State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
COR61363	1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
JOHN ABBOTT
304-558-2544

VENDOR
*709040719 304-766-6277
ELECTRONIC SPECIALTY COMPANY
PO BOX 400
1325 DUNBAR AVE
DUNBAR WV 25064

SHIP TO
DIVISION OF CORRECTIONS
MOUNT OLIVE CORRECTIONAL
CENTER
ONE MOUNTAINSIDE WAY
MT. OLIVE, WV
25185 304-442-7216

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
07/16/2007	Net 30	Our Truck	Jobsite	N/A

BID OPENING DATE: 08/15/2007 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT

REQUEST FOR QUOTATION

THE PURCHASING DIVISION IS SOLICITING BIDS FOR THE DIVISION OF CORRECTIONS TO PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO INSTALL A NEW FIRE ALARM MONITORING SYSTEM OR UPGRADIONG THE EXISTING SYSTEM; AND INSTALL A NURSE CALL SYSTEM.

MANDATORY ON-SITE PRE-BID:
MOUNT OLIVE CORRECTIONAL
1 MOUNTAINSIDE WAY
MT. OLIVE, WV

PRE-REGISTRATION: VENDORS ATTENDING THE PRE-BID MEETING SHOULD CONTACT TIM WHITTINGTON AT (304) 442-7216, TWO DAYS PRIOR TO THE PRE-BID DATE.

DATE: 8/9/2007; 1:30 PM

ATTACHMENTS: 1. SPECIFICATIONS
2. PURCHASING AFFIDAVIT

0001	1	LS		340-16		

FIRE ALARM SYSTEM & NURSE CALL STATION SYSTEM

EXHIBIT 5

NOTICE TO PROCEED: THIS CONTRACT IS TO BE PERFORMED WITHIN 90 CALENDAR DAYS AFTER THE NOTICE TO PROCEED IS RECEIVED. UNLESS OTHERWISE SPECIFIED, THE FULLY EXECUTED PURCHASE ORDER WILL BE CONSIDERED NOTICE TO

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE RECEIVED Pres. TELEPHONE 304-766-6277 DATE 9/6/07

TITLE President FEIN 55-0452548 ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

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PROCEED.

CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE MATERIALS OR WORKMANSHIP SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM WITH THE SPECIFICATIONS OF THE BID AND CONTRACT HERE IN.

WAGE RATES: THE CONTRACTOR OR SUBCONTRACTOR SHALL PAY THE HIGHER OF THE U.S. DEPARTMENT OF LABOR MINIMUM WAGE RATES AS ESTABLISHED FOR FAYETTE COUNTY, PURSUANT TO WEST VIRGINIA CODE 21-5A, ET, SEQ. (PREVAILING WAGE RATES APPLY TO THIS PROJECT)

ARBITRATION: ANY REFERENCES MADE TO ARBITRATION OR INTEREST FOR PAYMENTS DUE (EXCEPT FOR ANY INTEREST REQUIRED BY STATE LAW) CONTAINED IN THIS CONTRACT OR IN ANY AMERICAN INSTITUTE OF ARCHITECTS DOCUMENTS PERTAINING TO THIS CONTRACT ARE HEREBY DELETED.

WORKERS' COMPENSATION: VENDOR IS REQUIRED TO PROVIDE A CERTIFICATE FROM WORKERS' COMPENSATION IF SUCCESSFUL.

ALL OF THE ITEMS CHECKED BELOW WILL BE A REQUIREMENT OF THIS CONTRACT:

(XX) INSURANCE: SUCCESSFUL VENDOR SHALL FURNISH PROOF OF COMMERCIAL GENERAL LIABILITY INSURANCE PRIOR TO ISSUANCE OF CONTRACT. UNLESS OTHERWISE SPECIFIED IN THE BID DOCUMENTS, THE MINIMUM AMOUNT OF INSURANCE COVERAGE REQUIRED IS $250,000.

( ) BUILDERS RISK INSURANCE: SUCCESSFUL VENDOR SHALL FURNISH PROOF OF BUILDERS RISK - ALL RISK INSURANCE IN AN AMOUNT EQUAL TO 100% OF THE AMOUNT OF THE CONTRACT.

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(XX) BONDS: FIVE PERCENT (5%) OF THE TOTAL AMOUNT OF THE BID PAYABLE TO THE STATE OF WEST VIRGINIA, SHALL BE SUBMITTED WITH EACH BID AS A BID BOND. THE SUCCESSFUL BIDDER SHALL ALSO FURNISH A PERFORMANCE BOND AND LABOR/MATERIAL BOND FOR 100% OF THE AMOUNT OF THE CONTRACT. BONDS MAY BE PROVIDED IN THE FORM OF A CERTIFIED CHECK, IRREVOCABLE LETTER OF CREDIT, OR BOND FURNISHED BY A SOLVENT SURETY COMPANY AUTHORIZED TO DO BUSINESS IN THE STATE OF WEST VIRGINIA. A LETTER OF CREDIT SUBMITTED IN LIEU OF A PERFORMANCE AND LABOR & MATERIAL BOND WILL ONLY BE ALLOWED FOR PROJECTS UNDER $100,000. PERSONAL OR BUSINESS CHECKS ARE NOT ACCECPTABLE IN LIEU OF THE 5% BID BOND, PERFORMANCE BOND, OR LABOR AND MATERIAL BOND.

( ) MAINTENANCE BOND: A TWO (2) YEAR MAINTENANCE BOND COVERING THE ROOFING SYSTEM WILL BE A REQUIREMENT OF THE SUCCESSFUL VENDOR.

REV. 11/00

EXHIBIT 7

DOMESTIC ALUMINUM, GLASS & STEEL IN PUBLIC WORKS PROJECTS

IN ACCORDANCE WITH WEST VIRGINIA CODE 5-19-1 ET., SEQ., EVERY CONTRACT FOR CONSTRUCTION, RECONSTRUCTION, ALTERATION, REPAIR, IMPROVEMENT OR MAINTENANCE OF PUBLIC WORKS, WHERE THE COST IS MORE THAN $50,000 AND, IN THE CASE OF STEEL ONLY, WHERE THE COST OF STEEL IS MORE THAN $50,000 OR WHERE MORE THAN 10,000 POUNDS OF STEEL ARE REQUIRED, THE STATE WILL ACCEPT ONLY ALUMINUM GLASS, OR STEEL PRODUCTS PRODUCED IN THE UNITED STATES

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IN ADDITION, ITEMS OF MACHINERY OR EQUIPMENT PURCHASED FOR USE AT THE SITE OF PUBLIC WORKS SHALL BE MADE OF DOMESTIC ALUMINUM, GLASS OR STEEL, UNLESS THE COST OF THE PRODUCT IS LESS THAN $50,000 OR LESS THAN 10,000 POUNDS OF STEEL ARE USED IN PUBLIC WORKS PROJECTS.

