FIRE ALARM SYSTEM SPECIFICATIONS

A. GENERAL REQUIREMENTS

1. The requirements of the Contract Documents, including the General Conditions and Division 1 – General Requirements shall apply to the work of this section.
2. All exceptions taken to these specifications, all variances from these specifications and all substitutions of operating capabilities or equipment called for in these specifications shall be listed in writing and forwarded to the Architect/Engineer. Any such exception, variances or substitutions which were not listed at the time of bid and are identified in the submittal, shall be grounds for immediate disapproval without comment.
3. Fire alarm system work under this section shall include all labor, equipment, materials and services required to furnish and install a complete system of devices and wiring. The new system shall be complete with all necessary hardware, software, battery backup, power supplies, etc., as required for a complete and working system as described by the systems integrator.
4. Catalog numbers specified are standard equipment of Edwards Systems Technologies (EST) and constitute type and quality of equipment required. All equipment shall be UL listed for fire alarm signaling use. The system and its installation shall be provided in accordance with the applicable editions and sections of NFPA Standards #72, Life Safety Code (NFPA Standards #101), the Massachusetts State Building and Fire Codes, Electrical Codes and all other local codes and regulations.
5. Programming services shall be provided from a single source, Signet Electronic Systems Inc. – Contact David Curreri @ 781-603-2534. Products may be purchased through an authorized EST distributor.
6. Wiring: All wiring shall be in accordance with Article 760 of the Massachusetts Electrical Code and any applicable local codes. Loop circuits will follow the applicable riser drawings with pipe and wire installation methodology that has been established as a fire alarm system standard. Red conduit, in open ceilings, with MC, in concealed areas, as specified in specification section 2.02B or equal shall be used for loop installations with fire rated MC pigtails from red j-boxes to ceiling mounted devices.
7. Related Documents:
    a. Secure building and electrical permits from ISD with a fire alarm permit from BFD prior to the project commencement.
    b. After completion of work, notify ISD and BFD the authorities having jurisdiction (AHJ).
    c. The Electrical Contractor will submit a record of completion for the installation as required by the NFPA Article 72 before requesting Boston Fire Department (BFD) inspection of the system installation.
8. Submittals:
    a. Provide a complete list of all types of equipment and components provided. This shall be incorporated as part of a Table of Contents, which will also indicate the manufacturer's part number and the description of the part.
    b. Provide a description of operation of the system, similar to that provided in Part B products of this section of the specifications, to include any and all exceptions, variances or substitutions listed at the time of bid. Any such exceptions, variances or substitutions which were not listed at the time of bid and are identified in the submittal, shall be grounds for immediate disapproval without comment.
    c. Provide manufacturer's Original printed product data, catalog cuts and description of any special installation procedures. Photocopied, faxed and/or illegible product data sheets shall not be acceptable. All product data sheets shall be highlighted or stamped with arrows to indicate the specific components being submitted for approval.
    d. Provide manufacturer's installation instruction manual for specified system.

e. Provide samples of various items when requested.
f. Provide a complete riser diagram which depicts all individual control panels, annunciators (and any particular annunciator controls and/or switches), pull boxes and conduit provisions for future device looping. The riser diagram shall also include wire specifications and wire tags on each feeder/circuit shown on the riser diagram.

9. Warranty:

a. Manufacturer shall guarantee the system equipment for a period of one (1) year from date of substantial or final completion of the system.
b. The Contractor shall guarantee all wiring and raceways to be free from inherent mechanical or electrical defects for one (1) year from date of substantial or final completion of the system.

c. Upon completion of the installation of fire alarm system equipment, The Electrical Contractor shall provide to the engineer a signed written statement, substantially in form as follows: "The undersigned, having engaged as the contractor on the Beth Israel Deaconess Medical Center confirms that the fire alarm system equipment was installed in accordance with the wiring diagrams, instructions and directions provided to us by the manufacturer.

B. SYSTEM OPERATION

A. Operation of system smoke (with the exception of stair well smokes) or heat detector or manual fire alarm station, shall automatically:

1. Activate the system which will notify the Boston Fire Department that there is an alarm at the designated building at Beth Israel Deaconess Medical Center (BIDMC).

2. Activate the audible and visual evacuation alarms on all floors throughout the building: Alarms shall be heard clearly by all occupants throughout the building, including elevators. Acceptable frequency and dB levels shall be required by Boston Fire Department and in accordance with 780 CMR 917.8.2. and verified by the Medical Center's UL Certified Testing Agent that dB levels have been measured throughout facility with ANSI Type I sound level meter.

3. Activate the recorded message regarding the evacuation procedure. The alarm and communication system shall provide a pre-recorded message to all areas of BIDMC's East Campus. The message shall contain the following information. "Attention Please: The signal you have just heard indicates a report of an event in this building. You should await further instructions while this report is being verified. If further action is necessary, you will be instructed to follow the floor response plan." This message shall be repeated three times. A female voice shall be used for this message. Exact wording of the evacuation message shall be reviewed and coordinate with BIDMC and BFD.

4. The emergency signal shall be three (3) rounds of 900 Hz signal followed by the pre-recorded message (repeated three times). The evacuation signal will continue on the floor of the incident and the next floor above and below.

5. Display alarm condition on FACP and Remote Fire Alarm Annunciator.

6. Release self-closing fire barriers and smoke doors when the associated fire zone goes into alarm and disconnect power to the electric door operators. However, within the fire zone, BIDMC may have security doors that secure on loss of power and the hospital has developed standard operating procedures implemented by floor personnel.

7. Duct smoke detectors shall shut down respective supply fans, when detector is operated, where shown on drawings and shall signal a supervisory trouble only at the F.C.C. in RA-100.

8. Stairway smoke detectors upon initialization shall signal a supervisory trouble only at the

F.C.C. in RA-100.

C. SUPERVISION

1. The system shall contain Class “A” independently supervised initiation circuits so that a fault in any one zone (building) shall not effect any other zone (building). The alarm activation of any initiation circuit (provided in future) shall not prevent the subsequent alarm operation of any other (future) initiation circuit.
2. There shall be Class “A” independently supervised and independently fused indicating appliance circuits for alarm speakers and flashing alarm lamps.
3. All auxiliary manual controls shall be supervised so that all switches must be returned to the normal automatic position to clear system trouble.
4. Each independently supervised circuit shall include a discrete amber “trouble” LED to indicate disarrangement conditions per circuit.
5. The incoming power to the system shall be supervised so that any power failure shall be audible and visually indicated at the control panel, and remote annunciator. A green “power on” LED shall be displayed continuously while incoming power is present.
6. The system batteries shall be supervised so that disconnection of a battery shall be audible and visually indicated at the control panel, the remote annunciator.
7. System expansion modules shall be supervised for module placement. Should a module become disconnected from the C.P.U., the system trouble indicator shall illuminate and an audible trouble signal shall sound.
8. Wiring to remote annunciator (as shown on plans) shall be supervised for open and ground conditions. All independent annunciator trouble indicators shall illuminate and an audible trouble signal shall sound at the control panel.

D. Power Requirements:

1. Any required data gathering panels shall be powered from a dedicated 20 amp, 120 VAC, life safety circuit. This circuit shall have a locked, red, circuit breaker and be within a dedicated fire alarm life safety riser.
2. Earth grounds shall terminate at the same power panel serving each respective control panel.
3. The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal 120 VAC power in a normal supervisory mode for a period of sixty (24) hours with ten (10) minutes of alarm indication at the end of this period per NFPA 72. The system shall automatically transfer to the standby batteries upon power failure. All battery charging and recharging operations shall be automatic. Batteries, once discharged, shall recharge at a rate to provide a minimum of 70% capacity in 12 hours.
4. All circuits requiring system operating power shall be 24 VDC and shall be individually fused at the control panel CPU.

E. Equipment:

1. Remote Annunciators:

   a. Each annunciator shall be EST #KPDISP with surface box, and shall include an LCD module.
   b. Each annunciator shall contain the following system status indicators:

      a. Minimum of 80 character backlit Liquid Crystal Display
      b. System Normal Indicator
      c. System Common Alarm Indicator
      d. System Common Trouble Indicator
      e. System Common Supervisory Indicator
      f. System Ground Fault Indicator
      g. System Common Security Indicator.
      h. System Disabled Points Indicator.
      i. System Reset Switch with Indicator
      j. System Alarm Silence Switch with Indicator.

k. System Trouble Silence Switch with Indicator.
l. System Message Queue Scroll Switches
m. 10-Digit Keypad to Enable/Disable System and Functions

2. Outlying Devices:

a. Manual pull stations shall be non-coded Edwards #SIGA-278 double action and shall be constructed of high impact, red lexan with raised white lettering and a smooth high gloss finish. All pull stations shall have an approved terminal strip provided therein; pigtail termination shall not be acceptable. The break glass rod station shall have a hinged front with key lock. Stations which utilize screwdrivers, allen wrenches, or other commonly available tools shall not be accepted. Stations shall be keyed alike with the fire alarm control panel. When the station is operated, the handle shall lock in a protruding manner to facilitate quick visual identification of the activated station. Station shall remain activated until the station is reset by means of that key. The same key shall be used for drill and test purposes. Stations shall be visible as activated from a distance of 100 feet front or side viewing. They shall be surface mounted, as required for each individual device.

b. Furnish and install smoke, rate anticipation, automatic photo-electric smoke detector heads where indicated on the plans, Edwards #SIGA-PS with Edwards #SB4 base. All heads shall plug into a universal twist-lock page designed to accept photo-electric detectors.

a. Remote LED alarm indicators shall be installed where indicated, Edwards #SIGA-LED.

c. Alarm horn/strobes provided by the Contractor for indication of fire alarm activation shall be UL approved for their intended purpose and shall be selected and installed in compliance with the Americans with Disabilities Act (ADA), NFPA 72 and the Uniform Building Code. The ADA signal appliances shall consist of a visual device or combined audible and visual devices mounted to a common assembly. Each device shall be individually serviceable and replaceable so that failure of one device shall not render the entire unit inoperable.

a. The faceplate/lens assembly shall be a permanent assembly constructed of Lexan™ 950R material to provide optimal impact resistance. The device shall have the word “FIRE” silkscreen printed in reflective lettering on the faceplate.
b. Tamperproof hardware shall be supplied by the device manufacturer.
c. In the public mode audible signals shall have a sound output level of 15 db over ambient at 5’ above the floor in the occupiable area. The sound pressure level with all notification appliances operating shall not exceed 120 dba anywhere in the occupiable area. The medical center has adopted a maximum dba limit of 90.
d. Visual devices shall be a xenon strobe which produces a predominantly horizontal light pattern.
e. Visual devices shall have an effective intensity of not less than 75 candela. Upon a side view, light output shall be not less than 75% of the rated output.
f. The flash rate shall be a minimum 1 Hz and a maximum of 3 Hz (60 – 180 per minute).
g. No place in any room, corridor or hallway shall be more than 50 feet from any signal device. In large open areas, devices may be placed 100 feet between centers around the perimeter. Signaling devices shall be mounted 80 inches above the highest floor point or 6 inches below ceiling; whichever is lowest.

h. Audio/visual devices shall be similar to Edwards #2452THS, capable of surface indoor mounting. All devices shall be mounted to a 4 inch square backbox.

d. Visual only indicating appliances shall be Edwards #G1RF-VM. These devices shall be UL listed and be capable of either ceiling or wall mounting. The lexan lens shall be pyramidal in shape to allow better visibility. Visual units shall be of the stand alone type or be incorporated as part of the horn/bell unit.

e. Automatic heat detectors shall be combination rate-of-rise and fixed-temperature (15°F (9°C.)/minimum rate-of-rise/135°F. (57°C.)). When activated, the units shall be non-restorable and give visual evidence of such operation. Heat detectors shall be EST #SIGA-HRS with standard detector base.

f. Duct smoke detectors shall be EST #SIGA-SD Intelligent Duct Smoke Detector with EST #SD-TRK Remote Test Station with key reset and SD-Series Sampling Tube. SIGA-CR shall be provided for fan shutdown function. Detectors shall obtain their operating power from the supervised current in the fire alarm loop. Installation must comply with NFPA-90A

g. Remote alarm LED indicator/test/reset stations shall be EST #SD-TRK. Wiring between detectors and test/reset stations shall be provided per manufacturer's requirements.

h. Single Input Module, SIGA-CT1: Provide intelligent single input modules #SIGA-CT1 as required. The Single Input Module shall provide one (1) supervised Class B input circuit capable of a minimum of 4 personalities, each with a distinct operation.

i. Dual Input Module, SIGA-CT2: Provide intelligent dual input modules #SIGA-CT2 as required. The dual input module shall provide two (2) supervised Class B input circuits each capable of a minimum of four (4) personalities, each with a distinct operation.

j. Monitor Module, SIGA-MM1: Provide intelligent monitor modules #SIGA-MM1 as required. The Monitor Module shall be factory set to support one (1) supervised Class B Normally-Open Active Non-Latching Monitor circuit.

k. Waterflow/Tamper Module, SIGA-WTM: Provide intelligent waterflow/tamper modules #SIGA-WTM as required. The waterflow/tamper module shall be factory set to support two (2) supervised Class B input circuits. Channel A shall support a Normally-Open Alarm Delayed Latching Waterflow Switch Circuit. Channel B shall support a Normally-Open Active Latching Tamper Switch.

l. Single Input Signal Module, SIGA-MCC1: Provide intelligent single input signal modules #SIGA-MCC1 as required. The Single Input (Single Riser Select) Signal Module shall provide one (1) supervised Class B output circuit capable of a minimum of two (2) personalities, each with a distinct operation. The single input signal module shall support the following operations:

   a. Audible/Visible Signal Power Selector (Polarized 24 Vdc @ 2A, 25Vrms @50W or 70 Vrms @35 Watts of Audio).

m. Control Relay Module, SIGA-CR: Provide intelligent control relay modules #SIGA-CR as required. The Control Relay Module shall provide one Form "R" dry relay contact rated at 2 amps @ 24 Vdc to control external appliances or equipment shutdown. The control relay shall be rated for pilot duty and releasing systems. The position of the relay contact shall be confirmed by the system firmware.

3. Wiring:

a. Wiring shall meet the requirements of the Massachusetts Electrical Code, Article 760, “Fire Protection Systems for Building Fire Alarm system” and as indicated on the drawings. The system integrator will determine each loops device loading. **“T” taps shall not be provided.** Wiring for fire alarm system shall be color coded and sized as specified in the accompanying wiring details and shall be fire rated fire MC cable (red striped metal jacket) in concealed locations and red conduit in open ceilings.

b. Fire alarm system wire in junction boxes shall be permanently tagged and identified. Each junction box shall be oversized, so that its capacity will be 40% greater than required for associated fire alarm system wires. Each junction box shall be painted fire alarm red and identified with white markings FIRE ALARM SYSTEM.

c. Provide, in accordance with the manufacturer’s instruction, wiring, conduit and outlet boxes required for the erection of a complete system as described herein and as shown on the drawings.

d. Final connections between equipment and wiring system shall be made by the system integrator or a representative of the manufacturer.

e. All low voltage wiring terminated to the fire alarm system shall be no less than No. 18 AWG in size, and solid copper.

f. All line voltage (120 VAC) wiring shall be no less than No. 12 AWG in size, and solid copper. This shall include all system grounding.

g. All junction box covers shall be painted safety red and labeled FIRE ALARM SYSTEM ONLY in white letters.

h. Fire alarm system wiring shall not co-mingle with any other system wiring in the facility. Conduits shall not be shared under any circumstance.

i. Fire alarm control panel enclosures shall have engraved labels indicating “FIRE ALARM SYSTEM”, and the areas of the building served by that panel.

j. Auxiliary relays shall be appropriately labeled to indicate “FIRE ALARM SYSTEM” and their specific function (i.e. Fan Shutdown, if any).

k. All fire alarm wiring shall be continuous and unspliced. Terminations shall only occur at fire alarm devices or control panel enclosures under terminal screws. All other splicing methods are specifically disallowed (i.e. plastic wirenuts).

l. All fire alarm wiring shall be installed using a dedicated system of supports. Fire alarm wiring shall not be bundled or strapped to existing conduit, pipe, duct work or other wire in the facility.

m. All fire alarm wiring shall be firestopped when passing through any wall, ceiling or floor in accordance with code.

F. EXECUTION

1. Installation:

a. The entire system shall be installed in a workmanlike manner, in accordance with approved Medical Centers wiring diagram. The Contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for the complete installation. All wiring shall be of the type recommended by the manufacturer, approved by the local Fire Department and specified herein.

b. All penetrations of floor slabs and firewalls, if any, shall be firestopped in accordance with all local fire codes.

c. Fire Smoke Dampers will have ,Kele TS-470-2, (2) SPDT end device switches installed in order to be monitored by the HOA Panel to show “OPEN” or “CLOSED” position, see switch cut sheet in the submittal section.

d. All smoke control mechanical equipment (AHU’s, Exhaust Fans, HV Fans) will have a Dwyer Series 1620 Dual Pressure Flow Switch installed to provide the

HOA Panel a positive indication of the equipment disposition, see switch cut sheet in the submittal section.

2. Support for Installer and Owner Maintenance:

   a. Allow the Medical Center with the use of the "sensitivity cone" to activate/restore outputs, actions, sequences, and simulate detector smoke levels.

   b. Any modifications of the existing East Campus system shall be performed under direct supervision of the system Integrator (manufacturer's representative). The Integrator shall insure all components are functional prior to BIDMC's U.L. Listed Fire Alarm testing company's pre-acceptance test.

   c. The system evacuation signal shall be a prerecorded message as required by the authority having jurisdiction.

3. Testing and Guarantee:

   a. Upon completion of each area of the fire alarm system installation and prior to acceptance, **the system shall be independently pre-tested** by a trained representative of the manufacturer and a representative from the Medical Center's UL listed testing company. All necessary tests shall be made and any deficiency found shall be corrected and the system shall be retested. Once the fire alarm system is certified by the Medical Center's testing company they will notify BFD and the Electrical Contractor will notify ISD to coordinate an acceptance at a time convenient to the fire department.

   b. Upon completion of the testing of the fire alarm system, a fire alarm inspection and testing report shall be prepared by the equipment manufacturer. This report shall list all equipment tested and shall be duly signed by an authorized representative of the manufacturer and the Electrical Subcontractor's job site foreman. Copies of the report shall be forwarded to the Electrical Subcontractor for further distribution to the Engineer, BIDMC Engineering and Maintenance departments for review and approval.

   c. Upon completion of the installation and testing of the fire alarm system, the Electrical Subcontractor shall prepare and forward to the Engineer, a signed written statement substantially in the form as follows:

      The undersigned, having been engaged as the Electrical Subcontractor on _____ confirms that the fire alarm system equipment was installed and connected in accordance with the contract specifications, state and local codes and regulations and in accordance with wiring diagrams, instructions and directions provided to us by the equipment manufacturer.

   d. In addition, a copy of the aforementioned manufacturer's system testing report shall be attached to the subject letter and these documents shall be forwarded to the Engineer.

   e. The Medical Center will determine if Fire Alarm Commissioning shall be performed.

4. Field Quality Control:

a. The Electrical Contractor or fire alarm equipment vendor shall have no less than one (1) National Institute of Certified Electronics Technicians (NICET) Level III and Level IV fire alarm technicians dedicated to this project.

b. The Electrical Contractor and the fire alarm system vendor shall, upon the request of the Design Engineer or Beth Israel Deaconess Medical Center, attend any and all project meetings for the purpose of accurately determining progress.

c. It shall be the responsibility of the Electrical Contractor to assure that construction debris does not adversely affect any existing sensing devices. Should it be deemed necessary by the Design Engineer, BIDMC or AHJ, the Electrical Contractor shall be responsible for the cleaning of all pertinent smoke detectors prior to continuing work in that particular area.

d. All equipment provided under this contract shall be compatible with existing Fire Command Center CPU, outlying control panels, annunciators, etc..

5. Documentation and Training:

a. The Electrical Contractor shall provide the Engineer with three (3) completed system manuals, which shall include operating and maintenance instruction, catalog cuts of all equipment and components, as built wiring diagrams and a manufacturer's suggested spare parts list. The Engineer shall then forward all manuals to BIDMC Maintenance Operations. The O&M documents will also be provided in an electronic PDF format.

b. The Electrical Contractor shall provide the services of the manufacturer's trained representative for two (2) system training sessions (on separate calendar days), each four (4) hours in length. All Owner's designed personnel shall attend these sessions. The manufacturer shall be contacted as to when all personnel will be available.

c. During the first training session, the Electrical Contractor shall be responsible for videotaping the entire session. The Electrical Contractor shall then turn over the DVD to BIDMC maintenance personnel for future use. All videotaping shall be provided in DVD format.

d. Three (3) complete sets of As-built drawings shall be provided. The As-built drawings will also be provided in an electronic AUTOCAD & PDF Format.

e. Fire Department Coordination: The Electrical Contractor shall coordinate with the Owner's, UL listed, fire alarm, testing company through whom BFD will be scheduled for inspections.

G. POWER OPERATED DOORS – SEE EXAMPLE

1. DESCRIPTION

a. Handicap doors shall be tied into the fire alarm system via PAM Relays above doors so that when an event is initiated on the floor the automatic door operator is de-energized and push plates are dropped out.

b. Contractor to hire Signet Electronic Inc. to program handicap door devices into fire alarm system.

H. SECURITY INTEGRATION – SEE EXAMPLE

1. DESCRIPTION

a. Any new security shall be tied into the existing security panel relay cabinets located on the floors. When an event happens on a floor and there are security doors that are affected and tied into the fire alarm system a signal is sent to security. The fire alarm and security integration is done thru UIO boards/modules installed in an EST relay cabinet.

b. Contractor to hire Signet Electronic Inc. to program security door devices into fire alarm system. The contractor will coordinate with BIDMC security and security contractor for integration.

I. HVAC INTEGRATION – SEE EXAMPLE

1. DESCRIPTION

a. The HVAC system integration into the fire alarm will be performed through the HVAC Relay Cabinets. There shall be HVAC relay cabinets with UIO boards/modules installed with CT1 & CT2 devices installed onto them. CT1s & CT2s will be monitoring the end switches installed on the FSDs and the ACDs. Through these devices there will be a signal sent back to the HOA panel located in RA-100 Fire Command Center where their status can be monitored using LEDs installed on the HOA panel. Also through the HVAC relay cabinets there will be a signal sent to the BAS.

b. Contractor to hire Signet Electronic Inc. to program HVAC devices devices into fire alarm system.

J. HOA PANEL – SEE EXAMPLE

1. DESCRIPTION

a. The HOA Panel located in RA-100 Fire Command Center will be built in modules for future.

b. When a renovation project is constructed and fans are installed, if they are over 2000 CFMs with Fire Smoke Dampers installed in duct work the HOA Panel will need to be modified to accommodate the new fan and show HVAC duct runs work with Fire Smoke Damper locations and their respective names.

c. Along with the HOA Panel physical modifications the designing engineer will update the HOA Riser Diagram cad drawing file to reflect these modifications. The riser drawing needs to be revised each time so that BIDMC can keep an up to date version for their records.

d. When HOA Riser is updated the designing engineer will submit the cad file to BIDMC for approval before any physical modifications to the HOA Panel are performed. When BIDMC approves the new design Signet Electronic Inc will be notified and hired to make the appropriate modifications as needed.

K. BIDMC SHUTDOWN SCHEDULING PROCEDURE

1. DESCRIPTION

BIDMC is comprised of (2) campuses, East and West. On the East campus all buildings with the exception of the Shapiro building are connected to the main master-box. The Shapiro building has its own master-box. The West campus has multiple master-boxes for all its buildings. A list will be kept in the database which buildings trip which master-box.

a. Prior to each coming week, the project manager will submit all fire alarm shutdown requests, received from the electrical contractor, review by BIDMC's Electrical Supervisor.

b. All requests for shutdowns will be placed on an electronic calendar for BIDMC service work. This will allow for service coordinators to easily review if a shutdown is already scheduled for one of the buildings.

c. The shut down request will be generated detailing which building, effected master-box, reason for shutdown, timeframe / expected duration and manpower requirements.

d. When a shutdown is required for a building, the master-box for that building will be disconnected and the medical center's UL listed technicians will standby the effected FACP. At the end of the shut down a second technician will assist with required re-testing of the system.

e. If an actual alarm comes in the technician will pull the master-box hook to send the alarm signal to the Boston Fire Dept.

L. THE SYSTEM INTEGRATOR

1. DESCRIPTION

a. When spaces are renovated it affects the performance of the fire alarm system. Often walls are moved or removed from spaces. Room numbers change. This has significant effect to the fire alarm system. With this in mind any contractor bidding this type of work must have the following information to accurately bid work and for the system integrator to provide accurate pricing for the fire alarm system equipment and programming requirements.

b. For bidding purposes the system integrator will need the following:

Floor plan bid documents indicating the fire alarm devices. The plans should indicate whether devices are new, existing or to be relocated. The plans must include any changes to walls, door locations and room numbers.

If a renovation includes more than one building than the above information and files must be provided by the BIDMC for each building.

c. The successful contractor will need to provide the following:

The new floor plan will be in a windows metafile format (wma). This is required to update the fireworks graphic computer system. The new floor plan must be a complete floor plan for the building. It must include any changes to walls, door locations and room numbers. It should be a clean representation of the walls,

doorways, stairwells and room numbers only. It must not include any fire alarm devices. Electrical devices etc. that might appear on bid documents.

d. Once installation is complete the electrical contractor must supply accurate descriptions for each of the devices installed along with the bar code for each device. This is required for programming purposes and UL certification testing.

BIDMC

Fire Alarm Install

Picture Guide

&

Installation Reference Guide

REV 1 (2/22/11)

Conductors Used In the System

Data Loop - 16/2 RED "BX" (Smokes, Pull Stations, CT-1 and CT-2)

Speaker/Strobe Loop - 16/4 RED "BX" (Speaker) run with a 14/2 RED "BX" (Strobe)

*******A Strobe Only Device is run using the 14/2 "BX" from the Speaker/Strobe Loop******

24 Volt Circuit – 14/2 RED "BX" (24 Volt Door Magnets and Pam Relays for 120 Volt Door Release).

******Run as a Single Homerun (No Return Loop) to the Device and Paralleled up to add devices******

Splice boxes are permitted. BOX COVERS SHALL BE SPRAY PAINTED RED AND CLEARLY MARKED AS A FOLLOWS:

"FIRE ALARM

24 VOLT"

“DOOR HOLDER CIRCUIT”

<u>Annunciator</u> - 16/4 RED “BX” (Annunciator)

******Run as a Single Homerun (No Return Loop) to the Annunciator Device******

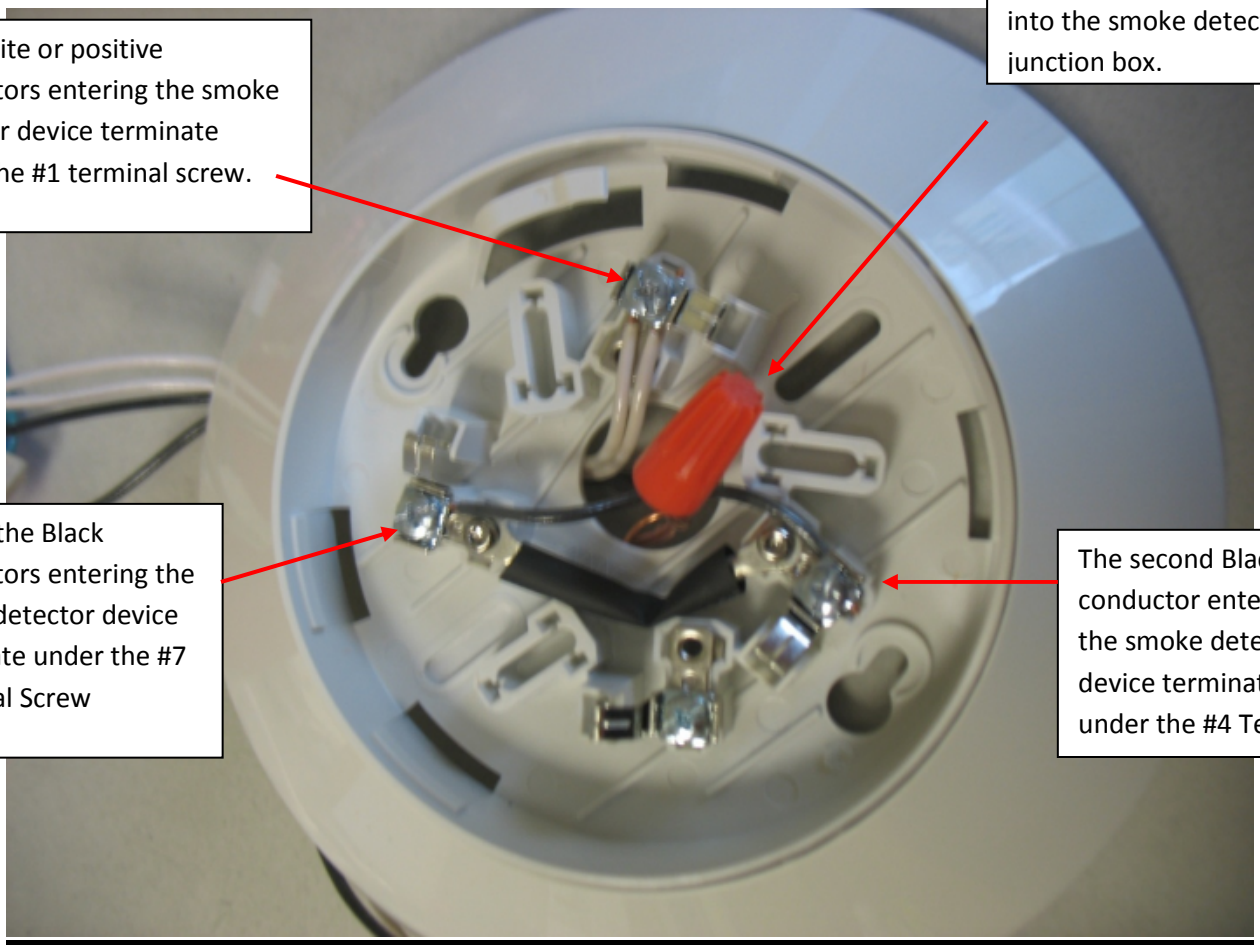
<u>HVAC Loop</u> – 16/2 RED “BX” SPRAYED YELLOW (A Data Loop containing CT-1 and CT-2 devices specifically used to monitor HVAC operations.)

DEVICE INSTALLATION

SMOKE DETECTOR:

The Copper ground wire or drain should be twisted together, capped off, and tucked into the smoke detector junction box.

The White or positive conductors entering the smoke detector device terminate under the #1 terminal screw.

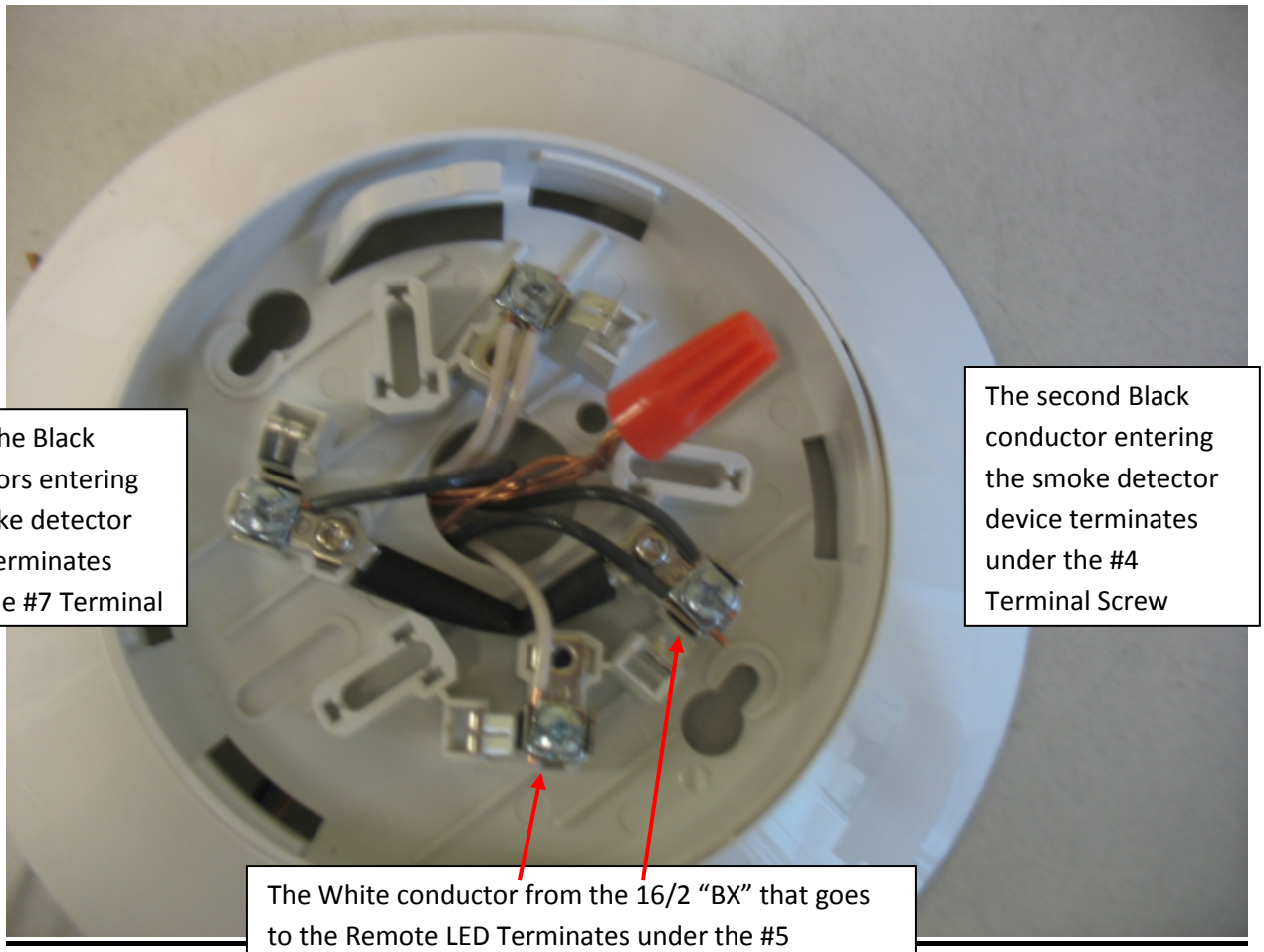


One of the Black conductors entering the smoke detector device terminate under the #7 Terminal Screw

The second Black conductor entering the smoke detector device terminate under the #4 Terminal

Smoke Detectors use the 16/2 data loop conductors to communicate with the fire alarm system that a building contains smoke.

