<td>12 or 24 V DC/V AC, semi-flush-mount, brass</td>
<td>20/case</td>
</tr>
<tr>
<td>DHF-24120C</td>
<td>24 V DC/V AC 120V AC, recess-mount, chrome</td>
<td>20/case</td>
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<tr>
<td>DHS-1224C</td>
<td>12 or 24 V DC/V AC, surface-mount, chrome</td>
<td>20/case</td>
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<tr>
<td>DHS-1224B</td>
<td>12 or 24 V DC/V AC, surface-mount, brass</td>
<td>20/case</td>
</tr>
<tr>
<td>DHS-24120C</td>
<td>24V DC/V AC 120V AC, surface-mount, chrome</td>
<td>20/case</td>
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<td>24V DC/V AC 120V AC, surface-mount, brass</td>
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<tr>
<td>Floor Mount</td>
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<td>6/case</td>
</tr>
<tr>
<td>DHFM1-24120</td>
<td>Single coil, 24VDC/VAC 120VAC, floor-mount, brushed steel</td>
<td>6/case</td>
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<tr>
<td>DHFM2-1224</td>
<td>Double coil, 12 or 24VDC/VAC, floor-mount, brushed steel</td>
<td>6/case</td>
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<td>DHFM2-24120</td>
<td>Double coil, 24VDC/VAC 120VAC, floor-mount, brushed steel</td>
<td>6/case</td>
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<tr>
<td>Extension Rods</td>
<td></td>
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</tr>
<tr>
<td>DHFM1-1224</td>
<td>Single coil, 12 or 24VDC/VAC, floor-mount, brushed steel</td>
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</tr>
<tr>
<td>DH-ER1C</td>
<td>1&quot; chrome</td>
<td></td>
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<tr>
<td>DH-ER1B</td>
<td>1&quot; brass</td>
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<tr>
<td>DH-ER3C</td>
<td>3&quot; chrome</td>
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<tr>
<td>DH-ER3B</td>
<td>3&quot; brass</td>
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<tr>
<td>Accessories</td>
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<td>DHW</td>
<td>Extension rod wrenches</td>
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<tr>
<td>DH-BP</td>
<td>Back Plate (chrome or brass)</td>
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<tr>
<td>DH-ARMC</td>
<td>Replacement armature, chrome</td>
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<tr>
<td>DH-ARMB</td>
<td>Replacement armature, brass</td>
<td></td>
</tr>
</tbody>
</table>
**S-12180** 12 Volt 18.0 AH
Rechargeable Sealed Lead Acid Battery

**Features**

- Absorbent Glass Mat (AGM) technology for superior performance
- Valve regulated, spill proof construction allows safe operation in any position
- Power/volume ratio yielding unrivaled energy density
- Rugged impact resistant ABS case and cover (UL94-HB)
- U.L. recognized under file number MH 20845

**Performance Specifications**

- **Nominal Voltage**: 12 volts (6 cells)
- **Nominal Capacity**
  - 20-hr. (900mA to 10.50 volts) ........................................... 18.0 AH
  - 10-hr. (1.7A to 10.50 volts) ................................................ 17.0 AH
  - 5-hr. (3.2A to 10.20 volts) ................................................. 16.0 AH
  - 1-hr. (11.1A to 9.00 volts) ................................................. 11.1 AH
  - 15-min. (34.3A to 9.00 volts) ............................................. 8.58 AH

- **Approximate Weight**: 12.60 lbs. (5.72 kg)
- **Energy Density** (20-hr. rate) ........................................ 1.53 W-h/in3 (93.51 W-h/l)
- **Specific Energy** (20-hr. rate) .................................. 17.14 W-h/lb (37.79 W-h/kg)
- **Internal Resistance** (approx.) ..................................... 14 milliohms
- **Max Discharge Current** (7 Min.) ................................ 54.0 amperes
- **Max Short-Duration Discharge Current** (10 Sec.) ............... 180.0 amperes
- **Shelf Life** (% of nominal capacity at 68°F (20°C))
  - 1 Month .......................................... 97%
  - 3 Months.................................................. 91%
  - 6 Months .............................................. 83%
- **Operating Temperature Range**
  - Charge ........................................... -4°F (-20°C) to 122°F (50°C)
  - Discharge ........................................... -40°F (-40°C) to 140°F (60°C)
- **Case** .............................................. ABS Plastic
- **Power-Sonic Chargers** .................................... PSC-122000A, 124000A, 122000A-C, 124000A-C

**Terminal Specifications**

- **PS-12180 F2**: Quick disconnect AMP, INC. Faston tabs, 0.250" x 0.032"
- **PS-12180 NB2**: Tin plated brass post with 5mm nut & bolt connectors

**Physical Dimensions: in (mm)**

<table>
<thead>
<tr>
<th>Width (W)</th>
<th>Height (H)</th>
<th>HT</th>
<th>Depth (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.13 (181)</td>
<td>3.00 (76)</td>
<td>6.59 (167)</td>
<td>6.59 (167)</td>
</tr>
</tbody>
</table>

Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.
**Charging**

- **Applications:** Limit initial current to 5.4A. Charge until battery voltage reaches 14.4 to 14.7 volts at 68°F (20°C). Hold at 14.4 to 14.7 volts until current drops to under 180mA. Battery is fully charged under these conditions, and charger should be disconnected or switched to "float" voltage.

- **At" or "Stand-By" Service:** Hold battery across constant voltage source of 13.8 volts continuously. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

- Due to the self-discharge characteristics of this type of battery, it is recommended that they be charged within 6 months of storage, otherwise permanent capacity might occur as a result of sulfation.

**Chargers**

- PowerSonic offers a wide range of chargers suitable for batteries up to 100AH. Please refer to the Charger Selection Guide in our specification sheets for "C-Series Mode Chargers" and "Transformer Type A and F Series". Please contact our technical department for advice if you have difficulty in locating suitable models.

**Further Information**

Please refer to our website www.power-sonic.com for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc.
Introduction
The Siemens Building Technologies, Fire Safety Division, Thermal Fire Detectors are of the rate compensation/fixed temperature type and are designed for use with either standard Fire Safety systems or other commercially available fire alarm systems. In all models the detector element is self-restoring after operation and is supplied in ratings of 135°F and 200°F.

Underwriter’s Laboratories, Inc. recommends the Thermal Detector be used to protect a maximum of 2,500 square feet. Job conditions and engineering judgement, however, often dictate closer spacing to provide faster detection.

The Models DT-135CL and DT-200CL are used with Fire Safety low voltage systems where it is desirable to provide visual identification of an operated detector by means of an internally mounted incandescent lamp. These models lock in upon alarm, therefore they must be reset at the control panel.

The Models DT-135CS, DT-135WP, DT-200WP and DT-200CS can be used with any fire alarm circuit of any manufacture using open circuit direct shorting type units. These units do not contain a series-connected resistor or an indicator lamp and do not lock in upon alarm. Contact ratings are 6-125 VAC, 5 Amps.; 6-25 VDC, 1 Amp.; 125 VDC, 0.5 Amps.

All Models are Underwriter’s Laboratories, Inc. listed.

The DT-135WP and DT-200WP are UL listed and U.S. Coast Guard approved as weatherproof. They are furnished with leads through a 1/2" NPT hub that screws into a standard W.P. junction box cover. The shell is epoxy coated.

Principle of Operation
Basically the detector consists of a tubular shell containing two curved expansion struts under compression fitted with a pair of normally open, opposed contact points which are insulated from the shell. The tubular shell and the struts have a different coefficient of expansion. When subjected to a rapid heat rise the tubular shell expands and lengthens slightly. At the same time the interior struts lengthen but at a slower rate than the shell. The rapid lengthening of the shell allows the struts to come together, thereby closing the contact points and initiating the alarm.

When subjected to a very slow heat rise the tubular shell and the interior struts lengthen at approximately the same rate. At the detectors’ set temperature point 135°F or 200°F, the interior struts are fully extended, thereby closing the contact points and initiating the alarm.

These thermal detectors, which are shock and corrosion resistant, respond only to heat, so they are suitable for use in areas where normal conditions would prohibit the use of other Fire Safety detectors.

When connected to Fire Safety control equipment the Models DT-135CL/CS/WP and DT-200CL/CS/WP detectors are fully compatible with Fire Safety ionization detectors, flame detectors, and manual stations. Electrically, any number of thermal detectors can be used in a circuit. The limit is only subject to the practical considerations of job conditions and engineering judgement.

In addition to operating the own internal alarm indicating lamps, the Models DT-135CL and DT-200CL can also operate one remote indicating lamp when desired.

Engineer and Architect Specifications
The thermal fire detector shall be a Fire Safety Model DT [insert model number] and shall be of the rate compensation/fixed temperature type. The detector shall be listed by Underwriter’s Laboratories, Inc.

CATALOG NUMBER 6131
Note: The Models DT-135CL/CSWP and DT-200CL/CSWP thermal detectors shall be compatible with Fire Safety ionization detectors, flame detectors, and manual stations on the same circuit. There shall be no limit, other than practical consideration, to the number of thermal detectors which may be installed in any one circuit.

*The DT-135CL, DT-135CS, DT-200CL and DT-200CS are UL, UL Listed, CSFM, NYMEA, FM and City of Chicago approved. The DT-135WP and DT-200WP are UL listed only.

The installing contractor shall install the detectors with #18 AWG thermoplastic wire housed in conduit or limited energy cable where permitted by local codes.

