Fire Watch 400™

Owner's Manual

13400-120 / 13400-240
Fire Alarm System Control Unit

P/N 446613
Issue I Rev. A
3/99

FARADAY

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Control Unit Limitations

This control unit will not show an alarm condition without compatible initiating devices (smoke detectors, etc.) and notification devices (horn, lights, etc.) connected to it. Electrical ratings of the initiating and notification appliances must be compatible with the electrical ratings of the control unit and must be properly interconnected. The wiring used for interconnection must be large enough to carry the total current by all appliances without excessive voltage drop.

This control unit must be connected to a dedicated primary electrical source that has a high degree of reliability and adequate capacity for this control unit. The only means of disconnecting this power source shall be available only to authorized personnel and clearly marked "Fire Alarm Circuit Control."

This control unit must also have connected to it, a battery set (24V) that has enough capacity to properly operate the system for 24 or 60 (depending on system type) hours standby and 5 minutes alarm per NFPA 72 (chapter 1). These batteries do lose capacity with age. Batteries must be replaced when they fail to provide the control unit with the required standby and alarm power or after 4 years, whichever happens first. These batteries must be checked for performance at least two (2) times per year or more often if local requirements dictate it.

Fire alarm control units cannot last forever. Even though this control unit was made to last for the expected life of the Fire Alarm Systems, any part could fail at any time. Therefore, a regular test program should be followed and documented to make sure that each part of the system is tested as per Chapter 7 of NFPA 72 or more often if dictated by local code requirements. Units that have malfunctioned must be replaced or repaired immediately by factory authorized service personnel.

Note: This control unit is designed to show an alarm condition when the initiating devices connected to it detect specific conditions. These conditions may or may not represent a life threatening condition (i.e., burnt toast may not be a life threatening condition but may cause an initiating device to indicate an alarm condition). Also, evacuation of a building or area may unnecessarily subject individuals to an unnecessary hazard. Therefore, it is most important that building owner, manager or representative promulgate, distribute and/or post instructions describing steps to be taken when the fire alarm control unit signals an alarm condition. These instructions should be developed in cooperation and conformance with representatives of the local authority having jurisdiction.
As a backup or precautionary measure, it is strongly suggested that one of these steps should be to notify the local fire department of an abnormal condition even where the city tie option (or similar device) is included in the system.

Installation and Warranty Information

Warranty Information: Faraday (the Manufacturer) provides a limited warranty to the Original Purchaser of this product. The Original Purchaser is the party to whom the Manufacturer issued its Sales Order, Generally, the Manufacturer's distribution. In order to preserve this warranty, it is important that the product be serviced only by persons who have been properly trained and authorized by the Manufacturer.

Other parties involved in the installation of this product may have also provided a warranty which may be different than that of the Manufacturer. The Manufacturer will only be responsible to the Original Purchaser and only for the Manufacturer's own warranty. For further information regarding the Manufacturer's warranty, contact the Original Purchaser.

Owner's Manual: The owner's manual does not purport to cover all the details or variations in the equipment described, nor does it provide for every possible contingency to be met in connection with installation, operation and maintenance. All specifications subject to change without notice. Should further information be desired or should particular problems arise which are not covered sufficiently, the matter should be referred to the Installer or Original Purchaser listed below.

Installer Information:

Company: _____ Installer: _____ Phone: _____

Address: _____ City: _____ State: ____ Zip: _____

Date Installed: _____ Installer's Signature: _____

Original Purchaser Information:

Company: _____ Phone: _____

Address: _____ City: _____ State: ____ Zip: _____

Purchaser's Purchase Order Number: _____

Date of Purchase: _____

Faraday Sales Order Acknowledgment Number: _____

Original Purchaser's Signature: _____

Preface

Along with the use of this Owner's Manual, the appropriate following standards and the manufacturers' instructions for initiating and signaling devices should be used to install and maintain a functioning Fire Alarm Signaling System.

NFPA 70-1993 National Electrical Code

NFPA 72-1993 National Fire Alarm Code

NFPA 101-1994 Life Safety Code

Other Standards - Contact the authority having jurisdiction for other standards that may apply.

For Publications, contact:

National Fire Protection Association
Batterymarch Park
Quincy, MA 02269

Section I : Descriptions

This section provides an overview of the 13400, including the following:

- Introduction
- Minimum control unit configuration
- Optional control unit configurations
- Optional Devices
- General operating parameters
- General Specifications

Introduction

The 13400 is a conventional, modular fire alarm control unit with the following standard features and options:

Control Unit Features

- 4 Class B (Style B) Initiating Device Circuits (IDC).
- 2 Class B (Style Y) Notification Appliance Circuits (NAC).
- 2.25 amps of Notification Appliance Power.
- 200ma of resettable and/or non-resettable power.
- .5 amps unfiltered Auxiliary Power (subtracted from NAC Power)
- General alarm operation.
- Dry contact status relay outputs, form-C, rated 2.0A at 30VDC / 0.5A at 30 VAC, resistive, (alarm and trouble).
- Operates one supervised remote LED annunciator.
- Battery charger with no and low battery supervision.
- Push button switches for: system reset, trouble silence, alarm silence, lamp test, city tie disable, zone/sig disable, general alarm, and history recall.
- Ground fault detection, positive and negative.
- Dual level IDC operation for waterflow (zone 4 only) and supervisory devices.
- Automatic NAC short circuit disconnect circuitry.

Settings for

- Alarm verification selectable for each IDC.
- Manual alarm silence with 0, or 1 minute inhibit.
- Steady output pattern selectable by NAC to be silenceable or non-silenceable.
- "Quick Test" by system.
- Silent or audible "Quick Test".

Expansions and Options

- Alarm Relay Board providing a form "C", 2.0 A at 30 VDC or 0.5 A at 30 VAC, resistive, fire alarm contact from each initiating device circuit and additional alarm and trouble contacts.
- Semi-flush mounting trim ring.
- Remote LED Annunciator Driver with zone alarm outputs.
- City Tie with Local Energy/Remote Station connections

Minimum Control Unit Configuration

The minimum configuration consists of the following components:

- Sub-Chassis Assembly
  - Chassis
  - Main Board
  - Operator Interface Board
- Transformer Assembly
- Enclosure
- Hardware

The basic control unit includes 4 Class B, Style B, initiating device circuits. All are adaptable to accept smoke detectors, manual stations, or supervisory contacts and zone 4 can be programmed to accept waterflow switches. All may be programmed for alarm verification. Each zone may be individually disabled.

The minimum control unit configuration also includes 2 Class B, Style Y, notification appliance circuits. Each is rated at 1.5A at 24VDC maximum, with a total of 2.25A at 24VDC available. Output pattern is steady. Each NAC may be selected for silencable or non-silenceable operation.

As standard features, the minimum configuration control unit includes the following:

- General alarm operation
- Drill Test operation
- History Recall
- Manual alarm silence with 0, or 1 minute inhibit function
- System Reset, Alarm Silence, Trouble Silence, General Alarm, History Recall, Lamp Test, City Tie Disable, Zone/sig Disable and Quick Test switches

Also included in the minimum control unit are:

- Resettable and non-resettable power outputs for 4-wire smoke detectors, (maximum .2 amps for resettable and non-resettable outputs combined)
- Non-resettable power output for auxiliary devices, (maximum .5 amps - must not exceed 2.25 amps when combined with signal power)

Main Board

The Main Board is mounted in the sub-chassis assembly which mounts in the backbox and provides the termination points for the power inputs and outputs, status relays and the four initiating device circuits and two notification appliance circuits. This board carries the main microcontroller, buzzer and the control unit configuration. The power supply float charges the sealed lead-acid batteries. The Main Board also contains the ground fault detection.

Operator Interface Board

The Operator Interface Board mounts on the back of the door and is connected to the Main Board by a ribbon cable. The indicators are light emitting diodes (LED's), visible

from the front of the control unit and displays system status LED's and the four initiating device circuits. Push buttons are used for operator interaction and are accessed by opening the door.

Transformer Assembly

The Transformer Assembly plugs into the Main Board and is mounted on the side of the chassis which mounts in the backbox. The Transformer Assembly comes in a 120 VAC or a 240 VAC version.

Enclosure

The enclosure is manufactured of painted sheet steel and is sized to fit between 16" O.C. wall studs and to be recessable in a semi-flush installation. Because of the need to segregate high voltage and nonpower-limited circuits from power-limited circuits, there are a limited number of acceptable conduit entry points. Combination 1/2 or 3/4 inch conduit knockouts are provided in the top and bottom of the backbox. The door assembly mounts with slip hinges and locks for service access. A 12 Amp Hour battery set may mounted in the bottom of the enclosure. Batteries larger than 12 AH require an external UL listed battery cabinet.

Optional Control Unit Configuration

Operation of the base 13400 control unit is expandable as follows.

Alarm Relay Board (P/N 13402)

The Alarm Relay Board provides 1 system alarm, 1 system trouble and 4 zone alarm relays with form "C" contacts, rated for 2 amps at 30 VDC and .5 amps at 30 VAC. The board mounts to the Main Board of the 13400 Fire Alarm System Control Unit.

City Tie Board (P/N 13403)

The City Tie Board provides a supervised output for local energy municipal box transmitter and alarm and trouble reverse polarity circuits. There is also a disable switch and a trouble LED. The alarm reverse polarity output can be configured to open on trouble if no alarm exists. The board mounts to the Main Board of the 13400 Fire Alarm System Control Unit.

Remote LED Annunciator Driver Board (P/N 13406)

The 13400 control unit provides an optional drive for a remote annunciator. While the remote interface is via individual drive circuits, the physical connection between the control unit and the annunciator uses parallel data and draws all power from the control unit. The control unit will supervise 1 remote unit. Annunciator wiring is supervised for open conditions.. The board mounts to the Main Board of the 13400 Fire Alarm System Control Unit.

Optional Devices

In addition to the components that are part of the control unit configuration, the 13400 provides for the following devices.

Remote LED Annunciator (P/N 7704 or 7704-01)

The Remote LED Annunciator provides 4 zone alarm LED's with an area for custom labeling. The annunciator mounts to a vertically mounted 2-gang box, 2" deep minimum.

Operating Parameters

The 13400 has the following general operating parameters.

Initiating Device Circuits

The basic 13400 control unit provides 4 IDCs for conventional initiating devices (smoke detectors, manual pull stations, waterflow switches and supervisory switches). IDCs are Class B (Style B). Each IDC may be disabled from the keypad accessible to the skilled user. Disabling a circuit causes a trouble LED in the associated circuit and prevents an alarm condition from that circuit.

Alarm Verification

Alarm verification is provided and is selectable by IDC. To disable alarm verification on all IDCs, set the no verify switch to the "On" position for each IDC (Alarm from any other zone during verification cycle causes an alarm). The detector reset time is 7 seconds with a restart time of 3 seconds. The alarm confirmation time is 120 seconds.

Waterflow Alarm

IDC 4 is convertible to a waterflow zone (i.e., it is not silenceable). The selection of waterflow zone permits the IDC to be wired so that sprinkler supervision is brought in on the same IDC. The IDCs discriminate waterflow switches (short circuit) as waterflow alarms and supervisory switches (with P/N 10822) as supervisory alarms.

Supervisory Alarm

Each of the IDCs is convertible to sprinkler supervisory function, with unique indication. The supervisory switches are wired with a series resistor (P/N 10822) when configured as a supervisory zone. See Waterflow Alarms above.

Ground Fault

The 13400 control unit provides ground fault detection, both positive and negative. There is one ground fault indication LED (DS15 on Main Board). The LED flashes to indicate a positive ground fault and remains on steady to indicate a negative ground fault condition. A single ground fault triggers the system buzzer and system trouble indicator, but does not interfere with the correct operation of the control unit. The whole control unit uses a ground fault reference of approximately 12V. In the 12V ground

system the mid-point of the system supply rails is referenced to ground via high impedance.

Quick Test

The 13400 provides a "quick test" feature to assist with testing the control unit. A quick test is performed on a system basis. After placing the system in Quick Test mode, a zone alarm will cause the system to respond according to normal operation for several seconds and then automatically perform a system reset. Any notification circuits not enabled will not sound. Alarm verification is disabled during quick test.

Note: If the control unit is left in quick test over one hour the control unit resets and disregards the quick test operation.

History Recall

The last zone alarm and last zone trouble or supervisory received can be recalled to the display by operating a front control unit push-button.

Batteries

The primary stage is responsible for charging and supervising the standby batteries. The output of the primary stage is at approximately 28V and is designed to charge 24V lead acid (gel-cell) batteries of up to 17.2 AH capacity. The charger is not designed to charge nickel cadmium batteries.

The control unit is protected from permanent damage by incorrect (reverse) battery installation by means of a PCB-mounted fuse. The fuse is not user-replaceable. If a battery is connected in reverse, the fuse will blow and a trouble will be indicated.

Note: If this occurs, the unit must be returned for repair.

The battery set is supervised for disconnect. The battery is also supervised for low battery voltage.

General Specifications

The 13400 is a small, processor-controlled fire alarm control unit incorporating most commonly used features as standard or add-on equipment.