FOREIGN MADE ALUMINUM, GLASS OR STEEL PRODUCTS MAY BE ACCEPTED ONLY IF THE COST OF DOMESTIC PRODUCTS IS FOUND TO BE UNREASONABLE. SUCH COST IS UNREASONABLE IF IT IS 20% OR MORE HIGHER THAN THE BID PRICE FOR FOREIGN MADE PRODUCTS. IF THE DOMESTIC ALUMINUM, GLASS OR STEEL PRODUCTS TO BE SUPPLIED OR PRODUCED IN A "SUBSTANTIAL LABOR SURPLUS AREA", AS DEFINED BY THE UNITED STATES DEPARTMENT OF LABOR, FOREIGN PRODUCTS MAY BE SUPPLIED ONLY IF DOMESTIC PRODUCTS ARE 30% OR MORE HIGHER IN PRICE THAN THE FOREIGN MADE PRODUCTS.

IF, PRIOR TO THE AWARD OF A CONTRACT UNDER THE ABOVE PROVISIONS, THE SPENDING OFFICER OF THE SPENDING UNIT DETERMINES THAT THERE EXISTS A BID FOR LIKE FOREIGN ALUMINUM, GLASS OR STEEL THAT IS REASONABLE AND LOWER THAN THE LOWEST BID DOMESTIC PRODUCTS, THE SPENDING OFFICE MAY REQUEST, IN WRITING, A REEVALUATION AND REDUCTION IN THE LOWEST BID FOR SUCH DOMESTIC PRODUCTS ALL VENDORS MUST INDICATE IN THEIR BID IF THEY ARE SUPPLYING FOREIGN ALUMINUM, GLASS OR STEEL.

REV. 3/88

EXHIBIT 9

NOTICE FOR ISSUANCE & ACKNOWLEDGEMENT OF CONSTRUCTION PROJECT ADDENDA

THE ARCHITECT/ENGINEER AND/OR AGENCY SHALL BE REQUIRED

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

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TO ABIDE BY THE FOLLOWING SCHEDULE IN ISSUING CONSTRUCTION PROJECT ADDENDA FOR STATE AGENCIES:

(1) THE ARCHITECT/ENGINEER SHALL PREPARE THE ADDENDUM AND A LIST OF ALL PARTIES THAT HAVE PROCURED DRAWINGS AND SPECIFICATIONS FOR THE PROJECT. THE ADDENDUM AND LIST SHALL BE FORWARDED TO THE BUYER IN THE STATE PURCHASING DIVISION. THE ARCHITECT/ENGINEER SHALL ALSO SEND A COPY OF THE ADDENDUM TO THE STATE AGENCY FOR WHICH THE CONTRACT IS ISSUED.

(2) THE BUYER SHALL SEND THE ADDENDUM TO ALL INTERESTED PARTIES AND, IF NECESSARY, EXTEND THE BID OPENING DATE. ANY ADDENDUM SHOULD BE RECEIVED BY THE BUYER WITHIN FOURTEEN (14) DAYS PRIOR TO THE BID OPENING DATE.

(3) ALL ADDENDA SHOULD BE FORMALLY ACKNOWLEDGED BY AL BIDDERS AND SUBMITTED TO THE STATE PURCHASING DIVISION. THE SAME RULES AND REGULATIONS THAT APPLY TO THE ORIGINAL BIDDING DOCUMENT SHALL ALSO APPLY TO AN ADDENDUM DOCUMENT. THE ONLY EXCEPTION MAY BE FOR AN ADDENDUM THAT IS ISSUED FOR THE SOLE PURPOSE OF CHANGING A BID OPENING TIME AND/OR DATE.

REV. 11/96

EXHIBIT 10

ADDENDUM ACKNOWLEDGEMENT

I HEREBY ACKNOWLEDGE RECEIPT OF THE FOLLOWING CHECKED ADDENDUM(S) AND HAVE MADE THE NECESSARY REVISIONS TO MY PROPOSAL, PLANS AND/OR SPECIFICATION, ETC.

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

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ADDENDUM NOS.:

NO. 1 ..... August 16, 2007

NO. 2 ..... August 27, 2007

NO. 3 .....

NO. 4 .....

NO. 5 .....

I UNDERSTAND THAT FAILURE TO CONFIRM THE RECEIPT OF THE ADDENDUM(S) MAY BE CAUSE FOR REJECTION OF THE BIDS.

Steven Riggins, President .....SIGNATURE

Electronic Specialty Company .....COMPANY

9/6/07 .....DATE

REV. 11/96

CONTRACTORS LICENSE

WEST VIRGINIA STATE CODE 21-11-2 REQUIRES THAT ALL PERSONS DESIRING TO PERFORM CONTRACTING WORK IN THIS STATE MUST BE LICENSED. THE WEST VIRGINIA CONTRACTORS LICENSING BOARD IS EMPOWERED TO ISSUE THE CONTRACTORS LICENSE. APPLICATIONS FOR A CONTRACTORS LICENSE MAY BE MADE BY CONTACTING THE WEST VIRGINIA DIVISION OF LABOR CAPITOL COMPLEX, BUILDING 3, ROOM 319, CHARLESTON, WV 25305. TELEPHONE: (304) 558-7890.

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

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WEST VIRGINIA STATE CODE 21-11-11 REQUIRES ANY PROSPECTIVE BIDDER TO INCLUDE THE CONTRACTORS LICENSE NUMBER ON THEIR BID.

BIDDER TO COMPLETE:

CONTRACTORS NAME: Electronic Specialty Company

CONTRACTORS LICENSE NO.: WV.010229

THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FURNISH A COPY OF THEIR CONTRACTORS LICENSE PRIOR TO ISSUANCE OF A PURCHASE ORDER/CONTRACT

APPLICABLE LAW

THE WEST VIRGINIA STATE CODE, PURCHASING DIVISION RULE AND REGULATIONS, AND THE INFORMATION PROVIDED IN THE "REQUEST FOR QUOTATION" ISSUED BY THE PURCHASING DIVISION IS THE SOLE AUTHORITY GOVERNING THIS PROCUREMENT.

ANY INFORMATION PROVIDED IN SPECIFICATION MANUALS, OR ANY OTHER SOURCE, VERBAL OR WRITTEN, WHICH CONTRADICTS OR ALTERS THE INFORMATION PROVIDED FROM THE SOURCES AS DESCRIBED IN THE ABOVE PARAGRAPH IS VOID AND OF NO EFFECT.

BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER.

REV. 1/2005

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NOTICE

A SIGNED BID MUST BE SUBMITTED TO:

DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
BUILDING 15
2019 WASHINGTON STREET, EAST
CHARLESTON, WV 25305-0130

THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:

SEALED BID

BUYER: JOHN ABBOTT----------

REQ. NO.: COR61363----------

BID OPENING DATE: 8/15/2007----------

BID OPENING TIME:-----1:30 PM----------

PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:

304-766-6270

PLEASE PRINT OR TYPE NAME OF PERSON TO CONTACT CONCERNING THIS QUOTE:

Owen S. Higgins

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

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	****** THIS IS THE END OF RFQ COR61363 ****** TOTAL:					

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Specification Cover Page

Project Name : Mount Olive Fire Alarm System

Project Scope : This project is to replace the current Simplex 2120 fire panel located within Central Control with a new network display unit. The new panel must communicate to all existing Simplex 4100+ fire alarm panels utilizing the new fiber optic cables put in place by Mt. Olive Correctional. Network display units being provided not capable of this, will require new panels, notification devices, and initiating devices throughout the facility and meet the specifications located herein to provide an addressable networked system.

PART 1 – GENERAL

1.1. SUMMARY NETWORK FIRE ALARM CONTROL PANEL (NODE)

A. Network fire alarm control panels shall include all features as described in this specification for stand-alone FACPs and shall have network communication to the new Network Display Panel in Central Control as described herein.

1. All points monitored and controlled by a single node shall be capable of being programmed as "Public". Each point made public to the network may be programmed to be operated by any other node connected to the network.
2. Network communications shall be capable of supporting "point lists" that can be handled as though they were a single point.

B. The network shall provide a means to log into any node on the system via a laptop computer or CRT/Keyboard and have complete network access (Set Host) for diagnostics, maintenance reporting, and information gathering of all nodes in the system. Systems not meeting this requirement must provide all diagnostic tools required to support this function from selected points on the network. This Section covers fire alarm systems, including initiating devices, notification appliances, controls, and supervisory devices.

C. Work covered by this section includes the furnishing of labor, equipment, and materials for installation of the fire alarm system as indicated on the drawings and specifications.

D. The Fire Alarm System shall consist of all necessary hardware equipment and software programming to perform the following functions:

1. Fire alarm and detection operations
2. Control and monitoring of elevators, smoke control equipment, door hold-open devices, fire suppression systems, emergency power systems, and other equipment as indicated in the drawings and specifications.

1.2. ACCEPTABLE MANUFACTURERS

A. Manufacturers: The equipment and service described in this specification are those supplied and supported by SimplexGrinnell or EQUAL and represent the base bid for the equipment.

1. Subject to compliance with requirements, if system bid is other than Simplex Grinnell, vendor must state manufacturer of

system proposed and include in response documentation that system proposed is an equal to all the following specifications contained herein.

B. Being listed as an acceptable Manufacturer in no way relieves obligation to provide all equipment and features in accordance with these specifications.

C. The Manufacturer shall be a nationally recognized company specializing in fire alarm and detection systems. This organization shall employ factory trained and NICET certified technicians, and shall maintain a service organization within 100 miles of this project location. The Manufacturer and service organization shall have a minimum of 10 years experience in the fire protective signaling systems industry.

1.3. RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

B. The work covered by this section is to be coordinated with related work as specified elsewhere in the specifications. Requirements of the following sections apply:

1. Division 16: "Basic Electrical Materials and Methods."
2. Division 16: "Wiring Methods."
3. Division 13: "Fire Suppression"
4. Division 15: "Fire Protection"
5. Division 15: "HVAC Systems"
6. Division 13: "Building Automation and Control"

C. The system and all associated operations shall be in accordance with the following:

1. Guidelines of the following Building Code:
2. NFPA 72, National Fire Alarm Code
3. NFPA 70, National Electrical Code
4. NFPA 101, Life Safety Code
5. NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems
6. Other applicable NFPA standards
7. Local Jurisdictional Adopted Codes and Standards

8. ADA Accessibility Guidelines

1.4. SYSTEM DESCRIPTION

A. General: Provide a complete, non-coded, addressable, microprocessor-based fire alarm system with initiating devices, notification appliances, and monitoring and control devices as required for each panel being replaced and as specified herein. A replaced panel must have all initiating and notification devices replaced.

B. Software: The fire alarm system shall allow for loading and editing instructions and operating sequences as necessary. The system shall be capable of on-site programming to accommodate system expansion and facilitate changes in operation. All software operations shall be stored in a non-volatile programmable memory within the fire alarm control unit. Loss of primary and secondary power shall not erase the instructions stored in memory. System shall be capable of storing dual configuration programs with one active and one in reserve. Panel shall be capable of full system operation during a new configuration download.

C. History Logs: The system shall provide a means to recall alarms and trouble conditions in chronological order for the purpose of recreating an event history. A separate alarm and trouble log shall be provided.

D. Recording of Events: Record all alarm, supervisory, and trouble events by means of system printer. The printout shall include the type of signal (alarm, supervisory, or trouble) the device identification, date and time of the occurrence. The printout differentiates alarm signals from all other printed indications.

E. Wiring/Signal Transmission:

1. Transmission shall be via fiber optic cabling.
2. System connections for initiating, signaling line circuits and notification appliance circuits shall be Class B.
3. Circuit Supervision: Circuit faults shall be indicated by a trouble signal at the FACP. Provide a distinctive indicating audible tone and alphanumeric annunciation.

F. Remote Access:

1. FACP shall have the capability to provide Remote Access through a Dial-Up Service Modem using the public switched telephone system of a private switched telephone system.

2. A personal computer or technician's laptop, configured with terminal emulation software shall have the ability to access the FACP for diagnostics, maintenance reporting and information gathering.
3. FACP shall have the capability to provide third party access through a serial interface connection and be agency listed for specific interfaces and for the purpose.
4. FACP shall provide remote access via an Internet/Intranet Interface. The Internet interface shall provide an alternative access to system information using the familiar interface of a standard Internet browser. A remotely located fire professional can use this access to analyze control panel status during non-alarm conditions and can also use this information to assist local fire responders during alarm conditions.

G. Network communication:

1. Network node communication shall be through a token ring configuration.
2. A single open, ground or short on the network communication loop shall not degrade network communications. Token shall be passed in opposite direction to maintain communications throughout all network nodes. At the same time the status of the communication link shall be reported.
3. If a group of nodes becomes isolated from the rest of the network due to multiple fault conditions, that group shall automatically form a sub-network with all common interaction of monitoring and control remaining intact. The network shall be notified with the exact details of the lost communications.
4. The communication method shall be NFPA 72 style 7.