### Mounting Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>135° rate compensation / fixed temperature detector with internal lamp</td>
<td>DT-135CL</td>
</tr>
<tr>
<td>200° rate compensation / fixed temperature detector with internal lamp</td>
<td>DT-200CL</td>
</tr>
<tr>
<td>135° rate compensation / fixed temperature detector, open circuit</td>
<td>DT-135CS</td>
</tr>
<tr>
<td>200° rate compensation / fixed temperature detector, open circuit</td>
<td>DT-200CS</td>
</tr>
<tr>
<td>140° rate compensation / fixed temperature detector, open circuit, weatherproof</td>
<td>DT-135WP</td>
</tr>
<tr>
<td>195° rate compensation / fixed temperature detector, open circuit, weatherproof</td>
<td>DT-200WP</td>
</tr>
<tr>
<td>Decorative ring or mounting adaptor for 4&quot; box</td>
<td>500-618020</td>
</tr>
</tbody>
</table>

### Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Skipping Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT-135CL</td>
<td>135° rate compensation / fixed temperature detector with internal lamp</td>
<td>1 lb.</td>
</tr>
<tr>
<td>DT-200CL</td>
<td>200° rate compensation / fixed temperature detector with internal lamp</td>
<td>1 lb.</td>
</tr>
<tr>
<td>DT-135CS</td>
<td>135° rate compensation / fixed temperature detector, open circuit</td>
<td>1 lb.</td>
</tr>
<tr>
<td>DT-200CS</td>
<td>200° rate compensation / fixed temperature detector, open circuit</td>
<td>1 lb.</td>
</tr>
<tr>
<td>DT-135WP</td>
<td>140° rate compensation / fixed temperature detector, open circuit, weatherproof</td>
<td>1 lb.</td>
</tr>
<tr>
<td>DT-200WP</td>
<td>195° rate compensation / fixed temperature detector, open circuit, weatherproof</td>
<td>1 lb.</td>
</tr>
<tr>
<td>500-618020</td>
<td>Decorative ring or mounting adaptor for 4&quot; box</td>
<td>.5 lb.</td>
</tr>
</tbody>
</table>

NOTICE: The use of other than Fire Safety detectors and bases with Fire Safety control equipment will be considered a misapplication of Fire Safety equipment and as such void all warranties either expressed or implied with regards to loss, damage, liabilities and/or service problems.
**Introduction**

The TRI-B6M Intelligent interface module is designed to provide the means of interfacing direct shorting devices to the MXL system's ALD loop circuit, MXL XLD loop or the IXL system's ICon loop circuit.

The TRI-B6M Intelligent interface module provides the market's most advanced method of address programming and supervision, combined with sophisticated control panel communication. Each TRI-B6M interface module incorporates microcomputer chip technology and its sophisticated bi-directional communication capabilities with the control panel.

**Description**

The TRI-B6M is designed to monitor a normally open or closed dry contact and reports the contact's status to the control panel.

The device's microcomputer chip has the capacity of storing, in memory, identification information as well as important operating status information.

Siemens Building Technologies, Fire Safety Division innovative technology allows all TRI-B6M intelligent interface modules to be programmed by using the **SensorLINK** model FPI-32 Programmer/Tester. The FPI-32 Programmer/Tester is a compact, portable, menu driven accessory that makes programming and testing an interface device faster, easier and more dependable than previous methods. The FPI-32 eliminates the need for mechanical addressing mechanisms, such as program jumpers, DIP switches or rotary dials, because it electronically sets the TRI-B6M interface's address into the interface's microcomputer chip non-volatile memory. Vibration, corrosion and other conditions that deteriorate mechanical addressing mechanisms are no longer a cause for concern. This TRI-B6M is connected to the programmer/tester with the programming cable provided with the tester. This cable utilizes two (2) alligator clip connectors, to attach to the TRI-B6M. (P/N 110-694927)

The TRI-B6 Series has five leads, one for grounding, which are wired to the system with user supplied wire nuts.
The TRI-B6M is fully compatible on the same MXL circuit with all intelligent IL and ID-60 Series detectors, MSI Series addressable manual stations or any other addressable intelligent modules, such as the CZM or ICP. The TRI-B6M is also fully compatible on the IXL (ICON) circuit with all intelligent IL and ID-60 detectors and MSI manual stations.

All TRI-B6M intelligent interface modules are UL and ULC listed.

Environmental operating conditions for all TRI-B6M modules are 32°F (0°C) to 120°F (49°C) with a relative humidity of not greater than 93% non-condensing.

**Engineer & Architect Specifications**

The addressable interface module shall incorporate a custom microprocessor based integrated circuit that shall provide communication with its compatible control panel.

The addressable interface module shall be a Fire Safety TRI-B6M that shall be compatible with an IXL or MXL control panel.

The TRI-B6M intelligent interface modules shall provide the means of interfacing direct shorting devices to the control panel's addressable circuits. The interface module shall report the contact's status to the control panel.

The TRI Series devices shall be capable of and listed for interfacing normally closed security switches to the MXL (per UL 1076).

The addressable interface module shall be UL and ULC listed.

The addressable interface module shall be dynamically supervised and uniquely identifiable by the control panel.

The addressable interface module's address shall be programmed with the use of a portable programming accessory. The programming accessory shall be a Fire Safety FPI-32 Programmer/Tester. The portable programmer shall be menu driven. Once the desired address is entered the programmer shall set and verify the address. The programming accessory shall also be capable of testing the interface's functionality. The addressable interface module's address shall be set by electronic means only. No mechanical means such as programming pins, DIP switches or rotary dials shall be required.

The TRI-B6M shall be compatible on the same MXL circuit with other intelligent IL and ID-60 Series detectors, TRI Series addressable interfaces, MSI Series addressable manual stations or any other MXL addressable intelligent module. The TRI-B6M shall be compatible on the same IXL (ICON) circuit as other intelligent IL and ID-60 Series detectors, MSI Series manual stations and TRI Series interfaces.

### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Shipping Wt. oz.</th>
<th>Kg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRI-B6M</td>
<td>Single Input</td>
<td>3.5</td>
<td>.1</td>
</tr>
<tr>
<td>TRI-B6M-C</td>
<td>ULC Model for Canada</td>
<td>3.5</td>
<td>.1</td>
</tr>
</tbody>
</table>

### Typical Wiring

(Refer to Figures 1, 2, 3 or 4) Refer to the appropriate wiring diagram below and wire the addressable interface module accordingly.

**Note:** **Recommended wire size:**

- 18 AWG minimum
- 14 AWG maximum
Installing A Security Point

WARNING: These circuits intended for 24 hour alarm monitoring only.

UL 1076 requires a TSW-1 tamper switch as well as a TSP-40 printer. A COMMUNICATION FAILURE with a TRI device configured for SECURITY results in a SECURITY ALARM as well as a communication trouble.

When installing a TRI device in the CSG-M, be sure to set the device usage to security. When setting the device address using the FPI-32, select the normally closed alarm causing input.

Connect only one switch per TRI input.

Reminder: Proper installation procedure for TRI Devices

As part of the normal installation practice each TRI device must be functionally tested. This includes testing the supervision through the end of the line resistor. The following steps must be followed for each TRI device installed:

1. Open the end of line resistor.
2. Check that the system annunciates the programmed trouble message.
3. Return the resistor to its proper connection.
4. Change the state of the switch to confirm that the system's programmed response is executed.
5. Return the switch to its normal state.

Mounting Diagram
Overview

The FireRay 2000 is a projected beam smoke detector designed to detect smoke in a large volume. The system is comprised of three pieces, a transmitter head, a receiver head, and a control box. The transmitter projects a modulated infrared light beam to the receiver. At the receiver, the signal is sent to the controller, where it is analyzed. If there is smoke in the beam path, the receiver’s signal is reduced by a level proportional to the density of the smoke. When the signal strength is reduced to a level between the obscuration threshold and 93% for more than 8 to 10 seconds, the fire alarm output relay is activated. The alarm obscuration threshold may be set at 25%, 35% or 50% obscuration, depending on the application. Reduction in signal strength below 93% is indicated as a fault condition.

The controller is designed to mount near ground level where it is convenient for maintenance. The controller is powered by the fire alarm control panel (FACP) and returns both alarm and trouble signals to the FACP via relay contacts. The controller features an automatic gain control that automatically compensates for component aging, and dirt on the optical surfaces. The optional installation aid is used to quickly align the beam and a test card is supplied with each controller to perform functional tests.

Standard Features

- Coverage up to 330 ft (100m) x 50 ft (15.2m) - 16,000 ft² (1,524 m²)
- Use with prism reflectors
- Supervised
- Automatic gain control
- Alarm and trouble contacts
- Controls located at convenient level
- Wide beam angle simplifies alignment and provides stability
- Low current consumption

Optical Beam Smoke Detector

FIRERAY 2000
Application
Projected beam smoke detectors are ideal for large volume applications such as atria, warehouses, factories, churches, power stations, and industrial plants. Detection time depends on a number of factors including the location of the detectors within the protected area, the volume of smoke produced by the fire, roof construction and the ventilation arrangements.

For flat ceiling applications, smoke typically makes its way into the detection beam from the point on the ceiling directly above the fire due to air currents and heat layering effects. At the maximum range of 330 ft (100m) the diameter of the beam is approximately 10 ft (3m). For reliable detection, the maximum distance either side of the beam axis has been determined to be 25 ft (7.6m). Using this spacing yields a maximum total coverage area of 16,500 square feet (1,524m²). Smoke layering is overcome by mounting detectors such that the beam is below the heat layer and projecting into the smoke layer. For flat ceiling applications the system is designed to be mounted approximately 19 inches (482mm) below and parallel to the roof or ceiling. Detection time is increased in buildings with peaked roofs should a fire occur at the fringes of the protected area. No more than approximately 10 ft (3m) of the beam path should be within 19 in (482mm) of any wall or partition and the centerline of the beam.

When access to the opposite wall is restricted or where wiring is difficult, the transmitter may be installed adjacent to the receiver. A prism is then mounted on a far wall and used to reflect the signal from the transmitter back to the receiver. When prisms are used, maximum beam length is reduced as shown in the specification table.

Typical Wiring
Shielded cable recommended for all wiring. The control unit must be grounded to the power supply. Terminate shields outside the control cabinet at the cable clamp. Do NOT let shields enter the cabinet. Use metal junction boxes only, no plastic boxes permitted.

Relay wiring as required

May be same P.S.U. as for control unit
P.S.U. (24 Vdc)
# Specifications

## Controller

### Power Requirements

<table>
<thead>
<tr>
<th>State</th>
<th>Current (mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standby</td>
<td>8.5</td>
</tr>
<tr>
<td>Alarm</td>
<td>14.5</td>
</tr>
</tbody>
</table>

### Output Relays

<table>
<thead>
<tr>
<th>Type</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm</td>
<td>Form C rated 0.5 A @ 30 Vdc</td>
</tr>
<tr>
<td>Trouble</td>
<td>Form C rated 0.5 A @ 30 Vdc</td>
</tr>
</tbody>
</table>

### LED Indicators

- Alarm: Signal High, Signal Low, Fault

### Reset

Configurable, manual or automatic

### Dimensions (HxWxD)

10.5 in (260 mm) x 8.5 in (210 mm) x 3.5 in (89 mm)

### Weight

5 lb (2.25 kg)

### Operating Environment

- Temperature: 32 °F to 100 °F (0 °C to 38 °C)
- Humidity: 93% RH, Non-condensing

## Detector Heads

### Beam

- **Width**: 25 ft (7.62 m) either side of transmitter centerline
- **Length**: 33 ft (10 m) to 330 ft (100 m)

### Alarm Threshold

25%, 35%, or 50% obscuration

### Wiring Requirements

- **Transmitter**: 2 conductor twisted-shielded, 18 AWG (0.75 mm²)
- **Receiver**: 3 conductor twisted-shielded, 18 AWG (0.75 mm²), 330 ft (100 m) max.