SMOKE DETECTOR WITH LED:



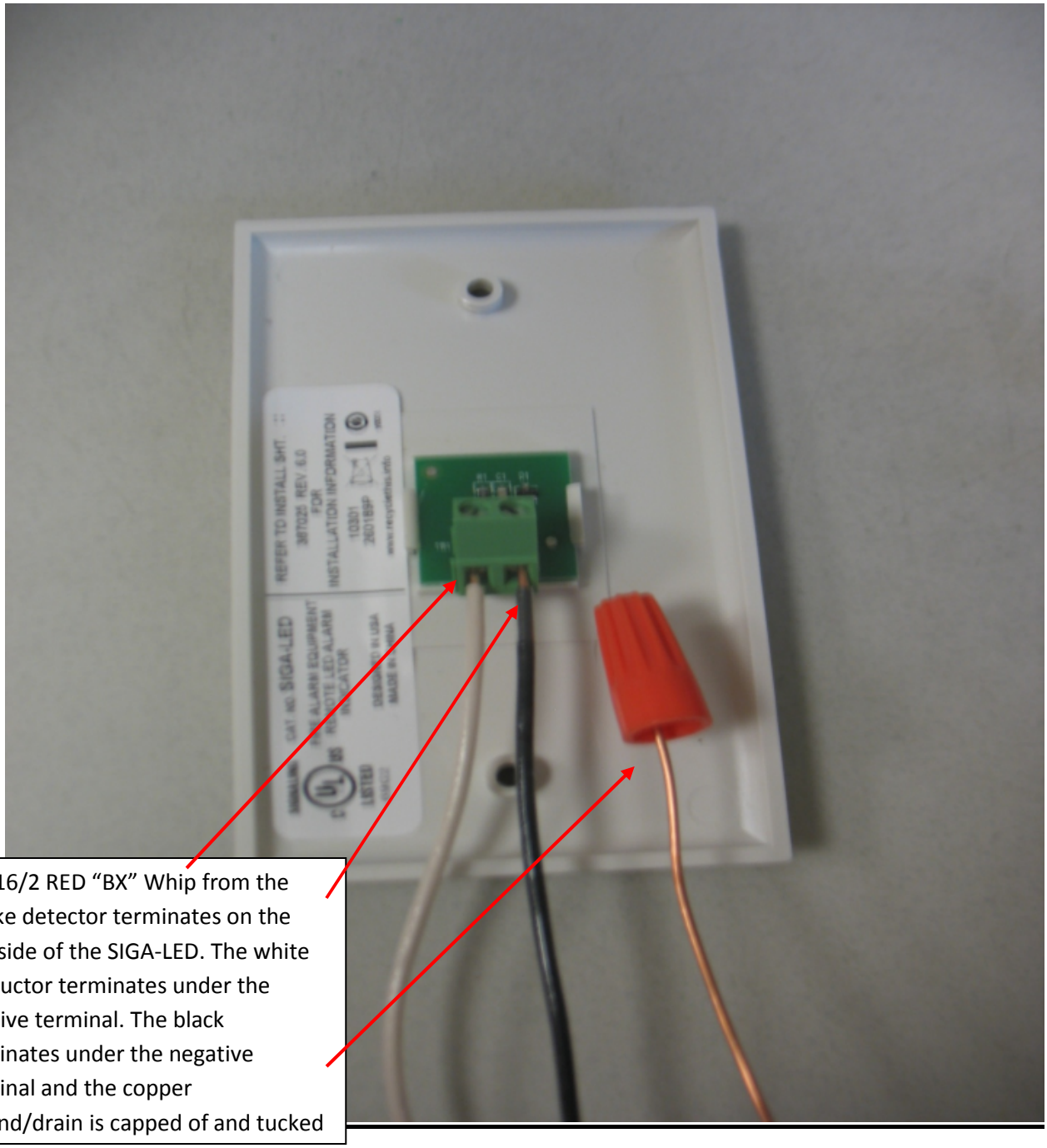
One of the Black conductors entering the smoke detector device terminates under the #7 Terminal

The second Black conductor entering the smoke detector device terminates under the #4 Terminal Screw

The White conductor from the 16/2 "BX" that goes to the Remote LED Terminates under the #5 Terminal screw. The Black conductor from the 16/2 "BX" that goes to the remote LED Terminates under the #4 terminal with one of the black conductors from the smoke detector.

Smoke Detectors with a Remote LED use the 16/2 data loop conductors to communicate with the fire alarm system and a 16/2 Red "BX" whip from the smoke detector to the LED to relay the status of the device.

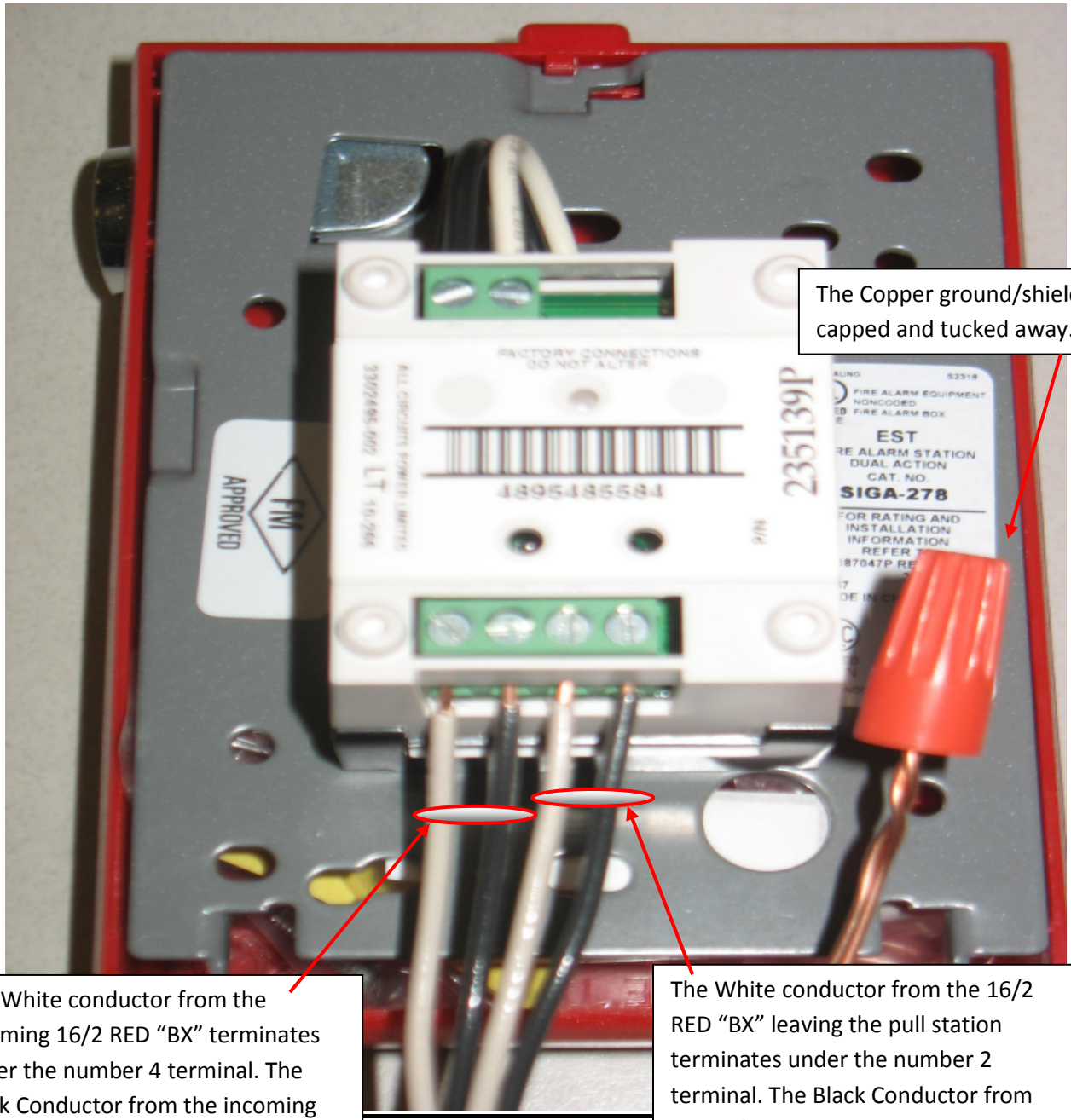
LED:



The 16/2 RED “BX” Whip from the smoke detector terminates on the backside of the SIGA-LED. The white conductor terminates under the positive terminal. The black terminates under the negative terminal and the copper ground/drain is capped of and tucked

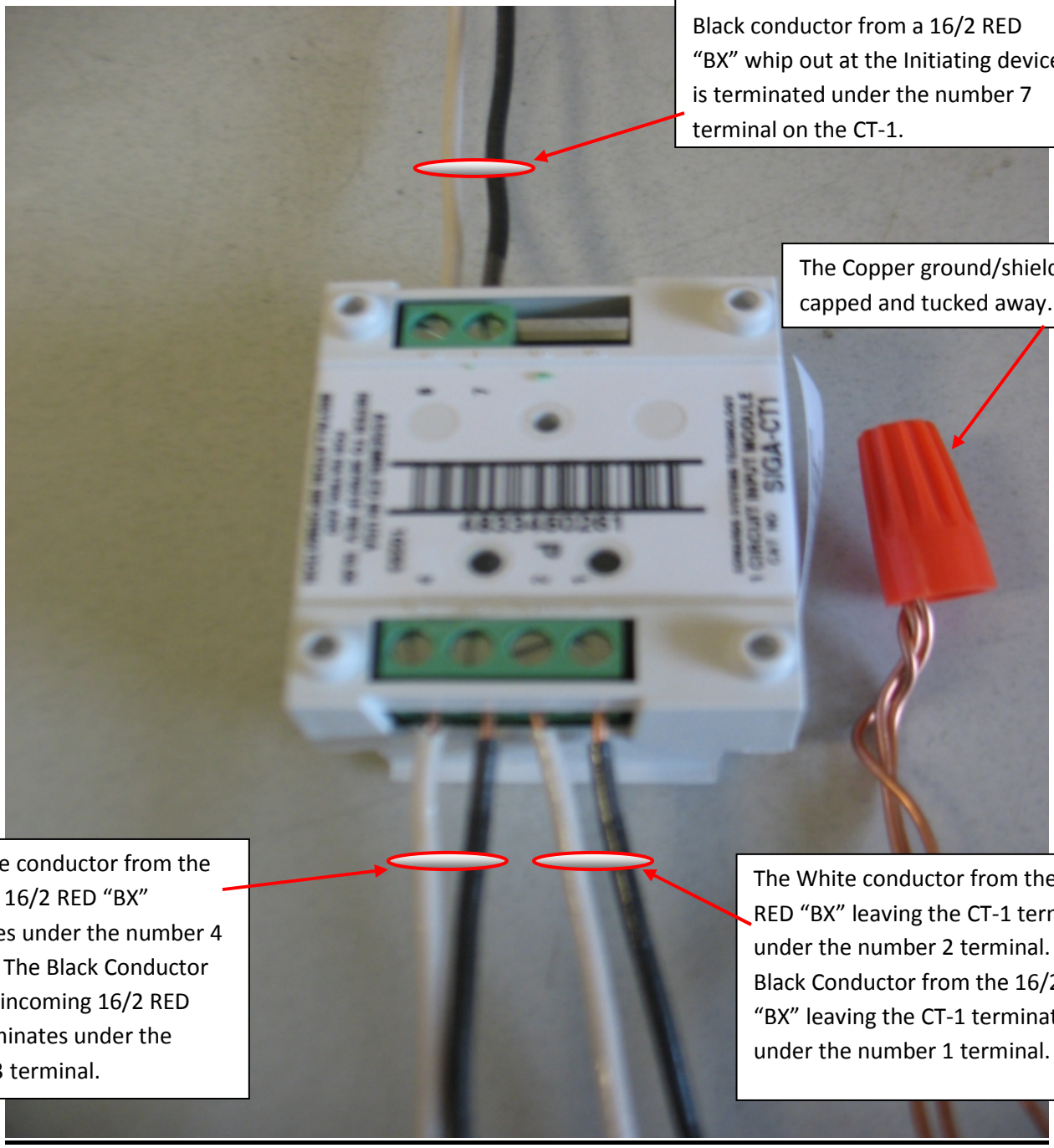
The LED Device is used in conjunction with smoke detectors to relay the status of smoke detectors inside electrical closets, tel-data closets and other areas specified on the prints.

PULL STATION:



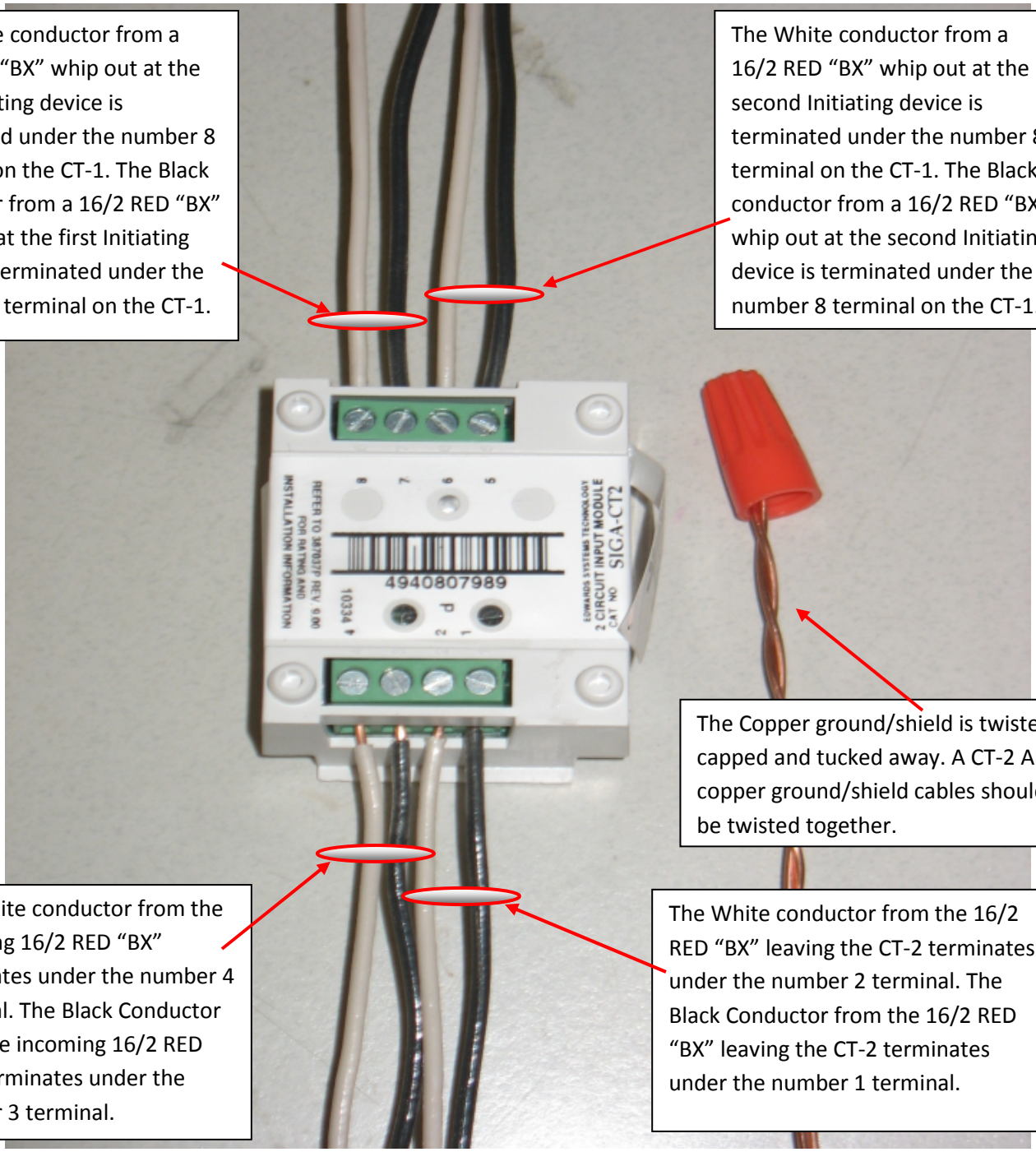
Pull stations use the 16/2 data loop conductors to communicate with the fire alarm system that someone has physically pulled the pull station lever to notify the command center that there is an emergency.

CT-1:



CT-1 Modules use the 16/2 data loop conductors to communicate with the fire alarm system that a NORMALLY OPEN initiating device such as a tamper switch or a water flow switch or positive flow indicator has been activated or deactivated.

CT-2:



The White conductor from a 16/2 RED "BX" whip out at the first Initiating device is terminated under the number 8 terminal on the CT-1. The Black conductor from a 16/2 RED "BX" whip out at the first Initiating device is terminated under the number 8 terminal on the CT-1.

The White conductor from a 16/2 RED "BX" whip out at the second Initiating device is terminated under the number 8 terminal on the CT-1. The Black conductor from a 16/2 RED "BX" whip out at the second Initiating device is terminated under the number 8 terminal on the CT-1.

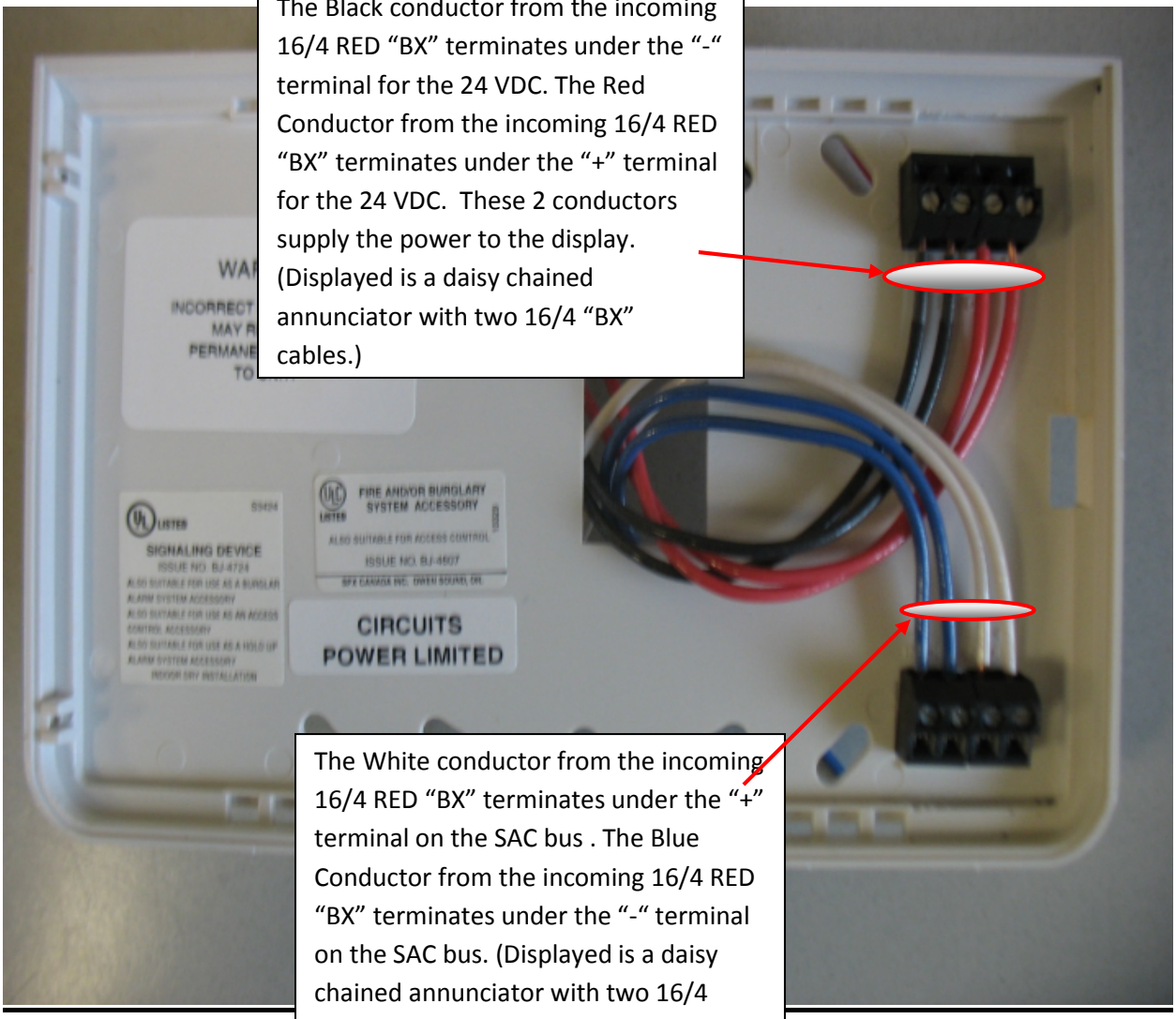
The Copper ground/shield is twisted, capped and tucked away. A CT-2 All 4 copper ground/shield cables should be twisted together.

The White conductor from the incoming 16/2 RED "BX" terminates under the number 4 terminal. The Black Conductor from the incoming 16/2 RED "BX" terminates under the number 3 terminal.

The White conductor from the 16/2 RED "BX" leaving the CT-2 terminates under the number 2 terminal. The Black Conductor from the 16/2 RED "BX" leaving the CT-2 terminates under the number 1 terminal.

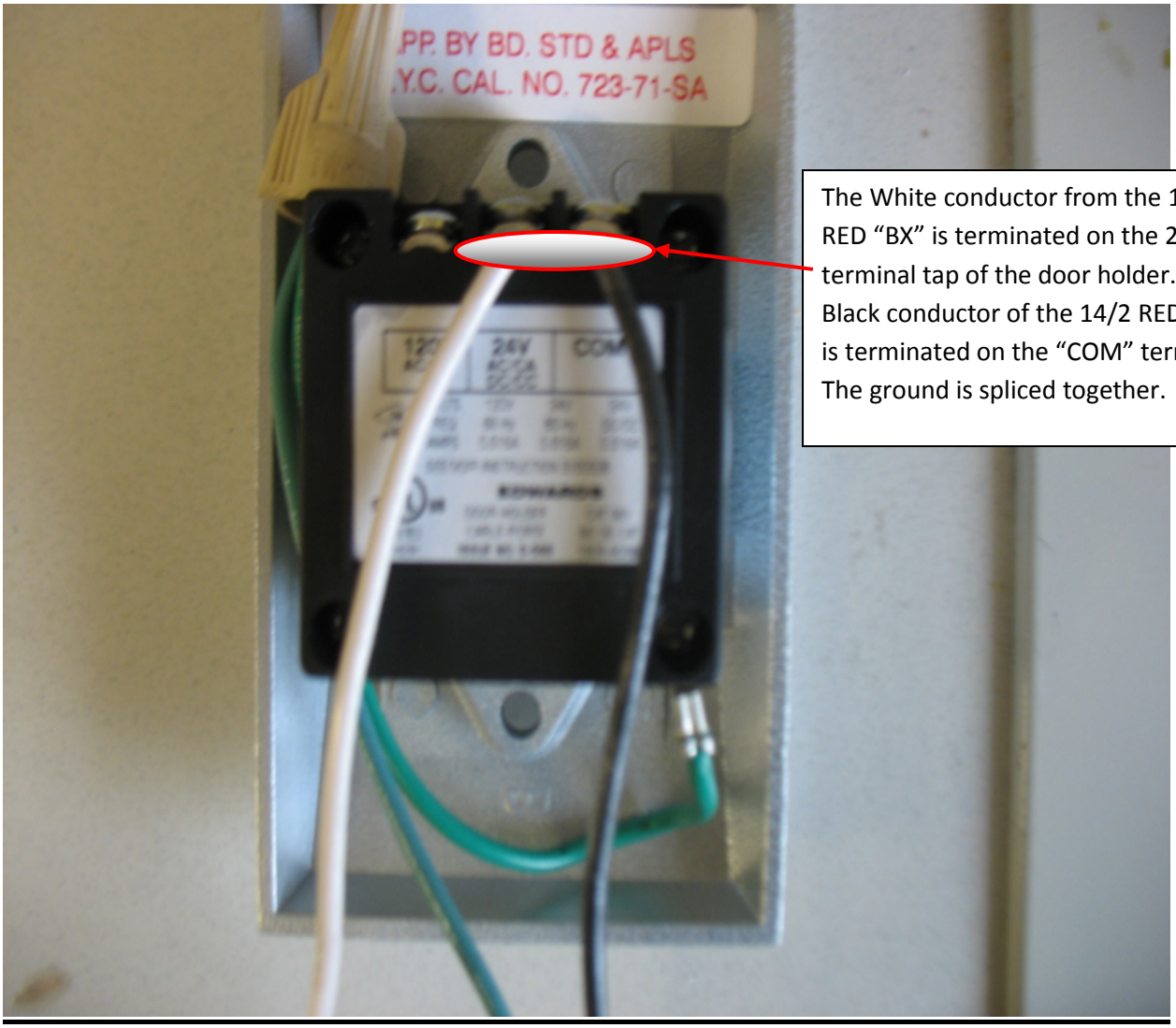
CT-2 Modules use the 16/2 data loop conductors to communicate with the fire alarm system that one or two NORMALLY OPEN initiating devices such as a tamper switches or water flow switches or positive flow indicators have been activated or deactivated.

ANNUNCIATOR KEY PAD:



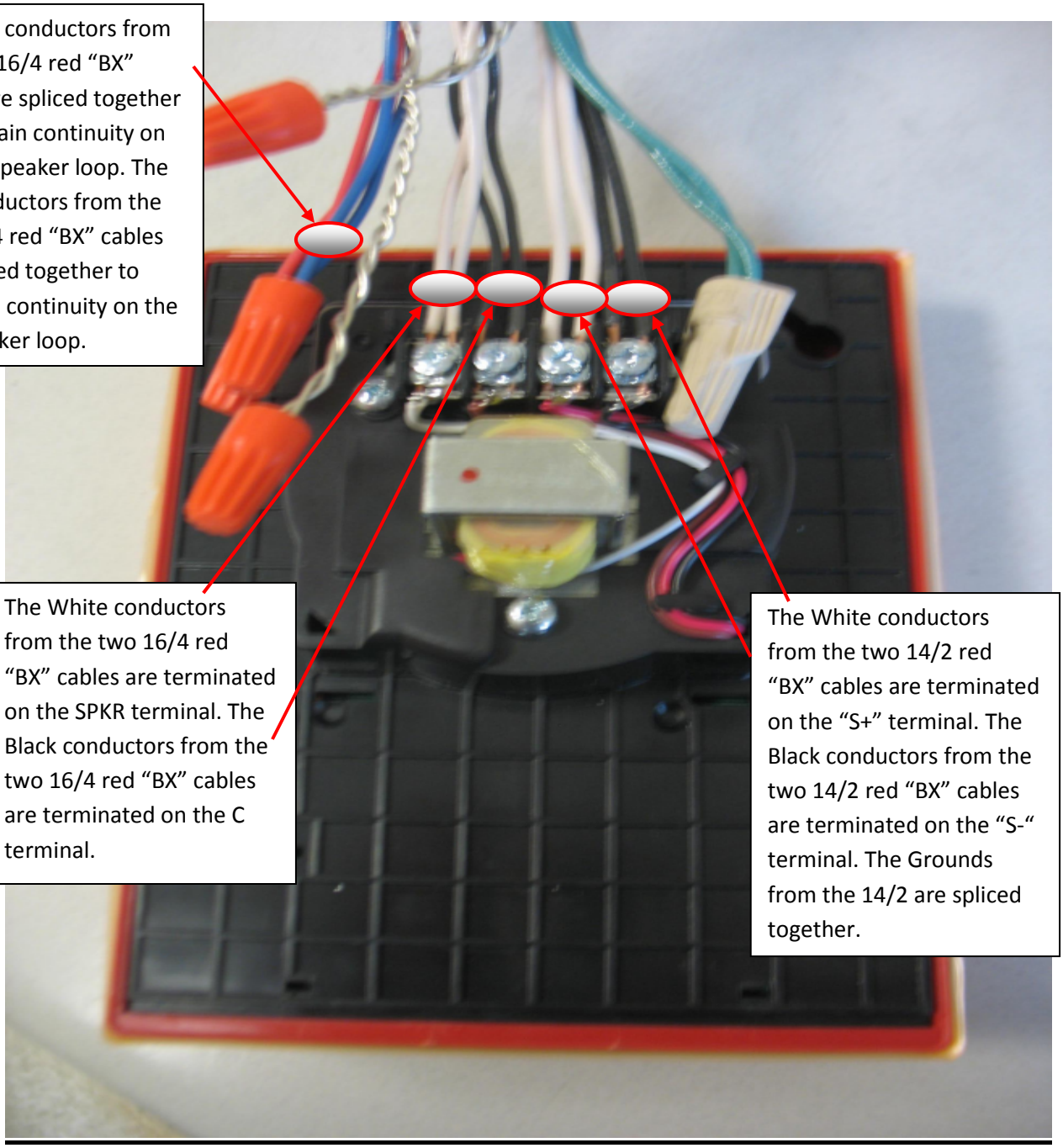
The Annunciator key pad uses a 16/4 RED “BX” run from the fire alarm riser directly to the Annunciator. The Annunciator displays the status of the fire alarm system throughout the campus. If a second annunciator is needed on the floor the power and signal is daisy chained (see picture above).

DOORHOLDER:



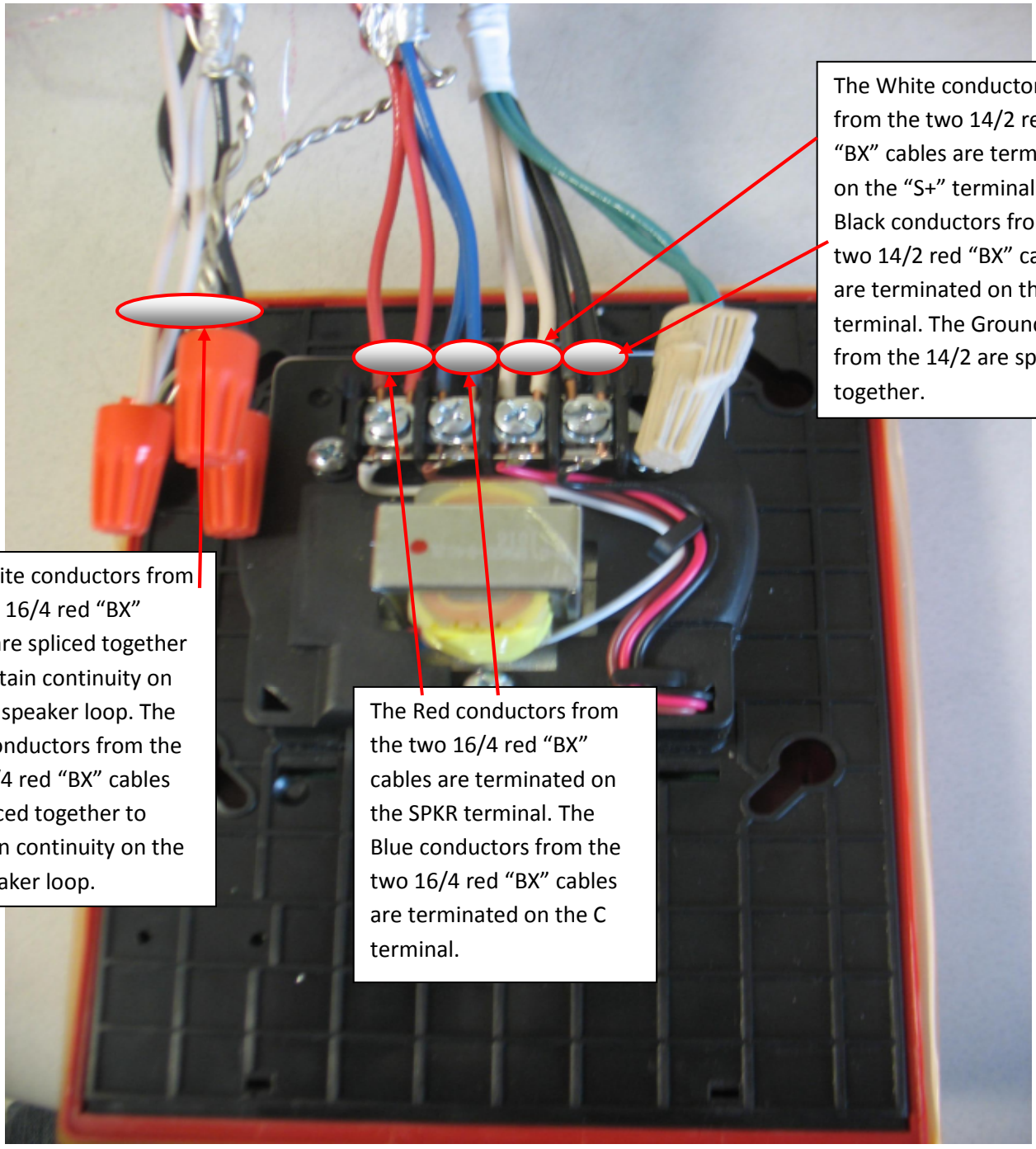
A 14/2 Red "BX" is used to power the 24 volt magnetic door holder. When the 24 volt signal is removed from the magnet the doors are released and the proper doors are closed to restrict the movement of fire into other areas of the complex.

SPEAKER/STROBE ("A" SPEAKER LOOP):



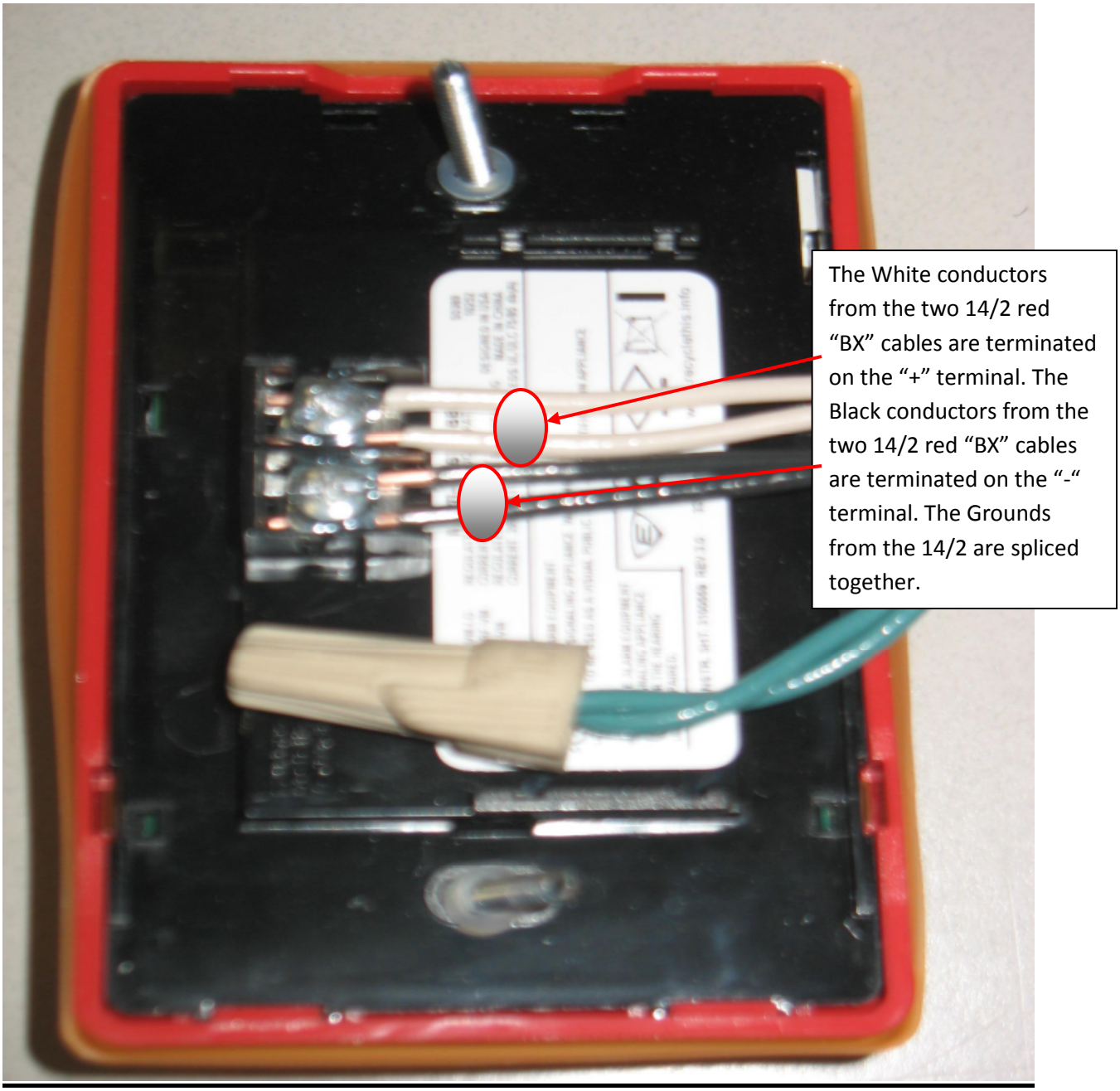
The Speaker/Strobe device uses the 16/4 red "BX" on the speaker and a 14/2 red "BX" for the strobe the Speaker/Strobe conductors are run in a daisy chain configuration. THERE ARE NO SPLICES IN THE SPEAKER STROBE CIRCUIT. The Speaker/Strobe device notifies the buildings that an alarm has been received.