Environmental

Operating temperature
- Normal: 68-77° F (20 - 25° C)
- Extreme: 32 - 120° F (0 - 49° C) up to 3 hours

Relative humidity
- Extreme: 85% @ 86° F up to 24 hours

Primary Input Voltage

Primary Input Voltage:
- 13400-120 120 VAC (50/60 Hz) nominal
- 13400-240 240 VAC (50/60 Hz) nominal

Maximum primary input current:
- 13400-120 1.00 A at 120 VAC
- 13400-240 .5 A at 240 VAC

Secondary and Trouble Power Supply

24 volt lead-acid battery set:
Maximum Charge Voltage: 28 VDC
Maximum Charge Current: 1 A
Maximum Input Current: 3A
Battery capacity: 7-17.2 AH

Power Outputs

Current: 200 milliamp maximum (Total of all resettable (R) and non-resettable (NR) power outputs - annunciator power, four-wire smoke power and auxiliary relay board power)
.5 amp Auxiliary Power Output (must be subtracted from NAC power)

Non-Resettable Power Outputs (NR+, NR-)
- Power limited
- Voltage: 24 VDC nominal
- Current: 200mA max.
- Ripple: 1 VAC maximum

Resettable Power Output (R+,R-)
- Power limited
- Voltage: 24 VDC nominal
- Current: 200mA max.
- Ripple: 1 VAC maximum

Auxiliary Power Output (AUX+, AUX-)
- Power limited
- Voltage: 24 VDC nominal
- Current: 500mA max.
- Ripple: 15 VAC maximum

Initiating Device Circuits

Power limited
Four Class B, Style B zones minimum
Standby voltage range: 16-27 VDC
Maximum standby current: 10 mA.
Maximum standby detector current: 3.0 mA @ 24 VDC
Maximum alarm current: 66 mA
Maximum ripple: 1 VAC
Maximum wire loop resistance: 100 ohms

Notification Appliance Circuits

Power limited
Maximum Standby Current: 1.0 mA
Alarm Voltage: 24 VDC nominal
Maximum Alarm Current: 1.5 A
Maximum Ripple: 15 VAC
Maximum Loop Drop Voltage: 1.0 VDC

Status Relays (alarm and trouble)

For connection to Power limited sources only
Contact Rating: 2A, 30 VDC maximum, resistive
0.5, 30 VAC maximum, resistive

City Tie (Option)

Reverse Polarity

Power limited
Voltage: 24 VDC nominal
Alarm Tie Current: 0.010 amp maximum
Trouble Tie Current: .010 amp maximum
Ripple: 1 VAC maximum

Local Energy

Non-Power limited
Voltage: 24 VDC nominal
Standby Current: 0.014 amp. maximum
Alarm Current: 0.51 amp maximum
Ripple: 1 VAC maximum
Maximum wire loop resistance: 30
Trip coil impedance: 14.5 ohms

Remote LED Annunciator Driver Circuit (Option)

Power limited
Voltage: 24 VDC nominal
Maximum Current: 80mA.
Maximum wire loop resistance: 100ohms

Alarm Zone Relays (Option)

For connection to Power limited sources only
Contact Rating: 2A, 30 VDC maximum, resistive
0.5 A, 30 VAC maximum, resistive

Section II : Operation Instructions

The following sections describe how to operate the 13400 once it is installed and operational.

Alarm Operation

An **alarm** is indicated by the following conditions:

- A red Zone *Alarm* LED lights and flashes.
- The System *Alarm* LED lights and flashes.
- The panel buzzer sounds a rapid pulsating tone.
- The building notification appliances activate (if enabled).
- If a remote annunciator is used, the alarm condition is also indicated at the remote location.
- If a remote station type of city connection is used, an alarm signal is sent to the remote station.
- If a local energy type of city connection is used, an alarm signal is sent to the fire department.
- The Alarm Relay also activates to serve various supplementary functions.

To silence the building notification appliances:

Momentarily press the **Alarm Silence** button. The red *Alarm* LED will stop flashing and will light steady, indicating the notification appliances are off. An alarm condition in additional IDCs will re-activate the building notification appliances. They may again be silenced by pressing the **Alarm Silence** button.

Note: Waterflow IDCs cannot be silenced and NACs programmed for alarm silence inhibit can not be silenced until after the time delay.

To reset after an alarm:

- First, the device that caused the alarm must be reset.
  Manual Pull Station - Reset the manual pull station using the instructions provided with the station.
  Heat Detector - For restorable type detectors, the affected area must be restored to a lower temperature. For non-restorable type detectors, the heat detector or the heat detector element must be replaced.
  Smoke Detector - The affected area must be cleared of smoke and the detector should be cleaned.
  Waterflow Switch - Replace or restore the activated sprinkler head, and the sprinkler system must be restored to its normal condition.
- Momentarily press the **System Reset** button.
- If a local energy type of city connection is used, the master box must be reset to clear the trouble condition.
- If an alarm condition still exists, notify the proper personnel for servicing the system immediately.

Trouble Operation

A **trouble** is indicated by the following conditions:

- The yellow System *Trouble* LED flashes.
- The trouble buzzer sounds a slow pulsating tone.
- The yellow Zone *Trouble* LED flashes
- If a remote station type of city connection is used, a trouble signal is sent to the remote station.
- The trouble relay will also activate to serve various functions.

To silence the trouble buzzer:

- Momentarily press the **Trouble Silence** button.
- The yellow System *Trouble* LED stops flashing and lights steady indicating the condition was silenced.
- If the trouble condition has been restored, the system may return to the normal standby condition. The system may need to be reset to restore the system to a normal standby condition.
- Notify the proper personnel for servicing the system immediately.
- Refer to Appendix B, Troubleshooting Guide.

Warning: Leaving the panel in a trouble condition may cause a fire alarm condition not to initiate a fire alarm sequence**.**

Sprinkler Supervisory Operation

(This applies only to control panels that have been configured for sprinkler supervisory switches.)

A **supervisory** is indicated by the following conditions:

- The yellow System *Supervisory* LED flashes.
- The buzzer sounds a pulsating tone.
- The yellow Zone *Trouble* LED flashes using a longer pulse rate than that of the trouble condition.
- If a remote station type of city connection is used, a trouble signal is sent to the remote station.

To silence the supervisory tone:

- Momentarily press the **Trouble Silence** button.
- Locate the activated switch and return it to its normal position.
- If a supervisory condition still exists, notify the proper personnel for servicing the system immediately.

System Testing and Maintenance

Note: Before any tests are conducted, the local fire department should be notified.

System Testing

1. System testing and/or fire drills must be performed at the intervals required by local fire authorities. Where no local regulations exist, testing schedules for fire alarm systems are specified in NFPA Standard 72, Chapter 7.

2. All system tests should be documented. A complete log of device testing including the type of device, its location, the date of the test, and the operation should be maintained for the system.

3. Devices should be tested in accordance with manufacturers' instructions.

4. When testing has been completed, all switches must be returned to their normal position. **Do not leave switches in the disconnected position!**

Maintenance

1. The 13400 fire alarm system control unit does not require periodic maintenance except that the unit should be kept clean and dry.

2. Sealed lead acid batteries should be replaced every four years or if the voltage is low. The terminals should be checked for corrosion and cleaned if necessary. To check for low battery voltage, with the primary power supply disconnected, operate the panel in alarm (under full load) for five minutes. If the battery voltage is less than 24.0 volts, with the control unit in alarm, replace the battery set.

3. Maintenance of other devices connected to the control unit should be done in accordance with the manufacturers' instructions.

Disable Zone/Signals

To disable a zone or signal press and hold the zone/sig disable button and then press one of the push buttons labeled A-F.
To enable a disabled zone or signal press and hold the zone/sig disable button and then press the appropriate push buttons for the zone or signal that was disabled.

Indicating Device Circuit	Button for Zone/Sig Disable/Enable
1	A
2	B
3	C
4	D
Notification Appliance Circuit	
1	E
2	F

When you disable a zone or signal, the disabled LED turns on steady. In addition the associated zone or signal trouble LED's blink.

Quick Test Procedures

A quick test enables you to check the operation of each of the detectors or devices that make up your system.

A Quick Test enables you to check full system operation. To prepare for the quick test:

- buttons simultaneously. The Disabled LED will flash indicating Quick Test is enabled.

To perform the quick test:

1. Activate a zone. The panel should indicate the appropriate way (the Alarm Verify feature is disabled during Quick Test).
2. The panel indicates for approximately 10 seconds, then resets just as if you had pressed the **System Reset** button.

If you leave the panel in quick test mode for more than an hour, the panel will end the Quick Test and return to normal operation.

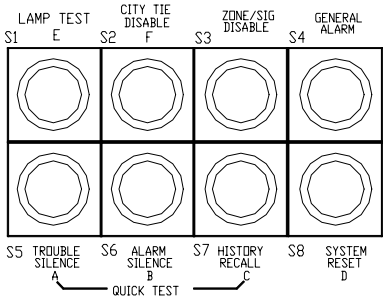
The NACs may be disabled for silent operation during Quick Test.

13400 Switches

The following table describes the operation of the panel's switches.

Note: All the panel's push-button switches are accessed on the back of the panel door.

Push-button Switch	If you press the button:
System Reset	Panel inactive for 12 seconds with the System *Trouble* LED flashing. Panel operational.
Trouble Silence	System *Trouble* LED on continuous (if from flashing state), while the trouble or supervisory exists. Zones that currently have a flashing trouble LED (with the exception of a supervisory alarm) will be turned continuous on. Troubles and supervisories that have cleared, their zone LEDs will be turned off. Panel buzzer will go from slowly pulsating to off.
Alarm Silence	System *Alarm* LED will be turned continuous on from the flashing state. Zones currently in alarm will have their alarm lights turned on steady from a flashing state. Panel buzzer will go from rapidly pulsating to off.
History Recall	The last Zone *Alarm* LED will light The last Zone *Trouble* LED will light, if the last zone trouble was a supervisory condition the System Supervisory LED will also light. All other zone LEDs will extinguish while holding the History Recall button. The LEDs will be restored when the switch is released.
General Alarm	Signal Circuit relays and Alarm relay activates. System *Alarm* LED and Panel buzzer activate.
Zone/Sig Disable	*Disabled* LED lights. Associated Zone(s) *Trouble* LEDs and Signal *Trouble* LEDs flash. Trouble relay energizes.
City Tie Disable	Trouble is reported, but Alarm is disabled.
Lamp Test	If the system is in a normal operating condition, then and only then: All LEDs light, except for the NAC active LEDs. The LEDs will be restored to their previous state when the switch is released.



13400 Operating Instructions

Alarm Operation

In case of alarm, the appropriate Zone *Alarm* LED flashes and the System *Alarm* LED flashes, and the panel buzzer sounds. Local audible and visual signals and remote alarm signals operate.

When an alarm occurs, proceed according to the established emergency plan. Assure that all personnel are accounted for, and notify the Fire Department to advise of the alarm and/or verify that an automatic signal has been received at the Fire Department.

Authorized Personnel Only

To silence the alarm:

To silence the notification appliances after evacuation, where permitted**,** open the front panel door and press the **Alarm Silence** switch. The notification appliances and panel buzzer will be silenced, and LED indications will change from flashing to continuous.

Note: Do not reset the panel until the alarm has been cleared.

Warning: Alarm silence inhibit (if set) prevents the alarm from being silenced for a predetermined time.

To reset panel after alarm:

When the alarm condition is corrected, return the panel to normal standby operation by opening the front panel door and then pressing the **System Reset** switch.

Trouble Operation

Trouble is indicated by:

System *Trouble* LED flashes
Specific trouble LEDs may light
Panel buzzer sounds

To silence the trouble buzzer:

Open the front panel door and press the **Trouble Silence** switch**.** The system *Trouble* LED and individual trouble LED(s) may change to continuous display. When the trouble condition has been cleared, you may need to reset the panel to restore to a normal standby condition.

Warning: Leaving the panel in a trouble condition may cause a fire alarm condition not to initiate a fire alarm sequence.

Normal Standby Condition

The green *AC Power On* LED will be lit and no other indicators on.

For service, contact: _____ (Company)
Telephone Number: _____

Frame these instructions and mount them near the control unit for operator reference.

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Section III : Installation and Wiring

Parts Supplied

446688 or 446689 Backbox Assembly (red or black)
413537 or 413538 Door Assembly (red or black)
413535 or 413536 Transformer Assembly (120VAC or 240VAC)
413540 Sub-Chassis Assembly
18965 #6-32 Keps Nuts (2)
29529-11 #6-32 x 1/4" Screws (10)
446613 Owner's Manual
446691 Operating Instructions
412387 Ground Wire Assembly
942665 3.9K Ohm 1/2W Resistor (4)
942633 1.8K Ohm 1W Resistor (4)
942685 2.2K Ohm 1/2W Resistor (4)
942667 24K Ohm 1/2W Resistor (2)
443269 Screwdriver

Installation

Installation is to be done only by qualified personnel who have thoroughly read and understood these instructions.

Cautions:

1. It is recommended that the Sub-Chassis assembly be removed for any procedure that may cause dust, metal shavings, grease or any such matter that may affect the circuit boards and/or parts.
2. There may be several sources of power into the control unit. Each source must be disconnected prior to installing or removing modules, connecting or disconnecting wiring, and programming jumpers.

Panel Location

The control unit should be located near an exit at ground level, where the normal ambient temperature is maintained within the control unit specification. (See General Specifications in Section I). The unit should be in an area that is free of dust, vibration, moisture and condensation.

Mount the Enclosure

Follow the appropriate instructions for surface or semi-flush mounting.

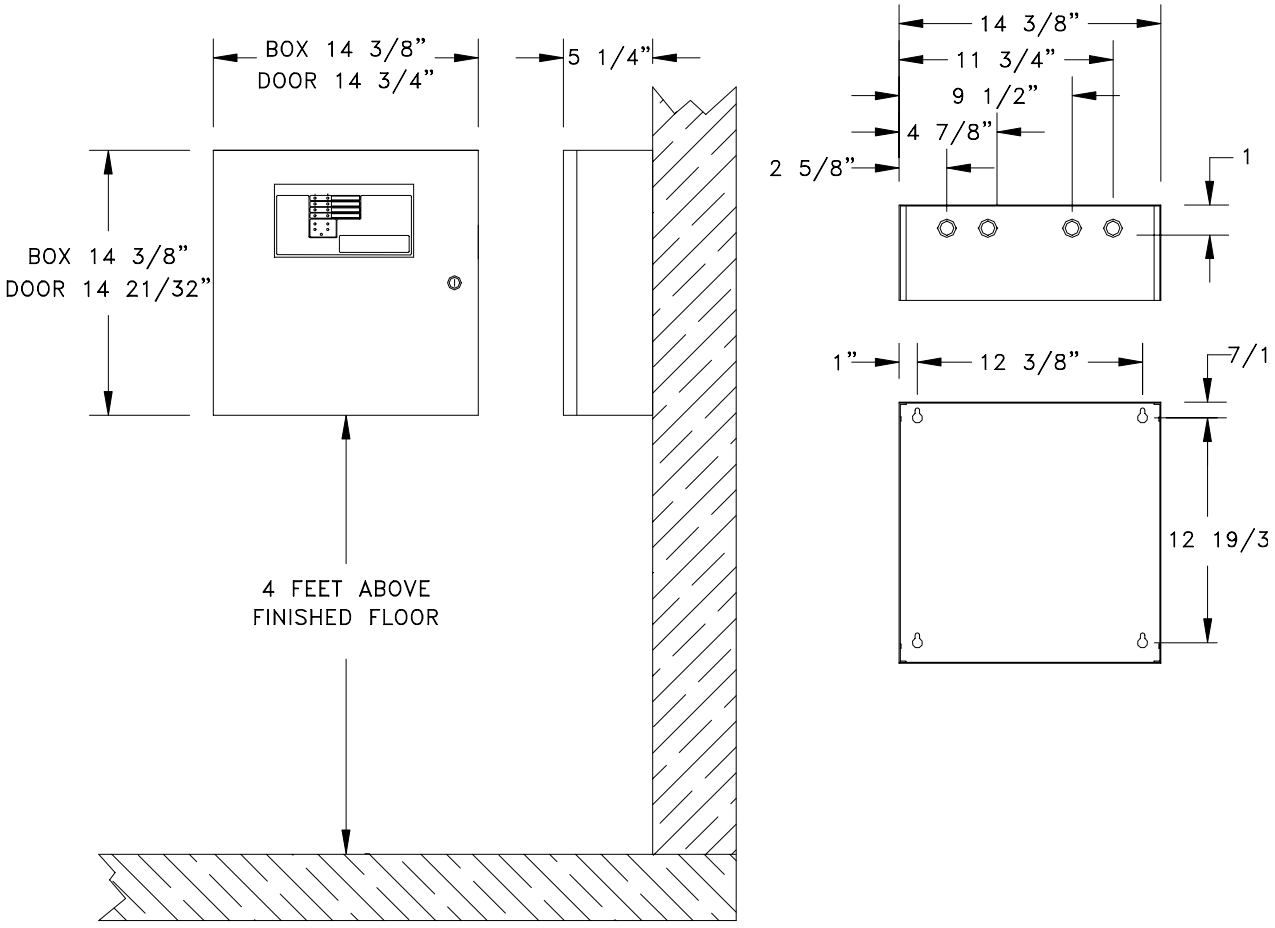
Surface Mounting Instructions

To mount the enclosure:

A. Mount the enclosure at a convenient height for viewing indicators and operating switches.

B. Use four #10 lag screws (not supplied) to secure the control unit to the wall. The screw type and length must support up to 45 pounds (control unit, options and battery set).
Note: You may need a different screw type, depending on the wall material.