H. Required Functions: The following are required system functions and operating features:

1. Priority of Signals: Fire alarm events have highest priority. Subsequent alarm events are queued in the order received and do not affect existing alarm conditions. Priority Two, Supervisory and Trouble events have second-, third-, and fourth-level priority respectively. Signals of a higher-level priority take precedence over signals of lower priority even though the lower-priority condition occurred first. Annunciate all events regardless of priority or order received.
2. Noninterfering: An event on one zone does not prevent the receipt of signals from any other zone. All zones are manually resettable from the FACP after the initiating device or devices

are restored to normal. The activation of an addressable device does not prevent the receipt of signals from subsequent addressable device activations.

3. Transmission to Remote Central Station: Automatically route alarm, supervisory, and trouble signals to a remote central station service transmitter provided under another contract.
4. Annunciation: Operation of alarm and supervisory initiating devices shall be annunciated at the FACP and the remote annunciator, indicating the location and type of device.
5. Selective Alarm: A system alarm shall include:
   a) Indication of alarm condition at the FACP and the annunciator(s).
   b) Identification of the device /zone that is the source of the alarm at the FACP and the annunciator(s).
   c) Operation of audible and visible notification devices on the fire floor, floor above and floor below until silenced at FACP.
   d) Selectively closing doors normally held open by magnetic door holders on the fire floor, floor above and floor below.
   e) Unlocking designated doors.
   f) Shutting down supply and return fans serving zone where alarm is initiated.
   g) Closing smoke dampers on system serving zone where alarm is initiated.
   h) Initiation of smoke control sequence through the building temperature control system.
   i) Notifying the local fire department.
   j) Initiation of elevator recall in accordance with ASME/ANSI A17.1, when specified detectors or sensors are activated.
6. Supervisory Operations: Upon activation of a supervisory device such as fire pump power failure, low air pressure switch, and tamper switch, the system shall operate as follows:
   a) Activate the system supervisory service audible signal and illuminate the LED at the control unit and the remote annunciator.
   b) Pressing the Supervisory Acknowledge Key will silence the supervisory audible signal while maintaining the Supervisory LED "on" indicating off-

normal condition.

c) Record the event in the FACP historical log.

d) Transmission of supervisory signal to remote central station.

e) Restoring the condition shall cause the Supervisory LED to clear and restore the system to normal.

7. Alarm Silencing: If the "Alarm Silence" button is pressed, all audible and visible alarm signals shall cease operation.

8. System Reset

a) The "System Reset" button shall be used to return the system to its normal state. Display messages shall provide operator assurance of the sequential steps ("IN PROGRESS", "RESET COMPLETED") as they occur. The system shall verify all circuits or devices are restored prior to resetting the system to avoid the potential for re-alarming the system. The display message shall indicate "ALARM PRESENT, SYSTEM RESET ABORTED."

b) Should an alarm condition continue, the system will remain in an alarmed state.

9. A manual evacuation (drill) switch shall be provided to operate the notification appliances without causing other control circuits to be activated.

10. WALKTEST: The system shall have the capacity of 8 programmable passcode protected one person testing groups, such that only a portion of the system need be disabled during testing. The actuation of the "enable one person test" program at the control unit shall activate the "One Person Testing" mode of the system as follows:

a) The city circuit connection and any suppression release circuits shall be bypassed for the testing group.

b) Control relay functions associated to one of the 8 testing groups shall be bypassed.

c) The control unit shall indicate a trouble condition.

d) The alarm activation of any initiation device in the testing group shall cause the audible notification appliances assigned only to that group to sound a code to identify the device or zone.

e) The unit shall automatically reset itself after signaling

is complete.

f) Any opening of an initiating or notification appliance circuit wiring shall cause the audible signals to sound for 4 seconds indicating the trouble condition.

I. Analog Smoke Sensors:

1. Monitoring: FACP shall individually monitor sensors for calibration, sensitivity, and alarm condition, and shall individually adjust for sensitivity. The control unit shall determine the condition of each sensor by comparing the sensor value to the stored values.
2. Environmental Compensation: The FACP shall maintain a moving average of the sensor's smoke chamber value to automatically compensate for dust, dirt, and other conditions that could affect detection operations.
3. Programmable Sensitivity: Photoelectric Smoke Sensors shall have 7 selectable sensitivity levels ranging from 0.2% to 3.7%, programmed and monitored from the FACP.
4. Sensitivity Testing Reports: The FACP shall provide sensor reports that meet NFPA 72 calibrated test method requirements. The reports shall be viewed on a CRT Display or printed for annual recording and logging of the calibration maintenance schedule.
5. The FACP shall automatically indicate when an individual sensor needs cleaning. The system shall provide a means to automatically indicate when a sensor requires cleaning. When a sensor's average value reaches a predetermined value, (3) progressive levels of reporting are provided. The first level shall indicate if a sensor is close to a trouble reporting condition and will be indicated on the FACP as "ALMOST DIRTY." This condition provides a means to alert maintenance staff of a sensor approaching dirty without creating a trouble in the system. If this indicator is ignored and the second level is reached, a "DIRTY SENSOR" condition shall be indicated at the FACP and subsequently a system trouble is reported to the Central Monitoring Station. The sensor base LED shall glow steady giving a visible indication at the sensor location. The "DIRTY SENSOR" condition shall not affect the sensitivity level required to alarm the sensor. If a "DIRTY SENSOR" is left unattended, and its average value increases to a third predetermined value, an "EXCESSIVELY DIRTY SENSOR" trouble condition shall be indicated at the control unit.
6. The FACP shall continuously perform an automatic self-test on each sensor which will check sensor electronics and ensure the

accuracy of the values being transmitted. Any sensor that fails this test shall indicate a "SELF TEST ABNORMAL" trouble condition.]

J. Fire Suppression Monitoring:

1. Water flow: Activation of a water flow switch shall initiate general alarm operations.
2. Sprinkler valve tamper switch: The activation of any valve tamper switch shall activate system supervisory operations.
3. WSO: Water flow switch and sprinkler valve tamper switch shall be capable of existing on the same initiating zone. Activation of either device shall distinctly report which device is in alarm on the initiating zone.