SPEAKER/STROBE ("B" SPEAKER LOOP)

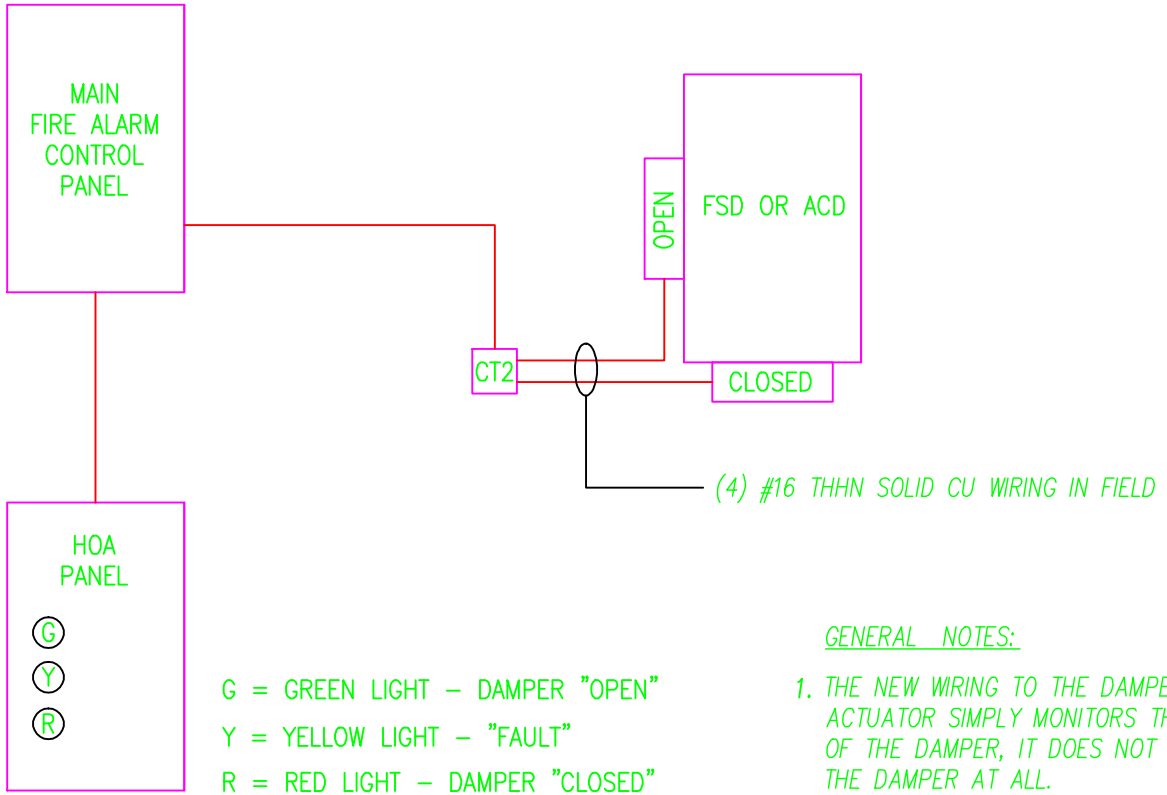


The Speaker/Strobe device uses the 16/4 red "BX" on the speaker and a 14/2 red "BX" for the strobe the Speaker/Strobe conductors are run in a daisy chain configuration. The Speaker/Strobe device notifies the buildings that an alarm has been received.

STROBE ONLY:



The Strobe Only device uses the 14/2 RED "BX" Cable incorporated in the Speaker/Strobe Loop. The 16/4 RED "BX" for the Speaker is run past the Strobe Only device. The Strobe Only is used in bathrooms, meeting rooms and small Conference rooms where a loud Speaker is not necessary notify people of an alarm condition.

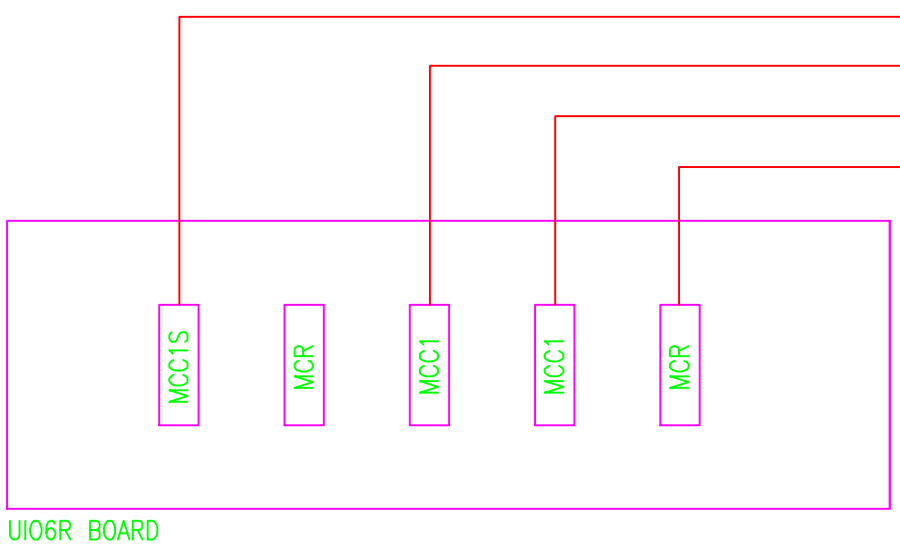


GENERAL NOTES:

1. THE NEW WIRING TO THE DAMPER ACTUATOR SIMPLY MONITORS THE POSITION OF THE DAMPER, IT DOES NOT CONTROL THE DAMPER AT ALL.
2. CT-2 WOULD INDICATE THE TYPE OF MONITORING MODULE USED ON THE CEILING OF A NON-MECHANICAL AREA. A MCT-2 WOULD BE A PLUG-IN STYLE THAT IS USED WITH A UIO6R BOARD IN MECHANICAL ROOM.

FSD/ACD FIRE ALARM WIRING DETAIL

N.T.S.



STROBES A/B

SPEAKER CIRCUIT A

SPEAKER CIRCUIT B

DOOR HOLDERS FOR PATIENT ROOM DOORS & CORRIDOR DOORS

(2) TYPES OF DOOR CONTROL:

1. NEW 24V DOOR MAGNETIC DOOR HOLDERS WHICH ARE POWERED VIA A 24VDC SOURCE THRU THE FIRE ALARM SYSTEM AND ARE DE-ENERGIZED UPON AN ALARM
2. EXISTING 110V DOOR HOLDER (PART OF THE ACTUAL DOOR CLOSER) WHERE (2) RELAYS ARE INVOLVED. THE MCR @ THE FIRE ALARM RISER CLOSET SUPPLIES 24VDC POWER TO A FIELD INSTALLED "PAM RELAY" WHICH INTERUPTS THE 110V FEED TO THE DOORS UPON AN ALARM.

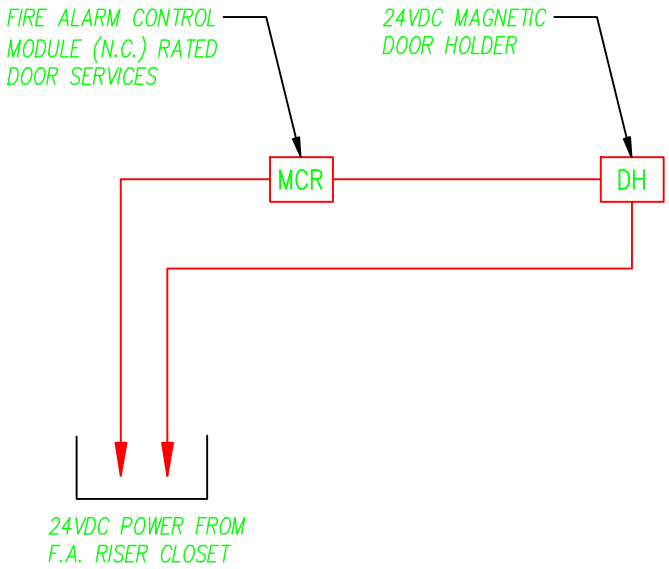
*REFER TO FIRE ALARM/SECURITY INTERFACE WIING DETAIL

GENERAL NOTES:

1. *SECURITY DOORS ARE CONTROLLED VIA THE SECURITY SYSTEM CONTROL PANELS. THESE DOOR CONTROL PANELS HAVE BEEN INTERFACED TO THE FIRE ALARM SYSTEM VIA FIRE ALARM CONTROL MODULES (MCR) INSTALLED IN THEIR OWN CABINET AND THEY CURRENTLY RELEASE DOORS TO THE "FAIL-SAFE" POSITION ON A CASE BY CASE SITUATION.*

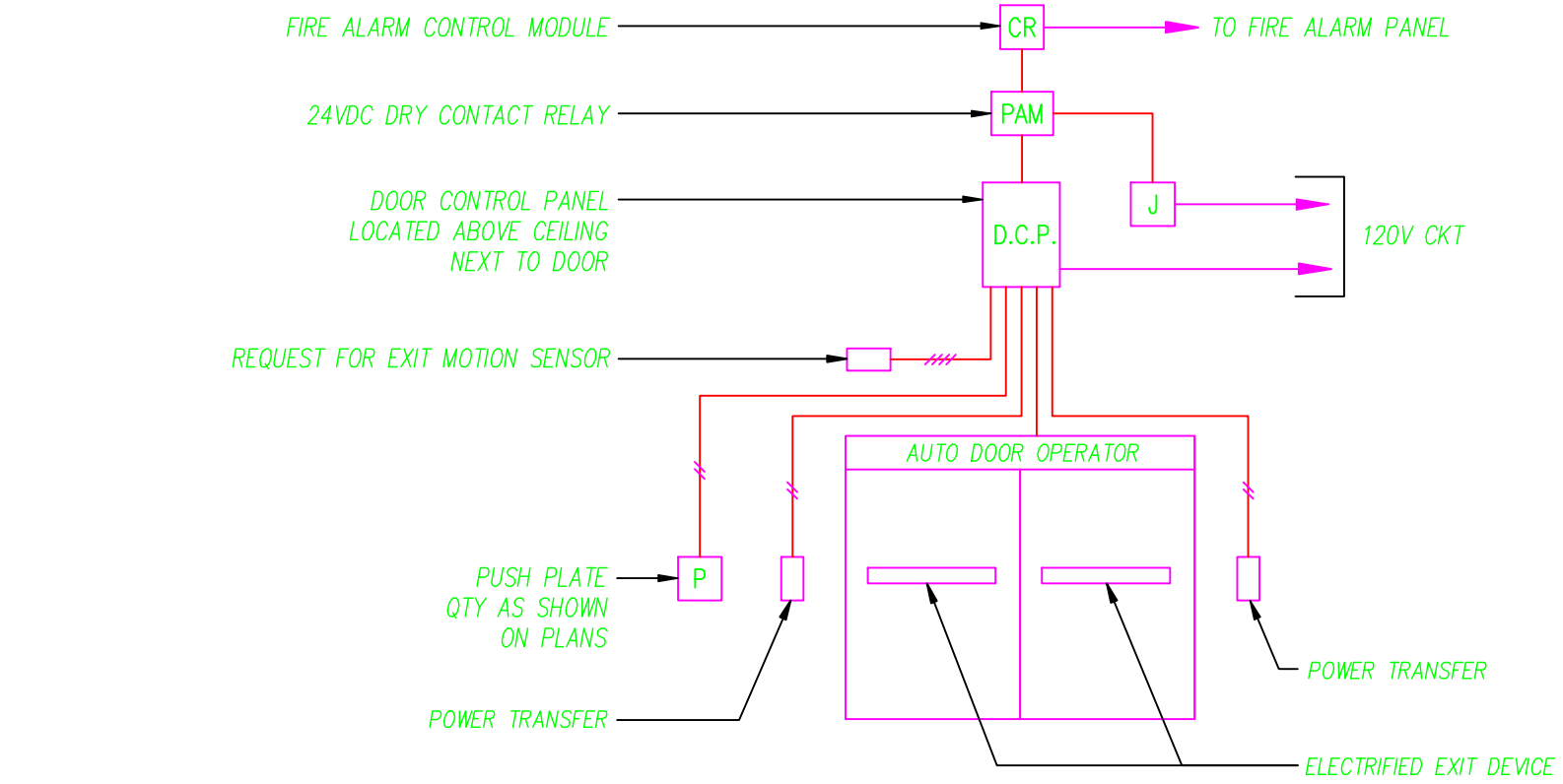
TYPICAL UIO BOARD FIRE ALARM WIRING DETAIL AT FIRE ALARM RISER CLOSETS

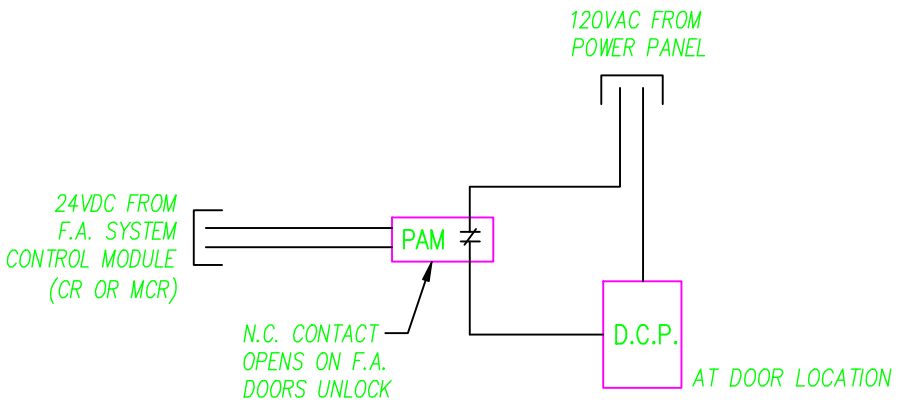
N.T.S.



TYPICAL DOOR HOLDER WIRING DETAIL – NON-SECURITY DOOR

N.T.S.





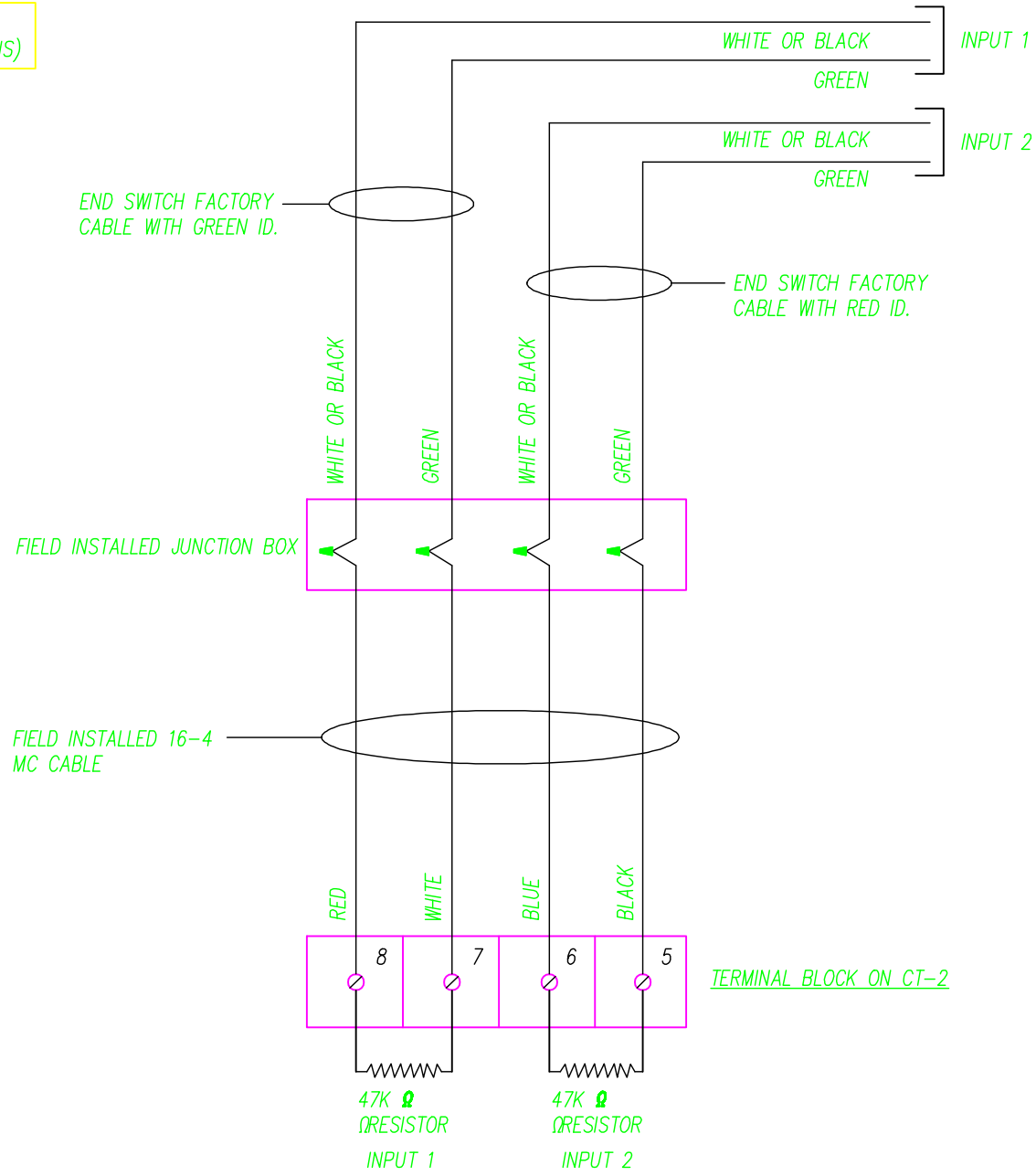
GENERAL NOTES:

1. SECURITY DOORS WIRED TO A DOOR CONTROL PANEL (SPECIFIC TO THE DOOR) AND AT THE DOOR LOCATION AND INTERFACED TO THE FIRE ALARM SYSTEM.

TYPICAL AUTO DOOR WIRING DETAIL

N.T.S.

SCHEME FOR DAMPER END SWITCH
WIRING IN CEILINGS (CONCEALED LOCATIONS)



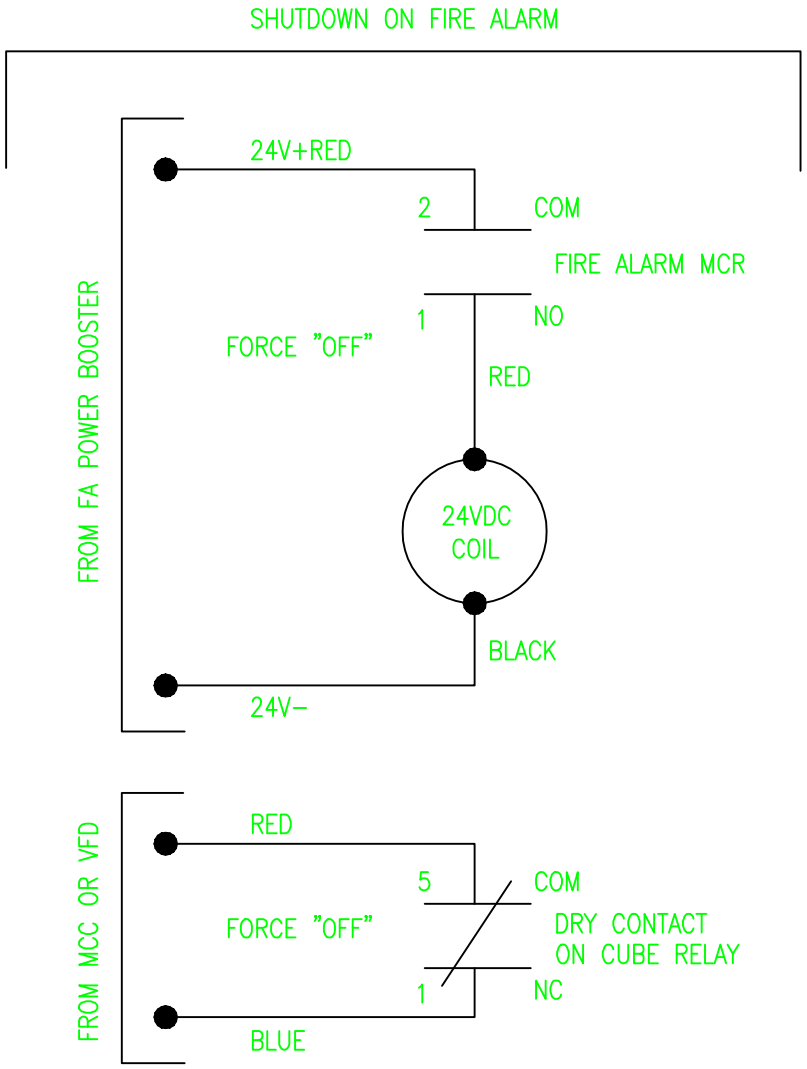
NOTES:

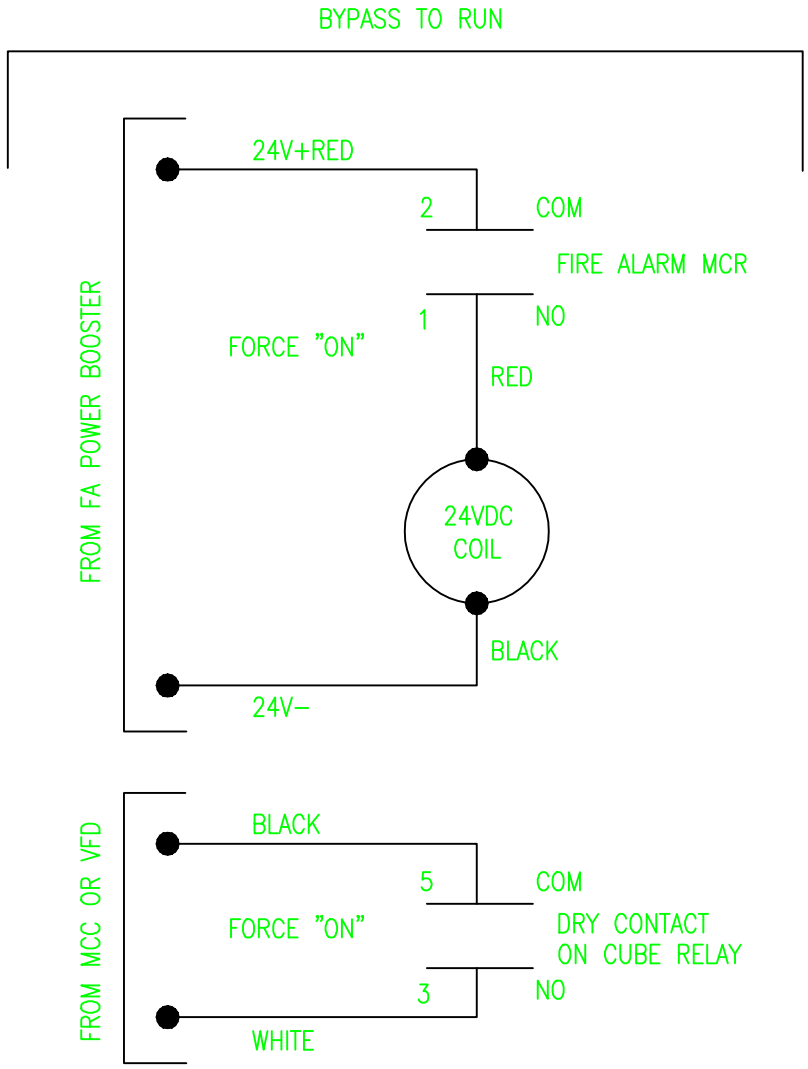
1. IF BLUE FLAG READS "OPEN" THEN:
   a. THE RED AND WHITE WIRES SPLICE TO THE GREEN AND NC
   b. THE BLUE AND BLACK WIRES SPLICE TO THE GREEN AND NO

2. IF BLUE FLAG READS "CLOSED" THEN:
   a. THE RED AND WHITE WIRES SPLICE TO THE GREEN AND NO
   b. THE BLUE AND BLACK WIRES SPLICE TO THE GREEN AND NC

WIRING DIAGRAM #3

N.T.S.



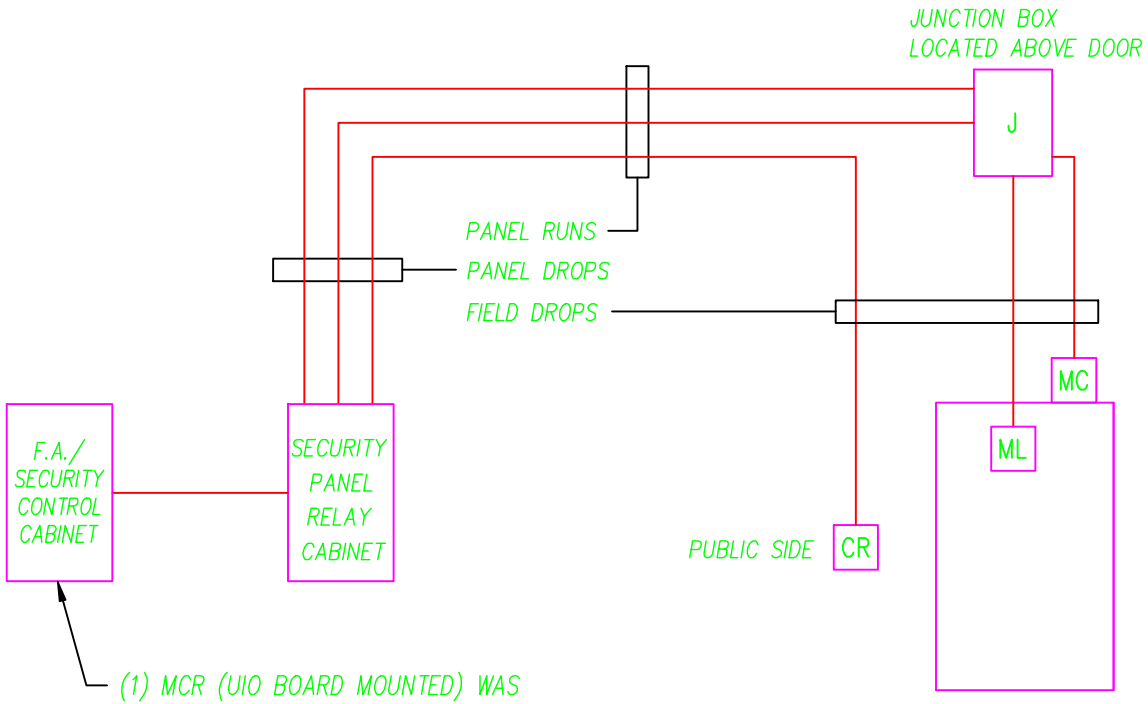


WIRING DIAGRAM #1

N.T.S.

Fire Alarm Specification - Rev. 0, March 29, 2012

Beth Israel Deaconess Medical Center



(1) MCR (UIO BOARD MOUNTED) WAS INSTALLED FOR EVERY DOOR THAT BIDMC WANTED CONTROL OF. BUILDING FIRE ALARM WILL UNLOCK SPECIFIC DOORS BASED ON SECURITY CONTRACTORS FINAL TERMINATIONS AT THE SECURITY PANEL.

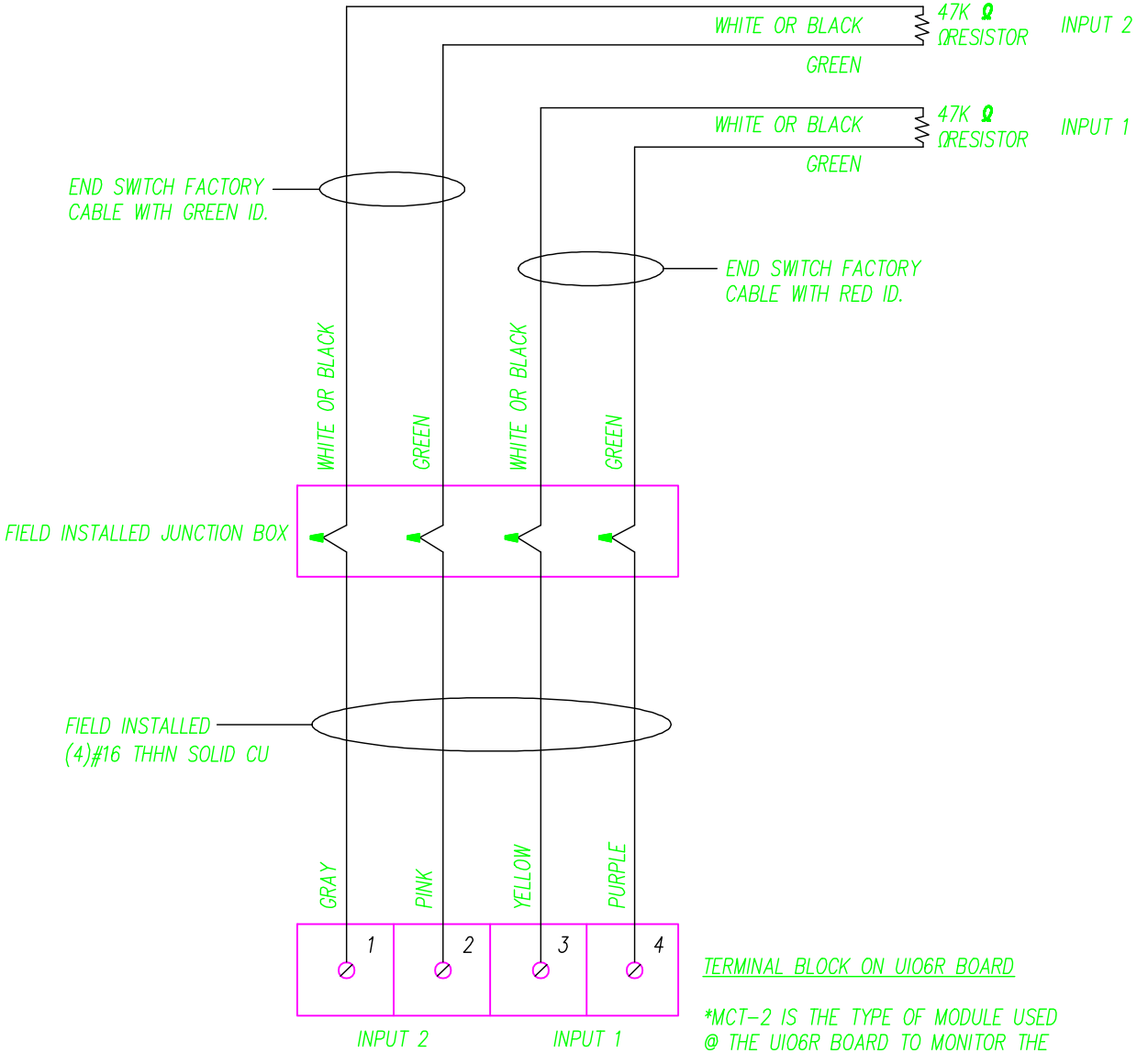
GENERAL NOTES:

1. PROVIDE 3/4"C FOR ALL CONCEALED WIRING IN WALLS
2. PROVIDE 4" SQUARE BOXES MINIMUM WITH SINGLE GANG MUD RINGS FOR RECESSED DEVICES.
3. ALL STAIRWELLS ARE "FAIL SAFE" ALL OTHERS ARE "FAIL SECURE."
4. SECURITY CONTRACTOR TO COORDINATE WITH MILLWORK, ETC.
5. SECURITY DOORS WIRED TO A DOOR SECURITY PANEL LOCATED IN A SECURITY CLOSET WHERE IT IS INTERFACED TO THE FIRE ALARM SYSTEM.

TYPICAL SINGLE MAGLOCK DOOR WITH CARD READER WIRING DETAIL

N.T.S.

SCHEME FOR DAMPER END SWITCH WIRING IN OPEN MECHANICAL SPACES



TERMINAL BLOCK ON UIO6R BOARD

*MCT-2 IS THE TYPE OF MODULE USED @ THE UIO6R BOARD TO MONITOR THE DAMPER POSITION

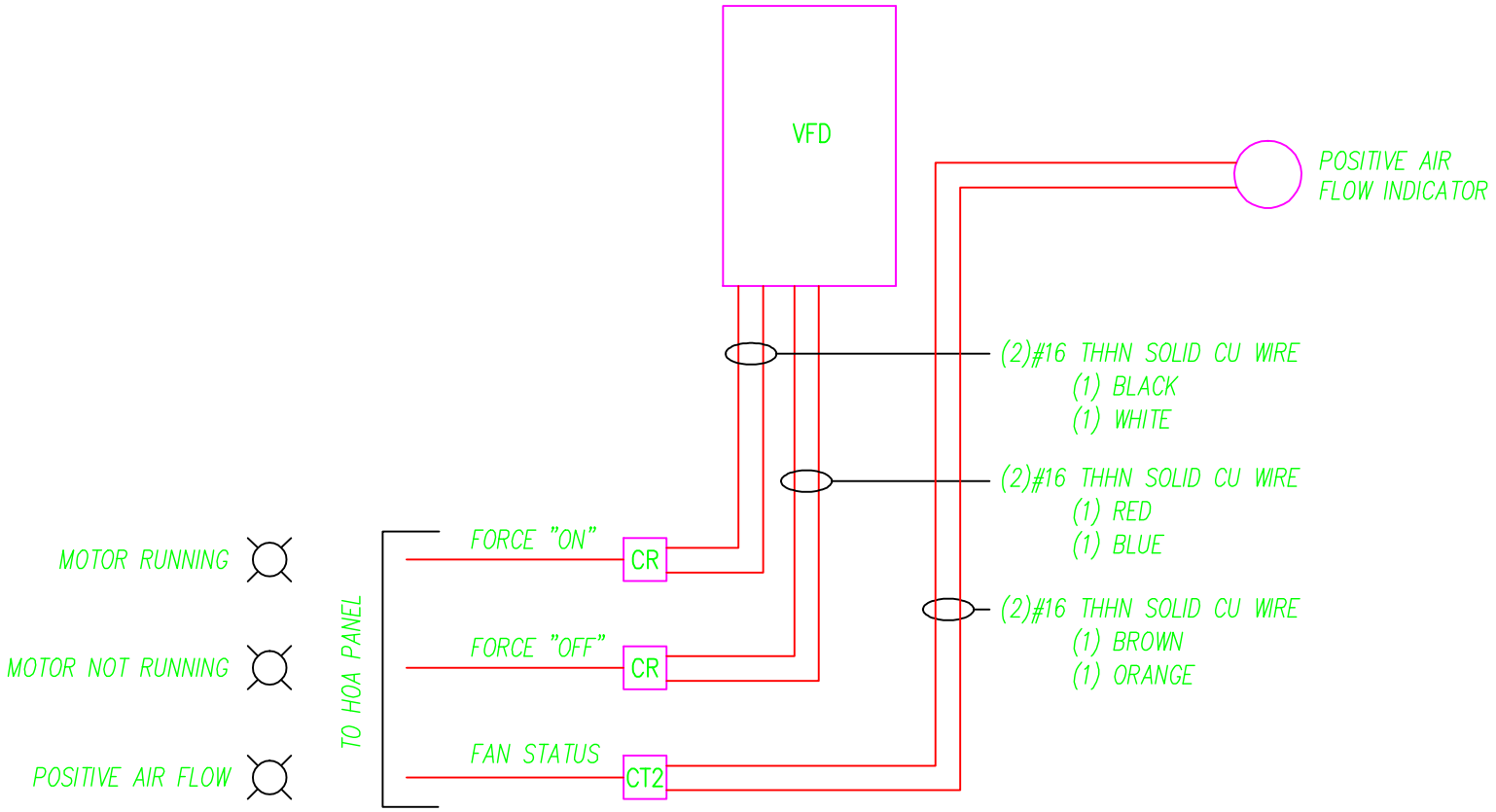
NOTES:

1. IF BLUE FLAG READS "OPEN" THEN:
   a. THE GRAY AND PINK WIRES SPLICE TO THE GREEN AND NC
   b. THE YELLOW AND PURPLE WIRES SPLICE TO THE GREEN AND NO

2. IF BLUE FLAG READS "CLOSED" THEN:
   a. THE GRAY AND PINK WIRES SPLICE TO THE GREEN AND NO
   b. THE YELLOW AND PURPLE WIRES SPLICE TO THE GREEN AND NC

WIRING DIAGRAM #2

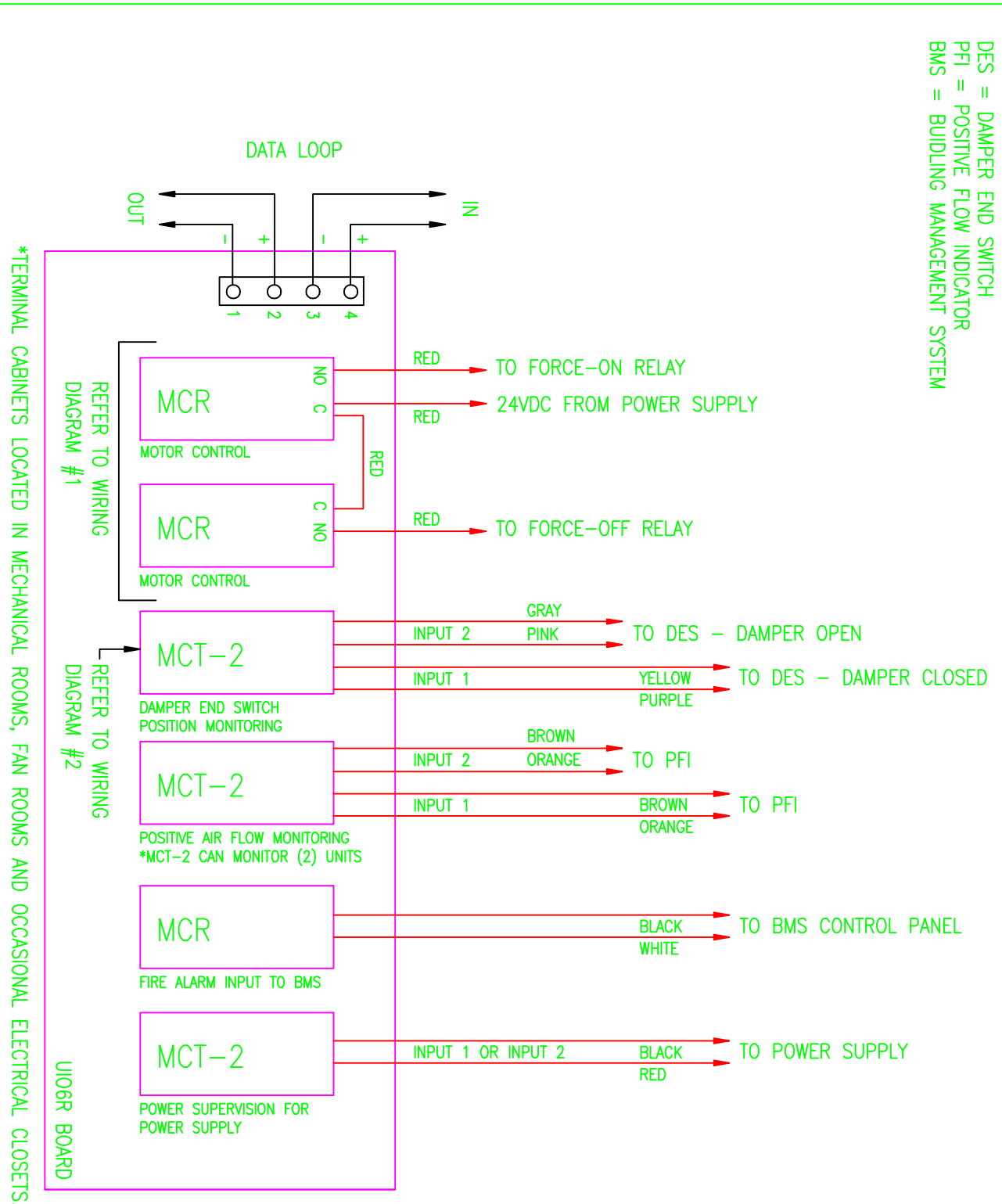
N.T.S.