C. The battery enclosure may be mounted immediately below the main enclosure, close nippled, allowing a minimum of 1 inch in between the enclosures for clearance between the doors. Keeping the wire run to the main panel short will keep the voltage drop to a minimum.



Semi-Flush Mounting Instructions

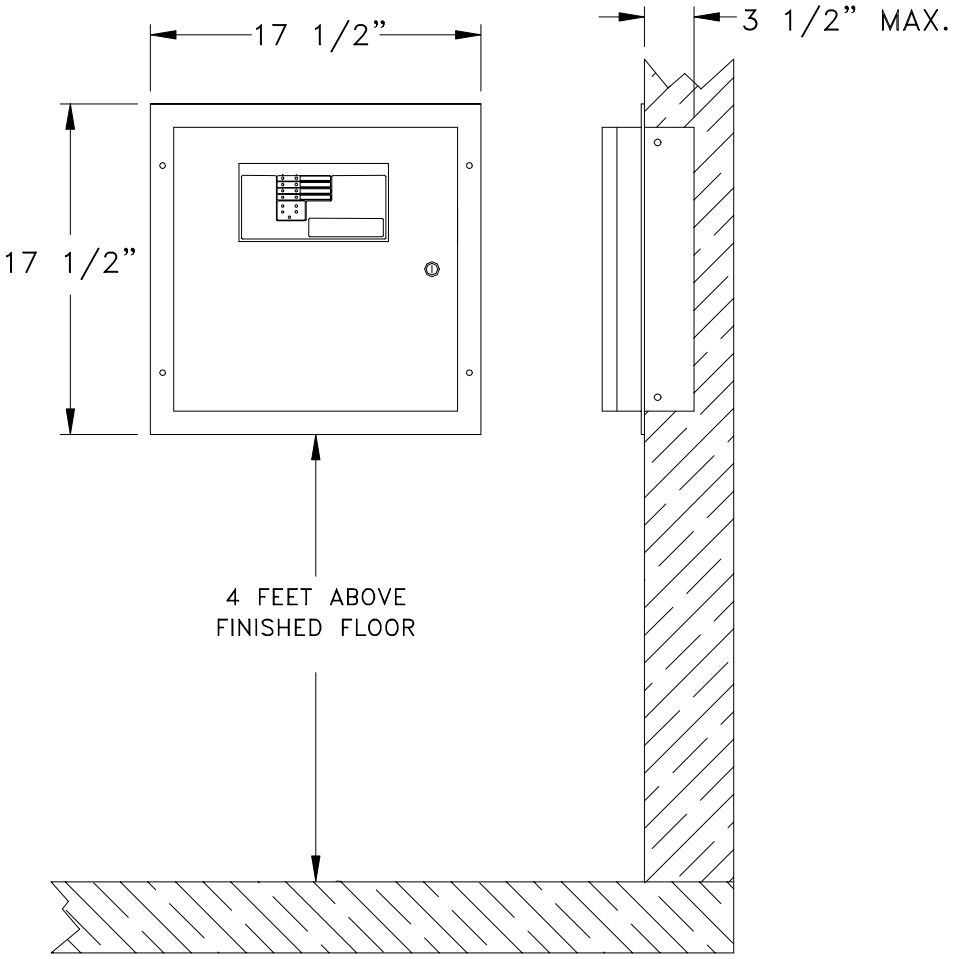
To mount the enclosure:

A. Mount the enclosure at a convenient height for viewing indicators and operating switches.

B. Use four #10 lag screws (not supplied) to secure the control unit to the wall. The screw type and length must support up to 45 pounds (control unit, options and battery set).
Note: You may need a different screw type, depending on the wall material.

C. The backbox can be mounted up to 3 1/2 inches into the wall. Place the semi-flush trim (P/N 15216) around the backbox and affix to the wall with four #10 x 3/4 inch wood screws (provided with trim).
Note: You may need a different screw type, depending on the wall material.

D. The battery enclosure may be mounted immediately below the main enclosure, close nippled, allowing a minimum of 3 inches in between the enclosures for clearance between the semi-flush trims. Keeping the wire run to the main panel short will keep the voltage drop to a minimum.



Knock out Knock-outs

A. Prepare the enclosure for electrical wiring, break out the appropriate conduit entry points. Note the wiring diagram requirements for nonpower-limited and power-limited wiring separation.
B. Attach conduit (if required) and run wires as required. Label each field cable for future reference.

Attach Transformer Assembly

There are two versions of the transformer assembly: a 120VAC (P/N 413535) and a 240VAC (P/N 413536) version. Make sure you have the correct one for your installation. (This stage must be accomplished before mounting the Sub-Chassis Assembly into the enclosure.)

Caution: Remove cardboard ring from around transfomer terminals before installation of the transformer assembly.

A. Attach the Transfomer Assembly to the Sub-Chasisis Assembly using two #6-32 keps nuts (P/N 18965) to secure. The Transformer Assembly electrical connections should be facing down.
B. Connect the plug from the Transformer Assembly to the J7 connector on the Main PCB assembly.

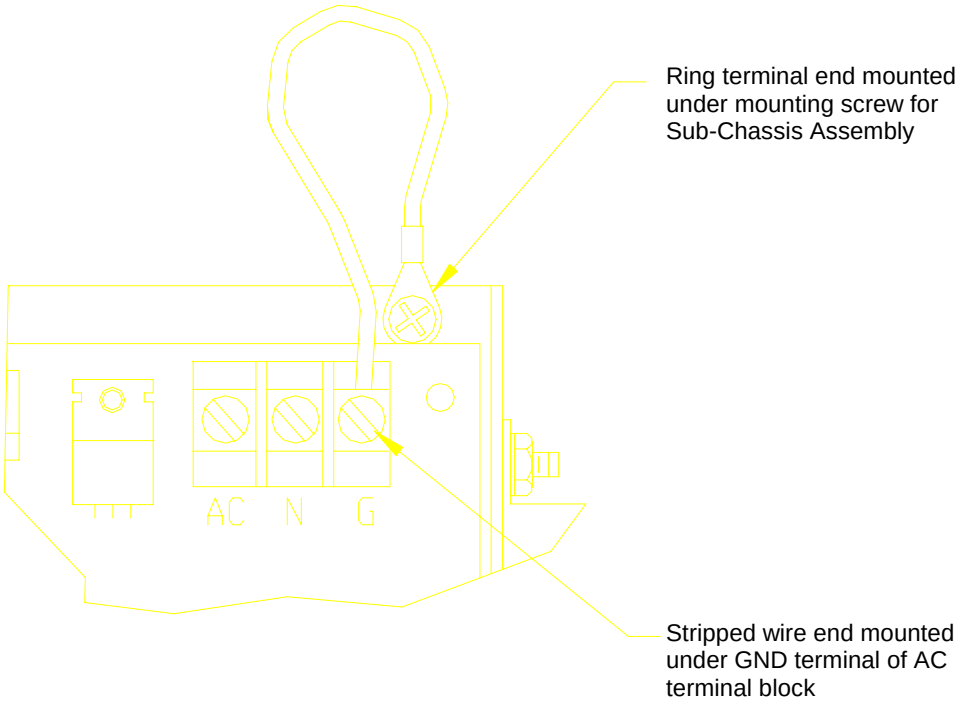
Configure the Control Unit

Set jumpers to match the desired functionality of the panel. See Section IV, “Setting Up 13400” for information about switch and jumper settings.

Warning: Failure to setup the switches may cause the improper detection and indication of a fire event, as well as cause the improper evacuation of the building.

Install the Sub-Chassis Assembly

A. Secure the Sub-Chassis Assembly to the enclosure using six #6-32 x 1/4" screws (P/N 29529-11).
B. Connect the Stripped wire end of the Ground Wire to the GND position of the AC terminal block.
C. Place ring terminal end of the Ground Wire under the head of the nearest mounting screw. (See Detail below)



Ground Wire Mounting Detail

Mount the Door and Install the Operator Interface board

A. Place the Door Assembly onto hinges of the Backbox Assembly.
B. Secure the Operator Interface board to the Door Assembly using four #6-32 x 1/4" screws (P/N 29529-11). The rubber push buttons should face the interior of the Backbox Assembly.
C. Ensure that the LED's are lined up with the openings in the front overlay..

Connect AC Supply

120VAC 50/60 Hz
1A Max.
or
240VAC 50/60 Hz.
0.5A Max.
Supervised
Non-power Limited

24V Battery Set
7 to 17.2 AH
Supervised
Non-Power Limited
Input Current 6A max.
Charge Voltage 28V max.
Charge Current 1A max.

Note: Branch-Circuit must be protected by a 15A overcurrent device

A. Wire up the AC supply to terminal block TB2 on the main termination board. The supply should originate from a separate, fused circuit. It should be provided with a breaker or other means of isolation. Observe the wiring order -- the right hand terminal is ground and must be wired back to the electrical panel ground (earth) bonding point or another good ground acceptable to the authority having jurisdiction and the electrical inspector. The neutral wire must be taken back to the electrical panel neutral distribution bar and must not be grounded. When wiring a two phase 240V system (with the appropriate transformer fitted in the panel) the order in which the phases are connected to the top two terminals is not important. **/!\ Dangerous voltages will be present on this terminal block and on other components surrounding it and the transformer when the AC supply is turned on. Do not touch.**

Apply Power to System

Apply AC power to the system. The *AC Power On* LED, System *Trouble* LED, all IDC *Trouble* LEDs, and the trouble buzzer should be on.

Install Batteries

Warning: Improper battery connections or shorting battery terminals may damage the panel and/or batteries and may cause personal injuries.

A. Place the batteries in the space provided in the bottom of the backbox. If larger than 12 AH battery set is required, a separate enclosure must be used. The 14050 may be used for battery sets 17.2 AH and smaller.
B. The panel uses a 24V battery set. Connect the two 12V batteries (or four 6V batteries) in series with #12 AWG wire. Route the battery leads to the right of the panel and up to the battery termination block, TB3. The battery leads are not power limited.
C. **Observe polarity**. Connect the "B-" terminal from the panel into the black or "-" terminal of the battery set and the "B+" terminal from the panel into the red or "+" terminal of the battery set.

Check Supervised Circuits

To check the supervised circuits of the control unit:

A. Place a 3.9K ohm resistor (color coded: orange, white, red) across each set of IDC terminals.
B. Place a 24 K ohm resistor (color coded: red, yellow, orange) across each set of NAC terminals.
C. Push **System Reset** button.
D. The System *Trouble* LED, all IDC *Trouble* LEDs, and the trouble buzzer should be off.

Install Optional Modules

Follow the installation instructions provided in Appendix C.

Check Control Unit Operation

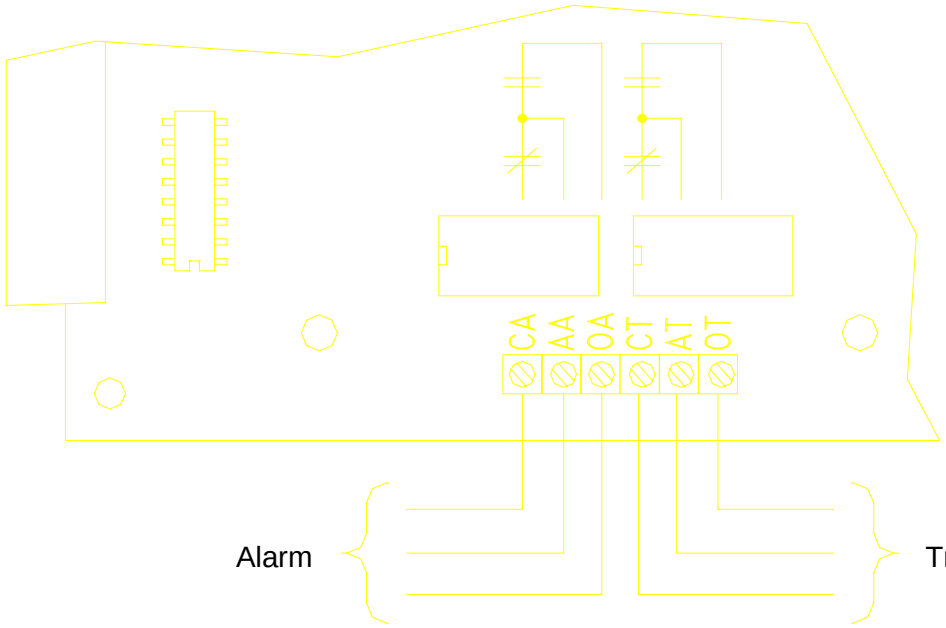
Check for proper operation of the panel functions. See Section II for "Operation Instructions".