K. Power Requirements

1. The control unit shall receive AC power via a dedicated fused disconnect circuit.
2. The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal AC power in a normal supervisory mode for a period of 24 hours with 15 minutes of alarm operation at the end of this period. The system shall automatically transfer to battery standby upon power failure. All battery charging and recharging operations shall be automatic.
3. All circuits requiring system-operating power shall be 24 VDC and shall be individually fused at the control unit.
4. The incoming power to the system shall be supervised so that any power failure will be indicated at the control unit. A green "power on" LED shall be displayed continuously at the user interface while incoming power is present.
5. The system batteries shall be supervised so that a low battery or a depleted battery condition, or disconnection of the battery shall be indicated at the control unit and displayed for the specific fault type.
6. The system shall support NAC Lockout feature to prevent subsequent activation of Notification Appliance Circuits after a Depleted Battery condition occurs in order to make use of battery reserve for front panel annunciation and control.
7. The system shall support 100% of addressable devices in alarm or operated at the same time, under both primary (AC) and secondary (battery) power conditions.
8. Loss of primary power shall sound a trouble signal at the FACP.

FACP shall indicate when the system is operating on an alternate power supply.

1.5. SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.

1. Product data sheets for system components highlighted to indicate the specific products, features, or functions required to meet this specification. Alternate or as-equal products submitted under this contract must provide a detailed line-by-line comparison of how the submitted product meets, exceeds, or does not comply with this specification.
2. Wiring diagrams from manufacturer.
3. Shop drawings showing system details including location of FACP, all devices, circuiting and details of graphic annunciator.
4. System Power and battery charts with performance graphs and voltage drop calculations to assure that the system will operate per the prescribed backup time periods and under all voltage conditions per UL and NFPA standards.
5. System operation description including method of operation and supervision of each type of circuit and sequence of operations for all manually and automatically initiated system inputs and outputs. A list of all input and output points in the system shall be provided with a label indicating location or use of IDC, NAC, relay, Sensor, and auxiliary control circuits.
6. Operating instructions for FACP.
7. Operation and maintenance data for inclusion in Operating and Maintenance Manual. Include data for each type product, including all features and operating sequences, both automatic and manual. Provide the names, addresses, and telephone numbers of service organizations.
8. Product certification signed by the manufacturer of the fire alarm system components certifying that their products comply with indicated requirements.
9. Record of field tests of system.

B. Submission to Authority Having Jurisdiction: In addition to routine submission of the above material, make an identical submission to the authority having jurisdiction. Include copies of shop drawings as required to depict component locations to facilitate review. Upon receipt of comments from the Authority, make resubmissions if required to make clarifications or revisions to obtain approval.

1.6. QUALITY ASSURANCE

A. Installer Qualifications: A factory authorized installer is to perform the work of this section.

B. Each and all items of the Fire Alarm System shall be listed as a product of a single fire alarm system manufacturer under the appropriate category by Underwriters Laboratories, Inc. (UL), and shall bear the "UL" label.

1.7. MAINTENANCE SERVICE

A. Maintenance Service Contract: Provide maintenance of fire alarm systems and equipment for a period of 12 months, using factory-authorized service representatives.

B. Basic Services: Systematic, routine maintenance visits on a quarterly basis at times scheduled with the Owner. In addition, respond to service calls within 24 hours of notification of system trouble. Adjust and replace defective parts and components with original manufacturer's replacement parts, components, and supplies.

C. Additional Services: Perform services within the above 12-month period not classified as routine maintenance or as warranty work when authorized in writing. Compensation for additional services must be agreed upon in writing prior to performing services.

D. Renewal of Maintenance Service Contract: No later than 60 days prior to the expiration of the maintenance services contract, deliver to the Owner a proposal to provide contract maintenance and repair services for an additional one-year term. Owner will be under no obligation to accept maintenance service contract renewal proposal.

1.8. EXTRA MATERIALS

A. General: Furnish extra materials, packaged with protective covering for storage, and identified with labels clearly describing contents as follows:

1. Break Rods for Manual Stations: Furnish quantity equal to 15 percent of the number of manual stations installed; minimum of 6 rods.
2. Strobe Units: Furnish quantity equal to 10 percent of the number of units installed, but not less than one of each installed.

3. Smoke Detectors or Sensors, Fire Detectors, and Flame Detectors: Furnish quantity equal to 10 percent of the number of units of each type installed but not less than one of each type installed.
4. Detector or Sensor Bases: Furnish quantity equal to 2 percent of the number of units of each type installed but not less than one of each type installed.
5. Printer Ribbons: Furnish 6 spare printer ribbons if a new printer is installed.

PART 2 – PRODUCTS

2.1. FIRE ALARM CONTROL PANEL (FACP)

A. General: Comply with UL 864, "Control Units for Fire-Protective Signaling Systems."

B. The following FACP hardware shall be provided:

1. Power Limited base panel with cabinet and door, 120 VAC input power.
2. 2,000 point capacity where (1) point equals (1) monitor (input) or (1) control (output).
3. 2,000 points of Network Annunciation at FACP Display when applied as a Network Node
4. 2000 points of annunciation where one (1) point of annunciation equals:
   a) 1 LED driver output on a graphic driver or 1 switch input on a graphic switch input module.
   b) 1 LED on panel or 1 switch on panel.
5. From all battery charging circuits in the system provide battery voltage and ammeter readouts on the FCP LCD Display.
6. Municipal City Circuit Connection with Disconnect switch, 24VDC Remote Station (reverse polarity), local energy, shunt master box, or a form "C" contact output .
7. One Auxiliary electronically resetable fused 2A @24VDC Output, with programmable disconnect operation for 4-wire detector reset.
8. One Auxiliary Relay, SPDT 2A @32VDC, programmable as a trouble relay, either as normally energized or de-energized, or as an auxiliary control.
9. Where required provide Intelligent Remote Battery Charger for charging up to 110Ah batteries.

10. Power Supplies with integral intelligent Notification Appliance Circuit Class B for system expansion.
11. Four (4) form "C" Auxiliary Relay Circuits (Form C contacts rated 2A @ 24VDC, resistive), operation is programmable for trouble, alarm, supervisory of other fire response functions. Relays shall be capable of switching up to ½ A @ 120VAC, inductive.
12. The FACP shall support (6) RS-232-C ports and one service port.
13. Remote Unit Interface: supervised serial communication channel for control and monitoring of remotely located annunciators and I/O panels.
14. Modular Network Communications Card.
15. Programmable DACT for either Common Event Reporting or per Point Reporting.
16. Service Port Modem for dial in passcode access to all fire control panel information.

C. Cabinet: Lockable steel enclosure. Arrange unit so all operations required for testing or for normal care and maintenance of the system are performed from the front of the enclosure. If more than a single unit is required to form a complete control unit, provide exactly matching modular unit enclosures.