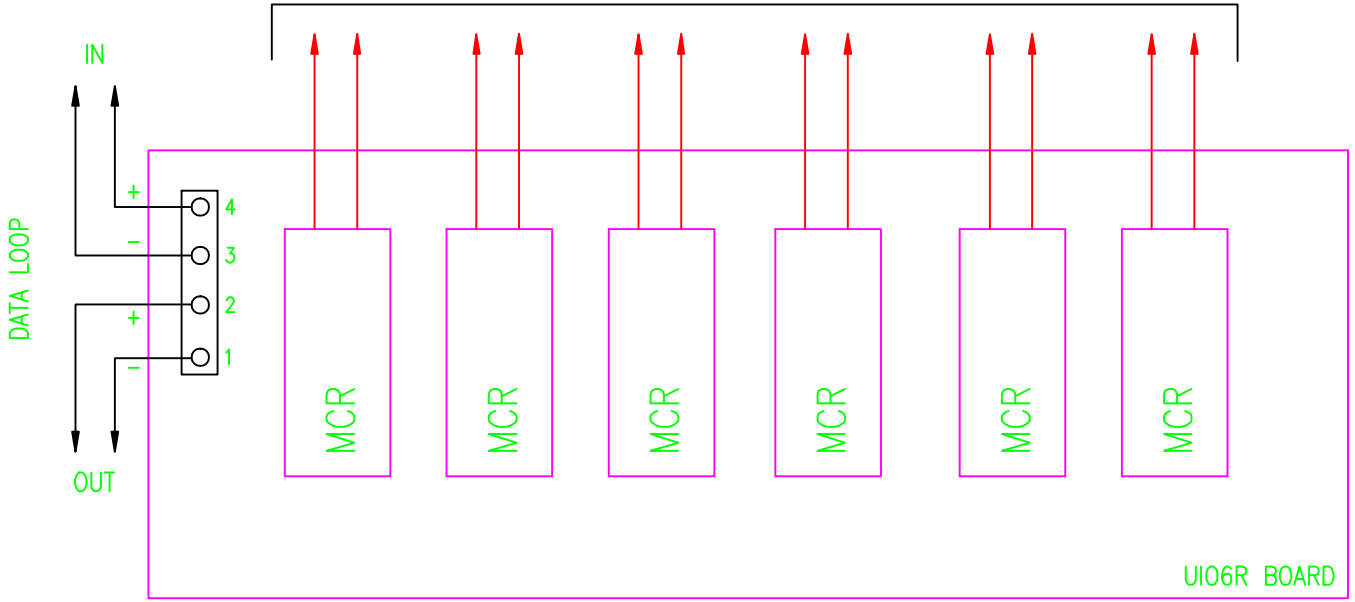
VFD FIRE ALARM WIRING DETAIL – MOTOR CONTROL (MECHANICAL ROOM INSTALLATION) | N.T.S.

TYPICAL FIRE ALARM/HVAC INTERFACE WIRING DETAIL

N.T.S.



EACH PAIR OF WIRES ARE TERMINATED IN THE SECURITY CONTROL PANEL AND CONTROL SPECIFIC DOORS BY DOOR# AND BUILDING IDENTIFICATION. WIRES ARE MARKED AS SUCH AND HAVE THEIR OWN COLOR COMBINATION TO DIFFERENTIATE BUILDINGS.



*TERMINAL CABINETS LOCATED IN SECURITY CLOSETS.

TYPICAL FIRE ALARM/SECURITY INTERFACE WIRING DETAIL

N.T.S.

CUT SHEETS/LITERATURE

Manufacturer	Model	Quantity	Item/Description	Page
			E2.8	
			Head End	
EST	KPDISP	2	KPDISP KeyPad and Display	3
			Initiating Devices	
EST	SIGA-278	5	SIGA-278 Manual Pull Station - Double Action, 1-stage	8
EST	SIGA-CR	4	SIGA-CR Control Relay Module. Select for either N.O. or N.C. operation. Rated at 2 amps (24Vdc)	13
EST	SIGA-CT2	6	SIGA-CT2 Dual Input Module. Two circuit input module for use with Normally Open Contact devices. Four selectable personality codes (on each circuit) f	18
EST	SIGA-LED	5	SIGA-LED Remote Alarm LED. Use with -SB and -SB4 Standard Base only	19
EST	SIGA-PS	50	SIGA-PS Intelligent Photoelectric Smoke Detector	23
EST	SIGA-SB4	50	SIGA-SB4 Detector Base - Standard, for 4 in. sq. box, includes -TS4 skirt	23
			Notification Devices	
EST	G1RF-VM	6	G1RF-VM Multi-cd strobe - 24V, RED w/FIRE	29
EST	G4RF-S2VM	11	G4RF-S2VM Speaker-strobe (25V), multi-tap, multi-cd, RED w/FIRE	34
			Accessories	
EST	1505-AQN5	8	1505-AQN5 Door Holder, Flush, Wall Mount, Short Catch Plate - 24Vac/24Vdc/120Vac	38

Overview

The KPDISP is a combination keypad and dot-matrix display designed for use with the EST3 integrated system. The unit features a large LCD display and telephone-style keypad housed in an attractive Cycoloy® case. A removable cover is provided to prevent accidental keypad activation and protect against dirt.

The KPDISP transmits and receives information from/to the 3-SAC Security Access Control module installed in the EST3 system. Communications between the KPDISP and the 3-SAC are supervised, providing the ultimate in reliability. Credential holder information is encrypted to provide an additional level of security. KPDISP data is stored in non-volatile memory. Power to the KPDISP is provided by the EST3, ensuring a reliable, supervised and backed-up power source.

The KPDISP supports bilingual operation, and can be programmed to automatically display the language of the user.

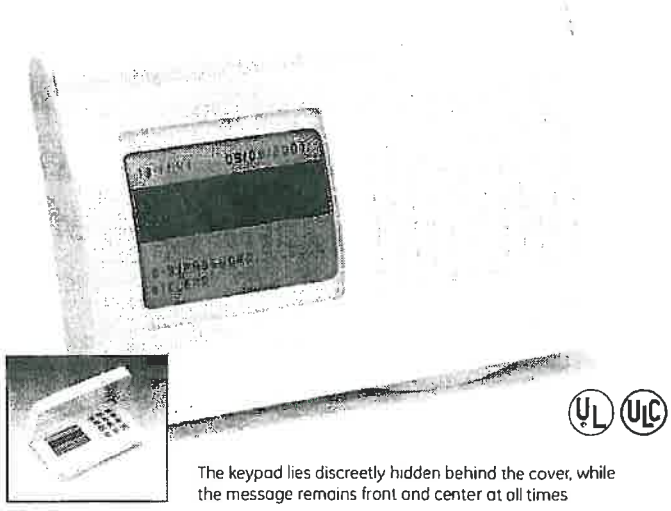
The display is backlit, and lights whenever a key is pushed. An automatic timer extinguishes the light after a brief delay. The keypad features tactile and audible feedback and is backlit at all times. To aid in locating the keypad in the dark, the back lighting is visible even with the cover closed.

Standard Features

- Listed for fire and security
- 128 x 64 backlit dot matrix LCD display
- Telephone style keypad with tactile & audible feedback
- Aesthetically pleasing design
- Removable protective cover
- 200 users and 9999 pin codes
- Supports bilingual operation
- Integral help function
- Menu driven
- Non-volatile memory
- Electronic addressing

Keypad/Display

KPDISP



The keypad lies discreetly hidden behind the cover, while the message remains front and center at all times

Application

All operations are menu driven. The most common use of the KPDISP is arming and disarming security partitions. The display permits a user to identify off-normal points and take corrective action. If the problems can't be corrected, the user can have the option to bypass a point before arming the system.

When used with EST3 and the 3-MODCOM, openings and closing may be sent automatically to a central monitoring station.

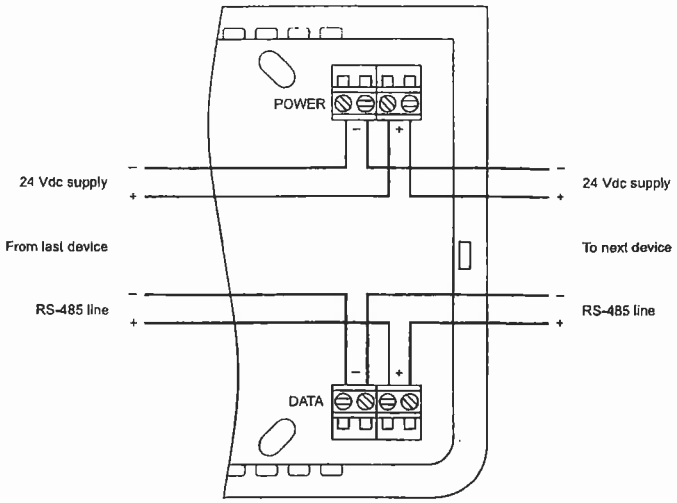
Each of up to 200 authorized users is assigned a pass code consisting of a unique three-digit number and a four-digit PIN number. Duplicate PINs are permitted by the KPDISP, so a user can pick a number that is easy for them to remember.

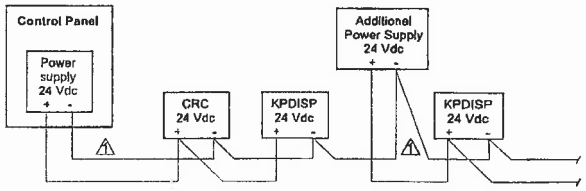
The KPDISP can also annunciate fire functions and be programmed to act as a full function fire annunciator. In the event of a problem, context-sensitive help is readily available using the HELP button.

Installation

The KPDISP is designed to facilitate installation in a wide variety of indoor applications. The unit can be mounted directly on a wall or using a 4" or 100mm square or 2-gang electrical box. To ensure reliability, terminal blocks are provided for all wiring. One pair carries data in and out of the unit, while the second pair provides power. These specially-designed terminal blocks provide unique features aimed at maintaining system operation during commissioning or servicing. Should a KPDISP be removed from its rear mounting plate, the terminals automatically provide continuity to downstream devices. This helps ensure continued communication with the control panel, despite the removal of a KPDISP from the communication wiring path. The unit features electronic addressing so there are no jumpers or switches to set in the unit.

Typical Wiring





⚠ Minus common from control panel must be maintained.

Engineering Specification

The Security/Access Control user interface shall provide both display and keypad functions to indicate system status and arming/disarming the system. The unit shall support additional display functions such as fire/security annunciation. The display shall be capable of bi-lingual operation under the direction of the system controller and/or access control credential.

The unit shall feature a backlit 128 x 64 dot matrix LCD readout. The keypad shall provide both tactile and audible user feedback to facilitate entry of information. User entries shall be menu driven, and capable of executing system commands. A context sensitive help system shall be available to the user at any time.

All keypad/display addressing shall be electronic, jumpers or DIP switches shall not be considered as equivalent to electronic addressing. All data within the unit shall be stored in non-volatile memory to prevent data loss. The unit shall be constructed of a thermoplastic housing with integral (removable) cover, and be suitable for mounting directly on a finished wall or standard 4" square or 2-gang electrical boxes. All wiring terminations shall be to an integral terminal strip.

<It shall be possible to transmit openings and closing performed at the keypad to the central monitoring station>.

Specifications

Agency Listings	UL, ULC. See Note 1.
Circuit Configuration	Class A or Class B
Power Requirements	24 Vdc @ 95 mA
Wire Size	14 AWG (1.5mm²) - 22 AWG (0.25mm²)
Dimensions (HWD)	4 ¾" x 7 ¼" x 1 ¼" (12.7cm x 18.4cm x 3.2cm) - open height 8.72" (22.15cm)
Finish	White high-impact Cycoloy®
Communications	RS-485
Supported Languages	English, Spanish, French, Hebrew, Italian, Dutch, Polish, Russian, Turkish, Portuguese, Slovak
Operating Environment	0°C to 49°C Complete (32°F to 120°F) @ 0 to 93%RH, Non-condensing
Mounting	4" or 100mm square or 2-gang electrical boxes
Users	200 max. per KPDISP
Partitions Supported	255 max. per KPDISP

Note 1:
The EST3 is modularly listed under the following standards:
UL 864 categories: UOJZ, UOXX, UUKL and SYZV, UL 294 category ALVY, UL 609 category AOTX, UL 636 category ANET, UL 1076 category APOU, UL 365 category APAW, UL 1610 category AMCX, UL 1635 category AMCX ULC-S527, ULC-S301, ULC-S302, ULC-S303, ULC-S304, ULC-S306, ULC/ORD-C1076, ULC/ORD-C693. Please refer to EST3 Installation and Service Manual for complete system requirements.

Ordering Information

Catalog Number	Description	Shipping Wt., lb (kg)
KPDISP	Keypad Display	1 (0.45)

Security

U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com

imagination at work

Overview

The SIGA-270 and SIGA-278 series Manual Pull Stations are part of GE Security's Signature Series system. The SIGA-270 Fire Alarm Manual Pull Stations feature our very familiar teardrop shape. They are made from die-cast zinc and finished with red epoxy powder-coat paint complemented by aluminum colored stripes and markings. With positive pull-lever operation, one pull on the station handle breaks the glass rod and turns in a positive alarm, ensuring protection plus fool-proof operation. Presignal models (SIGA-270P) are equipped with a general alarm (GA) keyswitch for applications where two stage operation is required. The up-front highly visible glass rod discourages tampering, but is not required for proper operation.

GE Security's double action single stage SIGA-278 station is a contemporary style manual station made from durable red colored lexan. To initiate an alarm, first lift the upper door marked "LIFT THEN PULL HANDLE", then pull the alarm handle.

Standard Features

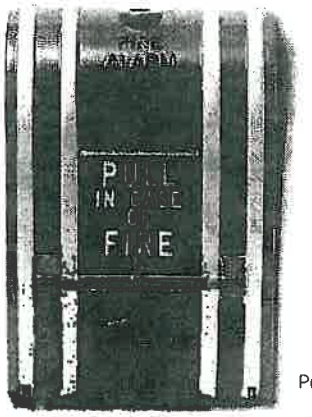
Note: *Some features described here may not be supported by all control systems. Check your control panel's Installation and Operation Guide for details.*

- **Traditional familiar appearance**
  SIGA-270 models feature our familiar teardrop design with simple positive pull action and sturdy die-cast metal body.
- **One stage (GA), two stage (pre-signal), and double action models**
  SIGA-270 models are available for one or two stage alarm systems. The single stage double action SIGA-278 features a rugged Lexan housing with keyed reset mechanism.
- **Break glass operation**
  An up-front visible glass rod on the SIGA-270 discourages tampering.
- **Intelligent device c/w integral microprocessor**
  All decisions are made at the station allowing lower communication speed while substantially improving control panel response time. Less sensitive to line noise and loop wiring properties; twisted or shielded wire is not required.
- **Non-volatile memory**
  Permanently stores serial number, type of device, and job number. Automatically updates historic information including hours of operation, last maintenance date, number of alarms and troubles, and time and date of last alarm.
- **Automatic device mapping**
  Each station transmits wiring information to the loop controller regarding its location with respect to other devices on the circuit.
- **Electronic addressing**
  Permanently stores programmable address; there are no switches or dials to set. Addresses are downloaded from a PC, or the SIGA-PRO Signature Program/Service Tool.
- **Stand-alone operation**
  The station inputs an alarm even if the loop controller's polling interrogation stops.
- **Diagnostic LEDs**
  Status LEDs; flashing GREEN shows normal polling; flashing RED shows alarm state.
- **Designed for high ambient temperature operation**
  Install in ambient temperatures up to 120 °F (49 °C).

Manual Pull Stations

SIGA-270, SIGA-270P,

SIGA-278



SIGA-270 SERIES

MEA

Patented

Application

The operating characteristics of the fire alarm stations are determined by their sub-type code or "Personality Code". NORMALLY-OPEN ALARM - LATCHING (Pesonality Code **1**) is assigned by the factory; no user configuration is required. The device is configured for Class B IDC operation. An ALARM signal is sent to the loop controller when the station's pull lever is operated. The alarm condition is latched at the station.

Compatibility

Signature Series manual stations are compatible only with GE Security's Signature Loop Controller.

Warnings & Cautions

This device will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

Testing & Maintenance

To test (or reset) the station simply open the station and operate the exposed switch. The SIGA-270 series are opened with a tool; the SIGA-278 requires the key which is supplied with that station.

The station's automatic self-diagnosis identifies when it is defective and causes a trouble message. The user-friendly maintenance program shows the current state of each Signature series device and other pertinent messages. Single devices may be deactivated temporarily, from the control panel. Availability of maintenance features is dependent on the fire alarm system used.

Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

Typical Wiring

The fire alarm station's terminal block accepts #18 AWG (0.75mm²) to #12 AWG (2.5mm²) wire sizes. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Wiring Notes

1. Refer to Signature Loop Controller manual for maximum wire distance.
2. All wiring is power limited and supervised.

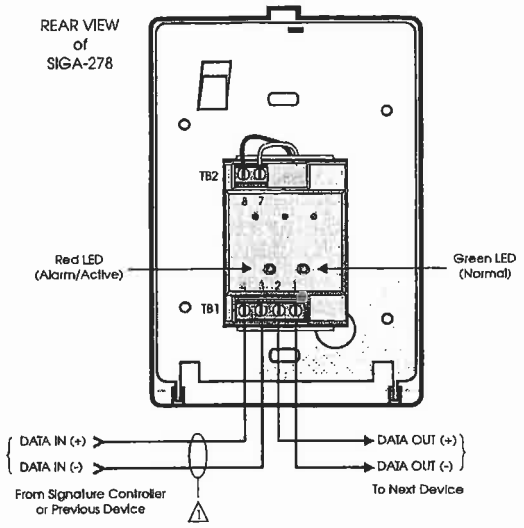


Figure 4. Single Stage Systems

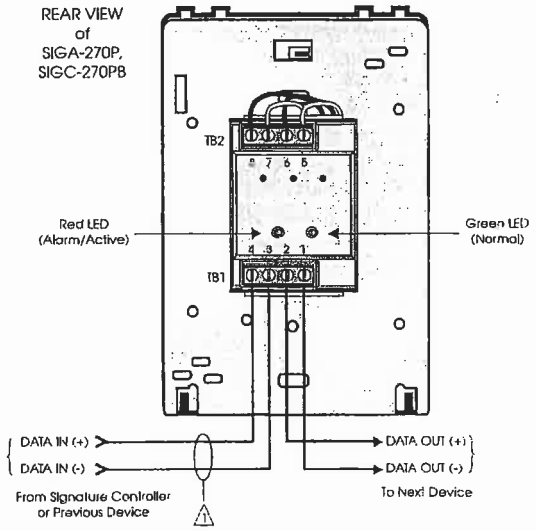


Figure 5. Two Stage Systems

Installation

Single-stage Signature Series fire alarm manual pull stations mount to North American 2½ inch (64 mm) deep 1-gang boxes.

Two stage presignal (270P) models require 1½ inch (38 mm) deep 4-inch square boxes with 1-gang, ½-inch raised covers. Openings must be angular. *Rounded openings are not acceptable.* Recommended box: Steel City Model 52-C-13; in Canada, use Iberville Model CI-52-C-49-1/2.

All models include terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size. GE Security recommends that these fire alarm stations be installed according to latest recognized edition of national and local fire alarm codes.

Electronic Addressing: The loop controller electronically addresses each manual station, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each station has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the stations can be addressed using the SIGA-PRO Signature Program/Service Tool.

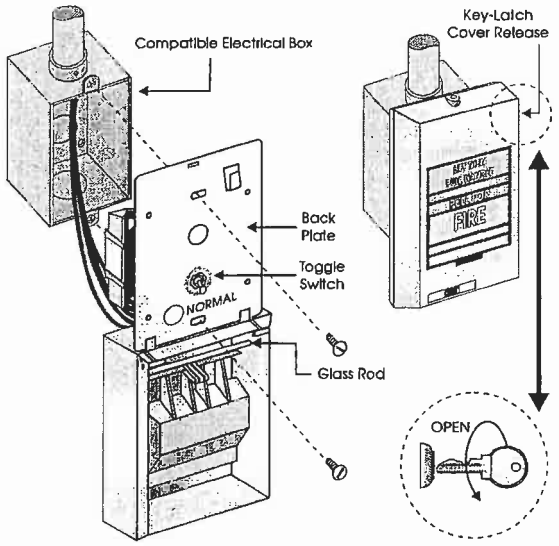


Figure 1. SIGA-278 installation

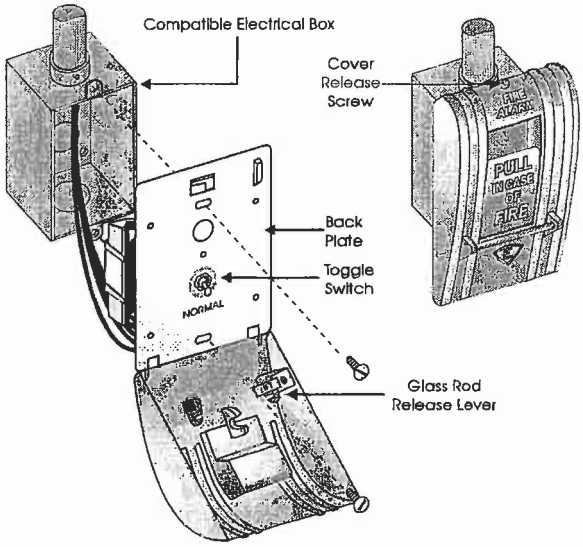


Figure 2. SIGA-270, SIGC-270F, SIGC-270B installation

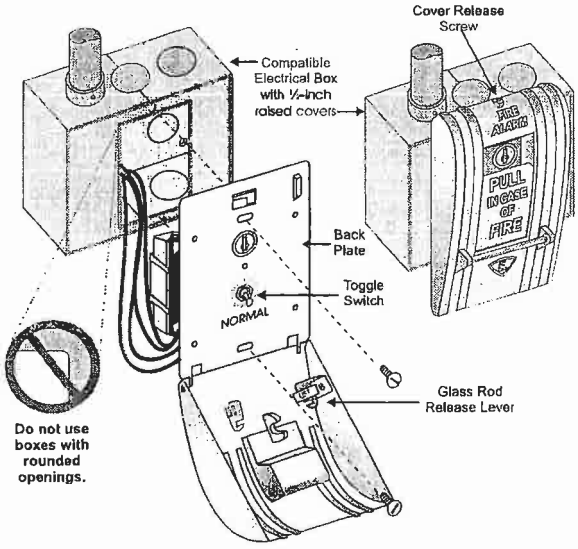


Figure 3. SIGA-270P, SIGC-270PB installation

U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com

Signature Series is a Trademark of GE Security.

Specifications

Catalog Number	SIGA-270, SIGC-270F, SIGC-270B	SIGA-270P, SIGC-270PB	SIGA-278
Description	Single Action - One Stage	Single Action -Two Stage (Presignal)	Double Action - One Stage
Addressing Requirements	Uses 1 Module Address	Uses 2 Module Addresses	Uses 1 Module Address
Operating Current	Standby = 250µA Activated = 400µA	Standby = 396µA Activated = 680µA	Standby = 250µA Activated = 400µA
Construction & Finish	Diecast Zinc - Red Epoxy with aluminum markings		Lexan - Red with white markings
Type Code	Factory Set		
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)		
Storage and Operating Environment	Operating Temperature: 32°F to 120°F (0°C to 49°C) Storage Temperature: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 93% RH		
LED Operation	On-board Green LED - Flashes when polled On-board Red LED - Flashes w hen in alarm Both LEDs - Glow steady when in alarm (stand-alone)		
Compatibility	Use With: Signature Loop Controller		
Agency Listings	UL, ULC (note 1), MEA, CSFM		

***Note:** SIGC-270F, SIGC-270B and SIGC-270PB are ULC listed only. Suffix "F" indicates French markings Suffix "B" indicates English/French biling ual markings.*

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-270	One Stage Fire Alarm Station, English Markings - UL/ULC Listed	1 (0.5)
SIGC-270F	One Stage Fire Alarm Station, French Markings - ULC Listed	
SIGC-270B	One Stage Fire Alarm Station, French/English Markings - ULC Listed	
SIGA-270P	Two Stage (Presignal) Fire Alarm Station, English Markings - UL/ULC Listed	
SIGC-270PB	Two Stage (Presignal) Fire Alarm Station, French/English Markings - ULC Listed	
SIGA-278	Double Action (One Stage) Fire Alarm Station, English Markings - UL/ULC Listed	
Accessories		
32997	GA Key w/Tag - for pre-signal station (CANADA ONLY)	0.1 (.05)
276-K2	GA Key - for pre-signal station (USA ONLY)	
27165	12 Glass Rods - for SIGA-270 series (CANADA ONLY)	
270-GLR	20 Glass Rods - for SIGA-270 series (USA ONLY)	
276-GLR	20 Glass Rods - for SIGA-278 series	
276B-RSB	Surface Mount Box, Red - for SIGA pull stations	1 (0.6)

imagination at work

Overview

The Control Relay Module and the Polarity Reversal Relay Module are part of the Signature Series system. They are intelligent analog addressable devices available in either plug-in (UIO) versions, or standard 1-gang mount versions.

The SIGA-CR/MCR Control Relay Module provides a Form "C" dry relay contact to control external appliances such as door closers, fans, dampers etc. This device does not provide supervision of the state of the relay contact. Instead, the on-board microprocessor ensures that the relay is in the proper ON/OFF state. Upon command from the loop controller, the SIGA-CR/MCR relay activates the normally open or normally-closed contact.

The SIGA-CRR/MCRR Polarity Reversal Relay Module provides a Form "C" dry relay contact to power and activate a series of SIGA-AB4G Audible Sounder Bases. Upon command from the Signature loop controller, the SIGA-CRR reverses the polarity of its 24 Vdc output, thus activating all Sounder Bases on the data loop.

Standard-mount versions (SIGA-CR and SIGA-CRR) are installed to standard North American 1-gang electrical boxes, making them ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

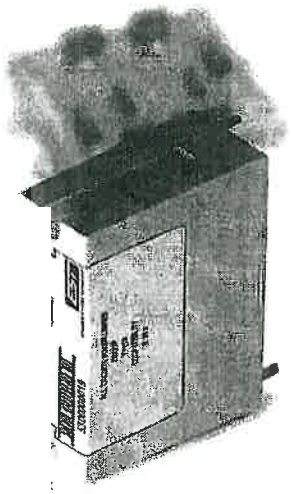
Plug-in UIO versions (SIGA-MCR and SIGA-MCRR) are part of the UIO family of plug-in Signature Series modules. They function identically to the standard mount versions, but take advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards are available. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in GE Security enclosures.

Standard Features

- **Provides one no/nc contact (SIGA-CR/MCR)**
  Form "C" dry relay contact can be used to control external appliances such as door closers, fans, dampers etc.
- **Allows group operation of sounder bases**
  The SIGA-CRR/MCRR reverses the polarity of its 24 Vdc output, thus activating all Sounder Bases on the data loop.
- **Plug-in (UIO) or standard 1-gang mount**
  UIO versions allow quick installation where multiple modules are required. The 1-gang mount version is ideal for remote locations that require a single module.
- **Automatic device mapping**
  Signature modules transmit information to the loop controller regarding their circuit locations with respect to other Signature devices on the wire loop.
- **Electronic addressing**
  Programmable addresses are downloaded from the loop controller, a PC, or the SIGA-PRO Signature Program/Service Tool; there are no switches or dials to set.
- **Intelligent device with microprocessor**
  All decisions are made at the module to allow lower communication speed with substantially improved control panel response time and less sensitivity to line noise and loop wiring properties; twisted or shielded wire is not required.
- **Ground fault detection by address**
  Detects ground faults right down to the device level.

Control Relay Modules

SIGA-CR, SIGA-MCR, SIGA-CRR, SIGA-M



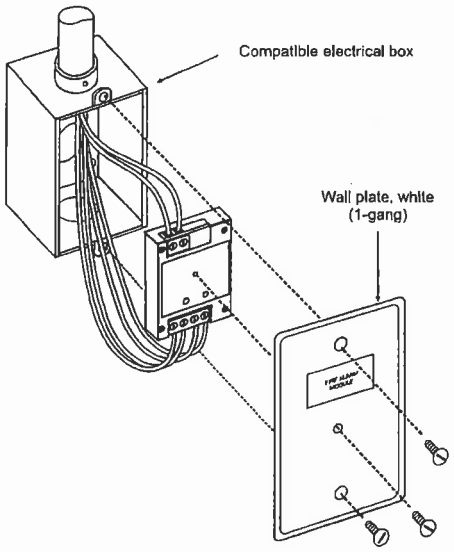
SIGA-CRx

MEA

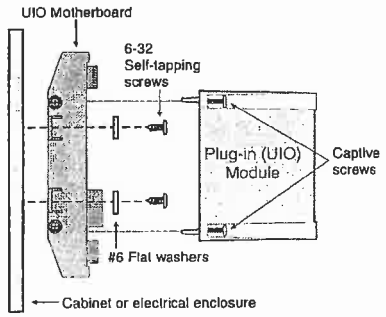
Data Sheet 85001-0239 Issue 7
Not to be used for installation purposes. Page 1 of 6

Installation

SIGA-CR and SIGA-CRR: modules mount to North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



SIGA-MCR and SIGA-MCRR: mount the UIO motherboard inside a suitable GE Security enclosure with screws and washers provided. Plug the module into any available position on the motherboard and secure the module to the motherboard with the captive screws. Wiring connections are made to the terminals on the motherboard (see wiring diagram). UIO motherboard terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



Electronic Addressing - The loop controller electronically addresses each module, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each module has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the modules can be addressed using the SIGA-PRO Signature Program/Service Tool.

GE Security recommends that this module be installed according to latest recognized edition of national and local fire alarm codes.

Application

The operation of Signature Series control relays is determined by their sub-type code or "Personality Code."

Personality Code 8: CONTROL RELAY (SIGA-CR/MCR) - Dry Contact Output. This setting configures the module to provide one Form "C" DRY RELAY CONTACT to control Door Closers, Fans, Dampers, etc. Contact rating is 2.0 amp @ 24 Vdc; 0.5 amp @ 120 Vac (or 220 Vac for non-UL applications). Personality Code 8 is assigned at the factory. No user configuration is required.

Personality Code 8: POLARITY REVERSAL RELAY MODULE (SIGA-CRR/MCRR). This setting configures the module to reverse the polarity of its 24 Vdc output. Contact rating is 2.0 amp @ 24 Vdc (pilot duty). Personality Code 8 is assigned at the factory. No user configuration is required.

Compatibility

The Signature Series modules are compatible only with GE Security's Signature Loop Controller.

Warnings & Cautions

This module will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

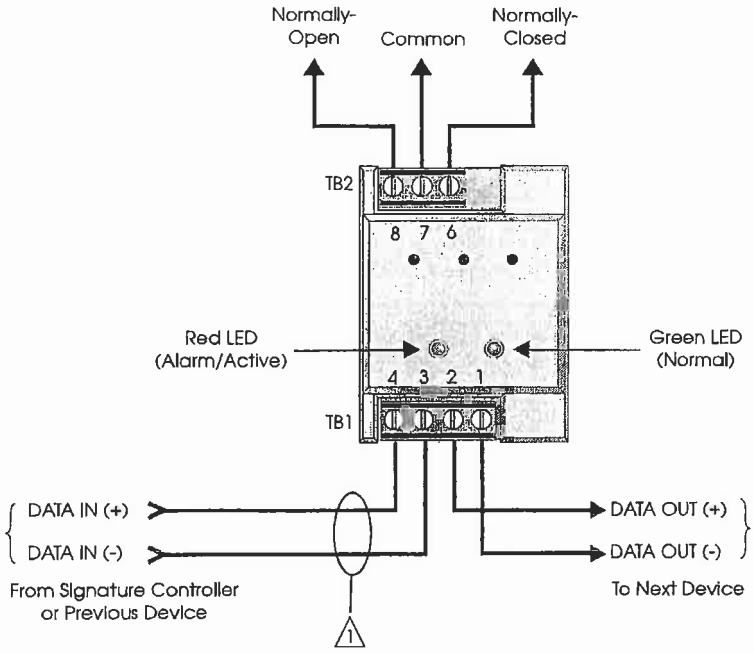
Testing & Maintenance

The module's automatic self-diagnosis identifies when it is defective and causes a trouble message. The user-friendly maintenance program shows the current state of each module and other pertinent messages. Single modules may be turned off (deactivated) temporarily, from the control panel. Availability of maintenance features is dependent on the fire alarm system used. Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

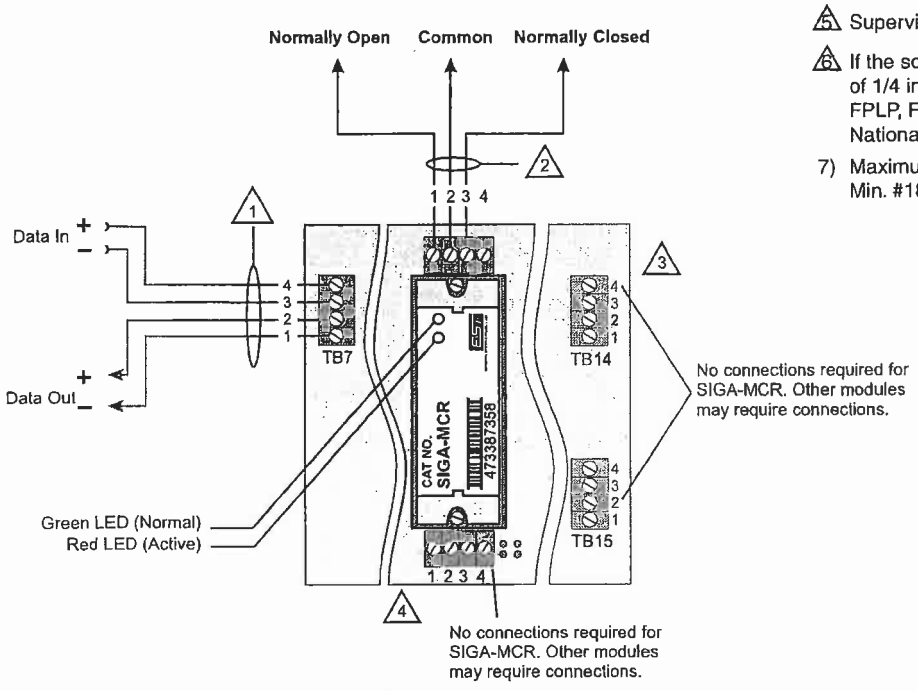
Typical Wiring

Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²) and #12 AWG (2.5mm²) wire sizes.

Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.



SIGA-CR Control Relay



SIGA-MCR Control Relay

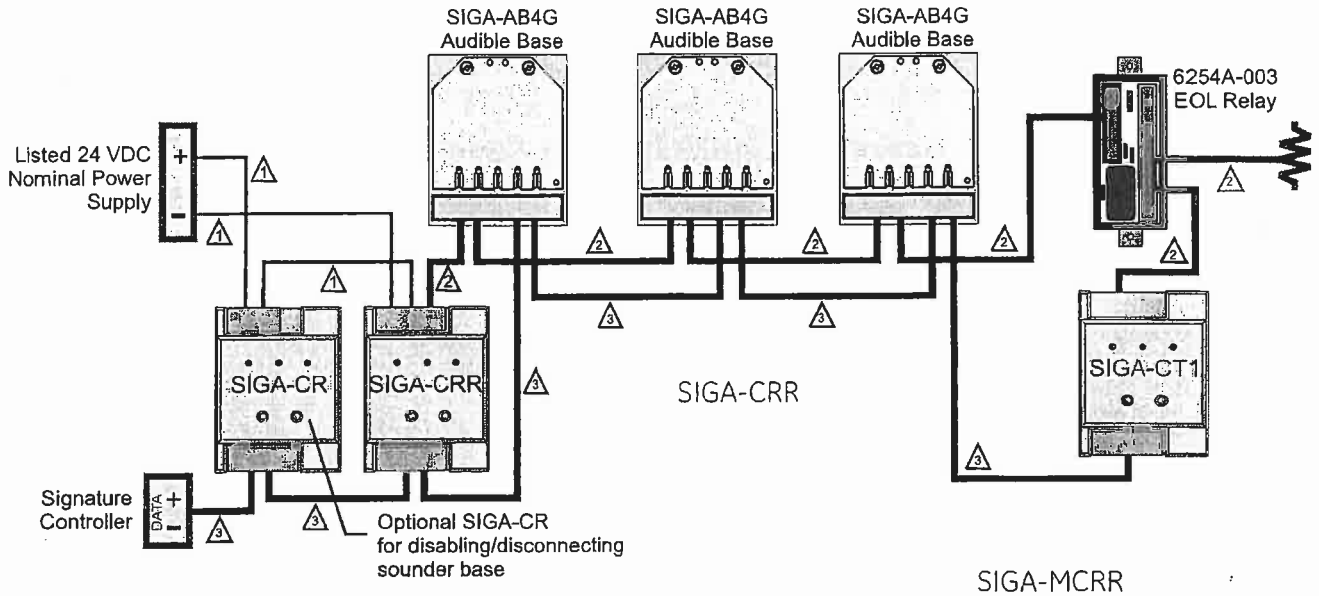
Notes

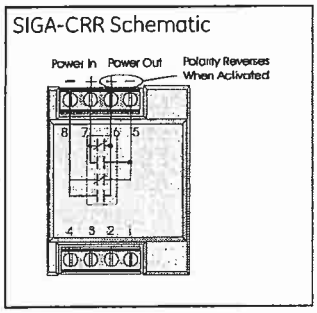
1. Refer to Signature Loop Controller Installation Sheet for wiring specifications.
2. NFPA 72 requires that the SIGA-CR/SIGA-MCR be installed in the same room as the device it is controlling. This requirement may not apply in all markets. Check with your local AHJ for details.
3. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
4. The SIGA-UIO6 does not come with TB8 through TB13.
5. Supervised and power-limited.
6. If the source is nonpower-limited, maintain a space of 1/4 inch from power-limited wiring or use FPL, FPLP, FPLR, or an equivalent in accordance with the National Electrical Code.
7) Maximum #12 AWG (2.5mm²) wire. Min. #18 (0.75mm²).

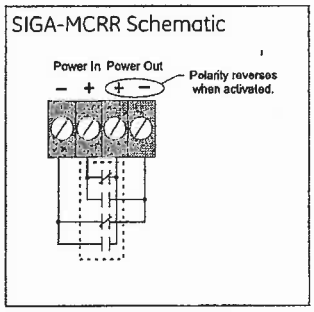
Typical Wiring

Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²) and #12 AWG (2.50mm²) wire sizes.

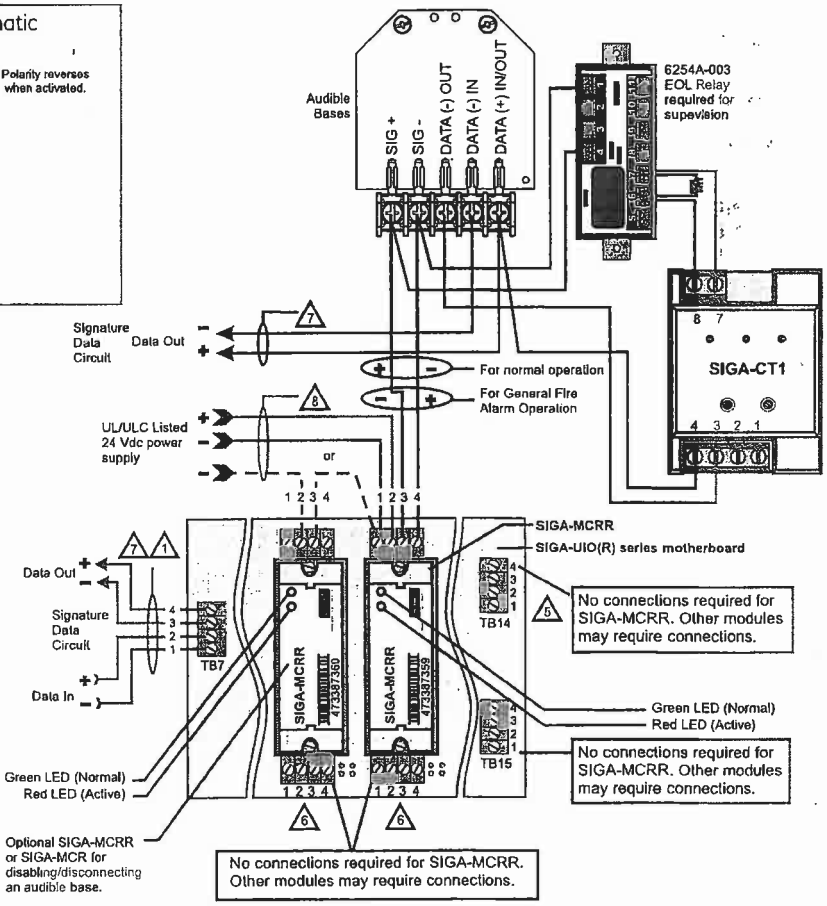
Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.







SIGA-MCRR



Notes

1. Refer to the Signature controller installation sheet for wiring.
2. One Pair of Wires (24 Vdc power).
3. One Pair of Wires (Signature Data).
4. Single Wire (24 Vdc power).
5. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
6. The SIGA-UIO6 does not come with TB8 through TB13.
7. Supervised and power-limited.
8. If the source is nonpower-limited, maintain a space of 1/4 inch from power-limited wiring or use FPL, FPLP, FPLR, or an equivalent in accordance with the National Electrical Code.
9. Maximum #12 AWG (2.5 mm²) wire; Minimum #18 AWG (0.75 mm²).
10. End-of-Line Relay must monitor and report power supply trouble to control panel.
11. Class B Data wiring may be "T-tapped."

Specifications

Catalog Number	SIGA-CR	SIGA-MCR	SIGA-CRR	SIGA-MCRR
Description	Control Relay		Polarity Reversal Relay	
Type Code	Personality Code 8 (Factory Set)		Personality Code 8 (Factory Set)	
Address Requirements	Uses 1 Module Address			
Operating Current	Standby = 100µA Activated = 100µA			
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)			
Relay Type and Rating	Form "C" 24 VDC = 2 amps (pilot duty) 120 Vac = 0.5 amps 220 Vac (non-UL) = 0.5 amps			
Mounting	North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates	Plugs into UIO2R, UIO6R or UIO6 Motherboards	North American 2½ inch (64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates	Plugs into UIO2R, UIO6R or UIO6 Motherboards
Construction & Finish	High Impact Engineering Polymer			
Storage and Operating Environment	Operating Temperature: 32°F to 120°F (0°C to 49°C) Storage Temperature: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 93% RH			
LED Operation	On-board Green LED - Flashes when polled On-board Red LED - Flashes when in alarm/active			
Compatibility	Use With: Signature Loop Controller			
Agency Listings	UL, ULC, CSFM, MEA			

Ordering Information

Catalog Number	Description	Ship Weight - lbs (kg)
SIGA-CR	Control Relay Module (Standard Mount) - UL/ULC Listed	0.4 (0.15)
SIGA-MCR	Control Relay Module (UIO Mount) - UL Listed	0.18 (0.08)
SIGA-CRR	Polarity Reversal Relay Module (Standard Mount) - UL/ULC Listed	0.4 (0.15)
SIGA-MCRR	Polarity Reversal Relay Module (UIO Mount) - UL Listed	0.18 (0.08)
Related Equipment		
27193-11	Surface Mount Box - Red, 1-gang	1 (0.6)
27193-16	Surface Mount Box - White, 1-gang	1 (0.6)
SIGA-UIO2R	Universal Input-Output Module Board w/Riser Inputs - Two Module Positions	0.32 (0.15)
SIGA-UIO6R	Universal Input-Output Module Board w/Riser Inputs - Six Module Positions	0.62 (0.28)
SIGA-UIO6	Universal Input-Output Module Board - Six Module Positions	0.56 (0.25)
SIGA-AB4G	Audible (Sounder) Detector Base	0.3 (0.15)
Accessories		
MFC-A	Multifunction Fire Cabinet - Red, supports Signature Module Mounting Plates	7.0 (3.1)
SIGA-MP1	Signature Module Mounting Plate, 1 footprint	1.5 (0.70)
SIGA-MP2	Signature Module Mounting Plate, 1/2 footprint	0.5 (0.23)
SIGA-MP2L	Signature Module Mounting Plate, 1/2 extended footprint	1.02 (0.46)

Security

U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com

Signature Series Overview

The Signature Series intelligent analog-addressable system from GE Security is an entire family of multi-sensor detectors and mounting bases; multiple-function input and output modules, network and non-network control panels, and user-friendly maintenance and service tools. Analog information from equipment connected to Signature devices is gathered and converted into digital signals. An onboard microprocessor in each Signature device measures and analyzes the signal and decides whether or not to input an alarm. The microprocessor in each Signature device provides four additional benefits – Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation and Fast, Stable Communication.

Self-diagnostics and History Log – Each Signature Series device constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in its non-volatile memory. This information is accessible for review any time at the control panel, PC, or using the SIGA-PRO Signature Program/Service Tool. The information stored in device memory includes:

- Device serial number, address, and type
- Date of manufacture, hours of operation, and last maintenance date[2]
- Number of recorded alarms and troubles[2]
- Time and date of last alarm[1]
- Most recent trouble code logged by the detector — 32 possible trouble codes may be used to diagnose faults.

Automatic Device Mapping –The Signature Data Controller (SDC) learns where each device's serial number address is installed relative to other devices on the circuit. The SDC keeps a map of all Signature Series devices connected to it. The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or "as-built" drawing information showing branch wiring (T-taps), device types and their address are stored on disk for printing hard copy. This takes the mystery out of the installation. The preparation of as-built drawings is fast and efficient.

Device mapping allows the Signature Data Controller to discover:

- Unexpected additional device addresses
- Missing device addresses
- Changes to the wiring in the circuit.

Most Signature modules use a personality code selected by the installer to determine their actual function. Personality codes are downloaded from the SDC during system configuration and are indicated during device mapping.

Standalone Operation – A decentralized alarm decision by the device is guaranteed. Onboard intelligence permits the device to operate in

[1]EST3 V.2 only.
[2]Retrievable with SIGA-PRO programming tool.

imagination at work

Overview

The SIGA-CT1 Single Input Module and SIGA-CT2/SIGA-MCT2 Dual Input Modules are intelligent analog addressable devices used to connect one or two Class B normally-open Alarm, Supervisory, or Monitor type dry contact Initiating Device Circuits (IDC).

The actual function of these modules is determined by the "personality code" selected by the installer. This code is downloaded to the module from the Signature loop controller during system configuration.

The input modules gather analog information from the initiating devices connected to them and convert it into digital signals. The module's on-board microprocessor analyzes the signal and decides whether or not to input an alarm.

The SIGA-CT1 and SIGA-CT2 mount to standard North American 1-gang electrical boxes, making them ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

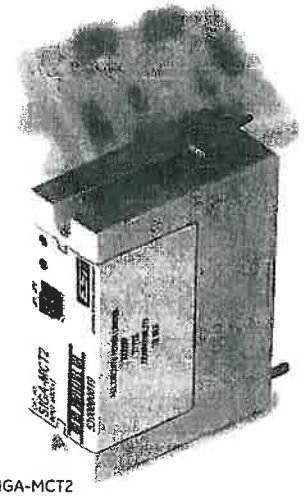
The SIGA-MCT2 is part of the UIO family of plug-in Signature Series modules. It functions identically to the SIGA-CT2, but takes advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards are available. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in GE Security enclosures.

andard Features

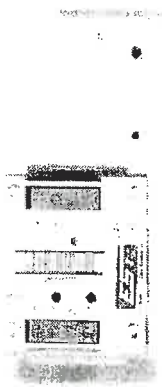
- **Multiple applications**
  Including Alarm, Alarm with delayed latching (retard) for waterflow applications, Supervisory, and Monitor. The installer selects one of four "personality codes" to be downloaded to the module through the loop controller.
- **Plug-in (UIO) or standard 1-gang mount**
  UIO versions allow quick installation where multiple modules are required. The 1-gang mount version is ideal for remote locations that require a single module.
- **Automatic device mapping**
  Signature modules transmit information to the loop controller regarding their circuit locations with respect to other Signature devices on the wire loop.
- **Electronic addressing**
  Programmable addresses are downloaded from the loop controller, a PC, or the SIGA-PRO Signature Program/Service Tool. There are no switches or dials to set.
- **Non-volatile memory**
  Permanently stores serial number, type of device, and job number.
- **Stand-alone operation**
  The module makes decisions and inputs an alarm from initiating devices connected to it even if the loop controller's polling interrogation stops. (Function availability dependent upon control panel.)
- **Ground fault detection by address**
  Detects ground faults right down to the device level.

Input Modules

SIGA-CT1, SIGA-CT2 & SIGA-MCT2



SIGA-MCT2



SIGA-CT1/2

MEA

Application Notes Available

Signature Series Overview

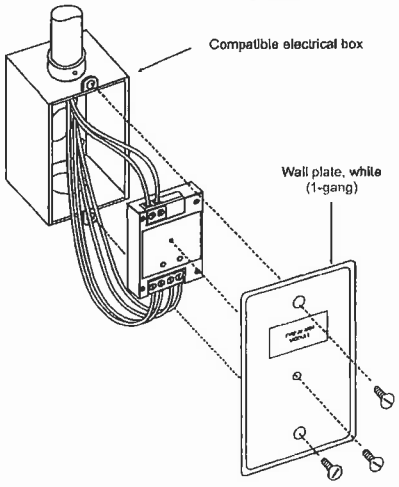
The Signature Series intelligent analog-addressable system from GE Security is an entire family of multi-sensor detectors and mounting bases, multiple-function input and output modules, network and non-network control panels, and user-friendly maintenance and service tools. Analog information from equipment connected to Signature devices is gathered and converted into digital signals. An onboard microprocessor in each Signature device measures and analyzes the signal and decides whether or not to input an alarm. The microprocessor in each Signature device provides four additional benefits – Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation and Fast, Stable Communication.

Self-diagnostics and History Log – Each Signature Series device constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in its non-volatile memory. This information is accessible for review any time at the control panel, PC, or using the SIGA-PRO Signature Program/Service Tool.

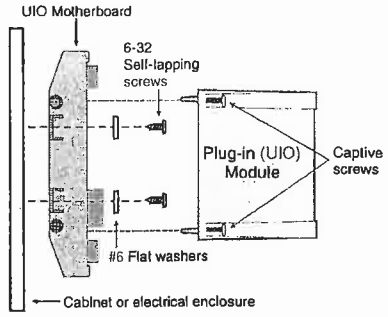
Automatic Device Mapping –The Signature Data Controller (SDC) learns where each device's serial number address is installed relative to other devices on the circuit. The SDC keeps a map of all Signature Series devices connected to it. The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or "as-built" drawing information showing branch wiring (T-taps), device types and their address are stored on disk for printing hard copy.

Installation

SIGA-CT1 and SIGA-CT2: modules mount to North American 2½ inch(64 mm) deep 1-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



SIGA-MCT2: mount the UIO motherboard inside a suitable GE Security enclosure with screws and washers provided. Plug the SIGA-MCT2 into any available position on the motherboard and secure the module to the motherboard with the captive screws. Wiring connections are made to the terminals on the motherboard (see wiring diagram). UIO motherboard terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



Electronic Addressing - The loop controller electronically addresses each module, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each module has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the modules can be addressed using the SIGA-PRO Signature Program/Service Tool.

GE Security recommends that this module be installed according to latest recognized edition of national and local fire alarm codes.

Application

The duty performed by the SIGA-CT1 and SIGA-CT2/MCT2 is determined by their sub-type code or "Personality Code". The code is selected by the installer depending upon the desired application and is downloaded from the loop controller.

One personality code can be assigned to the SIGA-CT1. Two personality codes can be assigned to the SIGA-CT2/MCT2. Codes 1, 2, 3 and 4 can be mixed on SIGA-CT2/MCT2 modules only. For example, personality code 1 can be assigned to the first address (circuit A) and code 4 can be assigned to the second address (circuit B).

NORMALLY-OPEN ALARM - LATCHING (Personality Code 1) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally open dry contact initiating devices such as Pull Stations, Heat Detectors, etc. An ALARM signal is sent to the loop controller when the input contact is closed. The alarm condition is latched at the module.

NORMALLY-OPEN ALARM - DELAYED LATCHING (Personality Code 2) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally-open dry contact initiating devices such as Waterflow Alarm Switches. An ALARM signal is sent to the loop controller when the input contact is closed for approximately 16 seconds. The alarm condition is latched at the module.

NORMALLY-OPEN ACTIVE - NON-LATCHING (Personality Code 3) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally-open dry contact monitoring input such as from Fans, Dampers, Doors, etc. An ACTIVE signal is sent to the loop controller when the input contact is closed. The active condition is not latched at the module.

NORMALLY-OPEN ACTIVE - LATCHING (Personality Code 4) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally open dry contact monitoring input such as from Supervisory and Tamper Switches. An ACTIVE signal is sent to the loop controller when the input contact is closed. The active condition is latched at the module.

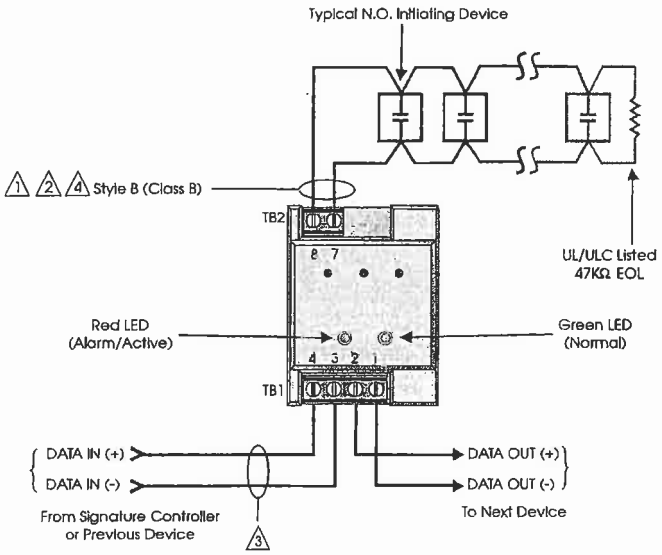
Typical Wiring

Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), and #14AWG (1.50mm²), and #12 AWG (2.50mm²) wire sizes.

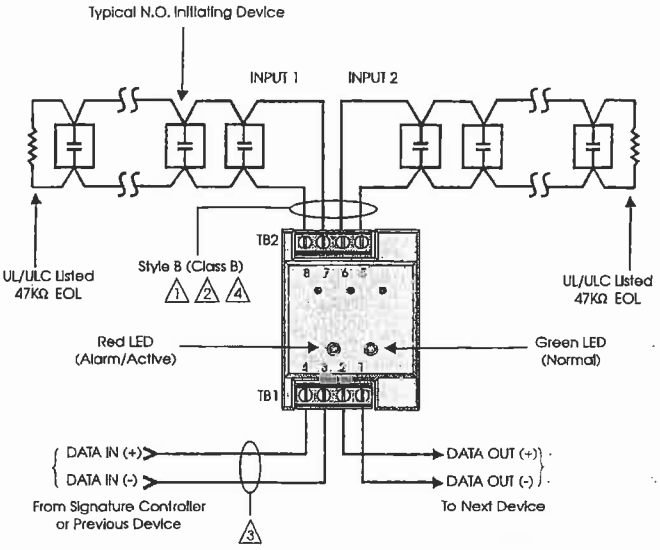
Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Initiating (Slave) Device Circuit Wire Specifications

Maximum Allowable Wire Resistance	50 ohms (25 ohms per wire) per Circuit	
Maximum Allowable Wire Capacitance	0.1µF per Circuit	
For Design Reference:	Wire Size	Maximum Distance to EOLR
	#18 AWG (0.75 mm²)	4,000 ft (1,219 m)
	#16 AWG (1.00 mm²)	
	#14 AWG (1.50 mm²)	
	#12 AWG (1.50 mm²)	



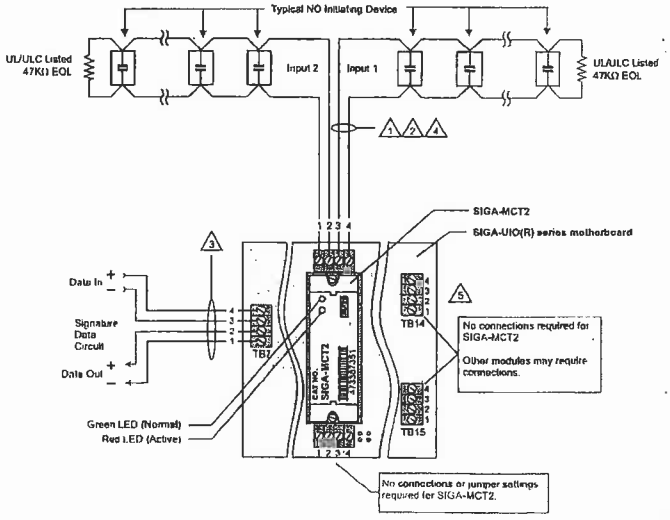
SIGA-CT1



SIGA-CT2

NOTES

1. Maximum 25 Ohm resistance per wire.
2. Maximum #12 AWG (2.5 mm²) wire; Minimum #18 AWG (0.75 mm2).
3. Refer to Signature controller installation sheet for wiring specifications.
4. Maximum 10 Vdc @ 350 µA
5. The SIGA-UIO6R and the SIGA-UIO2R do not come with TB14.
6. All wiring is supervised and power-limited.
7. These modules will not support 2-wire smoke detectors.



SIGA-MCT2

Warnings & Cautions

This module will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

Compatibility

The Signature Series modules are compatible only with GE Security's Signature Loop Controller.

Security

U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com

Specifications

Catalog Number	SIGA-CT1	SIGA-CT2	SIGA-MCT2
Description	Single Input Module	Dual Input Module	
Type Code	48 (factory set) Four sub-types (personality codes) are available	49 (factory set) Four sub-types (personality codes) are available	
Address Requirements	Uses One Module Address	Uses Two Module Addresses	
Operating Current	Standby = 250µA; Activated = 400µA	Standby = 396µA; Activated = 680µA	
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)		
Construction	High Impact Engineering Polymer		
Mounting	North American 2½ inch (64 mm) deep one-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with one-gang covers and SIGA-MP mounting plates		UIO2R/6R/6 Motherboard
Storage and Operating Environment	Operating Temperature: 32°F to 120°F (0°C to 49°C) Storage Temperature: -4°F to 140°F (-20°C to 60°C); Humidity: 0 to 93% RH		
LED Operation	On-board Green LED - Flashes when polled; On-board Red LED - Flashes when in alarm/active Both LEDs - Glow steady when in alarm (stand-alone)		
Compatibility	Use with Signature Loop Controller		
Agency Listings	UL, ULC, MEA, CSFM		

Ordering Information

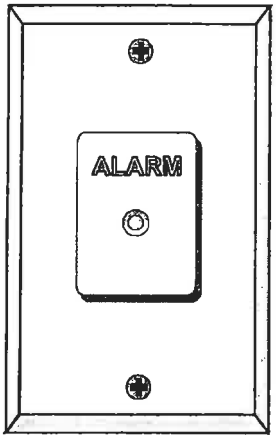
Catalog Number	Description	Ship Wt lbs (kg)
SIGA-CT1	Single Input Module — UL/ULC Listed	0.4 (0.15)
SIGA-CT2	Dual Input Module — UL/ULC Listed	0.4 (0.15)
SIGA-MCT2	Dual Input Plug-in (UIO) Module — UL, ULC Listed	0.1 (0.05)

Related Equipment		
27193-11	Surface Mount Box - Red, 1-gang	1.0 (0.6)
27193-16	Surface Mount Box - White, 1-gang	1.0 (0.6)
SIGA-UIO2R	Universal Input-Output Module Board w/Riser Inputs — Two Module Positions	0.32 (0.15)
SIGA-UIO6R	Universal Input-Output Module Board w/Riser Inputs — Six Module Positions	0.62 (0.28)
SIGA-UIO6	Universal Input-Output Module Board — Six Module Positions	0.56 (0.25)
MFC-A	Multifunction Fire Cabinet — Red, supports Signature Module Mounting Plates	7.0 (3.1)
SIGA-MP1	Signature Module Mounting Plate, 1 footprint	1.5 (0.70)
SIGA-MP2	Signature Module Mounting Plate, 1/2 footprint	0.5 (0.23)
SIGA-MP2L	Signature Module Mounting Plate, 1/2 extended footprint	1.02 (0.46)

imagination at work

SIGA-LED
Remote LED Alarm Indicator

Produ



The SIGA-LED Remote LED Alarm Indicator is a polarized device that provides visual indication when a detector initiates an alarm. A clear lens, light emitting diode pulses on and off in case of an alarm condition.

The SIGA-LED can *only* be used with the Standard Detector Base, models SB or SB4. It is
bases.

Specifications

LED type: Clear lens, red light

Luminous intensity: 65 mcd

Operation: Pulses on alarm co

Resistance per wire: 10 Ω ma

Operating power
Voltage: 3 Vdc
Current: 2 mA

Operating environment
Temperature: 32 to 120 °F
Humidity: 0 to 93% RH

Storage temperature range: -4 to 140 °F (-20 to 60 °C)

Compatible detectors: Signature Series detectors.
For duct applications with Signature Series detectors use the Signature Series duct housing assembly, model SIGA-DH, and duct detector mounting plate, model SIGA-DMP.

Compatible bases: Signature Series standard bases, models SB and SB4

Compatible duct detectors: SuperDuct models SIGA-SD and XLS-SD

Compatible electrical boxes: North American 1-gang box, standard 4 in square box 1-1/2 in (38 mm) deep with 1-gang cover

Construction and finish: High impact engineering polymer, white

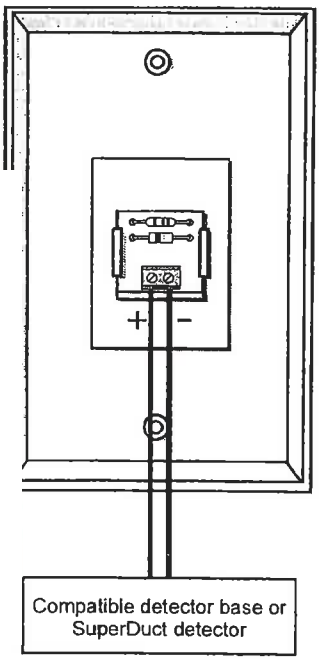
Shipping weight: 3.2 oz (90 g)

Comments: Not for use with 24 Vdc circuits

Installation instructions

1. Refer to Signature Series Technical Bulletin (P/N 270145) or SuperDuct Technical Bulletin (P/N 3100738) for installation guidelines.
2. Wire the SIGA-LED to the base as described in the Installation Sheet supplied with the base. Be sure to observe the polarity of the terminals on the terminal block as shown in the diagram below.

Wiring diagram



Warnings

1. This remote annunciator is *not* intended to be used as an evacuation signal for Life Safety situations.
2. This remote annunciator will *not* operate if the device that it is connected to it is not powered.
3. The SIGA-LED used in this device has a 180° range of visibility, but the best visibility is achieved in direct viewing applications. This device should *not* be installed in areas of direct sunlight, or where its intensity may be reduced.

Overview

The Signature Series Model SIGA-PS Intelligent Photoelectric Smoke Detector gathers analog information from its smoke sensing element and converts it into digital signals. The detector's on-board microprocessor measures and analyzes these signals. It compares the information to historical readings and time patterns to make an alarm decision. Digital filters remove signal patterns that are not typical of fires. Unwanted alarms are virtually eliminated.

The microprocessor in each detector provides four additional benefits - Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation and Fast, Stable Communication.

Self-diagnostics and History Log - Each Signature Series detector constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in the detector's non-volatile memory

Automatic Device Mapping - The loop controller learns where each device's serial number address is installed relative to other devices on the circuit. The mapping feature provides supervision of each device's installed location to prevent a detector from being reinstalled (after cleaning etc.) in a different location from where it was originally.

Stand-alone Operation - A decentralized alarm decision by the detector is guaranteed. On-board intelligence permits the detector to operate in stand-alone mode. If loop controller CPU communications fail for more than four seconds, all devices on that circuit go into stand-alone mode. The circuit acts like a conventional alarm receiving circuit.

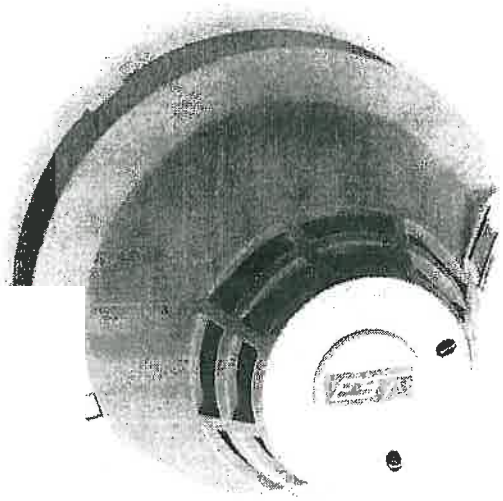
Fast Stable Communication - On-board intelligence means less information needs to be sent between the detector and the loop controller. Other than regular supervisory polling response, the detector only needs to communicate with the loop controller when it has something new to report.

Standard Features

- Integral microprocessor
- Non-volatile memory
- Automatic mapping device
- Electronic addressing
- Environmental compensation
- Intelligent detector
- Wide 0.67% to 3.77%/ft. sensitivity range
- Twenty pre-alarm sensitivity values, set in 5% increments
- Identification of dirty or defective detectors
- Automatic day/night sensitivity adjustment
- Twin RED/GREEN status LEDs
- Standard, relay, fault isolator, and audible mounting bases
- Designed and manufactured to ISO 9001 standards.

Intelligent Photoelectric Smoke Detector

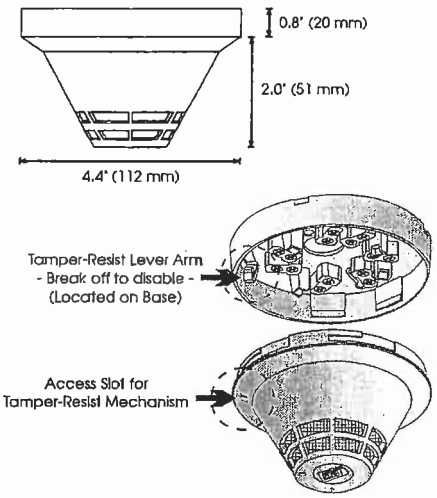
SIGA-F



Application Notes Available

Installation

Signature Series detectors mount to North American 1-gang boxes, 3-1/2 inch or 4 inch octagon boxes, and to 4 inch square electrical boxes 1-1/2 inches (38 mm) deep. They mount to European BESA and 1-gang boxes with 60.3 mm fixing centers.



Testing & Maintenance

Each detector automatically identifies when it is dirty or defective and causes a "dirty detector" message. The detector's sensitivity measurement can also be transmitted to the loop controller. A sensitivity report can be printed to satisfy NFPA sensitivity measurements which must be conducted at the end of the first year and every two years thereafter.

The user-friendly maintenance program shows the current state of each detector and other pertinent messages. Single detectors may be turned off temporarily from the control panel. Availability of maintenance features is dependent on the fire alarm system used. Scheduled maintenance (Regular or Selected) for proper detector operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

Compatibility

The SIGA-PS detectors are compatible only with the Signature Loop Controller.

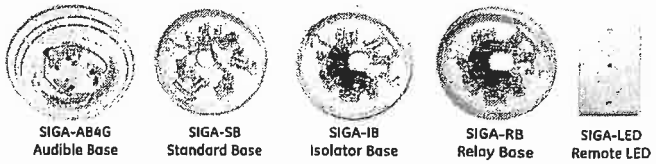
Warnings & Cautions

This detector will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your fire protection specialist.

This detector will NOT sense fires that start in areas where smoke cannot reach the detector. Smoke from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector to alarm it.

Accessories

All detector mounting bases have wiring terminals that are accessible from the "room-side" after mounting the base to the electrical box. The bases mount to North American 1-gang boxes and to 3½ inch or 4 inch octagon boxes, 1½ inches (38 mm) deep. They also mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. The SIGA-SB4, SIGA-RB4, and SIGA-IB4 mount to North American 4 inch sq. electrical boxes in addition to the above boxes. They include the SIGA-TS4 Trim Skirt which is used to cover the "mounting ears" on the base. The SIGA-AB4G mounts to a 4" sqare box only.



Standard Base SIGA-SB, SIGA-SB4 - This is the basic mounting base for GE Security Signature Series detectors. The SIGA-LED Remote LED is supported by the Standard Base.

Relay Base SIGA-RB, SIGA-RB4 - This base includes a relay. Normally open or closed operation is selected during installation. The dry contact is rated for 1 amp (pilot duty) @ 30 Vdc. The relay's position is supervised to avoid accidentally jarring it out of position. The SIGA-RB can be operated as a control relay if programmed to do so at the control panel (EST3 V.2 only). The relay base does not support the SIGA-LED Remote LED.

Audible Base SIGA-AB4G - This base is designed for use where localized or group alarm signaling is required. When the detector senses an alarm condition, the audible base emits a local alarm signal. The optional SIGA-CRR Polarity Reversal Relay can be used for sounding to other audible bases on the same 24 Vdc circuit.

Relay and Audible Bases operate as follows:

- at system power-up or reset, the relay is de-energized
- when a detector is installed in the base with the power on, the relay energizes for four seconds, then de-energizes
- when a detector is removed from a base with the power on, the relay is de-energized
- when the detector enters the alarm state, the relay is energized.