System Wiring Diagram

Before connecting the field wiring, check the wiring for opens, shorts, grounds and stray voltages. Ensure ALL power is disconnected, including the batteries.

Warning: Damage may result if a high voltage insulation tester is used on wiring while connected to the control unit.

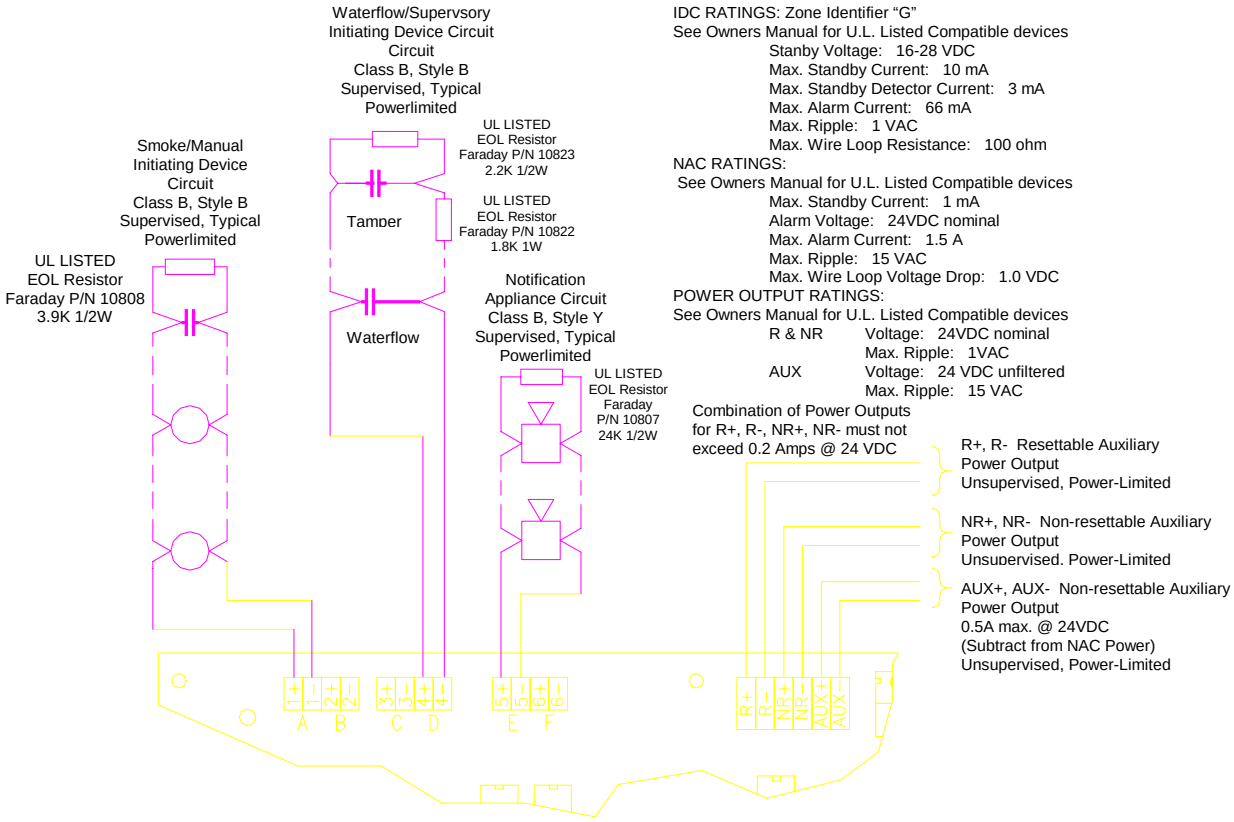
Terminate the field wiring to the termination board in accordance with the field wiring diagram and the system design documents.



Relay Contacts rated 2A at 30VDC / 0.5 A at 30 VAC, resistive
(shown in normal standby condition)
For Power-limited Source, Not Supervised

NOTE: All wiring must be in accordance with local codes and National Electrical Code. Use only FPL, FPLR and/or FPLP as described in Article 760 of N.E.C.

Initiating and Notification Circuits



NOTE: All wiring must be in accordance with local codes and National Electrical Code. Use only FPL, FPLR and/or FPLP as described in Article 760 of N.E.C.

A. Connect the first four initiating device circuits to terminals on TB1 and TB6. Each circuit may support an unlimited number of contact devices and the number of other devices shown in the tables in Section V: Compatible Devices.
B. Four wire, separately powered detectors may be used. Connect the contact of these detectors to the initiating device circuit and the power connection to the resettable auxiliary power output on TB8, marked R+ and R-. The maximum available power from the R+, R-, NR+, and NR- power outputs is 0.2A. total.
C. Connect an end of line device at the physically last device.
D. When wiring a circuit as waterflow/supervisory, there may be any number of contact type waterflow switches and/or supervisory switches. When installing a supervisory switch, mount a P/N 10822 supervisory resistor securely inside the body of the supervisory switch. The supervisory switches must be wired electrically past the series supervisory resistor, with all waterflow switches electrically closest to the control unit. The associated initiating device circuit dip switch must be set for Waterflow/Supervisory operation.

Check System Operation

Check for proper operation of all the system functions. See Section II for "Operation Instructions".

Section IV : Configuration

This section provides a checklist for you to consider as you plan the setup of 13400. It also describes the switches and jumpers you can use to configure operation.

Planning 13400 Configuration

You can use this checklist to help you plan your 13400 configuration. The checklist provides some reminders about different configurations you might select. Charts showing switch selections appear on the following pages.

❑ **The initiating device circuit needs to be set for alarm verification**. Set the appropriate zone no verify switch to the OFF position.
(J2.1, J2.2, J2.3, J2.4)

❑ **The initiating device circuit D has been wired as a waterflow zone**. Set the appropriate zone waterflow switch to the ON position.
(J2.5)

❑ **The panel needs to be set up to inhibit the operation of the alarm silence switch.** Set the alarm silence inhibit switch to the ON position.
(J2.6)

❑ **The notification appliance circuit needs to be set up as a non-silencable circuit**. Set the notification appliance circuit silencable switch to the ON position.
(J2.7, J2.8)

Servicing Configurations

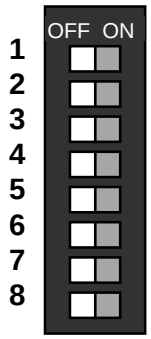
❑ **The initiating device circuit needs to be disabled temporarily from the panel.** Refer to Section II Disable Zones/Signals.

❑ **The alarm relays need to be disabled temporarily from basic panel operation**. Press the City Tie Disable button.

❑ **The City Tie needs to be temporarily disabled from basic panel operation.** Set the City Tie disable switch on the City Tie Board to the disabled position or press th City Tie Disable button on the Operator Interface Board on the door.

Main Board Switches

The Main Board switches are standard 8-position DIP switches. Slide the switches to the left for Off and to the right for On. All DIP switches are factory set for off, verify proper settings for proper system operation.



J2

Number	Function	Comments
1	IDC A no verify	Off for verification of smoke alarm On for no verification of smoke alarm
2	IDC B no verify	Off for verification of smoke alarm On for no verification of smoke alarm
3	IDC C no verify	Off for verification of smoke alarm On for no verification of smoke alarm
4	IDC D no verify	Off for verification of smoke alarm On for no verification of smoke alarm
5	IDC D waterflow	Off for no waterflow operation On for waterflow operation
6	Silence Inhibit	On for alarm silence inhibit of 60 seconds Off for no alarm silence inhibit
7	NAC 2 Silencable	On for NAC 2 as silencable Off for NAC 2 as non-silencable
8	NAC 1 Silencable	On for NAC 1 as silencable Off for NAC 1 as non-silencable

Section V : Compatible Devices

The following section lists compatible devices for the 13400 control panel.

- Devices for Initiating Device Circuits
- Devices for Notification Appliance Circuits
- Devices for auxiliary power outputs

Devices for Initiating Device Circuits

Manual Stations

Faraday Cat. No.	Mfg. Part Number
	Faraday
F1GT	17-450334-35
F1GGT	17-450334-38
F1GHT	17-450334-37
	Adalet
PM3823	XHFA-N4
	R.S.G. Inc.
PM6700	RMS-1P-KL
PM6608	RMS-1T-KL
PM6696	RMS-2T-LP-KL
PM6695	RMS-1T-PS-KL
PM6697	RMS-2T-KO-KL
PM6699	RMS-2T-WP-KL
PM6767	RMS-EX-WP-KL

Notes:

1. Any U.L. Listed contact type non-coded station with compatible contact ratings is acceptable. The list to the left is provided for your convenience.
2. For specific wiring and installation information, read the instructions provided with each device.

Waterflow Switches

Faraday Cat. No.	Mfg. Part Number
	System Sensor
PM6615	WFD20
PM6616	WFD25
PM6617	WFD30
PM6618	WFD35
PM6619	WFD40
PM6620	WFD50
PM6621	WFD60
PM6622	WFD80
PM6779	EPS10-1
PM6780	EPS10-2

Notes:

1. Any U.L. Listed contact type waterflow switch with compatible contact ratings is acceptable. The list to the left is provided for your convenience.
2. For specific wiring and installation information, read the instructions provided with each device.

Supervisory Switches

Faraday Cat. No.	Mfg. Part Number
	System Sensor
PM6623	OSY2
PM6624	PIBV2
PM6781	EPS40-1
PM6782	EPS40-2

Notes:

1. Any U.L. Listed contact type supervisory switch with compatible contact ratings is acceptable. The list to the left is provided for your convenience.
2. For specific wiring and installation information, read the instructions provided with each device.

Smoke and Heat Detectors

UL Compatible Two-Wire (Circuit Powered) Smoke & Heat Detectors - Zone Identifier “G”

Faraday Detector w/Base	Mfg. Detector w/Base	Number of Detectors Per Circuit	Maximum Standby Current	Detector Identifier	Base Identifier
	Air Products & Controls				
9267	RW-2W-N	0-30	0.081mA	RW-2W-N	45681-200
9268	RW-2W-P	0-27	0.110mA	RW-2W-P	45681-200
	Apollo Fire Detectors Limited				
9259 w/9263	55000-150 w/45681-200	0-30	0.057mA	55000-150	45681-200
9259 w/9262	55000-150 w/45681-220	0-30	0.057mA	55000-150	45681-220
9259 w/9266	55000-150 w/45681-227	0-30	0.086mA	55000-150	45681-227
9259 w/9265	55000-150 w/45681-230	0-30	0.089mA	55000-150	45681-230
9259 w/9224	55000-150 w/45681-231	0-30	0.089mA	55000-150	45681-231
9259 w/9223	55000-150 w/45681-232	0-30	0.057mA	55000-150	45681-232
9221 w/9263	55000-151 w/45681-200	0-30	0.057mA	55000-151	45681-200
9221 w/9262	55000-151 w/45681-220	0-30	0.057mA	55000-151	45681-220
9221 w/9266	55000-151 w/45681-227	0-30	0.086mA	55000-151	45681-227
9221 w/9265	55000-151 w/45681-230	0-30	0.089mA	55000-151	45681-230
9221 w/9224	55000-151 w/45681-231	0-30	0.089mA	55000-151	45681-231
9221 w/9223	55000-151 w/45681-232	0-30	0.057mA	55000-151	45681-232
9274 w/9263	55000-152 w/45681-200	0-30	0.057mA	55000-152	45681-200
9274 w/9262	55000-152 w/45681-220	0-30	0.057mA	55000-152	45681-220
9274 w/9266	55000-152 w/45681-227	0-30	0.086mA	55000-152	45681-227
9274 w/9265	55000-152 w/45681-230	0-30	0.089mA	55000-152	45681-230
9274 w/9224	55000-152 w/45681-231	0-30	0.089mA	55000-152	45681-231
9274 w/9223	55000-152 w/45681-232	0-30	0.057mA	55000-152	45681-232
9264 w/9263	55000-153 w/45681-200	0-30	0.057mA	55000-153	45681-200
9264 w/9262	55000-153 w/45681-220	0-30	0.057mA	55000-153	45681-220
9264 w/9266	55000-153 w/45681-227	0-30	0.086mA	55000-153	45681-227
9264 w/9265	55000-153 w/45681-230	0-30	0.089mA	55000-153	45681-230
9264 w/9224	55000-153 w/45681-231	0-30	0.089mA	55000-153	45681-231
9264 w/9223	55000-153 w/45681-232	0-30	0.057mA	55000-153	45681-232
9261 w/9263	55000-250 w/45681-200	0-30	0.057mA	55000-250	45681-200
9261 w/9262	55000-250 w/45681-220	0-30	0.081mA	55000-250	45681-220
9261 w/9266	55000-250 w/45681-227	0-30	0.092mA	55000-250	45681-227
9261 w/9265	55000-250 w/45681-230	0-30	0.100mA	55000-250	45681-230
9261 w/9224	55000-250 w/45681-231	0-30	0.100mA	55000-250	45681-231
9261 w/9223	55000-250 w/45681-232	0-30	0.057mA	55000-250	45681-232
9260 w/9263	55000-350 w/45681-200	0-27	0.110mA	55000-350	45681-200
9260 w/9262	55000-350 w/45681-220	0-27	0.110mA	55000-350	45681-220
9260 w/9266	55000-350 w/45681-227	0-23	0.142mA	55000-350	45681-227
9260 w/9265	55000-350 w/45681-230	0-23	0.130mA	55000-350	45681-230
9260 w/9224	55000-350 w/45681-231	0-23	0.130mA	55000-350	45681-231
9260 w/9223	55000-350 w/45681-232	0-27	0.110mA	55000-350	45681-232
9222 w/9263	55000-380 w/45681-200	0-16	0.185mA	55000-380	45681-200
9222 w/9262	55000-380 w/45681-220	0-16	0.185mA	55000-380	45681-220
9222 w/9266	55000-380 w/45681-227	0-14	0.205mA	55000-380	45681-227
9222 w/9265	55000-380 w/45681-230	0-14	0.205mA	55000-380	45681-230
9222 w/9224	55000-380 w/45681-231	0-14	0.205mA	55000-380	45681-231
9222 w/9223	55000-380 w/45681-232	0-16	0.185mA	55000-380	45681-232
	System Sensor				
9184 w/9185	1151 w/B110LP	0-25	0.120mA	A	A
9184 w/9448	1151 w/B116LP	0-25	0.120mA	A	A
9183 w/9185	2151 w/B110LP	0-25	0.120mA	A	A
9183 w/9448	2151 w/B116LP	0-25	0.120mA	A	A
9374	1400	0-25	0.120mA	A	---
9375	2400	0-25	0.120mA	A	---
9376	2400TH	0-25	0.120mA	A	---
9418	1100	0-30	0.100mA	A	---