### Power Requirements

- **Transmitter**: 5 mA @ 24 Vdc
- **Receiver**: Nominal, supplied by controller

### Dimensions (HxWxD) with Bracket

3.75 in (95 mm) x 3.25 in (83 mm) x 4 in (101 mm)

### Weight with Bracket

14 oz (400 g)

### Environment

- **Temperature**: 32 °F to 100 °F (0 °C to 38 °C)
- **Humidity**: 93% RH, Non-condensing

### Beam Ranges using Prisms

1 Prism: 6.5 ft (1.98 m) to 82 ft (25 m)
4 Prisms in a square: 68 ft (25 m) to 115 ft (35 m)
6 Prisms in a rectangle: 115 ft (35 m) to 148 ft (45 m)

### Construction

Zinc Alloy housing finished in white enamel

### Prism Dimensions (HxWxD)

4 in (100 mm) x 4 in (100 mm) x 5/16 in (9 mm)

## Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Ship Wt., lb (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22310-18-01</td>
<td>Beam Smoke Detector Controller with Heads</td>
<td>8.5 (3.9)</td>
</tr>
<tr>
<td>0201-01-A</td>
<td>Beam Alignment Aid</td>
<td>1 (0.45)</td>
</tr>
<tr>
<td>23901-00</td>
<td>Prism - Beam Detector</td>
<td>0.3 (0.14)</td>
</tr>
</tbody>
</table>

Data Sheet 85001-0548 Issue 5
Not to be used for installation purposes. Page 3 of 4
SIEMENS
TRI Series
Intelligent Initiating Devices Interface Modules for MXL Fire Detection Panels TRI-S, TRI-D, TRI-R

ENGINEER AND ARCHITECT SPECIFICATIONS

- Interfaces and Supervises Normally Open Contacts
- Integral SPDT Relay (up to 4 amps) on TRI-R Model
- Dual Input on TRI-D Model
- Multi-color L.E.D. indicates status (green, amber, red)
- Easy front access to programming port and wiring terminals
- Mounts in 4 inch square 2 ¼ deep box, or double gang box
- Dynamic Supervision
- Comes with 5x5 inch faceplate
- Two wire operation
- Model DPU or FPI-32 Programs and Verifies Device’s Address and Tests Device’s functionality
- Electronic Address Programming is Easy and Dependable
- UL Listed, ULC Listed
  CFSM, FM, NYMEA Approved

Introduction
The TRI Series Intelligent interface modules are designed to provide the means of interfacing direct shorting devices to the MXL system’s ALD loop circuit.

The TRI Series Intelligent interface modules provide the market’s most advanced method of address programming and supervision, combined with sophisticated control panel communication. Each TRI Series interface module incorporates a microcomputer chip. The TRI Series microcomputer chip technology and its sophisticated bi-directional communication capabilities with the control panel, achieve the state of an “Intelligent Device.”

Description
The TRI Series Intelligent interface modules are available in three models. The TRI-S and TRI-R are designed to monitor a normally open dry contact. The interface module reports the contact’s status to the control panel. The TRI-S model can only monitor and report the status of the contact, while the TRI-R incorporates an addressable Form C relay. The TRI-R relay and contact device input are controlled at the same address. For the MXL system, the relay and input contact can be controlled as a separate function. The relay is typically used where control or shunting of external equipment is required.

The TRI-D is a dual input module and is designed to supervise and monitor two sets of dry contacts. This interface module requires two address settings. The TRI-D is ideal for monitoring a water flow switch and its respective valve tamper switch.

The TRI has a multi-color Light Emitting Diode that flashes green when operating normally, amber if unit
is in trouble condition, and red to indicate a change of state. The TRI-D flashes twice, once for each address, the TRI-R red L.E.D. indicates a change of state in the relay.

The device’s microcomputer chip has the capacity of storing, in memory, identification information as well as important operating status information.

Siemens Building Technologies, Fire Safety Division innovative technology allows all TRI Series intelligent interface modules to be programmed by using the model DPU or FPI-32 Programmer/Tester. The Programmer/Tester is a compact, portable, menu driven accessory that makes programming and testing an interface device faster, easier and more dependable than previous methods.

The DPU or FPI-32 eliminates the need for mechanical addressing mechanisms, such as program jumpers, DIP switches or rotary dials, because the Programmer/Tester electronically sets the TRI interface’s address into the interface’s microcomputer chip nonvolatile memory. Vibration, corrosion and other conditions that deteriorate mechanical addressing mechanisms are no longer a cause for concern.

The TRI Series is fitted with screw terminals for connection to an addressable circuit.

The TRI Series is fully compatible on the same MXL circuit with all intelligent FP, IL and ID-60 Series detectors, MSI Series addressable manual stations or any other addressable intelligent modules, such as the CZM or ICP.

All TRI Series intelligent interface modules are UL listed.

Environmental operating conditions for all TRI Series modules are 32°F (0°C) to 120°F (49°C) with a relative humidity of not greater than 93% non-condensing.

### Mounting Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Shipping Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRI-S</td>
<td>Single Input</td>
<td>7 oz.</td>
</tr>
<tr>
<td>TRI-R</td>
<td>Single Input w/Relay</td>
<td>7 oz.</td>
</tr>
<tr>
<td>TRI-D</td>
<td>Dual Input</td>
<td>7 oz.</td>
</tr>
</tbody>
</table>

### Mounting Data

Addressable interface Model TRI-S, TRI-D, TRI-R mounts directly into a 4 inch square 2¼ deep box or a double gang box (user supplied). A 5 inch square off-white faceplate is included with each TRI.

![Mounting Diagram](image)

**Figure A
Mounting the TRI-S/-R/-D**

### Electrical Ratings

Current Draw (Active or Standby): 1.5mA

<table>
<thead>
<tr>
<th>Relay Ratings</th>
<th>Amps</th>
<th>Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistive 4A</td>
<td>4A</td>
<td>125 VAC</td>
</tr>
<tr>
<td>4A, 30 VDC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inductive 3.5A</td>
<td>3.5A</td>
<td>120 VAC (0.6PF)</td>
</tr>
<tr>
<td>3.0A, 30 VDC (0.6PF)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0A, 120 VAC (0.4PF)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0A, 120 VAC (0.35PF)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0A, 30 VDC (0.35PF)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Introduction
The Siemens Building Technologies, Fire Safety Division air duct detector housings are designed to be used with the 11-Series detectors. Designed for installation directly to heating, ventilating and air conditioning duct systems, they comply with National Fire Protection Association Standard No. 90A. When equipped with photoelectric detectors, these units will signal the presence of hazardous quantities of products of combustion or smoke being carried through the duct system. Air duct detectors are not intended to be substituted for open area detection.

Air duct housings can be equipped with optional relays. These relays are utilized to operate any supplementary equipment when smoke or particles of combustion are detected.

Note: Most conventional time control equipment guarantee only one detector per zone when the detector operated relay function is critical. The connection of a remote lamp and a remote relay per detector is allowed with PXL or System 3™ only, other conventional systems may use either a remote lamp or a relay.

With the MXL series of control panels, up to 60 detectors per circuit having relays may be used. The connection of a remote lamp or a remote relay is allowed for each detector but not both.

With the FireFinder XLS series of control panels, up to 252 detectors per circuit having relays may be used. The Connection of an intelligent remote lamp and a remote Relay (ILED), is also allowed.

Air duct housings (see Ordering Information) are Underwriters Laboratories, Inc. listed.

Description
The Fire Safety air duct housing is uniquely designed to use the photoelectric detector.

Sensitivity of PE-11 detectors can be checked by viewing the LED or an RSAW-11 or RSAC-11 multicolor remote lamp. A green flash indicates the detector has passed its self test. Amber indicates a trouble condition, and red indicates an alarm state.

HFP-11,HFPO-11 and FP-11 sensitivity may be viewed from the multi-color LED on the detector or preferably may be printed by command on an optional printer from the MXL control panel.

The detector unit employs a cross-sectional sampling principle of operation. Inlet: sampling tubes are available in four lengths (see table on reverse side). Outlet sampling tubes are one common length. A continuous cross-sectional sample of air moving through the duct stratification or skin effect phenomena occurring in the duct that could prevent combustion product or smoke (especially in large ducts) from reaching a spot type detector.

In addition, the unique design of the sampling chamber insures uniform sensitivity in air velocities, ranging from a low of 100 feet per minute to as high as 4000 feet per minute. The housing comes with two 1/2" conduit

Catalog Number 6185
knockouts and one ½” conduit opening for a number of 3 wiring entry ports.

The inlet sampling tube length is determined by the width of the air duct being protected. The inlet tube nearest to but greater than the duct width should be used (see table). The inlet tube can then be trimmed at the job site to the exact width of the duct. The outlet sampling tube for all ducts, irrespective of width, has a fixed length of approximately 5.5 inches and is supplied with the duct housing.

When the use of a remote relay is required, order model AD2-PR for conventional systems; AD2-XHR for addressable systems. When required the WP-2000 weatherproof enclosure for Duct Housing is available. For full details, refer to installation instructions part number 315-049708.

### Sampling Tube Selection Table

<table>
<thead>
<tr>
<th>Duct Width</th>
<th>Sampling Tube Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For duct widths 8” to 1’</td>
<td>ST-10</td>
</tr>
<tr>
<td>For duct widths over 1’ to 3’</td>
<td>ST-25</td>
</tr>
<tr>
<td>For duct widths over 3’ to 5’ (requires support)</td>
<td>ST-50</td>
</tr>
<tr>
<td>For duct widths over 5’ to 10’ (requires support)</td>
<td>ST-100</td>
</tr>
</tbody>
</table>

Maintenance of the detector is easily accomplished by the removal of the Series 11 duct housing sampling chamber cover. The detector, which plugs into the housing, is easily removed for cleaning by a trained technician.

All that is necessary for installation of the air duct detector is the cutting of three small holes for the sampling tube installation (template included) and the drilling of four holes for mounting the air duct housing. The unit is then easily mounted in place and connection made to the existing wires or terminals if optional accessories are utilized.

ST-50 and ST-100 require support. ST-100 is shipped in two five foot pieces with a coupling for field assembly.

### Technical Data

- **Temperature Range**: 32°F (0°C) - 100°F (38°C)
- **Altitude Range**: No Altitude Limitations
- **Relative Humidity**: 10-85% (non-condensing/non-freezing)
- **Air Duct Velocity Range**: 100 - 4000 Ft/Min.
- **Sampling Tube Pressure Range of Differences**: Greater than 0.01 amps less than 1.2 inches of water column

**Note to Architect**: When building codes regulate the location of detectors within ventilating systems, make sure that the number and locations of detectors is in accordance with the code regulations.