Isolator Base SIGA-IB, SIGA-IB4 - This base includes a built-in line fault isolator for use on Class A circuits. A detector must be installed for it to operate. The isolator base does not support the SIGA-LED Remote LED.

The isolator operates as follows:

- a short on the line causes all isolators to open within 23 msec
- at 10 msec intervals, beginning on one side of the Class A circuit nearest the loop controller, the isolators close to provide the next isolator down the line with power
- when the isolator next to the short closes, reopens within 10 msec.

The process repeats beginning on the other side of the loop controller.

Remote LED SIGA-LED - The remote LED connects to the SIGA-SB or SIGA-SB4 Standard Base only. It features a North American size 1-gang plastic faceplate with a white finish and red alarm LED.

SIGA-TS4 Trim Skirt - Supplied with 4 inch bases, it can also be ordered separately to use with the other bases to help hide surface imperfections not covered by the smaller bases.

Application

Although photoelectric detectors have a wide range of fire sensing capabilities they are best suited for detecting slow, smoldering fires. The table below shows six standard test fires used to rate the sensitivity of smoke and heat detectors. The table indicates that no single sensing element is suited for all test fires.

GE Security recommends that this detector be installed according to latest recognized edition of national and local fire alarm codes.

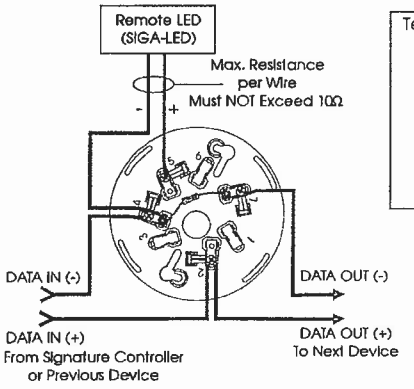
Test Fire	SIGA-IS Ion	SIGA-PS Photo	SIGA-HRS and SIGA-HFS Rate-of-Rise/ Fixed Temp.	SIGA-PHS Photo Heat 3D	SIGA-IPHS Ion/Photo/Heat 4D
Open **Wood**	optimum	unsuitable	optimum	very suitable	**optimum**
Wood Pyrolysis	suitable	optimum	unsuitable	**optimum**	**optimum**
Smouldering **Cotton**	very suitable	optimum	unsuitable	**optimum**	**optimum**
Poly **Urethane Foam**	very suitable	very suitable	suitable	very suitable	optimum
n-Heptane	**optimum**	very suitable	very suitable	**optimum**	**optimum**
Liquid **Fire without Smoke**	unsuitable	unsuitable	optimum	very suitable	very suitable

Typical Wiring

The detector mounting bases accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.5mm²), and #12 AWG (2.5mm²) wire sizes.

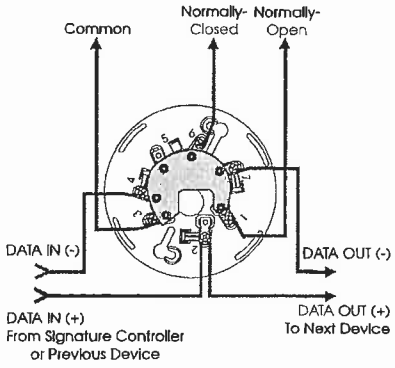
Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Standard Detector Base, SIGA-SB, SIGA-SB4



Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	Not Used
4	DATA IN (-)
5	Remote LED (-)
6	Remote LED (+)
7	Not Used
8	DATA OUT (-)

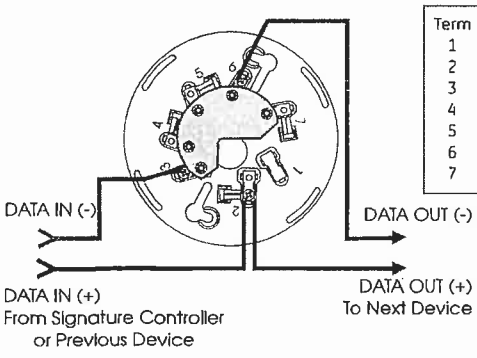
Relay Detector Base, SIGA-RB, SIGA-RB4



Term	Description
1	Normally Open
2	DATA IN/OUT (+)
3	Common
4	DATA IN (-)
5	Not Used
6	Normally-Closed
7	DATA OUT (-)

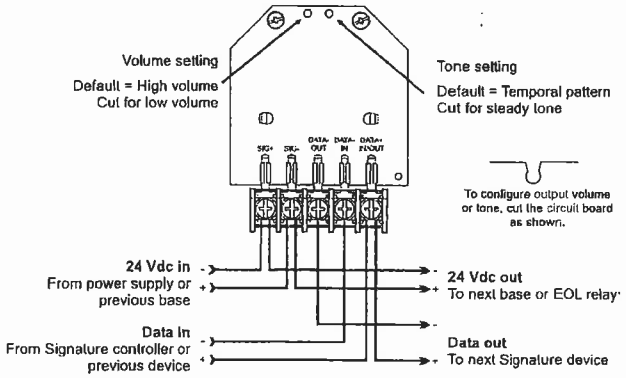
CONTACT RATING
1.0 Amp @ 30 VDC
(Pilot Duty)

Isolator Detector Base, SIGA-IB, SIGA-IB4



Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	DATA IN (-)
4	Not Used
5	Not Used
6	DATA OUT (-)
7	Not Used

Audible Detector Base, SIGA-AB4G



U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com

Specifications

Sensing Element	Photoelectric - Light Scattering Principle
Storage & Operating Environment	Air Velocity Range: 0 to 5,000 ft/min (0 to 25.39 m/s); Humidity: 0 to 93% RH, Non-Condensing Operating Temp: 32°F to 120°F (0°C to 49°C); Storage Temp: -4°F to 140°F (-20°Cto 60°C)
Sensitivity Range	ULI/ULC - 0.67% to 3.77% obscuration/foot
User Selected Alarm Sensitivity Settings	Most Sensitive: 1.0%/ft.; More Sensitive: 2.0%/ft.; Normal: 2.5%/ft.; Less Sensitive: 3.0%/ft.; Least Sensitive: 3.5%/ft.
Pre-alarm Sensitivity	5% increments, allowing up to 20 pre-alarm settings
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)
Operating Current	Quiescent: 45µA @ 19 V; Alarm: 45µA @ 19 V Emergency Stand-alone Alarm Mode: 18mA Pulse Current: 100 µA (100 msec); During Communication: 9 mA max.
Construction & Finish	High Impact Engineering Polymer - White
Compatible Mounting Bases	SIGA-SB Standard Base, SIGA-RB Relay Base, SIGA-IB Isolator Base, SIGA-AB4, SIGA-AB4G Audible Bases
LED Operation	On-board Green LED - Flashes when polled; On-board Red LED - Flashes when in alarm Both LEDs - Glow steady when in alarm (stand-alone) Compatible Remote Red LED (model SIGA-LED) Flashes when in alarm
Compatibility	Use With: SIGNATURE Loop Controller
Address Requirements	Uses one Device Address
Agency Listings	UL, ULC, MEA, CSFM
UL Listed Spacing	30 ft

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-PS	Intelligent Photoelectric Detector - UL/ULC Listed	0.5 (.23)
Accessories		
SIGA-SB	Detector Mounting Base - Standard	
SIGA-SB4	4-inch Detector Mounting Base c/w SIGA-TS4 Trim Skirt	
SIGA-RB	Detector Mounting Base w/Relay	
SIGA-RB4	4-inch Detector Mounting Base w/Relay, c/w SIGA-TS4 Trim Skirt	0.2 (.09)
SIGA-IB	Detector Mounting Base w/Fault Isolator	
SIGA-IB4	4-inch Detector Mounting Base w/ Fault Isolator, c/w SIGA-TS4 Trim Skirt	
SIGA-LED	Remote Alarm LED	
SIGA-AB4G	Audible (Sounder) Base	.3 (0.15)
SIGA-TS4	Trim Skirt (supplied with 4-inch bases)	.1 (.04)

imagination at work

Overview

The Genesis line of signals are among the smallest, most compact audible-visible emergency signaling devices in the world. About the size of a deck of playing cards, these devices are designed to blend with any decor.

Thanks to patented breakthrough technology, GE Security Genesis strobes do not require bulky specular reflectors and lenses. Instead, an exclusive cavity design conditions light to produce a highly controlled distribution pattern. Significant development efforts employing this new technology have given rise to a new benchmark in strobe performance – FullLight technology.

FullLight strobe technology produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors. This ensures the entire coverage area receives consistent illumination from the strobe flash. As a result, Genesis strobes with FullLight technology go well beyond the minimum UL-required "T" pattern, significantly exceeding UL-1971 and ULC-S526 light distribution requirements.

Genesis strobes and horn-strobes offer 15 to 110 candela output, which is selectable with a conveniently-located switch on the side of the device. Models are also available that offer fixed 15/75 cd output. The candela output setting remains clearly visible even after final installation, yet it stays locked in place to prevent unauthorized tampering.

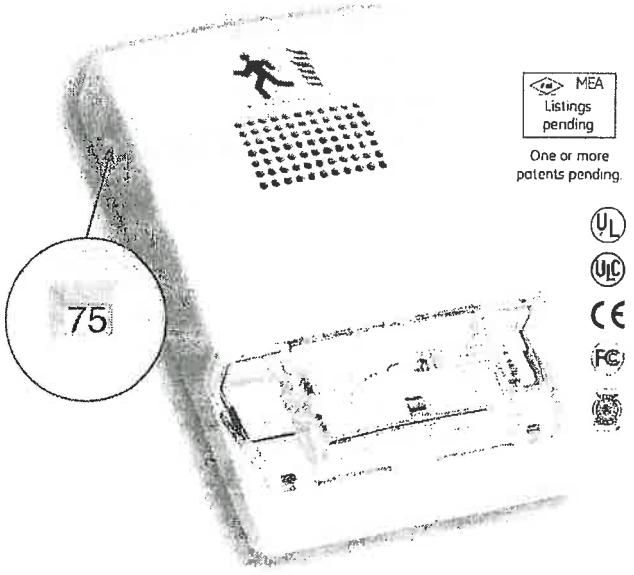
Genesis signals feature textured housings in architecturally neutral white or traditional fire red. An ingenious iconographic symbol indicates the purpose of the device. This universal symbol is code-compliant and is easily recognized by all building occupants regardless of what language they speak. Models with "FIRE" markings are also available.

Standard Features

- **Unique low-profile design**
  - The most compact UL-1971/ULC-S526 listed strobe available
  - Ultra-slim – protrudes less than one inch from the wall
  - Attractive appearance
  - No visible mounting screws
- **Four field-configurable options in one device**
  - Select 15, 30, 75, or 110 cd strobe output
  - Select high (default) or low dB horn output
  - Select temporal (default) or steady horn output
  - Select public mode flash rate (default) or private mode temporal flash
- **Fixed 15/75 cd model available**
- **Easy to install**
  - Fits standard 1-gang electrical boxes – no trim plate needed
  - Optional trim plate accommodates oversized openings
  - Pre-assembled with captive hardware
  - #12 AWG terminals – ideal for long runs or existing wiring
- **Unparalleled performance**
  - Industry's most even light distribution
  - Meets tough synchronizing standards for strobes
  - Single microprocessor controls both horn and strobe
  - Low current draw minimizes system overhead
  - Independent horn control over a single pair of wires
  - Highly regulated in-rush current
  - Multiple frequency tone improves wall penetration
  - Industry's first temporal strobe output

Field Configurable Horns and Strobes

Genesis Series



Application

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act (see application notes – USA).*

Combination horn-strobe signals must be installed in accordance with guidelines established for strobe devices.

Strobes

Although all Genesis strobes are self-synchronizing, when installed with an optional synchronization module, strobe flashes from devices on the same circuit synchronize to within 10 milliseconds of each other *indefinitely*. This exceeds the two-hour minimum specified in the UL standards. Only one synchronization module is required per circuit.

The following guidelines are based on ANSI/NFPA 72 *National Fire Alarm Code* (1999). When applied and installed in accordance with that code, GE Security strobes meet or exceed the illumination produced by the ADA-specified 75 candela (cd) strobe at 50 feet.*

Non-Sleeping Rooms and Corridors: GE Security strobes rated at less than 110 cd per UL 1971 are intended for use in non-sleeping areas only. Install with the bottom of the device at least 80 inches (2.0 m) and no more than 96 inches (2.4 m) above the finished floor. No point in any space (including corridors) required to have strobes should be more than 50 feet (15.2 m) from the signal (in the horizontal plane).

Non-Sleeping Rooms	Use One Wall Mounted Model:
Up to 20' x 20' (6.1 x 6.1m)	One 15 cd strobe
Up to 30' x 30' (9.1 x 9.1m)	One 30 cd or two 15 cd strobes
Up to 40' x 40' (12.2 m x 12.2 m)	One 75 cd or two 30 cd strobes
Up to 50' x 50' (15.2 x 15.2m)	One 110 cd or two 75 cd strobes

Corridors	Wall Mounted - Model:
Any Length x Max. 20' (6.1m) Wide	15 cd strobes spaced at 100' (30.5 m) max. Strobes must be placed within 15' (4.5m) of each end of the corridor.

** ADA suggests using 75 cd strobes throughout an area, with spacing that never exceeds 50 ft from the strobe to any point in the protected space.*

Sleeping rooms: GE Security 110 cd strobes are intended for use in sleeping rooms and should be installed along with a smoke detector. It must be wall mounted at least 80" (2.03 m) above floor level, but no closer than 24" (610 mm) to the ceiling. The distance from the strobe to the pillow must not exceed 16' (4.8 m).

Sleeping Rooms	Use One Wall Mounted Model:
Any Size	110 cd within 16 feet of pillow

For 177 cd ceiling horn-strobes, please refer to data sheet 85001-0559.

Horns

Genesis horn output reaches as high as 99 dB and features a unique multiple frequency tone that results in excellent wall penetration and an unmistakable warning of danger. Horns may be configured for either coded or non-coded signal circuits. They can also be set for low dB output with a jumper cut that reduces horn output by about 5 dB.

The suggested sound pressure level for each signaling zone used with alert or alarm signals is at least 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet (1.5 m) above the floor. The average ambient sound level is, A-weighted sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically result in a 6 dB reduction of the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. A 3 dBA difference represents a barely noticeable change in volume.

Application Notes - USA

Audible signals in the public mode should never have a sound level less than 75 dBA at 10' (3 m) per NFPA 72. Signals cannot exceed 120 dBA per ADA and NFPA 72 at the minimum hearing distance to audible appliance.

Strobe and combination horn/strobe devices should be installed with the bottom of the device at least 80 inches (2.0 m) and no more than 96 inches (2.4 m) above the finished floor. Horns should be installed with their tops not less than 6 inches (152 mm) below the ceiling and not less than 90 inches (2.3 m) above the finished floor.

Strobes must be used to supplement audible signals wherever the average ambient sound level exceeds 105 dBA. Combination audible/visual signals must be installed in accordance with NFPA guidelines established for strobes.

ADA requires visible signals in the following areas:

- rest rooms, meeting rooms, and other common use areas.
- sleeping rooms intended for use by persons with hearing impairment (in accordance with Title 1 of ADA).
- work areas used by a person with a hearing impairment (per Title 1 of ADA).

Application Notes - Canada

(Based in part on 1995 Canada National Building Code)

The fire alarm signal sound pressure level shall not exceed 110 dBA in any normally occupied area. The sound pressure level from an audible signal in a floor area used for occupancies other than residential occupancies shall not be less than 10 dBA above ambient levels, and never less than 65 dBA. In sleeping rooms the sound pressure level from an audible signal shall not be less than 75 dBA when any intervening doors between the device and the sleeping room are closed. Audible signal devices shall be installed not less than 1.8 m to the center of the device above the floor (per CAN/ULC S524).

The fire alarm audible signal shall be supplemented by fire alarm strobes in any floor area where the ambient noise level exceeds 87 dBA, or where the occupants of the floor area use ear protective devices, are located within an audiometric booth, or are located within sound insulating enclosures. This also applies to assembly occupancies in which music and other sounds associated with performances could exceed 100 dBA

Strobes shall be installed in a building so that the flash from one device is visible throughout the floor area or portion thereof in which they are installed. For maximum safety, GE Security recommends that strobes be installed as per the guidelines shown here under Strobe Spacing.

Installation

Genesis horns and strobes mount to any standard one-gang surface or flush electrical box. Matching optional trim plates are used to cover oversized openings and can accommodate one-gang, two-gang, four-inch square, or octagonal boxes, and European 100 mm square.

Genesis Horn/Strobe with optional trim plate

All Genesis signals come pre-assembled with captive mounting screws for easy installation. Two tabs at the top of the signal unlock the cover to reveal the mounting hardware. The shallow depth of Genesis devices leaves ample room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

Field Configuration

Temporal horn and horn-strobe models are factory set to sound in a **three-pulse temporal pattern**. Units may be configured for use with coded systems by cutting a jumper on the circuit board. This results in a **steady output** that can be turned on and off (coded) as the system applies and removes power to the signal circuit. A Genesis Signal Master is required when horn-strobe models are configured for coded systems. Non-temporal, horn-only models sound a steady tone.

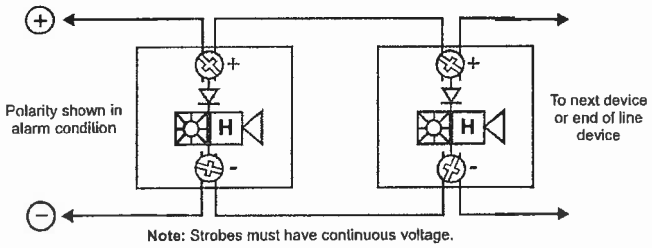
Genesis strobes and horn-strobes are shipped from the factory ready for use as **UL 1971 compliant** signals for public mode operation. These signals may be configured for **temporal flash** by cutting a jumper on the circuit board. This battery-saving feature is intended for private mode signaling only.

Genesis strobes and horn-strobes may be set for **15, 30, 75, or 110 candela output**. The output setting is changed by simply opening the device and sliding the switch to the desired setting. The device does not have to be removed to change the output setting. The setting remains visible through a small window on the side of the device after the cover is closed.

Horns and horn-strobes are factory set for **high dB output**. **Low dB output** may be selected by cutting a jumper on the circuit board. This reduces the output by about 5 dB.

Wiring

Field wiring terminals accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring. Horns, strobes, and combination horn-strobes are interconnected with a single pair of wires as shown below.



WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, we suggest you discuss further safeguards with your local fire protection specialist.

These visual signal appliances' flash intensity **may not be adequate to alert or waken** occupants in the protected area. Research indicates that the intensity of strobe needed to awaken 90% of sleeping persons is approximately 100 cd. GE Security recommends that strobes in sleeping rooms be 110 cd minimum.

Current Draw

Strobes, Horn-Strobes

Multi-cd Wall Strobes (G1-VM)

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	103	141	106	255	311
16 Vfwr	125	179	170	346	392

*G1-VM multi-cd; **G1F-V1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	85	79	127	124	150	140	245	243	285	283
20 Vdc	71	66	98	96	123	114	188	186	240	238
24 Vdc	59	55	82	80	104	97	152	150	191	190
33 Vdc	46	44	64	63	84	77	112	111	137	136
16 Vfwr	119	64	169	97	223	126	332	203	376	240
20 Vfwr	103	51	143	76	189	100	253	150	331	198
24 Vfwr	94	44	129	65	169	85	218	121	262	152
33 Vfwr	87	37	112	52	148	68	179	89	205	106

Wall Temporal Horn-strobes – High dB Setting

UL Rating	15 cd*	30 cd*	75 cd*	110 cd*	15/75 cd**
	RMS	RMS	RMS	RMS	RMS
16 Vdc	129	167	281	337	172
16 Vfwr	176	230	397	443	269

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	102	89	135	129	160	152	246	242	309	305
20 Vdc	88	77	109	104	137	129	193	190	248	243
24 Vdc	81	71	94	90	122	114	161	158	203	200
33 Vdc	74	64	72	74	106	98	124	121	154	151
16 Vfwr	144	77	182	106	247	143	352	212	393	249
20 Vfwr	141	68	162	87	220	120	274	158	362	210
24 Vfwr	136	65	152	76	203	106	235	133	282	165
33 Vfwr	125	54	144	65	196	94	201	101	232	123

Wall Temporal Horn-strobes – Low dB Setting

UL Rating	15 cd*	30 cd*	75 cd*	110 cd*	15/75 cd**
	RMS	RMS	RMS	RMS	RMS
16 Vdc	122	160	274	330	146
16 Vfwr	162	216	383	429	231

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	96	84	130	124	158	149	243	240	302	297
20 Vdc	79	70	104	99	133	124	189	186	241	237
24 Vdc	68	61	88	84	119	110	156	154	197	193
33 Vdc	56	52	71	68	100	93	118	116	146	143
16 Vfwr	128	69	180	104	241	139	344	204	389	244
20 Vfwr	118	60	157	84	213	115	266	156	343	200
24 Vfwr	113	54	144	74	195	101	230	128	279	161
33 Vfwr	112	48	137	64	182	87	197	99	226	117

Horns

Wall Temporal Horns (G1-HD)

UL Rating	High dB (RMS)	Low dB (RMS)
16 Vdc	26	19
24 Vdc	36	27
33 Vdc	41	33
16 Vfwr	51	37
24 Vfwr	69	52
33 Vfwr	76	70

Typical Current	High dB		Low dB	
	RMS	Mean	RMS	Mean
16 Vdc	22	17	17	14
20 Vdc	24	19	19	16
24 Vdc	27	21	22	18
33 Vdc	32	25	26	22
16 Vfwr	34	15	30	14
20 Vfwr	40	19	34	16
24 Vfwr	45	21	38	18
33 Vfwr	52	24	47	22

Wall Horns (G1-P)

UL Designation	Voltage Range	Max. Current, RMS
Regulated 24 Vdc	16 - 33 Vdc	13 mA
24 fwr	16 - 33 Vfwr	11 mA

Typical Current	RMS	Mean
24 Vdc	10	10
24 Vdc	11	11
31 Vdc	12	12
20 Vfwr	9	8
24 Vfwr	10	9

Notes and Comments

1. Current values are shown in mA.
2. UL Nameplate Rating can vary from Typical Current due to measurement methods and instruments used.
3. GE Security recommends using the Typical Current for system design including NAC and Power Supply loading and voltage drop calculations.
4. Use the Vdc RMS current ratings for filtered power supply and battery AH calculations. Use the Vfwr RMS current ratings for unfiltered power supply calculations.
5. Fuses, circuit breakers and other overcurrent protection devices are typically rated for current in RMS values. Most of these devices operate based upon the heating affect of the current flowing through the device. The RMS current (not the mean current) determines the heating affect and therefore, the trip and hold threshold for those devices.
6. Our industry has used 'mean' currents over the years. However, UL will direct the industry to use the 2004 RMS values in the future.

dBA output

Temporal Horns, Horn-strobes (G1-HD, G1-HDVM series)

High dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	81.4	85.5	91.4	94.2
24 Vdc	84.4	88.6	94.5	97.6
33 Vdc	86.3	90.4	96.9	99.5

Low dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	76.0	80.1	86.3	89.2
24 Vdc	79.4	83.5	89.8	92.5
33 Vdc	82.1	86.5	92.5	95.3

Steady Tone Horns (G1-P series)

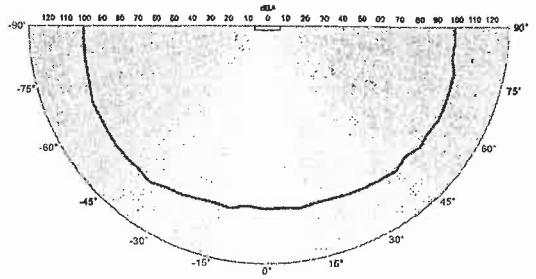
	UL464	Average	Peak
16 Vdc	77 dBA, min	85 dBA	91 dBA
16 Vfwr	77 dBA, min	85 dBA	91 dBA

Notes

1. All values shown are dBA measured at 10 feet (3.01m).
2. UL464 values measured in reverberation room.
3. Average and Peak values are measured in anechoic chamber.

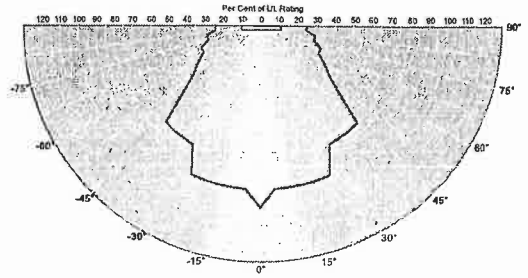
Average Sound Output (dBA)

(High dB setting, anechoic, 24V, measured at 10ft)



Light output - (effective cd)

Percent of UL rating versus angle



Specifications

Housing	Red or white textured UV stabilized, color impregnated engineered plastic. Exceeds 94V-0 UL flammability rating.
Lens	Optical grade polycarbonate (clear)
Mounting (indoor wall mount only)	Flush mount: 2½ inch (64 mm) deep one-gang box Surface mount: Model 27193 surface mount box, wiremold box, or equivalent surface-mount box With optional trim plate: One-gang, two-gang, four-inch square, octagonal, or European single-gang box
Wire connections	Screw terminals: single input for both horn and strobe. #18 to #12 AWG (0.75 mm² to 2.5 mm²) wire size
Operating environment	Indoor only: 32-120°F (0-49°C) ambient temperature. 93% relative humidity
Agency listings/approvals	UL 1971, UL 1638, UL 464, ULC S525, ULC S526, CSFM, CE, FCC, (MEA, FM pending). (All models comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule.)
Dimensions (HxWxD)	Signal: 4-1/2" x 2-3/4" x 13/16" (113 mm x 68 mm x 21 mm) Trimplate: 5" (127 mm); Height – 5-7/8" (149 mm); Depth – ½" (13 mm)
Operating voltage	G1-HD series temporal-tone horns: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded when horn set to steady tone) G1-HDVM series temporal-tone horn-strobes: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded (audible NAC only) when used with optional G1M Genesis Signal Master) G1-VM series strobes: non-coded, filtered 16 - 33 Vdc or unfiltered 16-33 Vdc FWR G1-P series steady-tone horns: coded or non-coded, filtered 20-31 Vdc or unfiltered 20-27 Vfwr
Strobe output rating	UL 1971, UL 1638, ULC S526: selectable 15 cd, 30 cd, 75 cd, or 110 cd output UL 1971: 15 cd (fixed 15/75 cd models) UL 1638, ULCS526: 75 cd (fixed 15/75 cd models)
Strobe flash rate	G1-VM strobes and G1-HDVM series temporal-tone horn-strobes: one flash per second synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master) Temporal setting (private mode only): synchronized to temporal output of horns on same circuit
Compatible synchronization modules*	G1M, G1M-RM, SIGA-CC1S, SIGA-MCC1S
Horn pulse rate	G1-HD temporal-tone horns and G1-HDVM series temporal-tone horn-strobes: temporal rate synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master) G1-P steady-tone horns: continuous, steady tone only
Temporal audible pattern	½ sec ON, ½ sec OFF, ½ sec ON, ½ sec OFF, ½ sec ON, 1½ sec OFF, then repeat cycle

* Not compatible with G1-P Series horns.

U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com

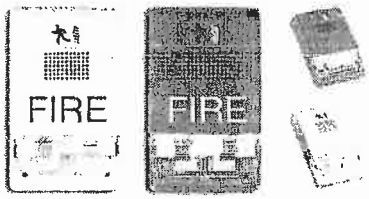
Ordering Information

Catalog Number		Description	Ship Wt. lbs (kg)
White Finish	Red Finish		
G1-HDVM	G1R-HDVM	Genesis Horn-Strobe (selectable 15, 30, 75, or 110 cd output, selectable high/low dB output)	
G1-VM	G1R-VM	Genesis Strobe (selectable 15, 30, 75, or 110 cd output)	
G1-HD	G1R-HD	Genesis Temporal Horn (selectable high/low dB output)	
G1-P	G1R-P	Genesis Steady Horn (not compatible with Genesis Signal Master)	
G1F-HDVM	G1RF-HDVM	Genesis Horn-Strobe (selectable 15, 30, 75, or 110 cd output, selectable high/low dB output) – with "FIRE" marking	
G1F-VM	G1RF-VM	Genesis Strobe (selectable 15, 30, 75, or 110 cd output) – with "FIRE" marking	0.25 (0.11)
G1F-HD	G1RF-HD	Genesis Temporal Horn (selectable high/low dB output) – with "FIRE" marking	
G1F-P	G1RF-P	Genesis Steady Horn with "FIRE" marking (not compatible with Genesis Signal Master)	
G1F-HDV1575	G1RF-HDV1575	15/75 cd temporal horn-strobe, hi/lo dB-24V – with "FIRE" marking (see note 1)	
G1F-V1575	G1RF-V1575	15/75 cd strobe – with "FIRE" marking (see note 1)	

Mounting Accessories			
G1T	G1RT	Genesis Trim Plate (for two-gang or 4" square boxes)	0.15 (0.7)
G1T-FIRE	G1RT-FIRE	Genesis Trim Plate (for two-gang or 4" square boxes) with "FIRE" markings	0.15 (0.7)
27193-16	27193-11	One-gang surface mount box	1 (0.4)

Synchronization Modules		
G1M	Genesis Signal Master – Snap-on Mount	0.2 (0.1)
G1M-RM	Genesis Signal Master – Remote Mount (1-gang)	
SIGA-CC1S	Intelligent Synchronization Output Module (2-gang)	0.5 (0.23)
SIGA-MCC1S	Intelligent Synchronization Output Module (Plug-in UIO)	0.18 (0.08)

Note 1: These 15/75 cd models provide fixed output and are not multi-candela devices. The 15 cd output component complies with UL1971, while the 75 cd output component complies with UL 1638.



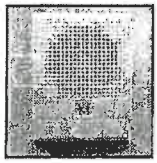
Genesis Horn-Strobes may be ordered in red or white, with or without 'FIRE' marking. Order matching trim plates separately.

imagination at work

Overview

The Genesis line of signals are the smallest, most compact audible-visible emergency signaling devices in the world. Protruding no more than one inch from the wall, Genesis speakers and speaker-strobes blend with any decor.

Signals feature textured housings in architecturally neutral white or traditional fire alarm red. An ingenious iconographic symbol indicates the purpose of the device. This universal symbol is code-compliant and is easily recognized by all building occupants regardless of what language they speak.



Speaker-only unit

Thanks to patented breakthrough technology, Genesis strobes do not require bulky specular reflectors. Instead, an exclusive mask-and-cavity design channels and conditions light to produce a highly controllable distribution pattern. Intensive development efforts employing this new technology have given rise to a new benchmark in strobe performance – FullLight™ technology.

Speaker-strobes feature 15, 30, 75 or 110 candela output, selectable with a conveniently-located switch on the bottom of the device. The candela setting remains clearly visible even after final installation Models are also available that offer fixed 15/75 cd output.

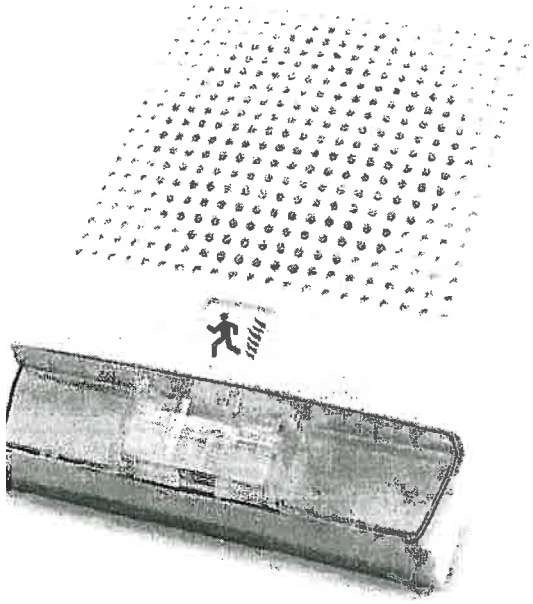
All Genesis speakers include a DC blocking capacitor to allow electrical supervision of the audio distribution circuit. Models for 25 V_{RMS} and 70 V_{RMS} circuits are available. The mylar speaker with its sealed back construction provides extra durability and improved audibility. ¼ W to 2 W operation is selectable with a conveniently-located switch on the bottom of the device. The wattage tap setting remains clearly visible even after final installation.

Standard Features

- **Unique low-profile design**
  - The most compact UL/ULC listed speaker-strobe available
  - Ultra-slim, protrudes a mere one inch from the wall
  - Attractive appearance, no visible mounting screws
- **Field configurable – no need to remove the device!**
  - Select ¼, ½, 1, or 2 watt operation and 15, 30, 75, or 110 candela output with convenient switches that remain visible even after the unit is installed
- **Fixed 15/75 cd models available**
- **Unparalleled performance**
  - loud 90 dBA output ensures clear, crisp audio
  - Exclusive FullLight strobe technology produces the industry's most even light distribution
  - Precision timing electronics meet tough new synchronizing standards for strobes when used with compatibile modules
  - Low current draw minimizes system overhead
  - Highly regulated in-rush current allows the maximum number of strobes on a circuit
  - Industry's first temporal strobe output
  - 25 Vrms and 70 Vrms models available, all supplied with a DC blocking capacitor for audio circuit supervision
- **Easy to install**
  - Fits all standard 4" square electrical boxes with plenty of room behind the signal for extra wire – no extension ring or trim plate needed
  - Simple jumper snips set strobe flash rates
  - #18 - #12 AWG terminals – ideal for long runs, existing wiring

Genesis Speakers and Strobes

Genesis G4 Series



MEA

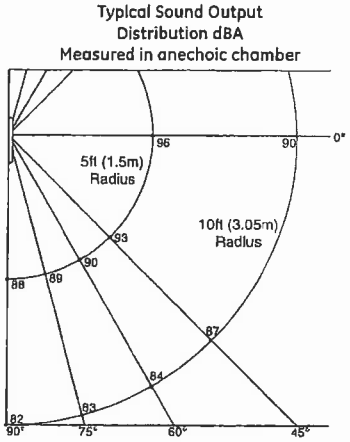
FM PENDING

Patents pending

Speaker Application

The suggested sound pressure level for each signaling zone used with alert or alarm signals is a minimum of 15 dB above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater. This is measured 5 feet (1.5 m) above the floor. The average ambient sound level is the RMS, A-weighted sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically cause a 6dB reduction in the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. Doubling the power output of a device (e.g.: a speaker from 1W to 2W) will increase the sound pressure level by 3dBA. A 3dBA difference represents a barely noticeable change in volume.



Genesis Series Cone Speaker/strobe

Strobe Application

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act (see application notes – USA)*.

Genesis strobes are synchronized and UL-listed for use in both sleeping and non-sleeping areas. They are intended for indoor wall-mount applications only. Combination speaker-strobe signals must be installed in accordance with guidelines established for strobe devices.

FullLight strobe technology produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors. This ensures the entire coverage area receives consistent illumination from the strobe flash.

All Genesis strobes self-synchronize when installed with the Genesis Signal Master or SIGA-CC1S module. Strobe flashes from devices on the same circuit synchronize to within 10 milliseconds of each other *indefinitely*. This exceeds the revised UL standards in effect as of November, 2000, which specify this level of synchronization over only two hours.

Genesis devices are fully compatible with Enhanced Integrity signals. The two product lines may be mixed on the same circuit.

Strobe Spacing

The following guidelines are based on ANSI/NFPA 72 *National Fire Alarm Code* (1999). When applied and installed in accordance with that code, Genesis strobes meet or exceed the illumination produced by the ADA-specified 75 candela (cd) strobe at 50 feet.*

Non-Sleeping Rooms and Corridors: Genesis strobes rated at less than 110 cd per UL 1971 are intended for use in non-sleeping areas only. Install with the bottom of the device at least 80 inches (2.0 m) and no more than 96 inches (2.4 m) above the finished floor. No point in any space (including corridors) required to have strobes should be more than 50 feet (15.2 m) from the signal (in the horizontal plane).

In large rooms or spaces (such as auditoriums) that exceed 100 feet (30.4 m) across and without obstructions more than 72 inches (1.8 m) above the finished floor, strobes may be placed around the perimeter, spaced a maximum of 100 feet (30.4 m) apart. This is an alternative to suspending strobes from the ceiling.