Faraday Detector w/Base	Mfg. Detector w/Base	Number of Detectors Per Circuit	Maximum Standby Current	Detector Identifier	Base Identifier
	System Sensor (Cont'd)				
9419	2100	0-30	0.100mA	A	---
9420	2100T	0-30	0.100mA	A	---
9358 w/9361	1451 w/B401B	0-25	0.120mA	A	A
9358 w/9364	1451 w/B401	0-25	0.120mA	A	A
9358 w/9424	1451 w/B406B	0-25	0.120mA	A	A
9359 w/9361	2451 w/B401B	0-25	0.120mA	A	A
9359 w/9364	2451 w/B401	0-25	0.120mA	A	A
9359 w/9424	2451 w/B406B	0-25	0.120mA	A	A
9360 w/9361	2451TH w/B401B	0-25	0.120mA	A	A
9360 w/9364	2451TH w/B401	0-25	0.120mA	A	A
9360 w/9424	2451TH w/B406B	0-25	0.120mA	A	A
9447 w/9361	5451 w/B401B	0-25	0.120mA	A	A
9447 w/9364	5451 w/B401	0-25	0.120mA	A	A
9447 w/9424	5451 w/B406B	0-25	0.120mA	A	A
9421 w/9361	4451HT w/B401B	0-25	0.120mA	A	A
9421 w/9364	4451HT w/B401	0-25	0.120mA	A	A
9421 w/9424	4451HT w/B406B	0-25	0.120mA	A	A
9176	DH400I (1451DH w/DH400)	0-25	0.120mA	A	A
9177	DH400P (2451 w/DH400	0-25	0.120mA	A	A
	Faraday				
8854 w/8853	8854 w/8853	0-27	0.110mA	8854	8853
8842 w/8853	8842 w/8853	0-27	0.110mA	8842	8853
8843 w/8853	8843 w/8853	0-27	0.110mA	8843	8853
8854 w/8840	8854 w/8840	0-27	0.110mA	8854	8840
8854 w/8853 & 8845 or 8849	8854 w/8853 & 8845 or 8849	0-27	0.110mA	8854	8853
8842 w/8853 & 8845 or 8849	8842 w/8853 & 8845 or 8849	0-27	0.110mA	8842	8853
8843 w/8853 & 8845 or 8849	8843 w/8853 & 8845 or 8849	0-27	0.110mA	8843	8853
8854 w/8840 & 8845 or 8849	8854 w/8840 & 8845 or 8849	0-27	0.110mA	8854	8840
8854 w/8853 & 8844 or 8848	8854 w/8853 & 8844 or 8848	0-13	0.220mA	8854	8853
8842 w/8853 & 8844 or 8848	8842 w/8853 & 8844 or 8848	0-13	0.220mA	8842	8853
8843 w/8853 & 8844 or 8848	8843 w/8853 & 8844 or 8848	0-13	0.220mA	8843	8853
8854 w/8840 & 8844 or 8848	8854 w/8840 & 8844 or 8848	0-13	0.220mA	8854	8840

Notes:

1. These detector models may be mixed and matched as long as the total maximum standby current does not exceed 3.0 mA per initiating device circuit. The total number of detectors on a circuit should not exceed 30.
2. This control unit is not intended to handle more than one 2-wire detector in alarm, per circuit.
3. The activation of a manual pull station or any other contact device, will prevent any 2-wire detector on the same circuit from remaining activated or from activating.
4. If the smoke detector has an alarm verify function, the circuit must not be programmed for alarm verify,
5. For specific wiring and installation information, read the instructions provided with each device.

UL Compatible Four-Wire (Separately Powered) Smoke & Heat Detectors

Faraday Detector w/Base	Mfg. Detector w/Base	Maximum Standby Current	Maximum Alarm Current	Notes
	Air Products & Controls			
9269	RW-DC-N	0.081mA	115mA	Must use EOL Relay
9270	RW-DC-P	0.110mA	115mA	Must use EOL Relay
	Apollo Fire Detectors Limited			
9259 w/9266	55000-150 w/45681-227	0.073mA	100mA	Must use EOL Relay
9221 w/9266	55000-151 w/45681-227	0.073mA	100mA	Must use EOL Relay
9274 w/9266	55000-152 w/45681-227	0.073mA	100mA	Must use EOL Relay
9264 w/9266	55000-153 w/45681-227	0.073mA	100mA	Must use EOL Relay
9261 w/9266	55000-250 w/45681-227	0.060mA	100mA	Must use EOL Relay
9260 w/9266	55000-350 w/45681-227	0.125mA	100mA	Must use EOL Relay
9222 w/9266	55000-380 w/45681-227	0.200mA	100mA	Must use EOL Relay
	System Sensor,			
9377	1424	0.100mA	41mA	Must use EOL Relay
9378	2424	0.120mA	41mA	Must use EOL Relay
9379	2424TH	0.120mA	41mA	Must use EOL Relay
9337	1112/24	0.050mA	25mA	Must use EOL Relay
9338	2112/24	0.050mA	25mA	Must use EOL Relay
9339	2112/24T	0.050mA	25mA	Must use EOL Relay
9340	2112/24TSRB	15mA	45mA	Must use EOL Relay
9358 w/9362	1451 w/B402B	0.120mA	41mA	Must use EOL Relay
9359 w/9362	2451 w/B402B	0.120mA	41mA	Must use EOL Relay
9360 w/9362	2451TH w/B402B	0.120mA	41mA	Must use EOL Relay
9447 w/9362	5451 w/B402B	0.120mA	41mA	Must use EOL Relay
9421 w/9362	4451HT w/B402B	0.120mA	41mA	Must use EOL Relay
9164	DH400ACDCI	25mA	110mA	Must use 6 wires
9165	DH400ACDCP	25mA	110mA	Must use 6 wires
9175	6424	10mA	28.4mA	Must use EOL Relay and 6 wires

Notes:
1. For specific wiring and installation information, read the instructions provided with each device.
2. Each 9273 EOL Relay requires 15 mA standby current.

Contact Type Heat Detectors

Faraday Cat. No.	Mfg. Part Number
	Chemetron
9341	601
9342	602
9343	603
9344	604
9345	621
9346	622
9347	623
9348	624
9300-136	A-135
9300-190	A-200
9301-136	AT-135
9301-190	AT-200
PM2872-136	EPB501
PM2872-190	EPB502
PM2872-136F	EPB503
PM2872-190F	EPB504
	Faraday
8858	8858
8859	8859

Notes:
1. Any U.L. Listed contact type heat detector with compatible contact ratings is acceptable. The list to the left is provided for your convenience.
2. For specific wiring and installation information, read the instructions provided with each device.

Devices for Notification Appliance Circuits

Compatible Notification Appliances

Catalog Number	Description	Audible Voltage	Audible Current	Strobe Voltage	Strobe Current
446(*1)	Bell-Vibrating	21-30 VDC	0.110A		
476(*1)	Bell-Vibrating	21-30VDC	0.070A		
477(*1)	Bell-Single Stroke	21-30VDC	0.360A		
2700-E	Strobe Light			20-31VDC	0.059A
2700-G	Strobe Light			20-31VDC	0.089A
2700-J	Strobe Light			20-31VDC	0.155A
2700-K	Strobe Light			20-31VDC	0.164A
2700-L	Strobe Light			20-31VDC	0.249A
2700-M (*2)	Sync Strobe Light			20-31VDC	0.059A
2700-R (*2)	Sync Strobe Light			20-31VDC	0.088A
2700-T (*2)	Sync Strobe Light			20-31VDC	0.154A
2700-Y (*2)	Sync Strobe Light			20-31VDC	0.170A
2700-Z (*2)	Sync Strobe Light			20-31VDC	0.249A
2701-E	Strobe Light			20-31VDC	0.059A
2701-G	Strobe Light			20-31VDC	0.089A
2701-J	Strobe Light			20-31VDC	0.155A
2701-K	Strobe Light			20-31VDC	0.164A
2701-L	Strobe Light			20-31VDC	0.249A
2701-M (*2)	Sync Strobe Light			20-31VDC	0.059A
2701-R (*2)	Sync Strobe Light			20-31VDC	0.088A
2701-T (*2)	Sync Strobe Light			20-31VDC	0.154A
2701-Y (*2)	Sync Strobe Light			20-31VDC	0.170A
2701-Z (*2)	Sync Strobe Light			20-31VDC	0.249A
2705-E	WP Strobe Light			20-31VDC	0.059A
2705-L	WP Strobe Light			20-31VDC	0.249A
2705-M (*2)	WP Sync Strobe Light			20-31VDC	0.059A
2705-Z (*2)	WP Sync Strobe Light			20-31VDC	0.249A
2820 (*2)	Sync Electronic Horn	20-31VDC	0.030A		
2821 (*2)	Sync Electronic Horn	20-31VDC	0.030A		
2824-M (*3)	Sync Electronic Horn w/Sync Strobe	20-31VDC	0.030A	20-31VDC	0.059A
2824-R (*3)	Sync Electronic Horn w/Sync Strobe	20-31VDC	0.030A	20-31VDC	0.088A
2824-T (*3)	Sync Electronic Horn w/Sync Strobe	20-31VDC	0.030A	20-31VDC	0.154A
2824-Y (*3)	Sync Electronic Horn w/Sync Strobe	20-31VDC	0.030A	20-31VDC	0.170A
2824-Z (*3)	Sync Electronic Horn w/Sync Strobe	20-31VDC	0.030A	20-31VDC	0.249A
2880	Electronic Signal-8T	20-31VDC	0.024-0.050A (*4)		
2881	Electronic Signal-8T	20-31VDC	0.024-0.050A (*4)		
2884-E	Electronic Signal-8T w/Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.059A
2884-G	Electronic Signal-8T w/Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.089A
2884-J	Electronic Signal-8T w/Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.155A
2884-K	Electronic Signal-8T w/Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.164A
2884-L	Electronic Signal-8T w/Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.249A
2884-M (*2)	Electronic Signal-8T w/Sync Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.059A
2884-R (*2)	Electronic Signal-8T w/Sync Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.088A
2884-T (*2)	Electronic Signal-8T w/Sync Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.154A
2884-Y (*2)	Electronic Signal-8T w/Sync Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.170A
2884-Z (*2)	Electronic Signal-8T w/Sync Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.249A
5330	Electronic Horn-3T	21-32VDC	0.020-0.025A (*4)		
5333	Electronic Horn-3T	21-32VDC	0.020-0.025A (*4)		
5334	Electronic Horn-3T	21-32VDC	0.020-0.025A (*4)		
5335	Electronic Horn-3T	21-32VDC	0.020-0.025A (*4)		
5336-(0,X)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-30VDC	0.038A
5336-(A,B) (*2)	Electronic Horn-3T w/Sync Strobe	21-32VDC	0.020-0.025A (*4)	20-31VDC	0.145A

Catalog Number	Description	Audible Voltage	Audible Current	Strobe Voltage	Strobe Current
5336-(H,U)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-30VDC	0.075A
5336-(N,W)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-32VDC	0.079A
5336-C (*2)	Electronic Horn-3T w/Sync Strobe	21-32VDC	0.020-0.025A (*4)	20-31VDC	0.285A
5336-D	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-32VDC	0.175A
5336-S	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-32VDC	0.245A
5337-(0,X)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-30VDC	0.038A
5337-(A,B) (*2)	Electronic Horn-3T w/Sync Strobe	21-32VDC	0.020-0.025A (*4)	20-31VDC	0.145A
5337-(H,U)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-30VDC	0.075A
5337-(N,W)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-32VDC	0.079A
5337-C (*2)	Electronic Horn-3T w/Sync Strobe	21-32VDC	0.020-0.025A (*4)	20-31VDC	0.285A
5337-D	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-32VDC	0.175A
5337-S	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-32VDC	0.245A
5338-(0,X)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-30VDC	0.038A
5338-(A,B) (*2)	Electronic Horn-3T w/Sync Strobe	21-32VDC	0.020-0.025A (*4)	20-31VDC	0.145A
5338-(H,U)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-30VDC	0.075A
5338-(N,W)	Electronic Horn-3T w/Strobe	21-32VDC	0.020-0.025A (*4)	21-32VDC	0.079A
5340	Electronic Horn	21-32VDC	0.020A		
5343	Electronic Horn	21-32VDC	0.020A		
5344	Electronic Horn	21-32VDC	0.020A		
5345	Electronic Horn	21-32VDC	0.020A		
5346-(0,X)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-30VDC	0.038A
5346-(A,B) (*2)	Electronic Horn w/Sync Strobe	21-32VDC	0.020A	20-31VDC	0.145A
5346-(H,U)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-30VDC	0.075A
5346-(N,W)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-32VDC	0.079A
5346-C (*2)	Electronic Horn w/Sync Strobe	21-32VDC	0.020A	20-31VDC	0.285A
5346-D	Electronic Horn w/Strobe	21-32VDC	0.020A	21-32VDC	0.175A
5346-S	Electronic Horn w/Strobe	21-32VDC	0.020A	21-32VDC	0.245A
5347-(0,X)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-30VDC	0.038A
5347-(A,B) (*2)	Electronic Horn w/Sync Strobe	21-32VDC	0.020A	20-31VDC	0.145A
5347-(H,U)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-30VDC	0.075A
5347-(N,W)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-32VDC	0.079A
5347-C (*2)	Electronic Horn w/Sync Strobe	21-32VDC	0.020A	20-31VDC	0.285A
5347-D	Electronic Horn w/Strobe	21-32VDC	0.020A	21-32VDC	0.175A
5347-S	Electronic Horn w/Strobe	21-32VDC	0.020A	21-32VDC	0.245A
5348-(0,X)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-30VDC	0.038A
5348-(A,B) (*2)	Electronic Horn w/Sync Strobe	21-32VDC	0.020A	20-31VDC	0.145A
5348-(H,U)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-30VDC	0.075A
5348-(N,W)	Electronic Horn w/Strobe	21-32VDC	0.020A	21-32VDC	0.079A
5350	Electronic Horn-3T	21-32VDC	0.020-0.025A (*4)		
5353	Electronic Horn-3T	21-32VDC	0.020-0.025A (*4)		
5354	Electronic Horn-3T	21-32VDC	0.020-0.025A (*4)		
5355	Electronic Horn-3T	21-32VDC	0.020-0.025A (*4)		
5360	Electronic Horn	21-32VDC	0.020A		
5363	Electronic Horn	21-32VDC	0.020A		
5364	Electronic Horn	21-32VDC	0.020A		
5365	Electronic Horn	21-32VDC	0.020A		
5370	Electronic Signal-8T	12-32VDC	0.020-0.050A (*4)		
5373	Electronic Signal-8T	12-32VDC	0.020-0.050A (*4)		
5374	Electronic Signal-8T	12-32VDC	0.020-0.050A (*4)		
5375	Electronic Signal-8T	12-32VDC	0.020-0.050A (*4)		
5376-(A,B) (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.145A
5376-(N,W)	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.079A
5376-C (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.285A
5376-D	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.175A
5376-S	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.245A
5377-(A,B) (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.145A
5377-(N,W)	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.079A
5377-C (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.285A
5377-D	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.175A