### Order Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD2-P</td>
<td>Air Duct Housing for use with FP-11, HFR-11, HP-11</td>
<td>500-649706</td>
</tr>
<tr>
<td>AD2-PR</td>
<td>Air Duct Housing for use with PE-11 with relay</td>
<td>500-649707</td>
</tr>
<tr>
<td>AD2-XHR</td>
<td>Air Duct Housing for use with PE-11 with relay</td>
<td>500-649708</td>
</tr>
<tr>
<td>ST-10</td>
<td>Sampling Tube for Ducts 6” to 1’</td>
<td>500-649710</td>
</tr>
<tr>
<td>ST-25</td>
<td>Sampling Tube for Ducts over 1’ to 3’</td>
<td>500-649711</td>
</tr>
<tr>
<td>ST-50</td>
<td>Sampling Tube for Ducts over 3’ to 5’</td>
<td>500-649712</td>
</tr>
<tr>
<td>ST-100</td>
<td>Sampling Tube for Ducts over 5’ to 10’</td>
<td>500-649713</td>
</tr>
</tbody>
</table>

**Product Includes**

- One Short Return (outlet) Tube
- One Stopper
- Two #12 + 3/4” Sheet Metal Screws
- Mounting Template

**Note**: Detector and sampling tube to be purchased separately

---

**Note**: Minimum hardware required is one Air Duct Housing Assembly, one Sampling Tube and one Detector.

**NOTICE**: The use of other than Fire Safety detectors and bases with Fire Safety equipment will be considered a missapplication of Fire Safety equipment and as such voids all warranties either expressed or implied in regard to loss, damage, liabilities and/or service problems.
Introduction
The DPU Device Program/Test Unit is a powerful programming and test tool that expedites installation of FireFinder XLS devices. The DPU programs addresses into devices and tests them to assure they operate properly prior to installation. Prior to connecting a device circuit to the control panel, you can operate the loop from the DPU (AC power must be used for this operation), allowing you to debug the circuit and test for ground faults. The DPU-PRT includes a label printer and a larger carrying case for the DPU and printer. The DPU-C1 is a carrying case for only the DPU.

Description
The DPU Device Program/Test Device is a compact, portable, menu driven device that makes programming and testing of intelligent devices faster and easier than ever before. The DPU electronically programs the device's address into its non-volatile memory. The DPU then tests the device's functionality, assuring the installer that the device works properly prior to installation.

The DPU has an LCD display with keypad that prompts the installer through easy to use program and test menus that take little to no training for first time users. The unit is supplied with NiMH rechargeable batteries and an AC power supply and will operate in either battery or AC modes. The batteries are easily exchanged with off-the-shelf Alkaline AA batteries.

To program and test a detector, simply insert the detector in the DPU's integrated DB-11 base and enter the device address as prompted on the DPU's backlit display. The address automatically increments to the next address for ease of addressing multiple devices, but the user can easily insert a different address if desired. The user also has the option of entering a loop number if they are printing labels at the same time.

Using the optional label printer, is a simple as telling the DPU how many labels are required. The labels will automatically print as the devices are programmed. The label maker is operated on AC current.
There is also an option to perform a loop test. (The DPU will only operate with AC in this mode due to power consumption.) The DPU will display the addresses and the device type, a summary count of devices (by type) communicating on that loop and indicate addresses that have no device and if the devices are in alarm. The operator can also use the DPU to detect ground faults on the device loop.

The DPU is backward compatible for use with MXL devices. A simple menu selection moves you to the MXL mode and allows for device testing and programming. The DPU does NOT perform loop and ground fault tests in the MXL mode; this feature only works for H-series FireFinder XLS devices.

The DPU has an integral DB-11 base for detector programming and testing. storage compartment for the programming cable that is used for other devices and comes with a B-3 base adapter for use with IL-series detectors used on MXL systems. Also included is the power supply used for AC operation and battery charging. The battery compartment is easily opened for battery replacement. The compartment contains a switch to turn off the charging circuit when using alkaline batteries.

The DPU-PRT package includes a printer and carrying case. Printer supplies are standard off-the-shelf models that can be purchased at any office supply or office superstore.

### Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPU</td>
<td>Device Program/Test Unit for FireFinder XLS and MSL Devices</td>
<td>500-033260</td>
</tr>
<tr>
<td>DPU-C1</td>
<td>Carrying Case for DPU</td>
<td>500-033990</td>
</tr>
<tr>
<td>DPU-PRT</td>
<td>Larger Carrying Case and Printer</td>
<td>500-034020</td>
</tr>
</tbody>
</table>

**NOTICE:** The use of other than Fire Safety detectors and bases with Fire Safety control equipment will be considered a misapplication of Fire Safety equipment and as such void all warranties either expressed or implied with regards to loss, damage, liabilities and/or service problems.
Description
POWERPATH™ Series PS-24-8MC is an 8 Amp, 24VDC, filtered and regulated, supervised remote power supply/charger used for supervision and expanded power driving capability for Fire Alarm Notification Appliance Circuits. The PS-24-8MC may be connected to any 12V or 24V (FWR or DC) Fire Alarm Control Panel (FACP) by using a Notification Appliance Circuit (NAC) or a "Dry Contact". Primary applications include NAC expansion (supports ADA requirements) and auxiliary power to support system accessories. This unit provides filtered and regulated 24VDC, 8 Amp up to four (4) Class "B", two (2) Class "A", or two (2) Class "B" and one (1) Class "A" Notification Appliance Circuits. With the optional plug-in PS-4CA module the unit supports (4) Class "A" Notification Appliance Circuits. Additionally, an auxiliary power output of 3.5 Amps (disconnected upon AC power loss or an alarm condition) or 200 mAm (constant) is provided, which can be manually reset. The PS-24-8MC also contains a battery charger capable of charging either 7 or 12 Amp/Hour (AH) of battery backup.

Two FACP NAC circuits or two "Dry" contact initiating circuits can be connected to the POWERPATH inputs. These inputs can then be directed to control supervision and power delivery to any combination of the four (4) outputs.

Each output is rated at 3.0 Amps (Class "B") or (Class "A") and can be programmed to generate a steady or Code 3 Temporal Horn sound and a strobe output under alarm condition. Total load for the PS-24-8MC NAC circuits must not exceed 8.0 Amps.

The PS-24-8MC under non-alarm condition provides independent supervision for Class "A" and Class "B" FACP NAC circuits. In the event of circuit trouble, the FACP will be notified via the POWERPATH steered input (IN1 or IN2). In addition there are two sets of trouble reporting terminals, one used for AC power loss reporting and the other for all troubles. The AC power loss reporting, on the common trouble terminals and on IN1 or IN2, can be delayed for either 30 seconds or 170 minutes. The AC power loss terminals will always report the trouble 30 seconds after loss of AC power.

The PS-24-8MC POWERPATH is UL Listed under UL Standard 864, to be used with any 24 volt Listed Regulated notification appliances. It includes the capability to synchronize Wheelock strobes and horns and to silence the horn signal when horn/strobes are operating on two wires.

Features
Approvals
- Approvals Include: UL Standard 864 California State Fire Marshal (CSFM), New York City (MEA), Factory Mutual (FM), Chicago (BFP) See Approvals by model in Specification and Ordering Information
- Compliant with NFPA 72

Inputs
- 120VAC, 50/60Hz, 5.0 Amps Operating Power in Alarm
- 24VDC Battery Backup Connection
- Two (2), 12V or 24V NAC Initiating Circuits (8-33V at 5mA) FWR or DC
- Two (2) "Dry" Contact initiating Circuits
- Accepts two (2) Class "A" or two (2) Class "B" circuit inputs
- Built in battery charger for sealed lead acid or gel type batteries

...Features continued on next page
Outputs
- NAC outputs are 24VDC, 3.0 Amps each, power limited
- 8 Amps total alarm current
- Capable of four (4), Class "B" circuits
- Capable of two (2) Class "A" circuits
- Capable of four (4) Class "A" circuits with optional PS-4CA module
- Capable of one (1) Class "A" circuit and two (2) Class "B" circuits
- Temporal (Code 3) or constant voltage output
- Built-in Wheelock synchronization mode that can be fed to any or all of the output circuits
- Input and output can be synchronized with "IN>OUT SYNC" mode (SM, DSM or 2nd PS-24-8MC is required)
- Audible silence capability
- Filtered and electronically regulated output
- 3.5 Amp auxiliary power limited output with reset capability. (Removed upon AC loss or alarm. Automatic reset 30 seconds after AC power returns or the alarm condition is over) or 200 mAmmps auxiliary power limited output which remains on during AC loss or an alarm condition

Supervision
- Compatible with 12V or 24V (FWR or DC) FACP
- Signaling appliance circuits are supervised and steered to either IN1 or IN2
- 2.2K Ohm, 1 Watt (Wheelock Model #MPEOL) End of Line Resistor (EOLR) for supervision of all outputs
- AC loss trouble reported over a separate set of contacts (delay of 30 seconds)
- All troubles are reported over the common trouble contacts (AC loss can have a delay of 30 seconds or 170 minutes)
- Automatic switchover to standby battery when AC fails
- Thermal and short circuit protection with auto reset
- Input and output status LED indicators
- AC fail supervision
- Battery presence and low battery supervision
- Ground Fault Detection (60K ohms)
- 4 latching LED's for NAC trouble annunciation

Power
- Not Battery Dependent - Full 8A even if battery is degraded
- Automatic switch over to standby batteries when AC fails
- Supports sealed lead acid or gel type batteries
- Fused battery protection
- Thermal and short circuit protection with auto reset
- Supports both 7AH or 12AH batteries in the same cabinet (Cabinet Size: 16.70" H x 12.83" W x 5" D)
POWERPATH™ Operating Modes (refer to Installation Manual):

Normal Mode: Provides constant 24 VDC output upon initiation by a voltage to input IN1 or IN2 or by a contact opening on DRY1 or DRY2. The unit returns to standby mode when the input is deactivated.

Wheellok Sync Mode: Provides signals for synchronization of patented Wheellok audible and strobe notification appliances. Audibles can also be silenced in this mode while the strobes continue to flash.

In>Out Sync Mode: Accepts a coded signal or synchronization signal on the input to provide a coded output or synchronized output. This signal may come from a FACP, another POWERPATH or a Wheelock SM or DSM synchronization module. Caution: Do not use strobes on coded output circuits.

Temporal Mode: Codes the output voltage in a code-3 temporal pattern to drive audible appliances such as horns, bells or chimes. Caution: Do not use strobes on coded output circuits.