D. Alphanumeric Display and System Controls: Panel shall include an 80 character LCD display to indicate alarm, supervisory, and component status messages and shall include a keypad for use in entering and executing control commands.

2.2. REMOTE CRTS, PC ANNUNCIATOR AND PRINTERs

A. Fire Alarm Control Unit shall be capable of operating remote CRT's and/or printers; output shall be ASCII from an RS-232-C connection with an adjustable baud rate.

B. Fire Alarm Control Unit shall be capable of operating a PC Annunciator which provides status annunciation and limited system control using a convenient and familiar Microsoft Windows® 2000 operating system based interface. PC Annunciator shall provide the following functions:

1. Login/logout password protection with time duration selectable automatic logout
2. Displays Alarm, Supervisory, Priority 2, and Trouble conditions with numerical tallies for each

3. Displays first and last alarms
4. Different event types have separate visible indicators with a common audible indicator
5. Event logs can be searched and printed
6. View and/or print TrueAlarm status reports and service reports (printing requires an available local or network printer)
7. Alarm Silence; System Reset; and Priority 2 Reset
8. Global and individual point acknowledge
9. Set system time and date; and clear event log
10. Individual point access for control or parameter revisions

C. Each RS-232-C port shall be capable of supporting and supervising a remote Printer; the FACP shall support as many as two (2) remote displays. The Fire Alarm Control Panel shall support five (5) RS-232-C ports.

2.3. REMOTE LCD ANNUNCIATOR

A. Provide where required a remote LCD Annunciator with the same "look and feel" as the FACP operator interface. The Remote LCD Annunciator shall use the same Primary Acknowledge, Silence, and Reset Keys, Status LEDs and LCD Display as the FACP.

B. Annunciator shall have super-twist LCD display with two lines of 40 characters each. Annunciator shall be provided with four (4) programmable control switches and associated LEDs.

C. Under normal conditions the LCD shall display a "SYSTEM IS NORMAL" message and the current time and date.

D. Should an abnormal condition be detected the appropriate LED (Alarm, Supervisory or Trouble) shall flash. The unit audible signal shall pulse for alarm conditions and sound steady for trouble and supervisory conditions.

E. The LCD shall display the following information relative to the abnormal condition of a point in the system:

1. 40 character custom location label.
2. Type of device (e.g., smoke, pull station, waterflow).
3. Point status (e.g., alarm, trouble).

F. Operator keys shall be key switch enabled to prevent unauthorized use. The key shall only be removable in the disabled position.

Acknowledge, Silence and Reset operation shall be the same as the FACP.

2.4. NETWORK DISPLAY UNIT

A. Central Control will receive a new Network Display Unit and shall contain the following features:

1. Communicate to all fire alarm panels located in the facility via fiber optic cable using the token-ring network required.
2. 80 column by 2 line back-lighted LCD readout of point status.
3. Capacity to annunciate 12,000 network point and/or point lists.
4. Historical event logs shall maintain separate 600 Alarm and 600 Trouble events.
5. The network shall provide a means to log into any node on the system via a laptop computer or CRT/Keyboard and have complete network access (Set Host) for diagnostics, maintenance reporting, and information gathering of all nodes in the system. Systems not meeting this requirement must provide all diagnostic tools required to support this function from selected points on the network.

2.5. EMERGENCY POWER SUPPLY

A. General: Components include battery, charger, and an automatic transfer switch.

B. Battery: Sealed lead-acid or nickel cadmium type. Provide sufficient capacity to operate the complete alarm system in normal or supervisory (non-alarm) mode for a period of 24 hours. Following this period of operation on battery power, the battery shall have sufficient capacity to operate all components of the system, including all alarm indicating devices in alarm or supervisory mode for a period of 15 minutes.

PART 3 – EXECUTION

3.1. INSTALLATION, GENERAL

A. Install system components and all associated devices in accordance with applicable NFPA Standards and manufacturer's recommendations.

B. Installation personnel shall be supervised by persons who are qualified and experienced in the installation, inspection, and testing of fire alarm systems. Examples of qualified personnel shall include, but not be limited to, the following:

1. Factory trained and certified personnel.
2. National Institute of Certification in Engineering Technologies (NICET) fire alarm level II certified personnel.
3. Personnel licensed or certified by state or local authority.

3.2. EQUIPMENT INSTALLATION

A. Furnish and install a complete Fire Alarm System as described herein and as shown on the plans. Include sufficient control unit(s), annunciator(s), manual stations, automatic fire detectors, smoke detectors, audible and visible notification appliances, wiring, terminations, electrical boxes, and all other necessary material for a complete operating system.

B. Existing Fire Alarm Equipment shall be maintained fully operational until the new equipment has been tested and accepted.

C. Equipment Removal: After acceptance of the new fire alarm system, disconnect and remove the existing fire alarm equipment. Package operational fire alarm and detection equipment that has been removed and deliver to the Owner. Remove from the site and legally dispose of the remainder of the existing material.

D. Water-Flow and Valve Supervisory Switches: Connect for each sprinkler valve required to be supervised.

E. Device Location-Indicating Lights: Locate in the public space immediately adjacent to the device they monitor.

3.3. WIRING INSTALLATION

A. System Wiring: Wire and cable shall be a type listed for its intended use by an approval agency acceptable to the Authority Having Jurisdiction (AH and shall be installed in accordance with the appropriate articles from the current approved edition of NFPA 70: National Electric Code (NEC).

B. Contractor shall obtain from the Fire Alarm System Manufacturer written instruction regarding the appropriate wire/cable to be used for this installation. No deviation from the written instruction shall be made by the Contractor without the prior written approval of the Fire Alarm System Manufacturer.

C. Color Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color code for alarm initiating device circuits wiring and a different color code for supervisory circuits. Color-code notification appliance circuits

differently from alarm-initiating circuits. Paint fire alarm system junction boxes and covers red.

3.4. FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pretesting, testing, and adjustment of the system.

B. Service personnel shall be qualified and experienced in the inspection, testing, and maintenance of fire alarm systems. Examples of qualified personnel shall be permitted to include, but shall not be limited to, individuals with the following qualifications:

1. Factory trained and certified.
2. National Institute for Certification in Engineering Technologies (NICET) fire alarm certified.
3. International Municipal Signal Association (IMSA) fire alarm certified.
4. Certified by a state or local authority.
5. Trained and qualified personnel employed by an organization listed by a national testing laboratory for the servicing of fire alarm systems.

C. Pretesting: Determine, through pretesting, the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new and retest until satisfactory performance and conditions are achieved.