Catalog Number	Description	Audible Voltage	Audible Current	Strobe Voltage	Strobe Current
5377-S	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.245A
5378-(A,B) (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.145A
5378-(N,W)	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.079A
5380	Electronic Signal-8T	12-32VDC	0.020-0.050A (*4)		
5383	Electronic Signal-8T	12-32VDC	0.020-0.050A (*4)		
5384	Electronic Signal-8T	12-32VDC	0.020-0.050A (*4)		
5385	Electronic Signal-8T	12-32VDC	0.020-0.050A (*4)		
5386-(A,B) (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.145A
5386-(N,W)	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.079A
5386-C (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.285A
5386-D	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.175A
5386-S	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.245A
5387-(A,B) (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.145A
5387-(N,W)	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.079A
5387-C (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.285A
5387-D	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.175A
5387-S	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.245A
5388-(A,B) (*2)	Electronic Signal-8T w/Sync Strobe	12-32VDC	0.020-0.050A (*4)	20-31VDC	0.145A
5388-(N,W)	Electronic Signal-8T w/Strobe	12-32VDC	0.020-0.050A (*4)	21-32VDC	0.079A
5405	Sync Control Unit	20-31VDC	.020A		
5406	Sync Control Unit	20-31VDC	.020A		
5508-(0,X)	Strobe Light			21-30VDC	0.038A
5508-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5508-(H,U)	Strobe Light			21-30VDC	0.075A
5508-(N,W)	Strobe Light			21-32VDC	0.079A
5508-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5508-D	Strobe Light			21-32VDC	0.175A
5508-S	Strobe Light			21-32VDC	0.245A
5509-(0,X)	Strobe Light			21-30VDC	0.038A
5509-(H,U)	Strobe Light			21-30VDC	0.075A
5510-(0,X)	Strobe Light			21-30VDC	0.038A
5510-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5510-(N,W)	Strobe Light			21-32VDC	0.079A
5511-(0,X)	Strobe Light			21-30VDC	0.038A
5511-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5511-(H,U)	Strobe Light			21-30VDC	0.075A
5511-(N,W)	Strobe Light			21-32VDC	0.079A
5511-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5511-D	Strobe Light			21-32VDC	0.175A
5511-S	Strobe Light			21-32VDC	0.245A
5512-(0,X)	Strobe Light			21-30VDC	0.038A
5512-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5512-(H,U)	Strobe Light			21-30VDC	0.075A
5512-(N,W)	Strobe Light			21-32VDC	0.079A
5512-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5512-D	Strobe Light			21-32VDC	0.175A
5512-S	Strobe Light			21-32VDC	0.245A
5516-(0,X)	Strobe Light			21-30VDC	0.038A
5516-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5516-(H,U)	Strobe Light			21-30VDC	0.075A
5516-(N,W)	Strobe Light			21-32VDC	0.079A
5516-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5516-D	Strobe Light			21-32VDC	0.175A
5516-S	Strobe Light			21-32VDC	0.245A
5517-(0,X)	Strobe Light			21-30VDC	0.038A
5517-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5517-(H,U)	Strobe Light			21-30VDC	0.075A
5517-(N,W)	Strobe Light			21-32VDC	0.079A
5517-C (*2)	Sync Strobe Light			20-31VDC	0.285A

Catalog Number	Description	Audible Voltage	Audible Current	Strobe Voltage	Strobe Current
5517-D	Strobe Light			21-32VDC	0.175A
5517-S	Strobe Light			21-32VDC	0.245A
5518-(0,X)	Strobe Light			21-30VDC	0.038A
5518-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5518-(H,U)	Strobe Light			21-30VDC	0.075A
5518-(N.W)	Strobe Light			21-32VDC	0.079A
5519-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5519-(N,W)	Strobe Light			21-32VDC	0.079A
5519-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5519-D	Strobe Light			21-32VDC	0.175A
5519-S	Strobe Light			21-32VDC	0.245A
5521-(0,X)	Strobe Light			21-30VDC	0.038A
5521-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5521-(H,U)	Strobe Light			21-30VDC	0.075A
5521-(N,W)	Strobe Light			21-32VDC	0.079A
5521-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5521-D	Strobe Light			21-32VDC	0.175A
5521-S	Strobe Light			21-32VDC	0.245A
5521C-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5521C-(N,W)	Strobe Light			21-32VDC	0.079A
5521C-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5521C-D	Strobe Light			21-32VDC	0.175A
5521C-S	Strobe Light			21-32VDC	0.245A
5522-(0,X)	Strobe Light			21-30VDC	0.038A
5522-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5522-(H,U)	Strobe Light			21-30VDC	0.075A
5522-(N,W)	Strobe Light			21-32VDC	0.079A
5522-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5522-D	Strobe Light			21-32VDC	0.175A
5522-S	Strobe Light			21-32VDC	0.245A
5522C-(A,B) (*2)	Sync Strobe Light			20-31VDC	0.145A
5522C-(N,W)	Strobe Light			21-32VDC	0.079A
5522C-C (*2)	Sync Strobe Light			20-31VDC	0.285A
5522C-D	Strobe Light			21-32VDC	0.175A
5522C-S	Strobe Light			21-32VDC	0.245A
6120	Horn	21-30VDC	0.035A		
6140	Horn	21-30VDC	0.065A		
6220	Horn	21-30VDC	0.038A		
6223	Horn	21-30VDC	0.038A		
6224	Horn	21-30VDC	0.038A		
6225	Horn	21-30VDC	0.038A		
6226-(A,B) (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.145A
6226-(N,W)	Horn w/Strobe	21-30VDC	0.038A	21-32VDC	0.079A
6226-C (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.285A
6226-D	Horn w/Strobe	21-30VDC	0.038A	21-32VDC	0.175A
6226-S	Horn w/Strobe	21-30VDC	0.038A	21-32VDC	0.245A
6227-(A,B) (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.145A
6227-(N,W)	Horn w/Strobe	21-30VDC	0.038A	21-32VDC	0.079A
6227-C (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.285A
6227-D	Horn w/Strobe	21-30VDC	0.038A	21-32VDC	0.175A
6227-S	Horn w/Strobe	21-30VDC	0.038A	21-32VDC	0.245A
6228-(A,B) (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.145A
6228-(N,W)	Horn w/Strobe	21-30VDC	0.038A	21-32VDC	0.079A
6230	Horn	21-30VDC	0.038A		
6234-E	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.059A
6234-G	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.089A
6234-J	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.155A
6234-K	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.164A
6234-L	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.249A

Catalog Number	Description	Audible Voltage	Audible Current	Strobe Voltage	Strobe Current
6234-M (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.059A
6234-R (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.088A
6234-T (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.154A
6234-Y (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.170A
6234-Z (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.249A
6235-E	WP Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.059A
6235-L	WP Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.249A
6235-M (*2)	WP Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.059A
6235-Z (*2)	WP Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.249A
6238-E	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.059A
6238-G	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.089A
6238-J	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.155A
6238-K	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.164A
6238-L	Horn w/Strobe	21-30VDC	0.038A	20-31VDC	0.249A
6238-M (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.059A
6238-R (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.088A
6238-T (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.154A
6238-Y (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.170A
6238-Z (*2)	Horn w/Sync Strobe	21-30VDC	0.038A	20-31VDC	0.249A
6240	Horn	21-30VDC	0.065A		
6243	Horn	21-30VDC	0.065A		
6244	Horn	21-30VDC	0.065A		
6245	Horn	21-30VDC	0.065A		
6246-(A,B) (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.145A
6246-(N,W)	Horn w/Strobe	21-30VDC	0.065A	21-32VDC	0.079A
6246-C (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.285A
6246-D	Horn w/Strobe	21-30VDC	0.065A	21-32VDC	0.175A
6246-S	Horn w/Strobe	21-30VDC	0.065A	21-32VDC	0.245A
6247-(A,B) (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.145A
6247-(N,W)	Horn w/Strobe	21-30VDC	0.065A	21-32VDC	0.079A
6247-C (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.285A
6247-D	Horn w/Strobe	21-30VDC	0.065A	21-32VDC	0.175A
6247-S	Horn w/Strobe	21-30VDC	0.065A	21-32VDC	0.245A
6248-(A,B) (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.145A
6248-(N,W)	Horn w/Strobe	21-30VDC	0.065A	21-32VDC	0.079A
6250	Horn	21-30VDC	0.065A		
6254-E	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.059A
6254-G	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.089A
6254-J	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.155A
6254-K	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.164A
6254-L	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.249A
6254-M (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.059A
6254-R (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.088A
6254-T (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.154A
6254-Y (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.170A
6254-Z (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.249A
6255-E	WP Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.059A
6255-L	WP Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.249A
6255-M (*2)	WP Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.059A
6255-Z (*2)	WP Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.249A
6258-E	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.059A
6258-G	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.089A
6258-J	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.155A
6258-K	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.164A
6258-L	Horn w/Strobe	21-30VDC	0.065A	20-31VDC	0.249A
6258-M (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.059A
6258-R (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.088A
6258-T (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.154A
6258-Y (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.170A

Catalog Number	Description	Audible Voltage	Audible Current	Strobe Voltage	Strobe Current
6258-Z (*2)	Horn w/Sync Strobe	21-30VDC	0.065A	20-31VDC	0.249A
6300	Mini-Horn	20-31VDC	0.025A		
6301	Mini-Horn	20-31VDC	0.025A		
6302-(A,B) (*2)	Mini-Horn w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.145A
6302-(N,W)	Mini-Horn w/Strobe	20-31VDC	0.025A	21-32VDC	0.079A
6302-C (*2)	Mini-Horn w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.285A
6302-D	Mini-Horn w/Strobe	20-31VDC	0.025A	21-32VDC	0.175A
6302-S	Mini-Horn w/Strobe	20-31VDC	0.025A	21-32VDC	0.245A
6304-E	Mini-Horn w/Strobe	20-31VDC	0.025A	20-31VDC	0.059A
6304-G	Mini-Horn w/Strobe	20-31VDC	0.025A	20-31VDC	0.089A
6304-J	Mini-Horn w/Strobe	20-31VDC	0.025A	20-31VDC	0.155A
6304-K	Mini-Horn w/Strobe	20-31VDC	0.025A	20-31VDC	0.164A
6304-L	Mini-Horn w/Strobe	20-31VDC	0.025A	20-31VDC	0.249A
6304-M (*2)	Mini-Horn w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.059A
6304-R (*2)	Mini-Horn w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.088A
6304-T (*2)	Mini-Horn w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.154A
6304-Y (*2)	Mini-Horn w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.170A
6304-Z (*2)	Mini-Horn w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.249A
6310	Mini-Horn-S/T	20-31VDC	0.025A		
6311	Mini-Horn-S/T	20-31VDC	0.025A		
6312-(A,B) (*2)	Mini-Horn-S/T w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.145A
6312-(N,W)	Mini-Horn-S/T w/Strobe	20-31VDC	0.025A	21-32VDC	0.079A
6312-C (*2)	Mini-Horn-S/T w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.285A
6312-D	Mini-Horn-S/T w/Strobe	20-31VDC	0.025A	21-32VDC	0.175A
6312-S	Mini-Horn-S/T w/Strobe	20-31VDC	0.025A	21-32VDC	0.245A
6314-E	Mini-Horn-S/T w/Strobe	20-31VDC	0.025A	20-31VDC	0.059A
6314-G	Mini-Horn-S/T w/Strobe	20-31VDC	0.025A	20-31VDC	0.089A
6314-J	Mini-Horn-S/T w/Strobe	20-31VDC	0.025A	20-31VDC	0.155A
6314-K	Mini-Horn-S/T w/Strobe	20-31VDC	0.025A	20-31VDC	0.164A
6314-L	Mini-Horn-S/T w/Strobe	20-31VDC	0.025A	20-31VDC	0.230A
6314-M (*2)	Mini-Horn-S/T w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.059A
6314-R (*2)	Mini-Horn-S/T w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.088A
6314-T (*2)	Mini-Horn-S/T w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.154A
6314-Y (*2)	Mini-Horn-S/T w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.170A
6314-Z (*2)	Mini-Horn-S/T w/Sync Strobe	20-31VDC	0.025A	20-31VDC	0.249A
6320 (*2)	Sync Electronic Horn	20-31VDC	0.030A		
6321 (*2)	Sync Electronic Horn	20-31VDC	0.030A		
6322-(A,B) (*3)	Sync Electronic Horn w/Sync Strobe	20-31VDC	0.030A	20-31VDC	0.145A
6322-C (*3)	Sync Electronic Horn w/Sync Strobe	20-31VDC	0.030A	20-31VDC	0.285A
6380	Electronic Signal-8T	20-31VDC	0.024-0.050A (*4)		
6381	Electronic Signal-8T	20-31VDC	0.024-0.050A (*4)		
6382-(A,B) (*2)	Electronic Signal-8T w/Sync Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.145A
6382-(N,W)	Electronic Signal-8T w/Strobe	20-31VDC	0.024-0.050A (*4)	21-32VDC	0.079A
6382-C (*2)	Electronic Signal-8T w/Sync Strobe	20-31VDC	0.024-0.050A (*4)	20-31VDC	0.285A
6382-D	Electronic Signal-8T w/Strobe	20-31VDC	0.024-0.050A (*4)	21-32VDC	0.175A
6382-S	Electronic Signal-8T w/Strobe	20-31VDC	0.024-0.050A (*4)	21-32VDC	0.245A

Key:

(*1) 1=10” gong, 4=4” gong, 5=chime, 6=6” gong, 8=8” gong

(*2) Sync Strobe Light or Sync Electronic Horn require 5405 or 5406 Sync Control Module

(*3) Sync Electronic Horn and Sync Strobe Light require 5405 or 5406 Sync Control Module

(*4) See Installation Instructions for the current of the desired tone.