Specifications and Ordering Information

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Order Code</th>
<th>Input Voltage/Current</th>
<th>Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS-24-8MC</td>
<td>0237</td>
<td>120 VAC @ 50/60 Hz; 5.0 amps max.</td>
<td>X X X X *</td>
</tr>
<tr>
<td>PS-4CA</td>
<td>1648</td>
<td>Four class &quot;A&quot; plug-in module for PS-24-8MC</td>
<td>X X X X *</td>
</tr>
</tbody>
</table>

Output NAC Circuit

<table>
<thead>
<tr>
<th>Output Voltage/Current</th>
<th>X= Approved</th>
<th>*= Pending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four (4) Class &quot;B&quot; or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two (2) Class &quot;A&quot; or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One (1) Class &quot;A&quot; and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two (2) Class &quot;B&quot; or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four (4) Class &quot;A&quot; (optional PS-4CA module)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standby Current</th>
<th>0.080 Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm Current</td>
<td>0.240 Amps</td>
</tr>
<tr>
<td>Total NAC Current</td>
<td>8 Amps Max.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standby Batteries</th>
<th>Standby Time</th>
<th>Alarm Output Total Amps/Minutes</th>
<th>Aux Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 VDC/12 AH</td>
<td>24 Hours</td>
<td>8 Amps/15 Minutes</td>
<td>CP Mode</td>
</tr>
<tr>
<td>(uses two (2) 12 VDC batteries in series)</td>
<td>60 Hours</td>
<td>8 Amps/15 Minutes</td>
<td>MP Mode</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>CP Mode</th>
<th>MP Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 mA</td>
<td>3.5A</td>
<td></td>
</tr>
<tr>
<td>60 mA</td>
<td>during</td>
<td></td>
</tr>
<tr>
<td>nonalarm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The power supply shall be Wheelock POWERPATH™ Series PS-24-8MC, or equivalent. The unit shall be stand alone power supply tended for powering fire alarm notification appliances via its own Notification Appliance Circuit(s) (NAC). The unit shall be UL 864 std for power limited operation of outputs and comply with NFPA 70 (NEC), article 760.

The power supply shall support a full 8A of notification power even if the battery is in a degraded mode and only AC power is connected.

The power supply shall be activated by a standard Notification Appliance Circuit (NAC) from any Fire Alarm Control Panel (FACP) or a dry contact* opening. The units shall be 8 ampere, 24 VDC, regulated and filtered, supervised remote power supply/charger. It shall operate over the voltage range of 8 to 33 VDC or FWR. The primary application of the unit shall be to expand fire alarm system capabilities for additional NAC circuits to support ADA requirements and to provide auxiliary power to support system accessories or options. The power supply shall provide four Class “B”, two Class “A”, or two Class “B” and one Class “A” NAC circuit(s). Four Class “A” circuits shall be available with an optional PS-4CA module. The PS-24-8MC unit shall supply up to 200 mA of auxiliary power at is available during both nonalarm and alarm or auxiliary power of not less than 3.5A at 24 VDC during nonalarm. The power supply shall be capable of charging batteries of up to 12 ampere hours per NFPA 72. Input activation options shall be from not less than two NAC circuits or Dry Contact closures. These inputs shall have the capability of being directed to any combination of the four AC circuit outputs. Each NAC circuit output shall be rated at 3 amperes for Class “B” applications or 3 amperes each for Class “A”. Two outputs shall be programmable to generate a steady or Temporal (Code 3) output and or a synchronized strobe or horn output. The power supply shall provide independent loop supervision for either Class “A” or Class “B” FACP NAC circuits and shall have the capability to “steer” all alarm or trouble conditions to either incoming NAC circuit. The units shall have common trouble terminals. The power supply shall be powered from a 120 VAC source with a current consumption of 5 amperes max. The unit shall incorporate short-circuit protection with auto reset. The power supply shall incorporate a built in battery charger for lead acid or gel type batteries with automatic switchover to battery back up in the event of AC power failure. The charger shall incorporate fused protection for the batteries d have the ability to report low battery and/or no battery condition(s). Standby current for battery back up shall be 80 mA max. The power supply shall have the ability to latch trouble LED’s so the circuit in trouble can be identified. The cabinet dimensions shall be 70” H x 12.83” W x 5” D.

WARNING: PLEASE READ THESE SPECIFICATIONS AND INSTALLATION INSTRUCTIONS CAREFULLY BEFORE USING, SPECIFYING OR APPLYING THIS PRODUCT. FAILURE TO COMPLY WITH ANY OF THESE INSTRUCTIONS, CAUTIONS AND WARNINGS COULD RESULT IN IMPROPER APPLICATION, INSTALLATION AND/OR OPERATION OF THESE PRODUCTS IN AN EMERGENCY SITUATION, WHICH COULD RESULT IN PROPERTY DAMAGE, AND SERIOUS INJURY DEATH TO YOU AND OTHERS.

*E: Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Wheelock Inc. standard terms and conditions.

ENCOURAGE AND SUPPORT NICET CERTIFICATION
5 YEAR WARRANTY
in USA

10 PS-24-8MC 08/08
**Features**

- Absorbent Glass Mat (AGM) technology for superior performance
- Valve regulated, spill proof construction allows safe operation in any position
- Power/volume ratio yielding unrivaled energy density
- Rugged impact resistant ABS case and cover (UL94-HB)
- U.L. recognized under file number MH 20845

### Performance Specifications

| Nominal Voltage | .......................................................... | 12 volts (6 cells) |
| Nominal Capacity | .......................................................... |
| 20-hr. | (350mA to 10.50 volts) | ............................................... | 7.00 AH |
| 10-hr. | (650mA to 10.50 volts) | ............................................... | 6.50 AH |
| 5-hr. | (1.2A to 10.20 volts) | ............................................... | 6.00 AH |
| 1-hr. | (4.5A to 9.00 volts) | ............................................... | 4.50 AH |
| 15-min. | (14A to 9.00 volts) | ............................................... | 3.50 AH |
| Approximate Weight | .......................................................... | 4.80 lbs (2.18 kg) |
| Energy Density (20-hr. rate) | .......................................................... | 1.49 W-h/in3 (90.95 W-h/l) |
| Specific Energy (20-hr. rate) | .......................................................... | 17.50 W-h/lb (38.58 W-h/kg) |
| Internal Resistance (approx.) | .......................................................... | 23 milliohms |
| Max Discharge Current (7 Min.) | .......................................................... | 21.0 amperes |
| Max Short-Duration Discharge Current (10 Sec.) | .......................................................... | 70.0 amperes |
| Shelf Life (% of nominal capacity at 68°F (20°C)) | .......................................................... |
| 1 Month | .......................................................... | 97% |
| 3 Months | .......................................................... | 91% |
| 6 Months | .......................................................... | 83% |
| Operating Temperature Range | .......................................................... |
| Charge | .......................................................... | -4°F (-20°C) to 122°F (50°C) |
| Discharge | .......................................................... | -40°F (-40°C) to 140°F (60°C) |
| Case | .......................................................... | ABS Plastic |

**Power-Sonic Chargers** .......................................................... PSC-12800A, 12800A-C

*Note: Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for various dimensions. Height dimensions are subject to change without notice.*
---

**Charging**

- **Applications:** Limit initial current to 2.1A. Charge until battery voltage (at charge) reaches 14.4 to 14.7 volts at 68°F (20°C). Hold at 14.4 to 14.7 until current drops to under 70mA. Battery is fully charged under these conditions, and charger should be disconnected or switched to “float” voltage.

- **St" or “Stand-By” Service:** Hold battery across constant voltage source of 13.8 volts continuously. When held at this voltage, the battery will seek its current level and maintain itself in a fully charged condition.

- Due to the self-discharge characteristics of this type of battery, it is advisable that they be charged within 6 months of storage, otherwise permanent loss of capacity might occur as a result of sulfation.

---

**Discharge Time vs. Discharge Current**

![Discharge Time vs. Discharge Current](image)

- **Final Voltage 10.5V**
- **10.2V**
- **9.6V**
- **9.0V**
- **8.1V**

**Discharge Characteristics**

- **Ambient Temperature:** 20°C (68°F)
- **Terminal Voltage (V):**
  - 14.0
  - 13.0
  - 12.0
  - 11.0
  - 10.0
  - 9.0
  - 8.0
- **Final Voltage:**
  - 14
  - 7.0
- **Discharge Time (min):**
  - 1.2
  - 2.4
  - 6
  - 12
  - 24
  - 48
  - 1
  - 2
  - 4
  - 6
  - 8
  - 10
  - 20
  - 40

**Life Characteristics in Stand-By Use**

- **Ambient Temperature:** 20°C (68°F)
- **Float Charging Voltage:** 2.25 - 2.30 V/Cell
- **Retention Capacity (%):**
  - 0
  - 20
  - 40
  - 60
  - 80
  - 100

**Life Characteristics in Cyclic Use**

- **Discharge Depth 100%**
- **Discharge Depth 50%**
- **Discharge Depth 30%**

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**Further Information**

Please refer to our website www.power-sonic.com for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc.

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**Contact Information**

**DOMESTIC SALES**

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info-domestic-sales@power-sonic.com

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customer-service@power-sonic.com

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support@power-sonic.com

**INTERNATIONAL SALES**

TEL: +1-650-364-5001
FAX: +1-650-365-3662
battery@power-sonic.com

**CORPORATE OFFICE**

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0308 1M
Series ZRS Strobes, ZNS Horn Strobes and Series ZNH Horns

Description:
The Wheelock Series Z notification appliances feature an easy snap on base that is designed to simplify the installation and testing of horns, strobes, and horn/strobes. The separate Series Z snap on base can be pre-wired so circuit wiring can be fully tested before the appliance is installed and before the walls are covered. Once all surrounding work is complete, the appliance can be simply installed by snapping it on the base. Shorting contacts in the base, which provide continuity for circuit testing, are permanently opened when the appliance is installed so any subsequent removal of the appliance will indicate a trouble condition on that circuit at the control panel when circuit supervision is enabled. The same base is used for all Series Z horns, strobes and horn/strobes to provide consistent installation and easy replacement of appliances if required. A locking screw is also included for the appliance to provide extra secure installation.

The Wheelock Series Z appliances incorporate the same dependable circuitry and high efficiency optics that are used in Wheelock RSS strobes, NS horn/strobes and NH horns and have the same high performance ratings. The Series Z appliances are compatible with all UL listed "Regulated" panels and all panels that are compatibility listed with Wheelock RSS, NS and NH appliances.