Non-Sleeping Rooms	Use One Wall Mounted Model:
Up to 20' x 20' (6.1 x 6.1m)	One 15 cd strobe
Up to 30' x 30' (9.1 x 9.1m)	One 30 cd or two 15 cd strobes
Up to 40' x 40' (12.2 m x 12.2 m)	One 75 cd or two 30 cd strobes
Up to 50' x 50' (15.2 x 15.2m)	One 110 cd or two 75 cd strobes

Corridors	Wall Mounted - Model:
Any Length x Max. 20' (6.1m) Wide	15 cd strobes spaced at 100' (30.5 m) max. Strobes must be placed within 15' (4.5m) of each end of the corridor.

** ADA suggests using 75 cd strobes throughout an area, with spacing that never exceeds 50 ft from the strobe to any point in the protected space.*

Sleeping rooms: Genesis 110 cd strobes are intended for use in sleeping rooms and should be installed along with a smoke detector. It must be wall mounted at least 80" (2.03m) above floor level, but no closer than 24" (610mm) to the ceiling. The distance from the strobe to the pillow must not exceed 16' (4.8m).

Sleeping Rooms	Use One Wall Mounted Model:
Any Size	110 cd within 16 feet of pillow

Application Notes - USA

Audible signals in the public mode should never have a sound level less than 75 dBA at 10' (3 m) per NFPA 72. Signals cannot exceed 120 dBA per ADA (130 dBA per NFPA 72) at the minimum hearing distance to audible appliance.

Strobe and combination speaker/strobe devices should be installed with the bottom of the device at least 80 inches (2.0 m) and no more than 96 inches (2.4 m) above the finished floor. Speakers should be installed with their tops not less than 6 inches (152 mm) below the ceiling and not less than 90 inches (2.3 m) above the finished floor.

Strobes must be used to supplement audible signals wherever the average ambient sound level exceeds 105 dBA. Combination audible/visual signals must be installed in accordance with NFPA guidelines established for strobes.

ADA requires visible signals in the following areas:

- rest rooms, meeting rooms, and other common use areas.
- sleeping rooms intended for use by persons with hearing impairment (in accordance with Title 1 of ADA).
- work areas used by a person with a hearing impairment (per Title 1 of ADA).

Application Notes - Canada

(Based in part on 1995 Canada National Building Code)

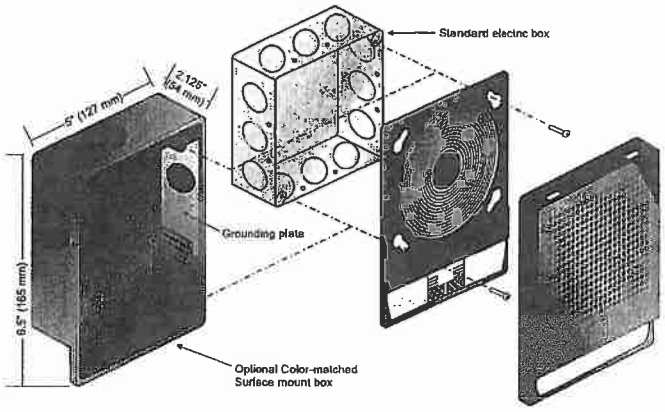
The fire alarm signal sound pressure level shall not exceed 110 dBA in any normally occupied area. The sound pressure level from an audible signal in a floor area used for occupancies other than residential occupancies shall not be less than 10 dBA above ambient levels, and never less than 65 dBA. In sleeping rooms the sound pressure level from an audible signal shall not be less than 75dBA when any intervening doors between the device and the sleeping room are closed. Audible signal devices shall be installed not less than 1.8 m to the center of the device above the floor (per CAN/ULC S524).

The fire alarm audible signal shall be supplemented by fire alarm strobes in any floor area where the ambient noise level exceeds 87 dBA, or where the occupants of the floor area use ear protective devices, are located within an audiometric booth, or are located within sound insulating enclosures. This also applies to assembly occupancies in which music and other sounds associated with performances could exceed 100 dBA. Strobes shall be installed in a building so that the flash from one device is visible throughout the floor area or portion thereof in which they are installed. For maximum safety, GE Security recommends that strobes be installed as per the guidelines shown here under Strobe Spacing.

Installation and Mounting

All models are intended for indoor wall mounted applications only. Speakers and speaker-strobes are flush mounted to a North-American 4" square electrical box, $2^1/_8$" (54 mm) deep or a European 100 mm square box. Signals may be surface mounted to a Genesis surface-mount box (see ordering information for details).

Two tabs at the top of the signal unlock the cover to facilitate mounting. The shallow depth of Genesis devices leaves ample room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

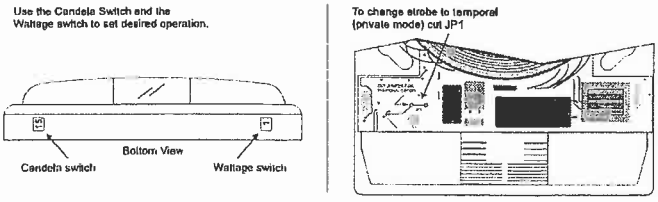


GE Security recommends that these fire alarm speaker-strobes always be installed in accordance with the latest recognized edition of national and local fire alarm codes.

Field Configuration

Genesis speakers may be set for ¼, ½, 1, or 2 watt operation. The wattage setting is visible through a small window on the bottom of the device and is changed by simply sliding the switch until the desired setting appears in the window. The speaker does not have to be removed to change the wattage.

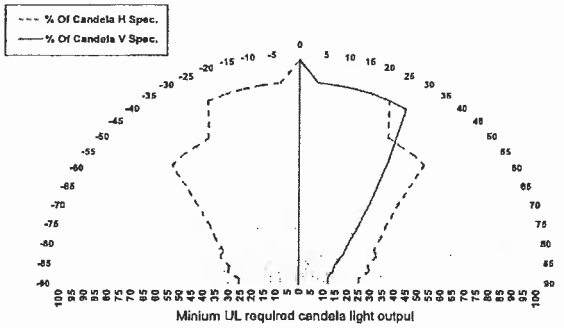
Genesis speaker-strobes may be set for 15, 30, 75, or 110 candela output. The output setting is visible through a small window on the bottom of the device and is changed by simply sliding the switch until the desired setting appears in the window. The speaker-strobe does not have to be removed to change the output.



Genesis speaker-strobes may also be configured for temporal flash. This battery-saving feature is intended for private mode signaling only. To set the device for temporal flash, snip the circuit board as shown in the Jumper Locations diagram above.

Light output

Per cent of UL rating versus angle



UL name plate **maximum** operating **current (RMS-mA)**

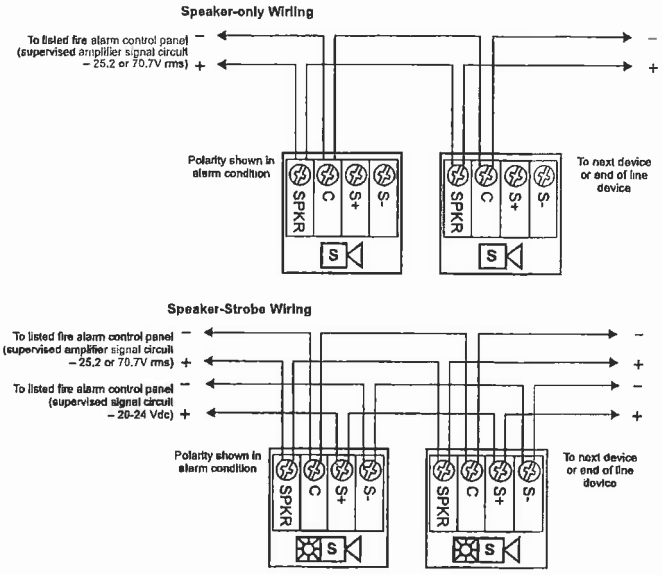
Cd rating	15	30	15/75	75	110
16 Vdc	96	130	106	239	294
16 Vfwr	120	169	170	329	375

Typical **current**, milliamps - average **(RMS)**

Cd rating	15	30	15/75	75	110
20 Vdc	65 (78)	93 (101)	114 (123)	182 (188)	238 (245)
24 Vdc	55 (65)	78 (86)	97 (104)	153 (159)	196 (203)
31 Vdc	45 (53)	63 (69)	77 (84)	120 (124)	151 (157)
20 Vfwr	56 (106)	79 (147)	100 (189)	147 (264)	197 (342)
24 Vfwr	50 (95)	68 (130)	85 (169)	121 (225)	155 (283)
27 Vfwr	44 (84)	60 (115)	68 (148)	107 (200)	137 (251)

Wiring

Field wiring is connected to Genesis signals with terminals that accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring.



WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, we suggest you discuss further safeguards with your local fire protection specialist. Research indicates that the intensity of strobe needed to awaken 90% of sleeping persons is approximately 100 cd. GE Security recommends that strobes in sleeping rooms be set to 110 cd minimum.

Specifications

Genesis Speakers and Speaker-Strobes	
Housing	Red or white textured UV stabilized, color impregnated engineered plastic. Exceeds 94V-0 UL flammability rating.
Dimensions	Height: 6.5" (165 mm). Width: 5" (127 mm). Depth to wall: 1" (25 mm).
Mounting (indoor wall mount only)	Flush: North-American 4" square box, 2 1/8" (54 mm) deep. Surface: model G4B (white) or G4RB (red) surface mount box.
Wire Connections	Screw terminals: separate polarized inputs for speaker and strobe, #18 to #12 AWG (0.75 mm² to 2.5 mm²) wire size
Operating environment	32-120° F (0-49° C) ambient temperature; 0-93% relative humidity.
Agency Listings	UL 1971, UL 1638, UL 1480, ULC S526, ULC S541, CSFM, MEA (FM pending) (All models comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule.)

Speakers	
Input/Operating Volts	25 VRMS or 70 VRMS. See ordering information.
Speaker Taps/Output*	2 W = 89 dBA; 1 W = 86 dBA; ½ W = 83 dBA; ¼ W = 80 dBA
Speaker Cone	Speaker frequency response: 250 to 5,000 Hz. Optimized for voice intelligibility. 4-inch (102mm) mylar cone, sealed back construction, rated for 8 watts, 8 ohm voice coil.

Strobes	
Strobe Output Rating	UL 1971, UL 1638, ULC S526: selectable 15 cd, 30 cd, 75 cd, or 110 cd output UL 1971: 15 cd (fixed 15/75 cd models) UL 1638, ULCS526: 75 cd (fixed 15/75 cd models)
Strobe Operating Voltage	16 - 33 Vdc Regulated, 16-33 V Full wave rectified (UL Voltage Designations "Regulated 24" and "24 fwr")
Strobe Flash Rate	One flash per second.
Strobe Flash Synchronization	All strobes: one flash per second (fps) within 200 milliseconds over 30 minutes on common circuit. With optional synchronization module: one fps within 10 milliseconds indefinitely (exceeds UL 1971). Temporal setting (private mode only): synchronized to temporal output on the same circuit.
Compatible Synchronization Modules	G1M-RM, SIGA-CC1S, SIGA-MCC1S

Ordering Information

Catalog Number		Description	Ship Wt., lbs (kg)
White	Red		
Speakers and Speaker-Strobes			
G4-S2	G4R-S2	25 Volt Speaker	1.5 (0.68)
G4-S2VM	G4R-S2VM	25 Volt Speaker-strobe with selectable 15, 30, 75, or 110 cd output	
G4F-S2V1575	G4RF-S2V1575	25 Volt Speaker-strobe with 15/75 cd output. Available with FIRE marking only.	
G4-S7	G4R-S7	70 Volt Speaker	
G4-S7VM	G4R-S7VM	70 Volt Speaker with selectable 15, 30, 75, or 110 cd output	
G4F-S7V1575	G4RF-S7V1575	70 Volt Speaker-strobe with 15/75 cd output. Available with FIRE marking only.	
Accessories			
G1M-RM		Synchronization Output Module (1-gang)	0.2 (0.1)
SIGA-CC1S		Intelligent Synchronization Output Module (2-gang)	0.5 (0.23)
SIGA-MCC1S		Synchronization Output Module (Plug-in UIO)	0.18 (0.08)
G4B	G4RB	Surface mount box	0.7 (0.32)

Housings available with "FIRE" markings

To specify housings with "FIRE" markings, insert an "F" before the hyphen in the model number.

Add an "F" here

G4F-S2
G4RF-S7VM

Note: 15/75 cd models provide fixed output and are not multi-candela devices. The 15 cd output component complies with UL1971, while the 75 cd output component complies with UL 1638. These models are available with FIRE marking only.

Security

U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com

Genesis Series is a Trademark
of GE Security.

imagination at work

Overview

GE Security Electromagnetic Door Holders are ruggedly constructed and attractively designed. The housing is finished with an aluminum color, durable baked polyester powder paint. The floor or wall section houses the electromagnet while the contact plate attaches to the door. The contact plate has a shock absorbing nylon (swivel) ball which allows the plate to adjust to any door angle. Floor units are available in single-door or double-door (back to back) versions. Wall units are available in flush or surface mounted versions.

GE Security door releases should be installed wherever doors may be effectively used to confine smoke and fire, or where the release of a self-closing door from a remote location is desirable for other reasons.

Fail-safe operation is an inherent feature of GE Security door holder-releases. If power fails, doors are released automatically but may be opened or closed manually at any time. All units are free of moving parts, are self-contained and require no maintenance.

These door holder-releases have a holding force of approximately 15 to 25 Lbf (66 to 111N). The device holds a door open while energized. When de-energized by a relay controlled by the fire alarm system or other switch, the door is released to a closed position, checking the spread of smoke and flames. Electromagnetic door holders should be used and installed in accordance with local Building Codes and Standards.

Standard Features

- Floor and wall mounted styles
- Low power consumption
- AC/DC models
- Completely silent operation
- 25 Lbf (111N) nominal holding force
- Adjustable, swivel contact plate

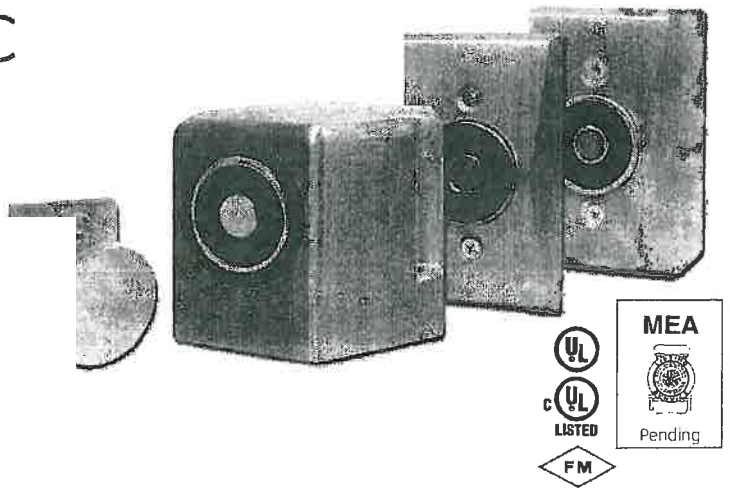
Basic Models

Floor Mounted:
The electromagnet portion consists of a floor plate and a floor housing which when installed with gaskets provided, form a weatherproof electrical junction box. Incoming conduit connects directly into floor plate.

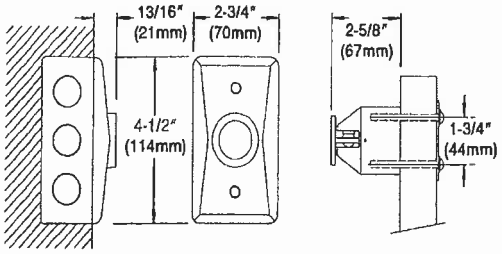
Floor mounted units are available with one (Cat. No. 1501) or two (Cat. No. 1502) magnet faces for holding a single door or two doors back to back.

Wall Mounted:
Wall mounted models are available in flush, semi-flush and surface mounting configurations. Flush and semi-flush models are designed for concealed wiring applications and mount on standard single gang (2 x 4 inch) outlet boxes. Surface mounted models mount on a surface adaptor housing (junction box), which is provided.

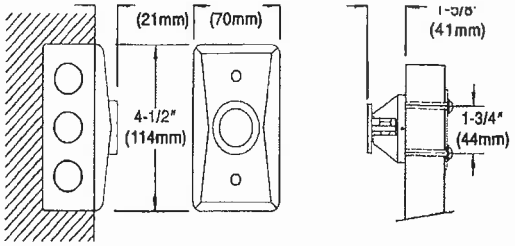
Electromagnetic Door Holders



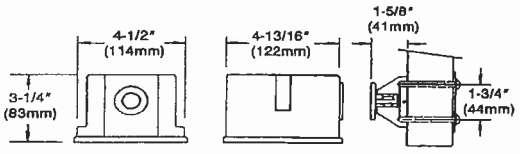
Dimensions



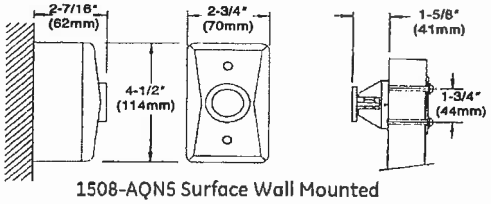
1504-AQN5 Flush Wall Mounted (Long Catch Plate)



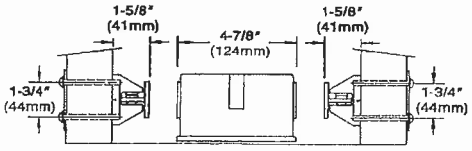
1505-AQN5 Flush Wall Mounted (Short Catch Plate)



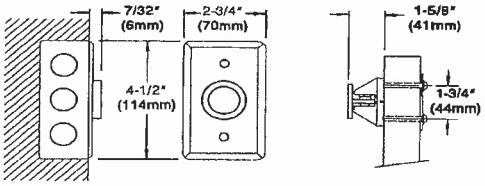
1501-AQN5 Floor Mounted (Single Door)



1508-AQN5 Surface Wall Mounted



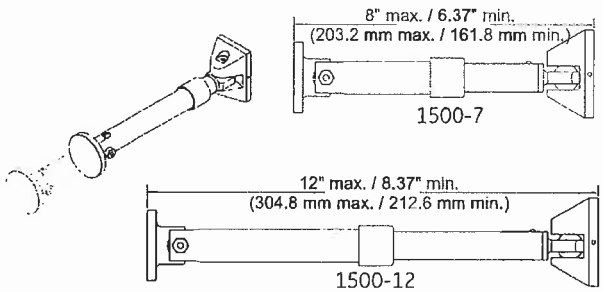
1502-AQN5 Floor Mounted (Double Door)

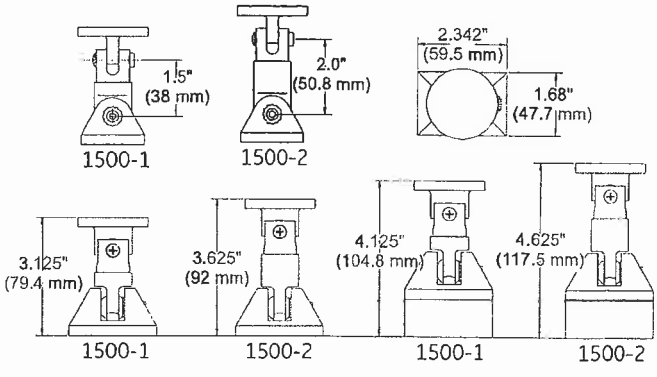


1509-AQN5 Completely Flush Wall Mounted

Catch Plate Extensions

Only the extension rods are included. The end pieces are included with the doorholders or can be ordered separately.





Specifications

Model No.	Style	Volts	Amps*
1501-AQN5	Floor Mounted (Single Door)	24 Vac 60 Hz 24 Vdc 120 Vac 60 Hz	.015
1502-AQN5	Floor Mounted (Double Door)		
1504-AQN5	Flush Wall Mounted (Long Catch Plate)		
1505-AQN5	Flush Wall Mounted (Short Catch Plate)		
1508-AQN5	Surface Wall Mounted		
1509-AQN5	Completely Flush Wall Mounted		

*1502-AQN5 is a double unit which draws .015 per side

Ordering Information

Model No.	Description	Ship. Wt. lb (kg)
1501-AQN5	Floor Mounted (Single Door)	5.4 (2.45)
1502-AQN5	Floor Mounted (Double Door)	5.0 (2.27)
1504-AQN5	Flush Wall Mounted (Long Catch Plate)	2.0 (0.91)
1505-AQN5	Flush Wall Mounted (Short Catch Plate)	2.0 (0.91)
1508-AQN5	Surface Wall Mounted	3.0 (1.36)
1509-AQN5	Completely Flush Wall Mounted	2.0 (0.91)
Accessories		
1500-1	Catch plate extension assembly, 1.5"	0.25 (0.11)
1500-2	Catch plate extension assembly, 2.5"	0.25 (0.11)
1500-7	Catch plate extension assembly (5.25 to 7.5 inches)	0.5 (0.23)
1500-12	Catch plate extension assembly (7.5 to 12 inches)	1.0 (0.45)
CS2595-5	Replacement armature - short (for use with 1501, 1502, 1505, 1508 and 1509 door holders)	0.25 (0.11)
CS2598-5	Replacement armature - long (for use with 1504 door holder)	0.25 (0.11)

CAUTION: These Door Holder units will not operate without electrical power.

Security

U.S.
T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

Europe
T 32 2 725 11 20
F 32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

www.gesecurity.com

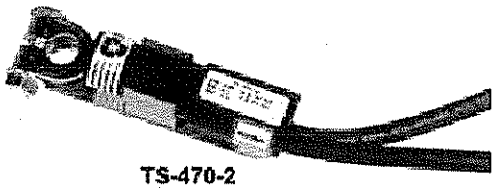
imagination at work

DAMPER POSITION SWITCHES

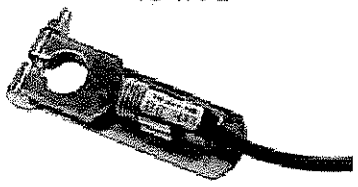
TS-470 SERIES

DESCRIPTION

The **TS-470 Series** damper position switches consist of an encapsulated mercury switch mounted on a 1/2" (1.3 cm) damper shaft crank arm. The **TS1-470 Series** includes the same switch, mounted on a 1" (2.5 cm) crank arm. They are mounted on a horizontal damper shaft to provide opened/closed indication. Switch contacts are normal when the cable end of the switch is horizontal or above, and makes when the cable end drops more than 15° below horizontal.



TS-470-2



TS1-470

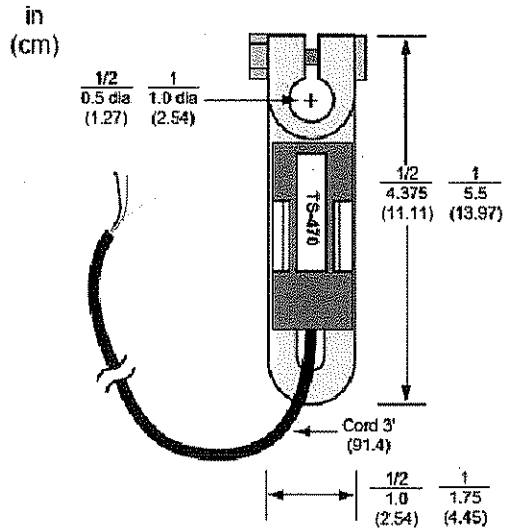
FEATURES

- ***Easy to install***
- ***Easily adjustable***

SPECIFICATIONS

Wiring	
TS(1)-470	3' length, AWG 18, 3-conductor cable; green = common, black = N.C., white = N.O.
TS(1)-470-2	3' length, AWG 18, two 3-conductor cables; green = common, black = N.C., white = N.O.
TS(1)-470-P	3' length, plenum AWG 18, 3-conductor cable; black = common, blue = N.C., red = N.O.
Switch Type	Encapsulated mercury switch, contains 0.03 cc mercury
Contact Rating	
Non-plenum	SPDT; 2A @ 120 VAC, 1A @ 240 VAC
-P models	SPDT; 1A @ 120 VAC, 240 VAC
Switch Angle	Makes at 15° below horizontal
Operating Temperature	-30° to 130°F (-34° to 54°C)
Dimensions	
TS-	1.4"H x 1.0"W x 4.4"L (3.6 x 2.5 x 11.1 cm)
TS1-	1.5"H x 1.8"W x 5.5"L (3.8 x 4.5 x 14.0 cm)
Weight	
TS-	0.46 lb (0.21 kg)
TS1-	0.8 lb (0.36 kg)
Mounting	
TS-	1/2" (1.3 cm) damper shaft
TS1-	1" (2.5 cm) damper shaft
Warranty	1 year

WIRING / DIMENSIONS



ORDERING INFORMATION

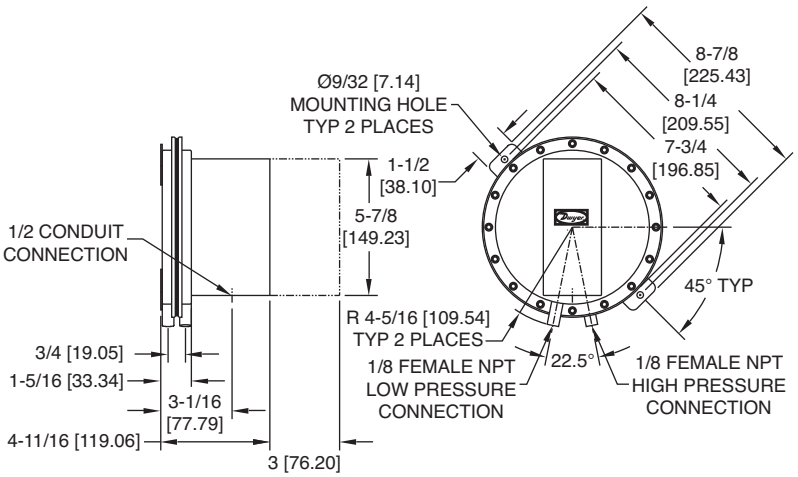
MODEL	DESCRIPTION
TS-470	Damper position switch with SPDT switch, for 1/2" shaft
TS-470-2	Damper position switch with two SPDT switches, for 1/2" shaft
TS-470-P	Damper position switch with SPDT switch, for 1/2" shaft, stainless steel housing, and plenum-rated cable
TS1-470	Damper position switch with SPDT switch, for 1" shaft
TS1-470-2	Damper position switch with two SPDT switches, for 1" shaft
TS1-470-P	Damper position switch with SPDT switch, for 1" shaft, stainless steel housing and plenum-rated cable

RELATED PRODUCTS		PAGE
KLNJ-A2	Whisker switch with coated spring-rod and 10A @ 120 VAC contacts	**41**
LS45M91B11	Whisker switch with steel spring-rod and 5A @ 120 VAC contacts	**41**
TS-475	Non-mercury damper position switch, SPDT, for 1/2" damper shaft	**39**
TT-470	Tilt transducer with 1/2-in crank arm, 4-20 mA loop powered	**40**
TT1-470	Tilt transducer with 1-in crank arm	**40**

Series 1620 – Single and Dual Pressure Switches

Specifications - Installation and Operating Instructions

Series 1620 Pressure Switch



INSTALLATION

1. Switch is normally calibrated for mounting in the vertical position with pressure and electrical connections pointing down. If other mounting is desired, it should be specified when ordering.

2. Two lugs with 9/32″ diameter holes, 180 degrees apart on an 8-1/4″ diameter circle are provided.

3. The location selected should be free from excessive vibration and ambient temperatures should not be above 130°.

OPERATION

1. General – Differential pressure acting on the power diaphragm rotates a channel, compressing a calibrated spring. The rotation of the channel actuates a snap switch when the set-point is reached, opening one set of electrical contacts and closing the other.

2. Pressure Connections – Two 1/8″ NPT female connections are provided. Make appropriate connections as follows:

A. Differential Pressure – Connect tubing from source of greater pressure to high pressure port and from lower source to low pressure port.

B. Positive Pressure (above atmospheric) – Connect tubing from pressure source to high pressure port. Leave low pressure port vented to atmosphere.

C. Negative Pressure (vacuum) – Connect tubing from vacuum source to low pressure port. Leave high pressure port vented to atmosphere.

NOTE: When installing switch per paragraphs B or C in dusty environments, we recommend use of optional A-331 filter vent plug in the unused port. This will keep excess dirt from collecting inside switch.

3. Electrical Connections – Make wire connections for normally open or normally closed operation to appropriate screw terminals on snap switch.

ADJUSTMENT

1. If switch has been furnished pre-set, mount it vertically or horizontally as specified. Shifting the position of the switch will alter the set point. Because the set-point may shift in transit it should be checked before placing it in service.

2. The effective area of either side of the power diaphragm is changed by the effect of the sealing diaphragm. Thus, the actuating differential pressure setting must be made with the total pressure for the service intended imposed on both sides of the diaphragm. For example, a switch set to close a circuit at a differential pressure increase to 1″ of water with a total pressure of 1 PSIG will vary from the 1″ of water setting if the total pressure is increased to 2 PSIG. Also, a two or three percent variation will be noted if a switch set for vacuum or below atmospheric pressure is used for pressure or above atmospheric pressure control.

3. To establish the set-point, use a manometer or pressure gage in an appropriate range and of known accuracy. Apply pressure slowly to allow equalization in all branches of the system. Keep tubing lengths as short as possible.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Temperature Limits: -30 to 130°F (-34.4 to 54.4°C).
Pressure Limits: Max. 50 in. w.c. (12.44 kPa) continuous, 2 psig (13.79 kPa) surge.
Switch Type: 1626, Single-pole double-throw (SPDT); 1627, two Single-pole double-throw (SPDT) .
Repeatability: ±1%.
Electrical Rating: 15 A @ 120-480 VAC, 60 Hz. Resistive, 1/8 HP @ 125 VAC,1/4 HP @ 250 VAC, 60 Hz.
Electrical Connections: 3 screw type, common, normally open and normally closed.
Process Connections: 1/8″ female NPT.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Set Point Adjustment: Screw Adjustment.
Weight: Model 1626, 3 lb, 9.8 oz (1.64 kg); Model 1627, 3 lb, 11.8 oz (1.69 kg).
Agency Approvals: CE.

MODEL 1626, ALSO MODEL 1627 DUAL SWITCHES: OPERATING RANGES, DEAD BANDS AND RATINGS.

Model (1626 shown, 1627 similar)	Operating Range Inches, W.C.	Approximate Dead Band		Adj. Diff. Between Set Points (1627 only)
		Min.	Max.	
1626-1	.15 to 1.5	.10	.20	0.5
1626-5	.5 to 6.0	.15	.35	1.2
1626-10	2.0 to 11	.25	.65	2.3
1626-20	8.0 to 24	.50	1.20	5.0

Add –EXPL for explosion proof housing;
Add –WP for weather proof housing.

4. Model 1626 – The set-point is changed by turning the adjusting nut clockwise to increase and counter-clockwise to decrease. Model 1627 – The set-point of snap switch No. 2 is established first using the adjusting nut as with the 1626 series. Next, set snap switch No. 1 by turning the adjusting screw under the switch roller. Recheck switch No. 2 and correct as necessary. If switch No. 2 needs re-adjustment a final check of switch No. 1 should be made. The settings of the two switches affect one another and both should be checked any time either is changed.

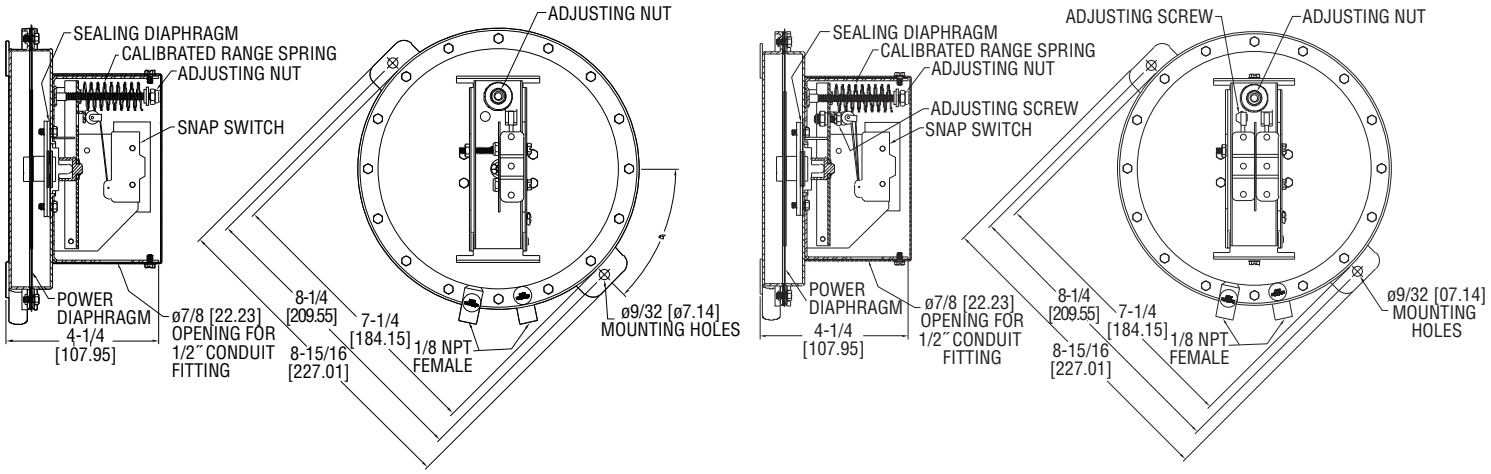
MAINTENANCE

No unusual precautions are required. Care should be taken to keep the switch reasonably dry and free from dust or dirt. No lubrication required.

CAUTION: For use with air or compatible gases only.

DWYER INSTRUMENTS, INC.
P.O. Box 373 • Michigan City, IN 46361-0373, U.S.A.
Phone: 219/879-8000 **www.dwyer-inst.com**
Fax: 219/872-9057 **e-mail: info@dwyer-inst.com**

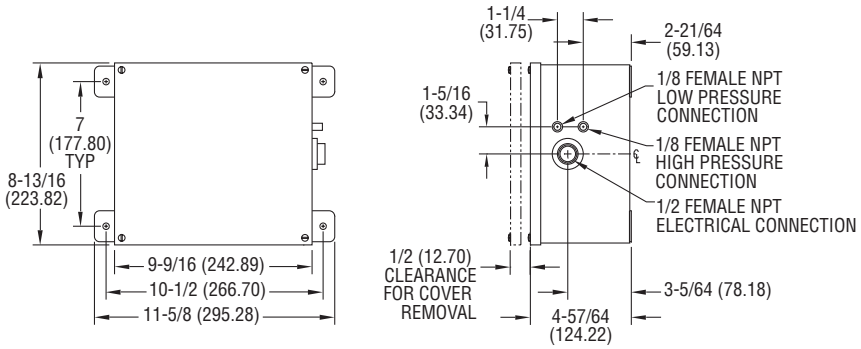
SERIES 1620 – DIMENSIONS



OPTIONAL ENCLOSURES

Weatherproof Housing

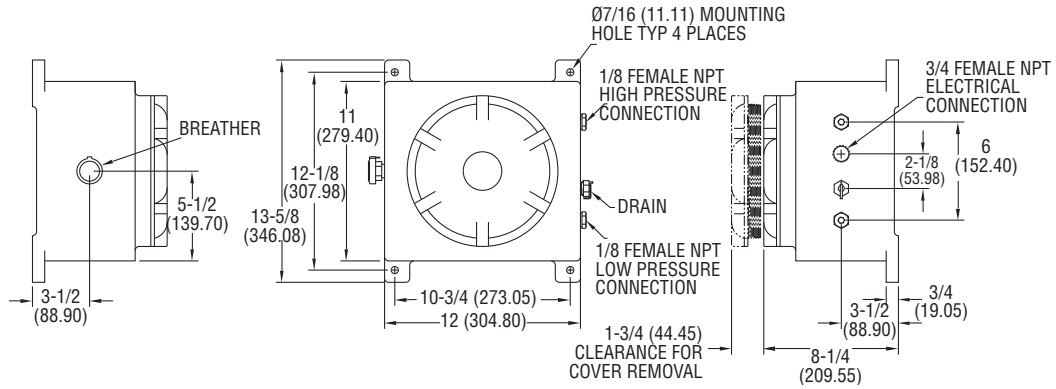
Note: Pressure and electrical connections must face down when mounted.