Cat. No. xxxx-E = Strobe Light (UL1971 15/75cd)
Cat. No. xxxx-G = Strobe Light (UL1971 30/75cd
Cat. No. xxxx-J = Strobe Light (UL1971 60/75cd)
Cat. No. xxxx-K = Strobe Light (UL1971 75cd)
Cat. No. xxxx-L = Strobe Light (UL1971 110cd)

Cat. No. xxxx-M = Sync Strobe Light (UL1971 15/75cd)
Cat. No. xxxx-R = Sync Strobe Light (UL1971 30/75cd)
Cat. No. xxxx-T = Sync Strobe Light (UL1971 60/75cd)
Cat. No. xxxx-Y = Sync Strobe Light (UL1971 75cd)
Cat. No. xxxx-Z = Sync Strobe Light (UL1971 110cd)

Key (cont'd):

Cat. No. xxxx-N = Strobe Light (UL1971 15cd)
Cat. No. xxxx-W = Strobe Light (UL1971 15/75cd)
Cat. No. xxxx-D = Strobe Light (UL1971 75cd)
Cat. No. xxxx-S = Strobe Light (UL1971 110cd)
Cat. No. xxxx-0 = Strobe Light (UL1638 4.5cd)
Cat. No. xxxx-X = Strobe Light (UL1638 30cd)
Cat. No. xxxx-A = Sync Strobe Light (UL1971 15cd)
Cat. No. xxxx-B = Sync Strobe Light (UL1971 15/75cd)
Cat. No. xxxx-C = Sync Strobe Light (UL1971 75cd)
Cat. No. xxxx-H = Strobe Light (UL1638 15cd)
Cat. No. xxxx-U = Strobe Light (UL1638 120cd)

Compatible Accessory Devices

Faraday Cat. No.	Mfg. Part Number	Description
	Faraday	
R711-1	711-1	Polarized Auxiliary Relay
MEP-100	15050	Mini-Evac Control Unit
RSE-100	15070	Remote Signal Expander
15222A	15222A	Signal Expander Panel
MVP-500	15060	Mini-Voice Control Unit
MVP-501	15061	Mini-Voice Control Unit

Notes:
1. The accessory devices listed may be wired to activate from the notification appliance circuits.
2. For specific wiring and installation information, read the instructions provided with each device.

Devices for auxiliary power outputs

The following lists compatible devices for the auxiliary power outputs.

- Door Holders
- Relays
- For Four-Wire (Separately Powered) Heat & Smoke Detectors, See Devices for Initiating Device Circuits.

Door Holders

Faraday Cat. No.	Mfg. Part Number	Description
	R.S.G. Inc.	
9552	DH-24120FC1	Door Holder
9553	DH-24120SC1	Door Holder
9554	DH-24120GC1	Door Holder
9555	DH-24120GC2	Door Holder

Relays

Faraday Cat. No.	Mfg. Part Number	Description
	Faraday Inc.	
R711-1	711-1	Remote Relay Unit
	Air Products & Controls	
R712-1	MR-101/C	Remote Relay Unit
R712-2	MR-201/C	Remote Relay Unit
R712-4	MR-104/C	Remote Relay Unit
R712-8	MR-204/C	Remote Relay Unit
9273	PAM-4	E.O.L. Relay
	System Sensor	
PM6849	A77-716B	E.O.L. Relay

Notes:
1. Any U.L. Listed accessory devices with compatible ratings are acceptable. The devices listed to the left are listed here for your convenience.
2. The accessory devices listed here may be wired to the auxiliary power outputs.
3. For specific wiring and installation information, read the instructions provided with each device.

Appendix A : Reference Data

This appendix provides reference for the following topics:

- Wire selection guides
- Battery size calculations

Wire Selection Guides

Resistance of Solid Copper Wire[+]

AWG	Ohms per Thousand Feet
18	8.08
16	5.08
14	3.19
12	2.01

[+]N.E.C. Chapter 9, Table 8.

Initiating Device Circuit Wire Selection Guide

Each initiating circuit loop must not have a resistance greater than 100 ohms. The following chart is based on the resistance of solid copper wire.

Maximum Wire Loop Distance (feet)

18 AWG	16 AWG	14 AWG	12 AWG
12,376	19,685	31,347	49,751

Notification Appliance Circuit Wire Selection Guide

Each Notification Appliance Circuit loop must not have a voltage drop greater than 1 volt. The following chart is based on the following premises:

1. All of the load is at the end of the wire run (worst case).
2. Resistance is of solid copper wire

Contact your local distributor or the factory if further information is needed in your circumstances.

Maximum Wire Loop Distance (Feet)

		18 AWG	16 AWG	14 AWG	12 AWG
Signal Load (A.)	0.1	1,237	1968	3134	4975
	0.25	495	787	1253	1990
	0.5	247	393	626	995
	0.75	165	262	417	663
	1.0	123	196	313	497
	1.25	99	157	250	398
	1.5	82	131	208	331

Battery Size Calculations

				Standby Current (A.)	Alarm Current (A.)
Control Unit (4 zones)				.075	.300
City Tie Board	Standby	.015	.015	+	NA
	Alarm	.035	.035	NA	+
w/ Alarm Tie - add	Standby	.010	.010		NA
	Alarm	.010	.010	NA	+
w/ Trouble Tie - add	Alarm	.010	.010		NA
	Alarm	.010	.010	NA	+
Alarm Relay Board	Standby	.010	.010	+	NA
	Alarm	.035	.035	NA	+
Remote LED Annunciator Driver	Standby	.010	.010	+	NA
	Alarm	.015	.015	NA	+
7704 / 7704-01 LED Annunciator	Standby	.040	.040	+	NA
	Alarm	.060	.060	NA	+
7700 / 7700-01 Trouble Unit	Standby	.040	.040	+	NA
	Alarm	.040	.040	NA	+
2-wire Smoke Detectors:					
Catalog #	**Quantity**		**X Current (A)**		
			X =	+	NA
			X. =	+	NA
			X =	+	NA
The detector models may be mixed and matched as long as the total maximum standby current does not exceed 3.0 mA per initiating device circuit. The total number of detectors on a circuit should not exceed 30.					
4-wire Smoke Detectors					
Catalog #	**Quantity**		**X Current (A.)**		
	Standby		X =	+	NA
	Alarm		X =	NA	+
	Standby		X =	+	NA
	Alarm		X =	NA	+
	Standby		X =	+	NA
	Alarm		X =	NA	+
End of Line Relay					
Catalog #	**Quantity**		**X Current (A.)**		
			X =	+	+
Notification Appliances					
Catalog #	**Quantity**		**X Current (A.)**		
			X =	NA	+
			X =	NA	+
			X =	NA	+
			X =	NA	+
Other			=	+	+
			TOTAL		

Total Standby Current (from above)	Hours of Standby Required per NFPA 72 Standard (4, 24 or 60)	AH for Standby
A.	x ____ Hours	=

Total Alarm Current (from above)	5 Minutes of Alarm Operation per NFPA 72 Standard*	AH for Alarm
A.	x 0.33 Hours	=

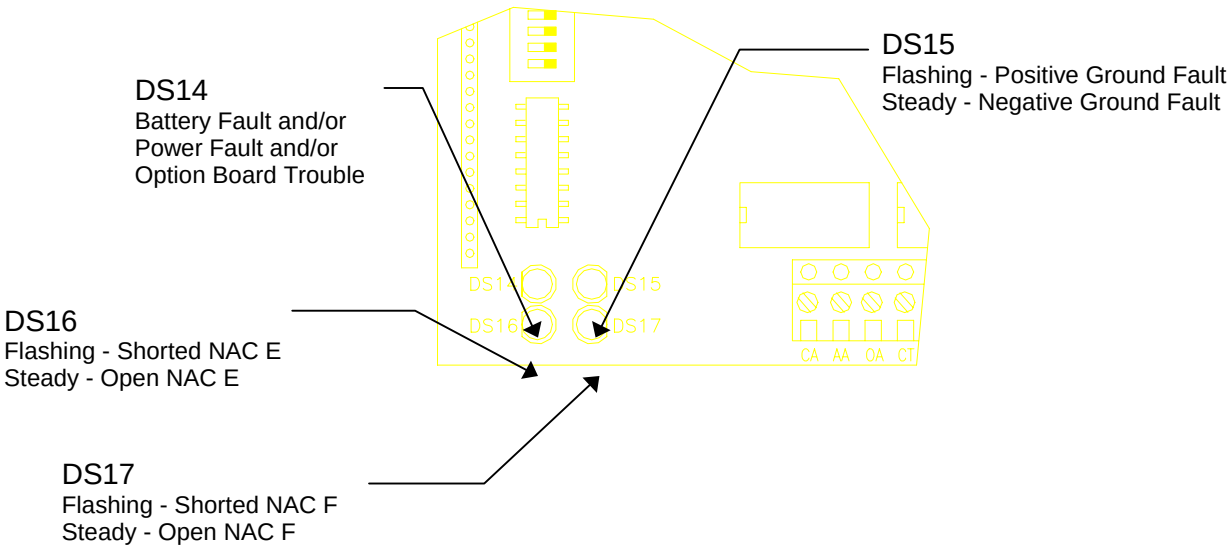
A.H. for Standby	A.H. for Alarm	A.H. Required Battery Capacity
	+	=

Notes: * An additional multiplier is included to compensate for the higher discharge rate in alarm.
** Battery capacity decreases with age. A 4-year old battery can lose up to 50% of its capacity. Compensations should be made to allow for this loss.

Appendix B : Troubleshooting

CAUTION: Troubleshooting is to be done only by qualified personnel who have been trained to repair and test this fire alarm system control unit.

Description	Probable Cause
AC Power On LED is not lit and System *Trouble* LED is lit.	Low or no AC input power
One or more IDC *Trouble* LED(s) are lit.	Disabled IDC. Open IDC wiring.
One or more NAC *Trouble* LED(s) are lit. (DS16 or DS17 on Main Board)	Steady - open NAC wiring. Flashing - shorted NAC wiring.
System Ground LED lit	One or more external field connections grounded.
System Power fault LED lit	No battery connected or battery fuse blown (return to factory).
System *Trouble* LED and *Ckt Disabled* LED is lit.	Disabled IDC Disabled NAC Disabled city tie
Button functions erratic or non-functional	Check to be sure buttons are not stuck.
Alarm Board Relays don't work	Board not seated properly.
Cannot silence an alarm.	Check alarm silence inhibit switches to see if they are set up correctly. Check if IDC is programmed for Waterflow/Supervisory.



Appendix C : Installation Instructions

This appendix provides installation instructions for the following options:

- 13402 Alarm Relay Board 446692
- 13403 City Tie Board 446693
- 12406 Remote LED Annunciator Drive 446694

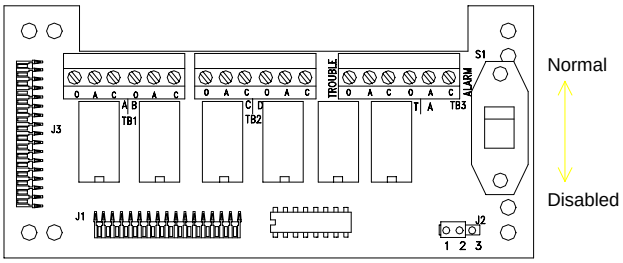
INSTALLATION INSTRUCTIONS AND WIRING FOR ALARM RELAY BOARD
Cat. No. ZRB Part No. 13402

The 13402 Alarm Relay Board is an optional module for the 13400 Fire Alarm System Control Unit. The Alarm Relay Board provides 1 system alarm, 1 system trouble and 4 zone alarm relays with form "C" contacts, rated for 2 amp at 30 VDC or 0.5 amp at 30 VAC. The board mounts to the Main Board of the 13400 Fire Alarm System Control Unit.

PARTS SUPPLIED

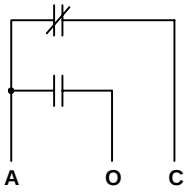
1	13402	Alarm Relay Board
4	942456	Spacer, 5/8"
1	446692	Instruction Sheet

13402 WIRING



TYPICAL CONTACT CONNECTIONS

(TRANSFERS ON ZONE ALARM)
RATED 2 AMP @ 30 VDC
OR .5 AMP @ 30 VAC
Not Supervised
For Powerlimited Source



NOTES:

1.) Units to be installed in accordance with all local electrical codes.

2.) Terminal block will accept a maximum of #12 AWG wiring.

Step 1.) Installation is to be done by qualified personnel who have thoroughly read and understood this instruction sheet.

Step 2.) Disconnect <u>all</u> power into system, including batteries.

Step 3.) Attach conduit and run wires as required.

Step 4.) Mount Alarm Relay Board as shown in Fig. 1, using four spacers (P/N 942456) to Main Board. If Remote LED Anuunciator Driver Board is being mounted also, mount the Driver Board first using the installation instructions provided with that board. See Fig. 2 for the mounting of the Alarm Relay Board.

Step 5.) Connect wires to fire alarm system control unit as required.

Step 6.) Apply power to system.

Step 7.) Check for proper operation of functions.