D. Final Test Notice: Provide a 10-day minimum notice in writing when the system is ready for final acceptance testing.

E. Minimum System Tests: Test the system according to the procedures outlined in NFPA 72.

F. Retesting: Correct deficiencies indicated by tests and completely retest work affected by such deficiencies. Verify by the system test that the total system meets the Specifications and complies with applicable standards.

G. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log.

H. Final Test, Certificate of Completion, and Certificate of Occupancy:

1. Test the system as required by the Authority Having Jurisdiction in order to obtain a certificate of occupancy.

3.5. CLEANING AND ADJUSTING

A. Cleaning: Remove paint splatters and other spots, dirt, and debris. Clean unit internally using methods and materials recommended by manufacturer.

B. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels and adjusting controls and sensitivities to suit actual occupied conditions. Provide up to three visits to the site for this purpose.

3.6. TRAINING

A. Provide the services of a factory-authorized service representative to demonstrate the system and train Owner's maintenance personnel as specified below.

1. Train Owner's maintenance personnel in the procedures and schedules involved in operating, troubleshooting, servicing, and preventive maintaining of the system. Provide a minimum of 8 hours' training.
2. Schedule training with the Owner at least seven days in advance.

FIRE ALARM EQUIPMENT: GE SECURITY
NURSE CALL EQUIPMENT: TEKTONE

3.7 Name of System/Manufacturer Proposed:

_____

Bid Price of System: $502,704

Bidder shall also quote maintenance costs as follows:

1st year maintenance: $43,400
2nd year maintenance: $45,130
3rd year maintenance: $46,930

Maintenance costs will be factored in bid cost by the State for evaluation of lowest cost bid.

The above is the Base Proposal.

Following is Alternate Proposal:

Provide all labor, equipment and materials necessary for hardware upgrade, software upgrade and technical expertise of the current SimplexGrinnell 2120 Fire Alarm and Monitoring Control System to a new Simplex 4100U system and provide upgrade to the Nurses Call System with a new Model NC30011.

Fire alarm panels in the pods to remain as is, however, a new fiber card must be added to each pod for a more reliable system. All pod fire alarm panels communicate back to the central office panel.

This upgrade will utilize the fiber optic cable system in place by Mt. Olive Correctional Complex.

Bidder shall detail response by hardware and software provided in scope of work.

Bidder shall also provide maintenance program and response time.

Bid Price for Alternate: $142,103
1st year maintenance: $47,700
2nd year maintenance $48,980
3rd year maintenance $50,900

For bid evaluation purposes, cost of maintenance will be included to determine lowest cost bid.

RFQ No. COR61363

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate

DEFINITIONS:
"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

EXCEPTION: The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

LICENSING: Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY: The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit **www.state.wv.us/admin/purchase/privacy** for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

Vendor's Name: Electronic Specialty Company

Authorized Signature: [signature] President Date: 9/6/07

Agency_____
REQ.P.O# COR 61363

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we, the undersigned, Electronic Specialty Company of Dunbar, WV, as Principal, and Ohio Farmers Insurance Company of Westfield Center, OH, a corporation organized and existing under the laws of the State of OH with its principal office in the City of Westfield Center, as Surety, are held and firmly bound unto the State of West Virginia, as Obligee, in the penal sum of Five Percent of Amount Bid ($ 5%) for the payment of which, well and truly to be made, we jointly and severally bind ourselves, our heirs, administrators, executors, successors and assigns.

The Condition of the above obligation is such that whereas the Principal has submitted to the Purchasing Section of the Department of Administration a certain bid or proposal, attached hereto and made a part hereof, to enter into a contract in writing for COR 61363 - Fire Alarm and Nurse Call System Replacement, Mt. Olive Correction Center, One Mountainside Way, Mt. Olive, WV According to Plans and Specifications

NOW THEREFORE,

(a) If said bid shall be rejected, or
(b) If said bid shall be accepted and the Principal shall enter into a contract in accordance with the bid or proposal attached hereto and shall furnish any other bonds and insurance required by the bid or proposal, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be null and void, otherwise this obligation shall remain in full force and effect. It is expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for the value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Obligee may accept such bid, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be affixed hereunto and these presents to be signed by their proper officers, this 6th day of September, 2007.

Principal Corporate Seal

Electronic Specialty Company
(Name of Principal)

By _____, Pres.
(Must be President or Vice President)

President
(Title)

Surety Corporate Seal

Ohio Farmers Insurance Company
(Name of Surety)

By: Larry D Kerr
Larry D. Kerr, WV Resident Agent Attorney-in-Fact

IMPORTANT – Surety executing bonds must be licensed in West Virginia to transact surety insurance. Corporate seals must be affixed, and a power of attorney must be attached.

THIS POWER OF ATTORNEY SUPERCEDES ANY PREVIOUS POWER BEARING THIS SAME POWER # AND ISSUED PRIOR TO 08/27/07, FOR ANY PERSON OR PERSONS NAMED BELOW.

POWER NO. **4752152 06**

General Power of Attorney

CERTIFIED COPY

Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.

Westfield Center, Ohio

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint
LARRY D. KERR, GREGORY T. GORDON, PATRICIA A. FINCKE, STEPHEN B. STOGDEN, PATRICIA A. MOYE, ALLAN L. MC VEY, KIMBERLY J. WILKINSON, JOINTLY OR SEVERALLY

of **CHARLESTON** and State of **WV** its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship**- -.

LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.
and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"*Be It Resolved,* that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact. may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"*Be it Further Resolved,* that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their **Senior Executive** and their corporate seals to be hereto affixed this **27th** day of **AUGUST** A.D., **2007** .

Corporate Seals Affixed

WESTFIELD INSURANCE COMPANY
WESTFIELD NATIONAL INSURANCE COMPANY
OHIO FARMERS INSURANCE COMPANY

By: Richard L. Kinnaird, Jr.
Richard L. Kinnaird, Jr., *Senior Executive*

State of Ohio
County of Medina ss.:

On this **27th** day of **AUGUST** A.D., **2007** , before me personally came **Richard L. Kinnaird, Jr.** to me known, who, being by me duly sworn, did depose and say, that he resides in **Medina, Ohio;** that he is **Senior Executive** of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial Seal Affixed

William J. Kahelin
William J. Kahelin, Attorney at Law, *Notary Public*
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

State of Ohio
County of Medina ss.:

I, **Frank A. Carrino,** Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this 6th day of September A.D., 2007.