Features:
- Approvals include: UL Standard 1971, UL Standard 464, New York City (MEA), California State Fire Marshal (CSFM), Factory Mutual (FM) and Chicago (BFP). See approvals by model number in Specifications and Ordering Information
- ADA/NFPA/UFC/ANSI and OSHA 29, Part 1910, 165 compliant
- EZ Mount SNAP design, with separate base plate, provides ability to pre-wire the base and test the circuit wiring before the walls are covered
- The base plate is protected by a disposable cover and the appliances can quickly snap onto the base after the walls are painted.
- Patented EZ Mount Universal Mounting Plate (ZBASE) – uses single plate for ceiling and wall mount installations
- Wall Mount models feature field selectable candela settings of 15/30/75/110cd and 135/185cd
- Ceiling Mount models feature field selectable candela settings of 15/30/75/95cd and 115/177cd
- Synchronize using the Wheelock Sync Modules or panels with built-in Wheelock Patented Sync Protocol
- 12 and 24 VDC models with UL “Regulated Voltage” using filtered DC or unfiltered VRMS input voltage
- Strobes produce 1 flash per second over the “Regulated Voltage” range (ZNS, ZRS models)
- Selectable Continuous Horn or Temporal (Code-3) Tones with selectable 90 or 95 dBA setting (ZNH, ZNS models)
- Selectable 12 or 24VDC in 1 appliance (ZNH model)

ZNS, ZNH and ZRS appliances go onto the base plate in a SNAP.
**General Notes:**

- Strobes are designed to flash at 1 flash per second minimum over their “Regulated Voltage Range”.
- All candela ratings represent minimum effective strobe intensity based on UL Standard 1971.
- Series ZNS Strobe products are listed under UL Standards 1971 and 484 for indoor use with a temperature range of 32°F to 120°F (0°C to 49°C) and maximum humidity of 93% (± 2%).
- Series ZNH horns are listed under UL Standard 464 for audible signal appliances (indoor use only).
- “Regulated Voltage Range” is the newest terminology used by UL to identify the voltage range. Prior to this change, UL used the terminology “Listed Voltage Range”.

<table>
<thead>
<tr>
<th>Table 1: Series ZNS Ratings Per UL Standard 1971</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>ZNS-MCW</td>
</tr>
<tr>
<td>ZNS-MCWH</td>
</tr>
<tr>
<td>ZNS-MCC</td>
</tr>
<tr>
<td>ZNS-MCCH</td>
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</table>

<table>
<thead>
<tr>
<th>Table 2: Series ZNS/ZNH Horn dBA Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>Continuous Horn</td>
</tr>
<tr>
<td>High</td>
</tr>
<tr>
<td>Low</td>
</tr>
<tr>
<td>Code 3 Horn</td>
</tr>
<tr>
<td>High</td>
</tr>
<tr>
<td>Low</td>
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<table>
<thead>
<tr>
<th>Table 3: Series ZNS UL Max. Current*</th>
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<tbody>
<tr>
<td>Series ZNS/ZNH 24 VDC</td>
</tr>
<tr>
<td>Audible Wall Mount Strobe Models</td>
</tr>
<tr>
<td>ZNS-12/24</td>
</tr>
<tr>
<td>High (95) dBA</td>
</tr>
<tr>
<td>16-33 VDC</td>
</tr>
<tr>
<td>0.044</td>
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<tr>
<td>0.074</td>
</tr>
<tr>
<td>0.107</td>
</tr>
<tr>
<td>0.184</td>
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<tr>
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<td>0.209</td>
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<td>0.350</td>
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<td>0.477</td>
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<tr>
<td>Low (90) dBA</td>
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<td>0.066</td>
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<td>0.101</td>
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<td>0.177</td>
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<td>0.232</td>
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<td>0.306</td>
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<td>0.429</td>
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<td>Series ZNS/ZNH 12VDC</td>
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<tr>
<td>Audible ZNH-12/24</td>
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<tr>
<td>High (89) dBA</td>
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<td>8-17.5 VDC</td>
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<td>Low (84) dBA</td>
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<table>
<thead>
<tr>
<th>Table 4: Series ZRS UL Max. Current*</th>
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<tbody>
<tr>
<td>ZRS 24VDC Models</td>
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<td>ZRS - Wall Mount</td>
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<tr>
<td>ZRS - Ceiling Mount</td>
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<tr>
<td>MCW</td>
</tr>
<tr>
<td>15cd</td>
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<td>30cd</td>
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<td>177cd</td>
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<td>16-33 vdc</td>
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<td>0.300</td>
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<td>0.420</td>
</tr>
</tbody>
</table>

* UL max current rating is the maximum RMS current within the listed voltage range (16-33v for 24v units). For strobes the UL max current is usually at the minimum listed voltage (16v for 24v units). For audibles the max current is usually at the maximum listed voltage (33v for 24v units). For unfiltered FWR ratings, see installation instructions.
**Wiring Diagrams**

**ZNS/ZNH APPLIANCE**

FROM PRECEDING APPLIANCE, SM/DSM, PS-12/24-8MP, PS-12/24-8CP OR FACP

+ + TO NEXT APPLIANCE OR EOLR

**ZNS AND ZNH APPLIANCES SYNCHRONIZED WITH DSM MODULE**

DUAL CLASS “A” NAC CIRCUIT WITH NO AUDIBLE SILENCE FEATURE

NOTE: ZNS/ZNH must be set on Code-3 horn tone to achieve synchronized temporal (Code-3) tone. Refer to installation instruction (P83983, P83600 respectively).

* For detail using SM or DSM Sync Module refer to Data Sheet S3000 or Installation Instructions P83123 for SM and P83177 for DSM. For wiring information on the power supplies refer to Installation Instructions P84662 for PS-24-8MC.

**SPECIFICATION & ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Order Code</th>
<th>Strobe</th>
<th>Candela</th>
<th>Sync w/ SM, DSM or PS-24-8MC</th>
<th>24 VDC</th>
<th>12 VDC</th>
<th>Mounting Options#</th>
<th>UL</th>
<th>MEA</th>
<th>CSFM</th>
<th>FM</th>
<th>BFP</th>
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<td>ZNS-MCW-FR</td>
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<td>*</td>
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<tr>
<td>ZNS-MCW-FW</td>
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<td>75/110</td>
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<td>X</td>
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<td>15/30</td>
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<td>B, D, E, F</td>
<td>X</td>
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<td>X</td>
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</tbody>
</table>

**Agency Approvals**

- UL
- MEA
- CSFM
- FM
- BFP

# The ZRS, ZNS and ZNH will mount to single-gang, double-gang, 4" octal, 4" square and 3-1/2" octal back boxes.

**NOTE:** Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Wheelock Inc. standard terms and conditions.
Architects and Engineers Specifications

General

Audible/visual notification appliances shall be listed for indoor use and shall meet the requirements of FCC Part 15 Class B. These appliances shall be listed under UL Standard 1971, (Standard for Safety Signaling Devices for Hearing Impaired) and UL Standard 464 (Fire Protective Signaling). The appliances shall use a Patented Universal EZMount backplate that shall allow mounting to a single-gang, double-gang, 4-inch square, 4" octal, or a 3-1/2" octal backbox. Two wire appliance wiring shall be capable of directly connecting the mounting back plate. Continuity checking of the entire NAC circuit prior to attaching any audible/visual notification appliances shall be allowed. A dust cover shall fit and protect the mounting plate. The dust cover shall be easily removed when the appliance is stalled over the backplate. Removal of an appliance shall result in an alarm condition by the Fire Alarm Control Panel (FACP).

Strobes

Strobe appliances shall produce a minimum flash rate of 60 flashes per minute (1 flash per second) over the Regulated Voltage Range of 16 to 33 VDC and shall incorporate a Xenon flashtube enclosed in a rugged Lexan lens. The strobes shall be available with two four field selectable settings in one unit and shall be rated, per UL 1971, for up to 185 cd for wall mounting and 177 cd for ceiling mounting. The strobes shall operate over an extended temperature range of 32°F to 120°F (0°C to 49°C) and be listed for maximum humidity of 95% RH. Strobe inputs shall be polarized for compatibility with standard reverse polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP).

Audibles and Audible/Strobe Combinations

Horns and horn/strobes shall be listed for indoor use under UL Standard 464. The horns shall be able to produce a continuous output for a temporal code-3 output that can be synchronized. The horns shall have at least 2 sound level settings of 90 and 95 dBA.

Synchronization Modules

When synchronization of strobes or temporal Code-3 audibles is required, the appliances shall be compatible with the Wheelock Series W, DSM Sync Modules Wheelock Power Supplies or other manufacturers panels with built-in Wheelock Patented Sync Protocol. The strobes shall not drift off of synchronization at any time during operation. Audibles and strobes shall be able to be synchronized on 2-wire circuit with the capability to silence the audible if required. If the sync module or power supply fails to operate (i.e., contacts main closed), the strobes shall revert to a non-synchronized flash rate.
(A) UNIVERSAL MOUNTING PLATE

"AS" Mounting

(F) DOUBLE-GANG, FLUSH (BO)

See Notes 4

MAXIMUM NUMBER OF CONDUCTORS

<table>
<thead>
<tr>
<th>AWG #18</th>
<th>AWG #16</th>
<th>AWG #14</th>
<th>AWG #12</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Used with Series AMT, AH, AS, HS4, HS, MT, NH, NS, RSS

(B) SINGLE-GANG, FLUSH (BO)

See Notes 1 & 8

MAXIMUM NUMBER OF CONDUCTORS

<table>
<thead>
<tr>
<th>AWG #18</th>
<th>AWG #16</th>
<th>AWG #14</th>
<th>AWG #12</th>
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<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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</tbody>
</table>

Used with Series AH, AS, MIZ, NH, NS, RSS

(G) DOUBLE-GANG, SURFACE (BO)

See Note 5

MAXIMUM NUMBER OF CONDUCTORS

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<thead>
<tr>
<th>AWG #18</th>
<th>AWG #16</th>
<th>AWG #14</th>
<th>AWG #12</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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</tbody>
</table>

Used with Series AH, AS, NH, NS, RSS

(D) 4" SQUARE, FLUSH (BO)

1-11/16" Deep

See Note 2

MAXIMUM NUMBER OF CONDUCTORS

<table>
<thead>
<tr>
<th>AWG #18</th>
<th>AWG #16</th>
<th>AWG #14</th>
<th>AWG #12</th>
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<tbody>
<tr>
<td>4</td>
<td>4</td>
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</tr>
</tbody>
</table>

Used with Series 31T, 43T, AMT, AH, AS, HS4, HS, MB, MT, MT4, NH, NS, RSS

(H) NATP (Order Codes: Red 8440, White 8441)

5.25"

Thickness: 13/64"

Used with Series AH, AS, NH, NS, RSS

(E) 4" SQUARE, DEEP, FLUSH (BO)

2-1/8" Deep

See Note 3

MAXIMUM NUMBER OF CONDUCTORS

<table>
<thead>
<tr>
<th>AWG #18</th>
<th>AWG #16</th>
<th>AWG #14</th>
<th>AWG #12</th>
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<tbody>
<tr>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
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</tbody>
</table>

Used with Series 31T, 43T, AMT, AH, AS, ET-1010, HS4, HS, MB, MT, MT4, NH, NS, RSS, RSP

(I) WPBB (Order Code: 9014)

For surface mounting AS outdoor products.