J2 - Silencable / Non-Silencable

Zone Alarm relays only

Non-Silenceable
Positions 1 & 2

Silenceable
Positions 2 & 3

13402 MOUNTING

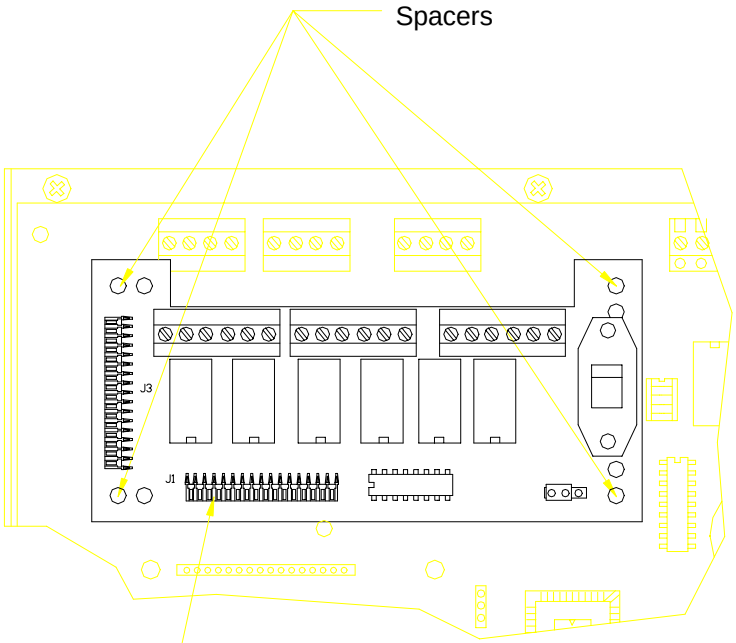


Fig. 1

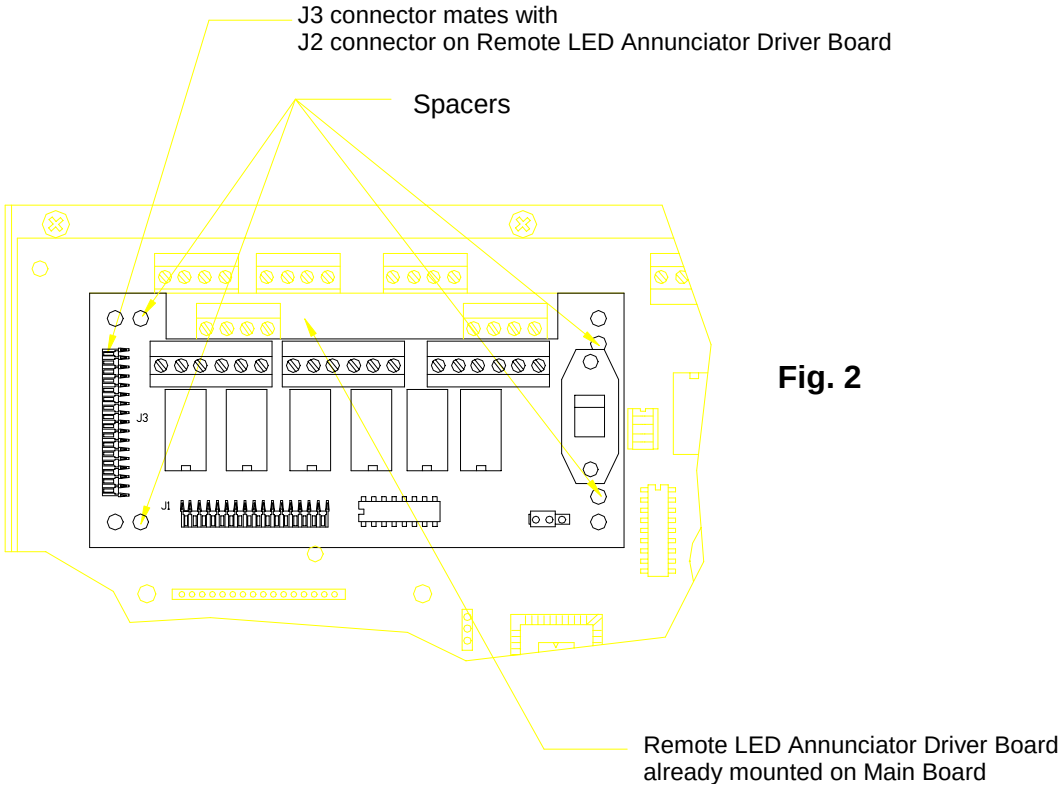


Fig. 2

INSTALLATION INSTRUCTIONS AND WIRING
FOR CITY TIE BOARD
Cat. No. CTB Part No. 13403

The 13403 City Tie Board is an optional module for the 13400 Fire Alarm System Control Unit. The City Tie Board provides a supervised output for local energy municipal box transmitter and alarm and trouble reverse polarity circuits. There is also a disable switch and a trouble LED. The alarm reverse polarity output can be configured to open on trouble if no alarm exists. The board mounts to the Main Board of the 13400 Fire Alarm System Control Unit.

PARTS SUPPLIED

1	13403	City Tie Board
4	942456	Spacer, 5/8"
1	942676	Resistor 4.7K 1/2W
1	446693	Instruction Sheet

Step 1.) Installation is to be done by qualified personnel who have thoroughly read and understood this instruction sheet.

Step 2.) Disconnect all power into system, including batteries.

Step 3) Attach conduit and run wires as required.

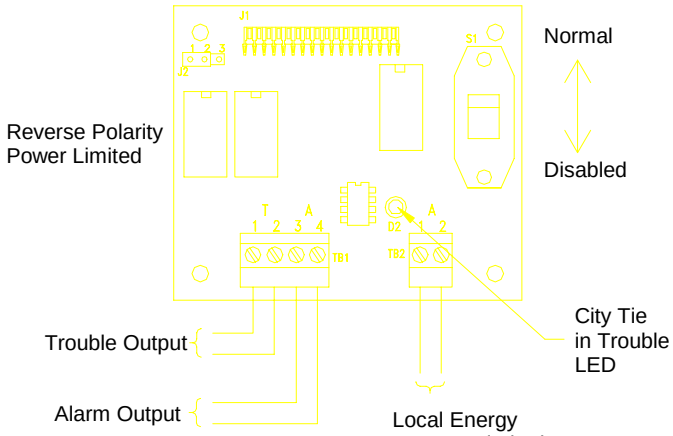
Step 4) Mount City Tie Board as shown, using four spacers (P/N 942456) to Main Board.

Step 5) Connect wires to fire alarm system control unit as required.

Step 6) Apply power to system.

Step 7 Check for proper operation of functions.

13403 WIRING



Reverse Polarity
Power Limited
24 VDC Nominal
1 VAC Ripple
.010 Amp Max. Standby Current
Alarm Tie Current .010 Amp Max.
Trouble Tie Current .010 Amp Max.

Local Energy
Non-power Limited
24 VDC Nominal
1 VAC Ripple
.015 Amp Max. Standby Current
.051 Amp Max. Alarm Current
Max. Line Resistance 30 ohms
Supervised for
Opens and Grounds
See Note 4

NOTES:

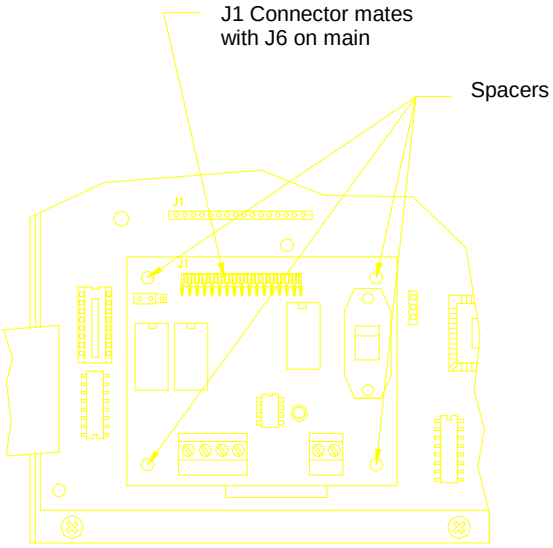
1.) Units to be installed in accordance with all local electrical codes.

2.) Terminal block will accept a maximum of #12 AWG wiring.

3.) System supervisory is transmitted as a Trouble.

4.) If Local Energy connection is not used, mount 4.7K resistor across TB2 terminals 1 and 2 .

13403 MOUNTING



J2 - Alarm / Trouble

Alarm/Trouble
Positions 1 & 2

Dedicated Alarm Output
Positions 2 & 3

INSTALLATION INSTRUCTIONS AND WIRING FOR REMOTE LED ANNUNCIATOR DRIVER BOARD
Cat. No. ADB Part No. 13406

The 13406 Remote LED Annunciator Driver Board is an optional module for the 13400 Fire Alarm System Control Unit. The 13400 control unit provides an optional drive for a remote annunciator. While the remote interface is via individual drive circuits, the physical connection between the control unit and the annunciator uses parallel data and draws all power from the control unit. The control unit will supervise 1 remote unit. Annunciator wiring is supervised for open conditions. The board mounts to the Main Board of the 13400 Fire Alarm System Control Unit.

PARTS SUPPLIED

1	13406	Remote LED Annunciator Driver Board
4	942456	Spacer, 5/8”
1	446694	Instruction Sheet

Step 1.) Installation is to be done by qualified personnel who have thoroughly read and understood this instruction sheet.

Step 2.) Disconnect all power into system, including batteries.

Step 3.) Attach conduit and run wires as required.

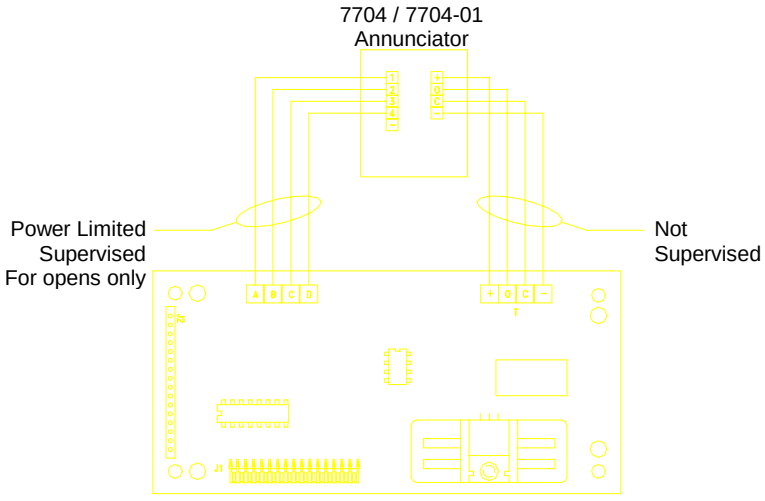
Step 4.) Mount Remote LED Anuunciator Driver Board as shown, using four spacers (P/N 942456) to Main Board.

Step 5.) Connect wires to fire alarm system control unit as required.

Step 6.) Apply power to system.

Step 7.) Check for proper operation of functions.

13406 WIRING

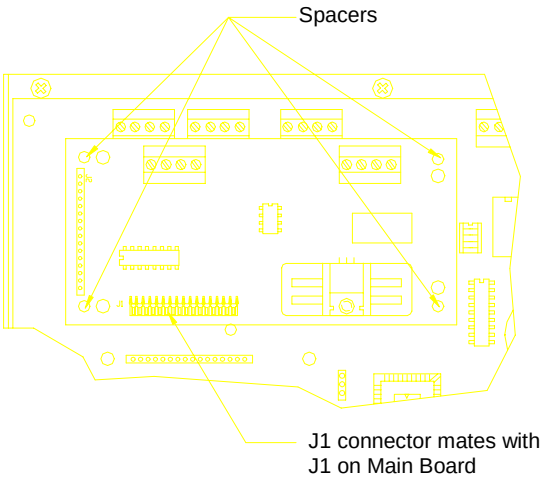


NOTES:

1.) Units to be installed in accordance with all local electrical codes.

2.) Terminal block will accept a maximum of #12 AWG wiring.

13406 MOUNTING



Glossary

Alarm Signal. A signal indicating an emergency requiring immediate action, such as an alarm for fire from a manual station, a waterflow alarm, or a automatic smoke detector.

Alarm Silence Inhibit. A option that prevents a human operator from silencing the notification appliances for a preset period of time.

Alarm System. A combination of compatible initiating devices, control panels, and notification appliances designed and installed to produce an alarm signal in the event of a fire.

Alarm Verification. A preset option that causes the panel to verify alarms originated by smoke detectors before indicating an alarm.

Annunciator. A remotely-located, electrically powered display, separate from the control panel, containing LEDs or lamps to indicate the states of the fire alarm system.

Audible Signal. An audible signal is a sound made by one or more audible notification appliances, such as bells or horns, in response to the operation of an initiating device.

Authority Having Jurisdiction (AHJ). The organization, office, or individual responsible for "approving" equipment, installation or procedure.

Auto-Silence. The capability of a panel to automatically silence the notification appliances after a preset period of time.

Auxiliary Relays. Control relays that energize only during alarm conditions that are used to either apply power to or remove power from other equipment during an alarm condition.

Class A Circuit. An initiating device or notification appliance circuit within which all components remain fully functional, even though a single open or ground exists in the circuit.

Class B Circuit. An initiating device or notification appliance circuit within which some or all components may be disabled with a single open or ground exists in the circuit.

Detector - Smoke, Ionization Type. A detector employing the principle of smoke's effect on an electrical current flowing in an ionized air chamber.

Detector - Smoke, Photoelectric Type. A detector employing the photoelectric principle of reflection or obstruction of light by smoke.

End Of Line (EOL). A device used to terminate a supervised circuit.

General Alarm. A term usually applied to the simultaneous operation of all the notification appliances on a system.

Ground Fault. A trouble condition in which a low resistance has been detected between the system wiring and conduit ground.

Initiating Device. A manually or automatically operated device such as a manual pull station, smoke detector, heat detector, waterflow switch or tamper switch.

Initiating Device Circuit (IDC). A circuit to which initiating devices are connected.

Labeled. Equipment or materials to which have been attached a label, symbol, or other identifying mark of an organization acceptable to the “authority having jurisdiction” and concerned with product evaluation, that maintains periodic inspection of the production of such labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Listed. Equipment or materials included in a list published by an organization acceptable to the “authority having jurisdiction” and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either than the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

NEC. National Electrical Code, also published as NFPA standard 70.

Notification Appliance. An electrically operated appliance used to indicate the system status such as a bell, horn, strobe light or speaker.

Notification Appliance Circuit (NAC). A circuit to which notification appliances are connected.

Power Supply. That portion of the fire alarm panel which provides the power needed to operate all panel modules, as well as that needed to operate all electrically powered initiating devices and all notification appliances.

Trouble Signal. An audible signal indicating trouble of any nature, such as a circuit break or ground, occurring in the device or wiring associated with a fire alarm signal.

Quick Test. A term pertaining to the test mode of the system, that automatically resets after a service technician tests initiating devices.

Supervisory Alarm. A signal indicating the operation of a supervisory device.

Supervisory Device. A device that monitors the condition of a sprinkler system such as a gate-valve switch, water-level switch, low pressure switch, low temperature switch or fire pump monitor.

Waterflow Switch. An assembly approved for service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler head will result in activation of this switch and subsequent indication of an alarm condition.

Zone. A designated area of a building. Commonly, zone, is interchanged with initiating device circuit.