Explosion-proof Housing

Class I, Groups C & D; Class II, Groups E, F & G; Class III

Warning: To reduce the risk of ignition of the hazardous atmosphere, conduit seals must be installed within 18˝ of this enclosure. Disconnect enclosure from supply circuit before opening. Keep assembly tight during operation.



Printed in U.S.A. 2/10

FR# 21-440199-00 Rev. 5

DWYER INSTRUMENTS, INC.
P.O. Box 373 • Michigan City, IN 46361-0373, U.S.A.
Phone: 219/879-8000 **www.dwyer-inst.com**
Fax: 219/872-9057 **e-mail: info@dwyer-inst.com**

FIRESTOPPING

FS-ONE
High Performance Intumescent Firestop Sealant

Product description

- Intumescent (expands when exposed to fire) firestop sealant that helps protect combustible and non-combustible penetrations for up to 4 hours fire rating

Areas of application

- Steel, copper and EMT pipes
- Insulated steel and copper pipes
- Cable bundles
- Closed or vented plastic pipes
- HVAC penetrations

For use with

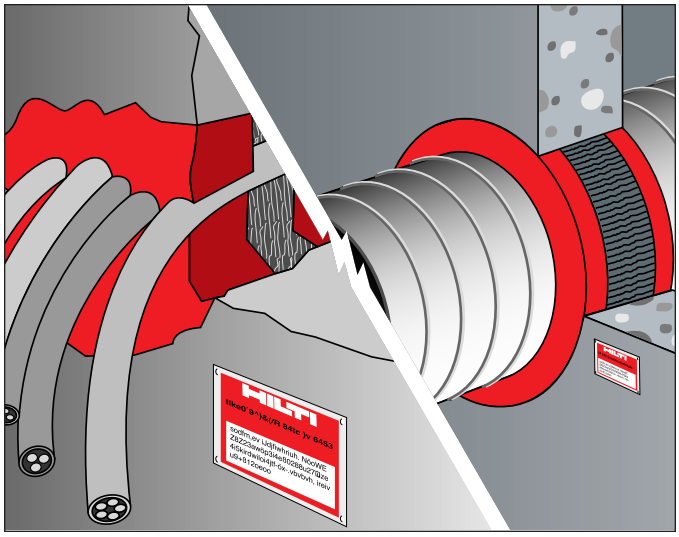
- Concrete, masonry, drywall and wood floor assemblies
- Wall and floor assemblies rated up to 4 hours

Examples

- Sealing around plastic pipe penetrations in fire rated construction
- Sealing around combustible and non-combustible penetrations in fire rated construction

System advantage/Customer benefits

- Protects most typical firestop penetration applications
- Easy to work with and fast cleanup
- Can be repenetrated when laying new cables
- Can be painted



Internationally tested and approved

CLASSIFIED UL

FILL, VOID OR CAVITY MATERIALS
CLASSIFIED BY
UNDERWRITERS LABORATORIES, INC.
FOR USE IN TROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

FM
APPROVED
For Penetration Fire Stops.
Consult the Factory Mutual Research Corporation Approval Guide.

FS-ONE
Intumescent Firestop Sealant

Ordering Description	Color	Package contents	Volume	Item No.
FS-ONE, tube	**red**	**10.1 oz. (300 ml)**	**18 in³**	**00259579**
FS-ONE, foil	**red**	**(Qty 20) 20.2 oz. (600 ml)**	**36 in³**	**00311387**
FS-ONE, pail	**red**	**5 Gallons (19 liter)**	**1155 in³**	**00259578**
CB 200 PI-300/310 ml Dispenser				**00055205**
600 ml Foil Dispenser				**00024669**

FS-ONE
High Performance Intumescent Firestop Sealant

Product description

- Intumescent (expands when exposed to fire) firestop sealant that helps protect combustible and non-combustible penetrations for up to 4 hours fire rating

Product features

- Smoke, gas and water resistant
- Contains no halogen, solvents or asbestos
- High fire rating properties
- Water based, easy to clean

Tested in accordance with

- UL 1479
- ASTM E 814
- ASTM E 84

Technical Data

FS-ONE Intumescent Firestop

(at 73°F (23°C) and 50% relative humidity)

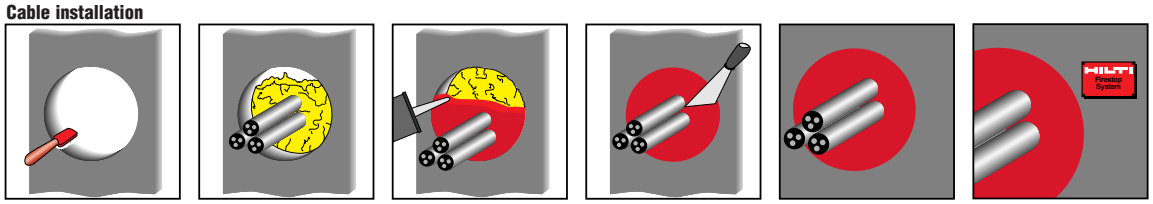
Chemical basis:	Water-based intumescent acrylic dispersion
Density:	Approx. 1.5 g/cm^3
Color:	Red
Working time:	Approx. 20-30 min
Curing time:	Approx. 14-21 days
Shore A Hardness:	Approx. 35
Movement capability:	Approx. 5%
Intumescent Activation:	Approx 250°F (121°C)
Expansion rate (unrestricted):	Up to 3-5 times original volume
Temperature resistance (cured):	-40°F (-40°C) to 212°F (100°C)
Application temperature:	35°F (2°C) to 100°F (38°C)
Surface burning characteristics: (ASTM E 84-96)	Flame Spread: 0 Smoke Development: 5
Sound transmission classification: ASTM E 90-97	50

Approvals

ICBO Evaluation Service, Inc.	Report No. 5071
California State Fire Marshal	Listing No. 1200:108
City of New York	MEA 326-96-M Vol. II

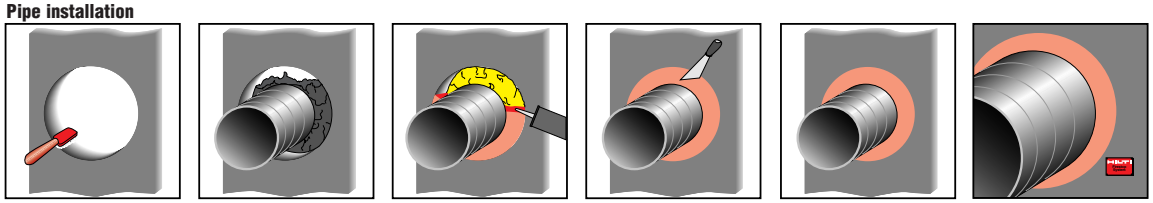
Installation instructions for FS-ONE

Cable installation



1. Clean opening. *2. Pack mineral wool. (If required)* *3. Apply FS-ONE.* *4. Smooth FS-ONE.* *5. Leave completed seal undisturbed for 48 hours.* *6. Fasten identification plate (if required).*

Pipe installation



1. Clean opening. *2. Pack mineral wool. (If required)* *3. Apply FS-ONE.* *4. Smooth FS-ONE.* *5. Leave completed seal undisturbed for 48 hours.* *6. Fasten identification plate (if required).*

Opening

1. Clean the opening. Surfaces to which FS-ONE will be applied should be cleaned of loose debris, dirt, oil, moisture, frost and wax. Structures supporting penetrating items must be installed in compliance with local building and electrical standards.

Application of firestop sealant

2. Install the prescribed backfilling material type and depth to obtain the desired rating (if required). Leave sufficient depth for applying FS-ONE.
3. Application of firestop sealant: Apply FS-ONE to the required depth in order to obtain the desired fire rating. Make sure FS-ONE contacts all surfaces to provide maximum adhesion. For application of FS-ONE use a standard caulking gun, foil pack gun, bulk loader and bulk gun. With FS-ONE buckets, Graco type sealant pumps may be used. (Contact pump manufacturer for proper selection).
4. Smoothing of firestop sealant: To complete the seal, tool immediately to give a smooth appearance. Excess sealant, prior to curing, can be cleaned away from adjacent surfaces and tools with water.
5. Leave completed seal undisturbed for 48 hours.
6. For maintenance reasons, a penetration seal could be permanently marked with an identification plate. In such a case, mark the identification plate and fasten it in a visible position next to the seal.

Notice about approvals

- Check that the penetration has been sealed according to the specified drawing in the UL Fire Resistance Directory or Hilti Firestop Manual. For further advice, please contact Hilti customer service. Refer to Hilti product literature and UL fire resistance directory for specific application details.

Not for use…

- High movement expansion joints
- Underwater
- On materials where oil, plasticizers or solvents may bleed i.e. impregnated wood, oil based seals, green or partially vulcanized rubber
- In any penetration other than those specifically described in this manual or the test reports

Safety precautions

- Before handling, read the product and Material Safety Data Sheet for detailed use and health information
- Keep out of reach of children
- Wear suitable gloves and eye protection

Storage

- Store only in the original packaging in a location protected from moisture at temperatures between 40°F (5°C) and 86°F (30°C)
- Observe expiration date on the packaging

Material Safety Data Sheet

HILTI, INC.: **P.O. Box 21148, Tulsa, OK 74121; Ph: 1 800 879 6000; Emergency No.: 1 800 879 4444**

PRODUCT NAME: **FS-ONE High Performance Intumescent Firestop Sealant**

DESCRIPTION: **One-part acrylic-based sealant**

MSDS No.: 259
Revision No.: 008
Date: 05/19/99
Page: 1 of 2

INGREDIENTS AND EXPOSURE LIMITS

Ingredients:	*CAS Number:*	*PEL:*	*TLV:*	*TEL:*
Calcium carbonate	01317-65-3	5 mg/m³ (T)	10 mg/m³ (T)	NE
Ammonium polyphosphate	68333-79-9	NE	NE	NE
Boron trioxide	01303-86-2	15 mg/m³ (R)	10 mg/m³	NE
Alkylphenolethersulfate, sodium salt	69011-84-3	NE	NE	NE
Talc	14807-96-6	20 mppcf	2 mg/m³	NE
Zinc oxide	01314-13-2	5 mg/m³ (T)	10 mg/m³	NE
Expandable graphite	12777-87-6	5 mg/m³ (T)	2 mg/m³ (T)	NE
Ethylene glycol	00107-21-1	NE	C:100 mg/m³ (A)	NE
Polybutene	09003-29-6	NE	NE	NE
Iron oxide	01309-37-1	10 mg/m³	5 mg/m³	NE
Glass filament	65997-17-3	NE	5 mg/m³ (T)	NE
Silicon dioxide	14808-60-7	0.05 mg/m³ (T)	0.1 mg/m³ (T)	NE

Abbreviations: PEL = OSHA Permissible Exposure Limit. TLV = ACGIH Threshold Limit Value. C = Ceiling. STEL = Short Term Exposure Limit. NE = None Established. NA = Not Applicable. (T) indicates “as total dust”. (R) indicates “as respirable fraction”. (A) indicates “as an aerosol”. mppcf = million particles per cubic foot.

PHYSICAL DATA

Appearance:	Red paste.	Odor:	Odorless.
Vapor Density: (air = 1)	Not determined.	Vapor Pressure:	23mbar @ 20C / 68F
Boiling Point:	Not applicable.	VOC Content:	None.
Evaporation Rate:	Not applicable.	Solubility in Water:	Soluble.
Specific Gravity:	1.5	pH:	Notdetermined.

FIRE AND EXPLOSION HAZARD DATA

Flash Point:	Non-flammable.
Flammable Limits:	Not applicable.
Extinguishing Media:	Not applicable. Use extinguishing media as appropriate for surrounding fire.
Special Fire Fighting Procedures:	None known. Use a self-contained breathing apparatus when fighting fires involving chemicals.
Unusual Fire and Explosion Hazards:	None known. Thermal decomposition products can be formed.

REACTIVITY DATA

Stability:	Stable.
Hazardous Polymerization:	Will not occur.
Incompatibility:	Strong acids, peroxides, and oxidizing agents.
Decomposition Products:	Thermal decomposition can yield CO and CO2.
Conditions to Avoid:	None known.

HEALTH HAZARD DATA

Known Hazards:	None known.
Carcinogenicity:	IARC classifies crystalline silica (quartz sand) as Gp I based upon evidence among workers in industries where there has been long-term and chronic exposure (via inhalation) to silica dust; e.g. mining, quarry, stone crushing, refractory brick and pottery workers. This product does not pose a dust hazard; therefore, this classification is not relevant. Based upon the nature and intended use of this product, it does not pose an increased cancer risk to workers.

Signs and Symptoms of Exposure:	Possibly irritating upon contact with the eyes or upon repeated contact with the skin.
Routes of Exposure:	Dermal.
Medical Conditions Aggravated by Exposure:	Eye and skin conditions.

EMERGENCY AND FIRST AID PROCEDURES

Eyes:	Immediately flush with plenty of water. Call a physician if symptoms occur.
Skin:	Immediately wipe off material and wash with soap and water. Material can adhere to the skin. If material has adhered to the skin, use an abrasive containing hand cleaner. If material does not come off, buff with a pumice stone.
Inhalation:	Move victim to fresh air if discomfort develops. Call a physician if symptoms persist.
Ingestion:	Seek medical attention. Do not induce vomiting unless directed by a physician. Never give anything by mouth to an unconscious person.
Other:	Referral to a physician is recommended if there is any question about the seriousness of the injury/exposure.

CONTROL MEASURES AND PERSONAL PROTECTIVE EQUIPMENT

Ventilation:	General (natural or mechanically induced fresh air movements).
Eye Protection:	Not required, however, safety glasses should be worn in most industrial settings.
Skin Protection:	Avoid skin contact. Cloth gloves are suitable for hand protection.
Respiratory Protection:	None normally required. Where ventilation is inadequate to control vapors, use a NIOSH-approved respirator with organic vapor cartridges. Never enter a confined space without an appropriate air-supplied respirator.

PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storing Precautions:	Store in a cool, dry area preferably between 50° and 100° F. Keep from freezing. Do not store in direct sunlight. Avoid contact with the eyes or skin. Practice good hygiene; i.e. always wash thoroughly after handling and before eating or smoking. For industrial use only. Keep out of reach of children. Follow label/use instructions.
Spill Procedures:	Immediately wipe away spilled material before it hardens. Place in a container for proper disposal in accordance with all applicable local, state, or federal requirements.

REGULATORY INFORMATION

Hazard Communication:	This MSDS has been prepared in accordance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
HMIS Codes:	Health 1, Flammability 0, Reactivity 0, PPE B
DOT Shipping Name:	Not regulated.
TSCA Inventory Status:	Chemical components listed on TSCA inventory.
SARA Title III, Section 313:	This product contains 1-5% ethylene glycol (CAS 107-21-1) and 1-5% zinc oxide (re: zinc compounds) which are subject to reporting under Section 313 of SARA Title III (40 CFR Part 372).
EPA Waste Code(s):	Not regulated by EPA as a hazardous waste.
Waste Disposal Methods:	Consult with regulatory agencies or your corporate personnel for disposal methods that comply with local, state, and federal safety, health and environmental regulations.

CONTACTS

Customer Service:	1 800 879 8000
Technical Service:	1 800 879 8000
Emergency:	1 800 879 4444
Health / Safety:	1 800 879 6000 Steve Gerrard (x6309) Jerry Metcalf (x6704)

The information and recommendations contained herein are based upon data believed to be correct; however, no guarantee or warranty of any kind expressed or implied is made with respect to the information provided.

Underwriters Laboratories Inc.®

Northbrook, Illinois • (708) 272-8800
Melville, New York • (516) 271-6200
Santa Clara, California • (408) 985-2400
Research Triangle Park,
North Carolina • (919) 549-1400

CERTIFICATE OF COMPLIANCE

CERTIFICATE NUMBER: 211097 - R13240A
ISSUE DATE: October 21, 1997

Issued to: Hilti Construction Chemicals Inc.
5400 S. 122nd East Avenue
Tulsa, OK 74146 USA

Report Reference: R13240, February 14, 1997

This is to Certify that representative samples of: Fill, Void or Cavity Materials, one part Sealant designated as FS One (also identified as CP 612)

Have been investigated by Underwriters Laboratories Inc. in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 1479, Fire Tests of Through-Penetration Firestops;

UL 2079, Tests for Fire Resistance of Building Joint Systems.

Additional Information:

This material is a one part intumescent firestop sealant for use in through-penetration firestop systems. These sealants are Classified as "Fill, Void or Cavity Materials" for use in various Through-Penetration Firestop Systems as specified in Volume 2 of UL's Fire Resistance Directory.

Only those products bearing the UL Classification Marking should be considered as being covered by UL's Classification and Follow-Up Service.

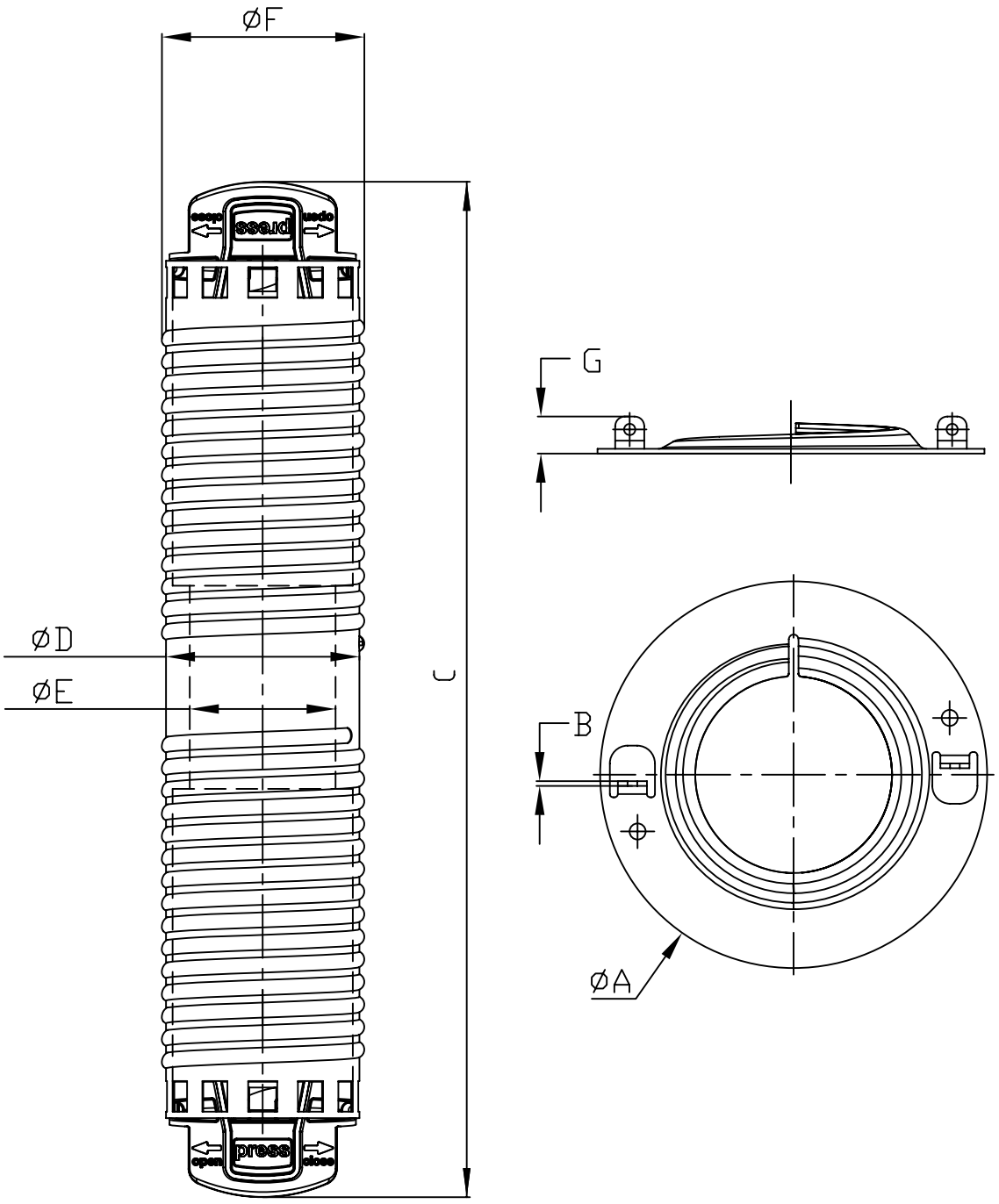
The UL Classification Marking includes: the name "Underwriters Laboratories Inc."; the word "Classified"; a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and, the product category name (product identity) as indicated in the appropriate UL Directory.

LOOK FOR THE UL CLASSIFICATION MARKING ON THE PRODUCT

Engineer: Underwriters Laboratories Inc.
Nikola Momcilovic

Review Engineer: Underwriters Laboratories Inc.
A. M. Ramirez

2000-44C (6/92)



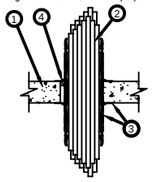
	A	B	C	D	E	F	G
	Flange Diameter, inches (mm)	Flange Thickness, inches (mm)	Total Length, inches (mm)	Smallest Outer Diameter, Sleeve, inches (mm)	Smallest Inner Diameter, Sleeve, inches (mm)	Largest Outer Diameter, Sleeve, inches (mm)	Flange, Highest Point, iinches (mm)
CP 653 2" (P/N 236323)	4.7 (120)	0.1 (1.5)	12.4 (315)	2.4 (60)	1.7 (43)	2.3 (63)	0.5 (12)
CP 653 4" (P/N 236324)	6.7 (170)	0.1 (1.5)	12.4 (315)	4.3 (110)	3.7 (93)	4.3 (113)	0.5 (12)

Hilti Firestop Systems

Saving Lives through Innovation and Education

System No. C-AJ-3281

F Rating - 2 Hr
T Rating - 3/4 Hr
L Rating at Ambient - 1 and 7 CFM/sq ft (See Item 2)
L Rating at 400F - 2 and 7 CFM/sq ft (See Item 2)



1. Floor or Wall Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Floor may also be constructed of any min 6 in. thick UL Classified hollow-core Precast Concrete Units*. Opening in floor or wall to be max 2-1/2 in. (64 mm) diam for 2" device and max 4-1/2 in. (114 mm) diam for 4" device.
   See Concrete Blocks (CAZT) and Precast Concrete Units (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. Cables — Within the loading area for each firestop device, the cables may represent a 0 to 100 percent visual fill. Cables to be tightly bundled within the device and rigidly supported on both sides of floor or wall assembly. Any combination of the following types of cables may be used:
   A. Max 100 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) jacketing and insulation.
   B. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.
   C. Max 4/0 AWG Type RHH ground cable.
   D. Max 4 pr No. 22 AWG Cat 6 computer cables.
   E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.
   F. Fiber optic cable with polyvinyl chloride (PVC) or polyethylene (PE) jacket and insulation having a max diam of 1/2 in. (13 mm).
   G. Max 20/C No. 22 AWG shielded printer cable with PVC jacket.
   H. Through-Penetrating Product* - Two copper conductors No. 18 AWG (or smaller) Power or Non Power Limited Fire Alarm Cable with or without a jacket under a metal armor.
      AFC CABLE SYSTEMS INC
   I. Max. ½" (6 mm) diameter S-Video Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC jacket .
      The L Rating for the firestop systems with cables is 7 CFM/sq ft at both ambient and 400F. The L Rating for blank openings with no cables is 1 CFM/sq ft at ambient and 2 CFM/sq ft at 400F.
3. Firestop Device* — Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings and tightly twisted inner fabric smoke seal. Firestop device to be installed in accordance with the accompanying installation instructions. Device slid into floor or wall such that ends project an equal distance from the approximate centerline of the assembly. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact). Device provided with flanges that are spun clockwise onto device threads, butting tightly to both sides of floor or wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 653 2" Speed Sleeve and CP 653 4" Speed Sleeve
4. Fill, Void or Cavity Material* - Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus between firestop device and periphery of opening, flush with top surface of floor or both surfaces of wall, and an additional 1/4 in. (6 mm) bead applied at the device/floor or wall interface on top side of floor or both sides of wall assembly prior to installing flanges.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE or CP 606 Sealant

*Bearing the UL Classification Mark

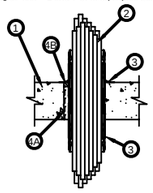
Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. October 12, 2007

CLASSIFIED C UL US

System No. C-AJ-3285

F Rating - 3 Hr
T Ratings - 1, 1-1/2 and 3 Hr (See Item 2)
L Rating at Ambient - 1 and 7 CFM/sq ft (See Items 2 and 4)
L Rating at 400F - 2 and 7 CFM/sq ft (See Items 2 and 4)



1. Floor or Wall Assembly — Reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Min 4-1/2 in. (114 mm) thick floors and min 5 in. (127mm) thick walls. Wall may also be constructed of any UL Classified Concrete Blocks*. Floor may also be constructed of any min 6 in. thick UL Classified hollow-core Precast Concrete Units*. Opening in floor or wall to be max 3 in. (76 mm) diam for 2" device and max 5 in. (127 mm) diam for 4" device.
   See Concrete Blocks (CAZT) and Precast Concrete Units (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. Cables — Within the loading area for each firestop device, the cables may represent a 0 to 100 percent visual fill. Cables to be tightly bundled within the device and rigidly supported on both sides of floor or wall assembly. Any combination of the following types of cables may be used:
   A. Max 100 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) jacketing and insulation.
   B. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.
   C. Max 4/0 AWG Type RHH ground cable.
   D. Max 4 pr No. 22 AWG Cat 6 computer cables.
   E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.
   F. Fiber optic cable with polyvinyl chloride (PVC) or polyethylene (PE) jacket and insulation having a max diam of 1/2 in. (13 mm).
   G. Max 20/C No. 22 AWG shielded printer cable with PVC jacket.
   H. Through-Penetrating Product* - Two copper conductors No. 18 AWG (or smaller) Power or Non Power Limited Fire Alarm Cable with or without a jacket under a metal armor.
      AFC CABLE SYSTEMS INC
   I. Max. ½" (6 mm) diameter S-Video Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC jacket .
      The hourly T Rating for blank openings (no cables) is 3 hr. The hourly T Rating for openings with cables is 1-1/2 hr except that when cable types 2A, 2B, 2C, 2E or 2H are used, the T Rating is 1 hr. The L Rating for the firestop systems with cables is 7 CFM/sq ft at both ambient and 400F. The L Rating for blank openings with no cables is 1 CFM/sq ft at ambient and 2 CFM/sq ft at 400F.
3. Firestop Device* — Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings and tightly twisted inner fabric smoke seal. Firestop device to be installed in accordance with the accompanying installation instructions. Device slid into floor or wall such that ends project an equal distance from the approximate centerline of the assembly. As an option, in floors, steel sleeve of device may be installed flush with bottom of floor. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact). Device provided with flange(s) that are spun clockwise onto device threads, butting tightly to top side of floor or both sides of floor or wall. In floors, when one device flange is used, device flange to be secured to floor with min two 1-1/4 in. (32 mm) long masonry screws or anchors.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 653 2" Speed Sleeve and CP 653 4" Speed Sleeve
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into annular space between firestop device and opening as a permanent form. Packing material to be installed flush with bottom of floor and recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. For L Rating, an additional 1/4 in. (6 mm) bead of fill material applied at the device/floor or wall interface on top side of floor or both sides of wall assembly prior to installing flange(s).
      HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 606 Sealant or FS-ONE Sealant

*Bearing the UL Classification Mark

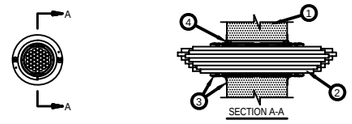
Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. October 12, 2007

CLASSIFIED C UL US

System No. W-J-3167

F Rating — 2 Hr
T Ratings — 0, 1, 1-3/4 and 2 Hr (See Items 2 and 3)
L Ratings at Ambient — Less Than 1 CFM/sq ft, 5 CFM/sq ft and 9 CFM/sq ft (See Item 2)
L Rating at 400F — Less Than 1 CFM/sq ft, 1 CFM/sq ft and 10 CFM/sq ft (See Item 2)



1. Wall Assembly — Min 5 in. (127 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Opening in wall to be max 2-1/2 in. (64 mm) diam for 2" device and max 4-1/2 in. (114 mm) diam for 4" device.
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Cables — Within the loading area for each firestop device, the cables may represent a 0 to 100 percent visual fill. Cables to be tightly bundled within the device and rigidly supported on both sides of wall assembly. Any combination of the following types of cables may be used:
   A. Max 100 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) jacketing and insulation.
   B. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.
   C. Max 4/0 AWG Type RHH ground cable.
   D. Max 4 pr No. 22 AWG Cat 6 computer cables.
   E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.
   F. Fiber optic cable with polyvinyl chloride (PVC) or polyethylene (PE) jacket and insulation having a max diam of 1/2 in. (13 mm).
   G. Max 20/C No. 22 AWG shielded printer cable with PVC jacket.
   H. Through-Penetrating Product* - Two copper conductors No. 18 AWG (or smaller) Power or Non Power Limited Fire Alarm Cable with or without a jacket under a metal armor.
      AFC CABLE SYSTEMS INC
   I. Max. ½" (6 mm) diameter S-Video Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC jacket .
      For openings with cables, the T Rating is 1-3/4 hr except that when Item 2C, 2G or 2I is used, the T Rating is 1 hr (see Item 3 also).
   L Ratings apply only when device flanges and CP 606 or FS-One Sealant is used. For blank (no cables) openings, the L Rating at Ambient and 400F is Less Than 1 CFM/sq ft. For openings with cables, the L Rating is 9 CFM/sq ft at Ambient and 10 CFM/sq ft at 400F. . For openings with Cat 6 cables only (Item 2D), the L Rating is 5 CFM/sq ft at Ambient and 1 CFM/sq ft at 400F.
3. Firestop Device* — Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings and tightly twisted inner fabric smoke seal. Firestop device to be installed in accordance with the accompanying installation instructions. Device slid into wall such that ends project an equal distance from the approximate centerline of the wall assembly. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact). Device provided with flanges that are spun clockwise onto device threads, butting tightly to both sides of wall. Device flanges are optional. When the device flanges are not used, the T Rating for the firestop system is 0 hr. For blank openings (no cables), the T Rating for the firestop system is 2 hr only when the device flanges are used.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — CP 653 2" Speed Sleeve and CP 653 4" Speed Sleeve
4. Fill, Void or Cavity Material* - Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus between firestop device and wall, flush with both surfaces of wall, and an additional 1/4 in. (6 mm) bead applied around periphery of device.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — FS-ONE or CP 606 Sealant

*Bearing the UL Classification Mark

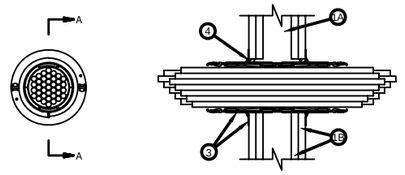
Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. October 12, 2007

CLASSIFIED C UL US

System No. W-L-3334

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1, 1-3/4 and 2 Hr (See Items 2 and 3)
L Ratings at Ambient — Less Than 1 CFM/sq ft, 5 CFM/sq ft and 9 CFM/sq ft (See Item 2)
L Rating at 400F — Less Than 1 CFM/sq ft, 1 CFM/sq ft and 10 CFM/sq ft (See Item 2)



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described within the individual U300, U400 or V400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. Studs — Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Opening in gypsum board to be max 2-1/2 in. (64 mm) diam for 2" device and max 4-1/2 in. (114 mm) diam for 4" device.
   The hourly F Rating of the firestop system is dependent upon the hourly rating of the wall in which it is installed.
2. Cables — Within the loading area for each firestop device, the cables may represent a 0 to 100 percent visual fill. Cables to be tightly bundled within the device and rigidly supported on both sides of wall assembly. Any combination of the following types of cables may be used:
   A. Max 100 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) jacketing and insulation.
   B. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.
   C. Max 4/0 AWG Type RHH ground cable.
   D. Max 4 pr No. 22 AWG Cat 6 computer cables.
   E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.
   F. Fiber optic cable with polyvinyl chloride (PVC) or polyethylene (PE) jacket and insulation having a max diam of 1/2 in. (13 mm).
   G. Max 20/C No. 22 AWG shielded printer cable with PVC jacket.
   H. Through-Penetrating Product* - Two copper conductors No. 18 AWG (or smaller) Power or Non Power Limited Fire Alarm Cable with or without a jacket under a metal armor.
      AFC CABLE SYSTEMS INC
   I. Max. ½" (6 mm) diameter S-Video Cable consisting of 2 max 24 AWG 75 ohm coax or twisted pair cable with PE insulation and PVC jacket .
      For openings with cables, when the hourly rating of the wall assembly is 1 hr, the T Rating is 0 hr. For openings with cables, when the hourly rating of the wall assembly is 2 hr, the T Rating is 1-3/4 hr except that when Item 2C, 2G or 2I is used, the T Rating is 1 hr (see Item 3 also).
   L Ratings apply only when device flanges and CP 606 or FS-One Sealant is used. For blank (no cables) openings, the L Rating at Ambient and 400F is Less Than 1 CFM/sq ft. For openings with cables, the L Rating is 9 CFM/sq ft at Ambient and 10 CFM/sq ft at 400F . . For openings with Cat 6 cables only (Item 2D), the L Rating is 5 CFM/sq ft at Ambient and 1 CFM/sq ft at 400F.
3. Firestop Device* — Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings and tightly twisted inner fabric smoke seal. Firestop device to be installed in accordance with the accompanying installation instructions. Device slid into wall such that ends project an equal distance from the approximate centerline of the wall assembly. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact). Device provided with flanges that are spun clockwise onto device threads, butting tightly to both sides of wall. Device flanges are optional. When the device flanges are not used, the T Rating for the firestop system is 0 hr. For blank openings (no cables), the T Rating for the firestop system equals the F Rating only when the device flanges are used.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — CP 653 2" Speed Sleeve and CP 653 4" Speed Sleeve
4. Fill, Void or Cavity Material* - Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus between firestop device and wall, flush with both surfaces of wall, and an additional 1/4 in. (6 mm) bead applied around periphery of device.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — FS-ONE or CP 606 Sealant

*Bearing the UL Classification Mark

Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. October 12, 2007

CLASSIFIED C UL US

Notes:

1. *Refer to section 16055 of the specifications. For Quality Control requirements, refer to the Quality Control portion of the specification.*
2. *Details shown are typical details. If field conditions do not match requirements of typical details, approved alternate details shall be utilized. Field conditions and dimensions need to be verified for compliance with the details, including but not limited to the following: * Minimum and maximum Width of Joints * Type and thickness of fire-rated construction. The minimum assembly rating of the firestop assembly shall meet or exceed the highest rating of the adjacent construction.*
3. *If alternate details matching the field conditions are not available, manufacturer's engineering judgment drawings are acceptable. Drawings shall follow the International Firestop Council (IFC) Guidelines for Evaluating Firestop Systems Engineering Judgments.*
4. *References:*
   * *2009 Underwriter's Laboratories Fire Resistance Directory, Volumes 1 & 2*
   * *NFPA 101 Life Safety Code*
   * *NFPA 70 - National Electric Code*
   * *All governing local and regional building codes*
5. *Firestop System installation must meet requirements of ASTM E-814 (UL 1479) tested assemblies that provide a fire rating equal to that of construction being penetrated.*
6. *All rated through-penetration assemblies shall be prominently labeled with the following information:*
   * *ATTENTION: Fire Rated Assembly*
   * *UL System # * Product(s) used*
   * *Hourly Rating (F-Rating)*
   * *Installation Date*
7. *For outlet boxes requiring protection, use only Wall Opening Protective Materials, category CLIV as classified by Underwriter's Laboratories, Fire Resistance Directory (Volume 1.)*

<Notes to designer (delete this note after reading and replace with title block information)>
1. Any modification to these details could result in an application/system not meeting the UL or Intertek Classification or the intended temperature or fire ratings.
2. Details shown are up to date as of January 2009.
3. For additional information on the details, refer to the most current "Underwriter's Laboratories Fire Resistance Directory (volume 2.)"

JOB NUMBER:

DRAWN:

CHECKED:

ISSUE DATE:

REVISIONS:

TYPICAL CP 653 SPEED SLEEVE DETAILS

SHEET NAME:

SHEET NUMBER:

CP 653 1.1