MAXIMUM NUMBER OF CONDUCTORS

<table>
<thead>
<tr>
<th>AWG #18</th>
<th>AWG #16</th>
<th>AWG #14</th>
<th>AWG #12</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Used with Series ASWP Weatherproof
### I) BB BACKBOX (Order Codes: Red 2830, Gray 2349)

Standard steel backbox with knockouts for interior surface mounting, onceal conduit mounting or semi-flush applications.

![](image1.png)

See Note 9

<table>
<thead>
<tr>
<th>MAXIMUM NUMBER OF CONDUCTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWG. 8/18</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

Used with Series 31T, 43T, AH, AS, MB, MT4, NH, NS, RSS

### N) DBB BACKBOX (Order Code: 2955)

Standard steel backbox provided with knockouts for interior surface mounting, concealed conduit mounting or semi-flush applications. It is painted to match the signal.

![](image2.png)

<table>
<thead>
<tr>
<th>MAXIMUM NUMBER OF CONDUCTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWG. 8/18</td>
</tr>
<tr>
<td>8</td>
</tr>
</tbody>
</table>

Used with Series 31T, 43T, AMT, AH, AS, ET-1010, HS4, HS, MB, MT, MT4, NH, NS, RSS

### Q) WBB WEATHER RESISTANT BACKBOX (Order Code: Red 2959, White 2411)

Terry die cast housing, threaded conduit hole and knockout for outdoor applications. It is painted to match the signal.

![](image3.png)

<table>
<thead>
<tr>
<th>MAXIMUM NUMBER OF CONDUCTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWG. 8/18</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

Used with Series 31T, 43T, AHWP, ET-1010, MB, MT4

### O) RP-R RETROFIT PLATE (Order Code: 5042)

Use with Series 31T, 43T, AMT, AH, AS, CH70, ET70, ET-1010, ET-1080, HS4, HS, MB, MT, MT4, NH, NS, RSS

![](image4.png)

### P) SBB BACKBOX (Order Code: Red 3204, White 3193)

For surface mounting speakers, chimes, and electronic applications.

![](image5.png)

<table>
<thead>
<tr>
<th>MAXIMUM NUMBER OF CONDUCTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWG. 8/18</td>
</tr>
<tr>
<td>8</td>
</tr>
</tbody>
</table>

Used with Series 43T, AMT, CH70, ET70, ET-1080, HS4, HS, MB, MT, NH, NS, RSS

### Q) 4" SQUARE DEEP W/ EXTENSION RING, FLUSH (BO)

Ext Ring Depth: 1-1/2", 2-1/8"}

![](image6.png)

<table>
<thead>
<tr>
<th>MAXIMUM NUMBER OF CONDUCTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWG. 8/18</td>
</tr>
<tr>
<td>8</td>
</tr>
</tbody>
</table>

Used with Series CH70, CH90, ET70, ET100, ET90, ET1080

---

**See Note 10**

**See Note 11**

**See Note 6**
(R) SFP SEMI-FLUSH PLATE (Order Codes: Red 2957, White 2958)
Stamped aluminum surface wall plate which mounts behind the basic unit and serves to cover recessed backboxes in semi-flush mounting applications. It is painted to match the signal.

Used with Series 31T, 43T, AMT, AH, AS, CH70, E70, ET70, ET-1010, ET-1080, HS4, HS, MB, MT, MT4, NH, NS, RSS

(V) SSB-4 CEILING SUPPORT BRIDGE (Order Code: 3380)
Provisions for (4) J-nuts #8-32 ib 3-7/8" square Material: Steel

Used with Series CH70, CH90, E70, ET770, E90, ET90, ET-1080

(S) AP ADAPTER PLATE (Order Code: 2961)
Stamped aluminum adapter plate designed for applications where semi-flush installations cannot be used. The plate can be mounted to standard octagon or round backboxes single or double gang boxes or plaster rings. The backbox and basic unit are then fastened to the plate. This type mounting is referred to as a concealed conduit installation. It is painted to match the signal.

Used with Series 43T, MB

(W) 4-7/16" SQUARE, DEEP SURFACE (B0)
See Note 7

MAXIMUM NUMBER OF CONDUCTORS

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Used with Series SM, DSM

(T) WPSBB-R (Order Codes: Red 9751, White 3033)

Used with Series RSSWP Weather-proof

MAXIMUM NUMBER OF CONDUCTORS

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<th>AWG #16</th>
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<tbody>
<tr>
<td>8</td>
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</table>

Used with Series SM, DSM

(X) SHBB SQUARE, SURFACE BACKBOX (Order Codes: Red 7254, White 7255)

Used with Series 43T, AH, AS, MB, NH, NS, RSS

(U) 5" SQUARE BACKBOX W/ EXTENSION RING, FLUSH (BO)

Used with Series CH70, CH90, E70, ET770, E90, ET90, ET-1080

(Y) SER-R SQUARE SEMI-FLUSH EXTENSION RING (Order Codes: Red 3045, White 3049)

Used with Series CH70, E70, ET770
(GG) WFP PLATE (Order Codes: Red 4696, White 4697)

(HH) WFPA PLATE (Order Codes: Red 4696, White 4697)

BACKBOX DIMENSIONS FOR MPS

4-3/4" H x 3-1/4" W x 2-1/4" D

GENERAL NOTES

1. FIGURE B IS TYPICAL OF A STEEL CITY LXM-WOW BOX OR EQUAL. FIGURE B SHOULD BE A 3.5" DEEP BACKBOX FOR CONDUIT INSTALLATIONS AND IS TYPICAL OF A STEEL CITY CY-5 BOX OR EQUAL.
2. FIGURE D IS TYPICAL OF A STEEL CITY 52151 BOX OR EQUAL.
3. FIGURE E IS TYPICAL OF A STEEL CITY 52171 BOX OR EQUAL.
4. FIGURE F IS TYPICAL OF TWO STEEL CITY LXM-WOW BOXES OR EQUAL.
5. FIGURE G IS TYPICAL OF A WIREMOLD 5748-2 BOX OR EQUAL.
6. FIGURE Q IS TYPICAL OF A STEEL CITY 52171 BOX WITH A STEEL CITY 53151 EXTENSION RING OR EQUAL.
7. FIGURE W IS TYPICAL OF A STEEL CITY 72171-1 BOX OR EQUAL.
8. USE 3.5 DEEP BACKBOX ON ALL MIZ PRODUCTS WHEN EMT CONDUIT IS USED.
9. WHEN USED WITH AC HORN (J), "BB" MUST BE USED FOR SURFACE MOUNT.
10. HS4, HS, MT OR MTWP STROBE ARE FOR OUTDOOR MOUNTING.
11. USE WITH SERIES RSSP.
12. FIGURE U IS TYPICAL OF A RANDL INDUSTRIES BACKBOX. ("Total Number of conductors shall be in accordance with NEC table 314.16 (B)").
<table>
<thead>
<tr>
<th>MOUNTING MATRIX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Universal Mounting Plate</strong></td>
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<tr>
<td><strong>1-GANG x 2&quot; Deep - Flush (BO) Note 1 &amp; 8</strong></td>
</tr>
<tr>
<td><strong>4&quot; x 4&quot; x 1.5&quot; Deep - Flush (BO) Note 2</strong></td>
</tr>
<tr>
<td><strong>4&quot; x 4&quot; x 2.125 Deep - Flush (BO) Note 3</strong></td>
</tr>
<tr>
<td><strong>2-Gang x 3.5&quot; Deep - Flush (BO) Note 4 &amp; 8</strong></td>
</tr>
<tr>
<td><strong>2-Gang x 1.75&quot; Deep - Surface (BO) Note 5</strong></td>
</tr>
<tr>
<td><strong>NATP Trim Plate</strong></td>
</tr>
<tr>
<td><strong>VPBB-R Weatherproof Backbox for ASWP</strong></td>
</tr>
<tr>
<td><strong>3B Surface (WSI) Note 9</strong></td>
</tr>
<tr>
<td><strong>MWB Weatherproof (WSI)</strong></td>
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<tr>
<td><strong>SP Adapter (WSI) for Square Products</strong></td>
</tr>
<tr>
<td><strong>IOB Surface &amp; Weatherproof (WSI) Note 10</strong></td>
</tr>
<tr>
<td><strong>DBB Surface (WSI)</strong></td>
</tr>
<tr>
<td><strong>RP-R Retrofit Plate</strong></td>
</tr>
<tr>
<td><strong>SB Surface (WSI) Note 11</strong></td>
</tr>
<tr>
<td><strong>4&quot; x 4&quot; x 2.125&quot; Box w/ 1.5&quot; Extension Ring - Flush (BO) Note 8</strong></td>
</tr>
<tr>
<td><strong>SPT Semi-Flush Plate (WSI)</strong></td>
</tr>
<tr>
<td><strong>AD Adapter Plate (WSI)</strong></td>
</tr>
<tr>
<td><strong>VPBB-R Weatherproof Backbox for RSSWP</strong></td>
</tr>
<tr>
<td><strong>3&quot; Square Backbox w/ Extension Ring, Flush (BO)</strong></td>
</tr>
<tr>
<td><strong>SBB-4 Ceiling (WSI) Support Bridge</strong></td>
</tr>
<tr>
<td><strong>4.6875&quot; x 4.6875&quot; x 2.125&quot; Deep Surface (BO)</strong></td>
</tr>
<tr>
<td><strong>SHBB (WSI) Shallow Surface</strong></td>
</tr>
<tr>
<td><strong>3ER Semi-Flush Extension Ring (Retrofit Appl.)</strong></td>
</tr>
<tr>
<td><strong>SIL-2 Surface (WSI) Note 11</strong></td>
</tr>
<tr>
<td><strong>E60SB Backbox for E50 Speaker</strong></td>
</tr>
<tr>
<td><strong>E60SSB Backbox for E50 Speaker Strobe</strong></td>
</tr>
<tr>
<td><strong>SSB-8&quot; Speaker Support Tile Bridge</strong></td>
</tr>
<tr>
<td><strong>CBB-8&quot; Ceiling Speaker Backbox</strong></td>
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<tr>
<td><strong>E60 Extension Ring</strong></td>
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<tr>
<td><strong>ZBB</strong></td>
</tr>
</tbody>
</table>

**NOTES**

- **JUNCTIONS**: The mounting options figures show the maximum number of field wires (conductors) that can enter the backbox with each mounting option. If these limits are exceeded, there may be insufficient space in the backbox to accommodate field wires and stresses from the wires could damage the product.
- **Mounting**: The limits shown for each mounting option comply with the National Electrical Code (NEC). Wheelock recommends the largest backbox option and the use of approved stranded field wires whenever possible, to provide additional room for easy installation and minimum stress on the product when wiring.
- **Mounting**: Check that the installed product will have sufficient clearance and wiring room prior to installing backboxes and conduit, especially if sheathed multiconductor cable or 3/4" conduit fittings are used.
- **Mounting**: Hardware for each mounting option is supplied.
- **Mounting**: Entrances to the backbox should be selected to provide sufficient wiring clearance for the installed product. When extension rings are required, conduit should enter through the backbox, not the extension ring. Use Steel City #53151 (1-1/2" p) or #53171 (2-1/8" deep) extension rings (as noted in the mounting options) or equal with the same cut-out area. Then terminating field wires, do not use more lead length than required. Excess lead length could result in insufficient space for the appliance.
- **Mounting**: Care and proper techniques to position the field wires in the backbox so that they use minimum space and produce mumm stress on the product. This is especially important for stiff, heavy gauge wires and wires with thick insulation or stringing.
- **Mounting**: Do not pass additional wires (used for other than the appliance) through the backbox "unless the backbox is of sufficient to permit additional wiring as described in NEC 314.16 (B)". Such additional wires could result in insufficient wiring space for the appliance.

E: Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Wheelex Inc. standard terms and conditions.
# BACKBOX MOUNTING HEIGHTS

for WHEELOCK WALL MOUNTED HORIZONTAL STROBE APPLIANCES

**NFPA-72 (2002)**

7.5.4* Appliance Location. Wall-mounted appliances shall be mounted such that the entire lens is not less than 2.0 m (80 in.) and not greater than 2.4 m (96 in) above the finished floor.

<table>
<thead>
<tr>
<th>Backbox Mounting Options*</th>
<th>Series AS/AH Audible Strobe</th>
<th>Series RSSP Flush and Surface Retrofit Plate</th>
<th>Series NS Horn Strobe</th>
<th>Series Z and RSS Strobe</th>
<th>Series MT and AMT Multitone Strobe</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B) 1-Gang x 2” Deep - Flush (BO)</td>
<td>80 IN 6 IN</td>
<td>80 IN 6 IN</td>
<td>80 IN 6 IN</td>
<td>80 IN 6 IN</td>
<td>80 IN 6 IN</td>
</tr>
<tr>
<td>(D) 4” x 4” x 1.5” Deep - Flush (BO)</td>
<td>77 7/8 9 7/6</td>
<td>78 1/2 8 7/6</td>
<td>79 1/2 7 7/8</td>
<td>79 1/2 6 7/8</td>
<td>79 1/2 5 1/2</td>
</tr>
<tr>
<td>(E) 4” x 4” x 2.125” Deep - Flush (BO)</td>
<td>77 7/8 9 7/6</td>
<td>78 1/2 8 7/6</td>
<td>79 1/2 7 7/8</td>
<td>79 1/2 6 7/8</td>
<td>79 1/2 5 1/2</td>
</tr>
<tr>
<td>(F) 2-Gang x 3.5” Deep - Flush (BO)</td>
<td>77 7/8 8 7/6</td>
<td>78 1/2 7 7/8</td>
<td>79 1/2 6 7/8</td>
<td>80 1/2 5 7/8</td>
<td>80 1/2 5 7/8</td>
</tr>
<tr>
<td>(G) 2-Gang x 1.75” Deep - Surface (BO)</td>
<td>77 7/8 8 7/6</td>
<td>78 1/2 7 7/8</td>
<td>79 1/2 6 7/8</td>
<td>80 1/2 5 7/8</td>
<td>80 1/2 5 7/8</td>
</tr>
<tr>
<td>(M) IOB Surface &amp; Weatherproof (WSI)</td>
<td>78 3/4 8 7/6</td>
<td>78 1/2 7 7/8</td>
<td>79 1/2 6 7/8</td>
<td>80 1/2 5 7/8</td>
<td>80 1/2 5 7/8</td>
</tr>
<tr>
<td>(P) SBB Surface (WSI)</td>
<td>79 1/2 6 7/8</td>
<td>79 1/2 6 7/8</td>
<td>79 1/2 6 7/8</td>
<td>79 1/2 6 7/8</td>
<td>79 1/2 6 7/8</td>
</tr>
<tr>
<td>(Q) 4” x 4” x 2.125” Box w/ 1.5” Extension Ring - Flush (BO)</td>
<td>69 1/2 8 7/6</td>
<td>77 1/2 7 7/8</td>
<td>78 1/2 6 7/8</td>
<td>79 1/2 5 7/8</td>
<td>79 1/2 5 7/8</td>
</tr>
<tr>
<td>(U) 5” Square Backbox w/ Extension Ring, Flush (BO)</td>
<td>76 7/8 9 7/6</td>
<td>78 1/2 7 7/8</td>
<td>79 1/2 6 7/8</td>
<td>79 1/2 5 7/8</td>
<td></td>
</tr>
<tr>
<td>(X) SHBB (WSI) Shallow Surface</td>
<td>78 3/4 8 7/6</td>
<td>78 1/2 7 7/8</td>
<td>79 1/2 6 7/8</td>
<td>79 1/2 5 7/8</td>
<td></td>
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<tr>
<td>(Z) SBL-2 Surface (WSI)</td>
<td>78 3/4 8 7/6</td>
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<td></td>
</tr>
<tr>
<td>(FF) ZBB</td>
<td>78 3/4 8 7/6</td>
<td>78 1/2 7 7/8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Backbox Mounting Options*</th>
<th>Series CH70 Chime Strobe</th>
<th>Series ET80 Speaker Strobe</th>
<th>Series E70 Speaker Strobe</th>
<th>Series ET70 Speaker Strobe</th>
<th>Series SA-705 Self Amplified Speaker Strobe</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P) SBB Surface (WSI)</td>
<td>80 IN 6 IN</td>
<td>80 IN 6 IN</td>
<td>80 IN 6 IN</td>
<td>80 IN 6 IN</td>
<td>80 IN 6 IN</td>
</tr>
<tr>
<td>(C) 4” x 4” x 2.125” Box w/ 1.5” Extension Ring - Flush (BO)</td>
<td>77 1/2 7 7/8</td>
<td>80 6 7/8</td>
<td>78 1/2 7 7/8</td>
<td>78 1/2 7 7/8</td>
<td>80 6 7/8</td>
</tr>
<tr>
<td>(U) 5” Square Backbox w/ Extension Ring - Flush (BO)</td>
<td>76 7/8 7 7/8</td>
<td>79 1/2 5 7/8</td>
<td>78 1/2 7 7/8</td>
<td>78 1/2 7 7/8</td>
<td>79 1/2 5 7/8</td>
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<tr>
<td>(X) SHBB (WSI) Shallow Surface</td>
<td>78 3/4 7 7/8</td>
<td>79 1/2 5 7/8</td>
<td>78 1/2 7 7/8</td>
<td>78 1/2 7 7/8</td>
<td>79 1/2 5 7/8</td>
</tr>
<tr>
<td>(Y) 4” x 4” x 1.5” Box w/ 1.5” Extension Ring Plate - Flush (BO)</td>
<td>78 1/2 7 7/8</td>
<td>80 6 7/8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Measured from Bottom of Backbox

NOTES:
(BO) = By Others
(WSI) = Wheelock Product
Design Select Exit Sign

EgressTec’s new Design Select Exit Signs are the ultimate in style, durability and energy efficiency for today’s fire safety signs. Based on proprietary LEC (Light Emitting Capacitor) technology, our industry leading DirectVu trade; LEC lamp is less than half the thickness of a credit card and provides unsurpassed visibility and uniformity. Combine that with over 35 Class A finishes and even Exit Signs can be beautiful. The solid state design delivers reliability and maintenance free operation.

Slim Profile, Superior Style
At less than 3/8" thick, clear design and availability in over 35 Class A finishes Design Select Exit Signs deliver a new look in Emergency Exit Signs that complement any building. Changeable finishes for design flexibility. The New Standard for Energy Efficiency
Design Select Exit Signs use less than $0.25 of electricity per year. Their AC energy draw of 0.20 watt AC is up to 20 times more efficient than LED Exit Signs.

Unsurpassed Illumination Uniformity
The EgressTec DirectVu LEC lamp is made up of millions solid state light sources which have a life of more than 20 years. That’s up to 10 times the useful life of LED Exit Signs.

Industry Leading Visibility
Superior luminance in clear air and smoke is achieved by tuning the DirectVu Lamp for optimal visibility. The LEC lamp provides a non-glare, direct-view light source that is easily seen. Importantly the green light is not mistaken as a fire source through smoke.

Installs in Minutes
The adaptor kit for existing recessed housings and the quick attach Exit Sign make for easy installation.

Maintenance Free
All this adds up to a maintenance free exit sign. Solid state reliability.

All with an Industry Leading 10 Year Warranty

Privacy Statment
Technology

Light Emitting Capacitor (LEC) Technology  There are four main operating components in a LEC lamp. (1) a front electrode layer, (2) a rear electrode layer, (3) a dielectric insulating layer and (4) the light emitting crystals layer when an alternative current (standard household AC) is applied to the front and rear (1 and 2) electrode layers of the lamp an electro-magnetic (EM) field is created. This EM field in-turn excites the light emitting crystals layer (4) which products a luminous energy.  EgressTec Exit Signs exclusively use state-of-the-art LEC technology which is the next generation of electroluminescent light. These safety signs are the safest, most dependable and most energy efficient available. The LEC lamp lights up when the light emitting crystals are excited by an alternating electrical current (AC). This direct conversion of electric energy to light produces no heat or ultraviolet radiation.

Technology Highlights

Safest

- No diminishing light uniformity issues  •  Direct view crystals provide clear sign readability  •  Superior luminance in clear air and smoke  •  LEC lamp produces no heat  •  No UV light; important for museums and art galleries  •  Most Dependable  •  Single lamp design -- no extra elements to fail  •  Most Energy Efficient  •  Lamp uses less than $0.25 of electricity each year

Privacy Statment