Frank A. Carrino
Frank A. Carrino, *Secretary*

BPOAC2 (combined) (06-02)

ELECTRONIC SPECIALTY COMPANY

1325 Dunbar Ave.
P. O. Box 400
Dunbar, WV 25064
(304) 766-6277
Fax (304) 766-6270
800-642-5500

ALTERNATE PROPOSAL RFQ # COR61363

We propose to provide all labor, equipment and material necessary for hardware upgrade, software upgrade and technical expertise to replace the current Simplex 2120, located within Central Control with a new network display unit. The equipment used to perform this work shall be manufactured by GE Security and shall perform in accordance with applicable codes to report alarm, trouble and supervisory signals from existing remote fire panels. We shall upgrade the existing nurse call system by supplying two (2) new master stations (monitors) one (1) each for medical and mental health units. These stations shall permit voice communication between units and shall allow voice communication from each desk to individual cells. Existing nurse call lights, speakers and key controlled reset devices shall be reused. All call initiating devices shall be replaced using heavy duty vandal resistant stations complete with security hardware.

Fire alarm panels in the pods to remain as is. However, a GE interface unit shall be connected to each existing fire panel, thence attached to the existing fiber optic cable system to communicate back to the Central Office panel.

This upgrade shall utilize the fiber optic cable system in place by Mt. Olive Correctional Complex.

SCOPE OF WORK

Our proposal includes hardware and software to perform the required performance of this specification as listed:

20	EST3 Panels
20	3-CPU3 Central Processor Module
20	3-FIBMB Fiber Card, w/adaptor card, ribbon cable, mtg bracket
76	MMXVR Multimode plug-in Transceiver – 8000 feet
1	3-RS232 Communication Card
20	3-SSDC1 Signature Single Driver Controller
1	3-MODCOM Modem Communicator and Dialer
20	3-LCD Liquid Crystal Display Module
20	3-PPS/M Primary Power Supply
2	12V17A Battery
38	12V24A Battery
20	3-CHAS7 Chassis Assembly
49	3-LRMF Blank LRM filler
20	3-CAB7B Back Box

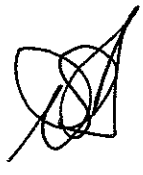
20	3-CAB7D Door Assembly
19	BC-1 Battery Cabinet
1	PT-1S System Printer
60	SIGA-CT1 Single Input Module
2	NC304LCD Master Station
1	NC351A Central Equipment
39	IR300C Multipurpose Station
43	Vandal Resistant Push Button Station (includes 4 spares)

All work to be performed in accordance with schedules as approved by Mt. Olive Correctional Complex.

Interconnection work between the existing and new fire alarm components shall comply with applicable codes and regulations.

MAINTENANCE PROGRAM

We shall provide maintenance program in accordance with our enclosed form # PMSA090607. This program provides four (4) inspections of four (4) quarterly inspections of equipment per year. Service response shall be provided within 24 hours of notification to our Company.



Sales and Service
Since 1947

ELECTRONIC SPECIALTY COMPANY

Phone #304-766-6277
Fax #304-766-6270
PO Box 400, 1325 Dunbar Ave.
Dunbar, WV 25064

PREVENTIVE MAINTENANCE SERVICE AGREEMENT

Agreement Effective From: 6-Sep-07 To: 31-Aug-08

Provides Quantity	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
4 Inspections per annum	X			X			X			X		

Complete service inspections and testing during regular visits with customer listed equipment to give peak performance and minimize repair interruptions and downtiime. Inspections include field cleaning, calibration and verification of proper operation. Strategic voltage/current measurements shall be taken, compared to manufacturers' data and corrections made as required.

Additional service calls which are required due to the malfunction of the equipment are made without labor charge.

New equipment purchased from Electronic Specialty Company and eligible for PMS will be automatically added to this agreement. Customer will receive full disclosure notice showing effective dates, costs and any discounts resulting from "multiple units" inspection agreement.

Dedicated service from professional Electronic Technicians, trained and equipped with especially designed tools. Each technician is backed with technical data, repair parts, special training and manufacturer engineering support.

Ordinary life of equipment is extended by locating and correcting infant problems. PMS inspections assure a more reliable performance while providing a greater return on your original investment.

Equipment Covered by this PMS Agreement

Qty	Model	Description/Location	Annual Amt.
1 Lot		Fire Alarm and Nurse Call System	
		**Refer to Proposal Document	

Selected PMS Options:

◆ Travel time and expenses for service calls other than regular inspection are charged to customer.

◆

Subtotal	$ -
Taxes	$ -
Total	**

(Special Instructions) Our technical service representative shall inspect and test operation of the Fire Alarm/Nurse Call Systems. Documentation shall be forwarded to Owner's rep as directed. Owner provides assistance/escort during inspections.

The Following Terms and Conditions Shall Apply:

- ◆ Service calls after business hours and on weekends or holidays are charged to customer at established rates.
- ◆ This agreement does not cover service and parts required by accidents, fire, water, storm, negligence or misuse, power failures or fluctuations, or any cause external to the equipment.
- ◆ When equipment alterations, replacement or code/technology upgrades become necessary, a cost estimate will be given to the customer. Such work must be authorized by the customer and is separate and in addition to the PMS charge.
- ◆ This agreement will be automatically renewed for successive one year periods. Either party may cancel on 30 days written notice. In the event of cancellation of individual units or the entire Agreement, credit will be on a pro-rata inspection basis.
- ◆ The sole obligation of Electronic Specialty Company under this agreement is to inspect/test/repair above listed equipment, and your company hereby agrees that there are no expressed or implied warranties which would impose upon Electronic Specialty Company any other obligation or liability: and Electronic Specialty Company neither assumes nor authorizes any person to assume for it any such other obligation or liability.

WV Contractors License #WV 010229

Authorized By: _____ **P.O.#** _____

For: Mt. Olive Correctional Center **Ph #** 304-442-7216

Street: One Mountainside Way

City: Mt. Olive **State** WV **Zip** 25185

PMSA # 90607 **Date** September 6, 2007

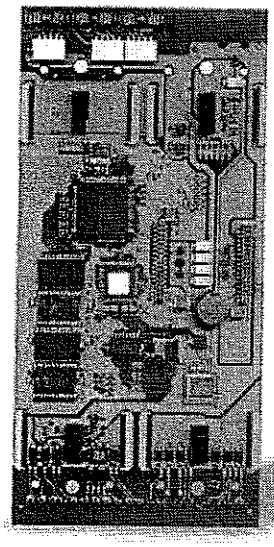
By: Owen S. Higgins
Authorized Representative
Electronic Specialty Company

Central Processor Unit Module

Model: 3-CPU3, 3-RS485A, 3-RS485B, 3-RS232

Features

- **16 bit processor**
- **Up to 1,000 history events**
- **RS-485 local rail communications**
- **Multiplexed audio channels**
- **Network communication RS-485**
- **RS-232 communication card**
- **Form 'C' contacts for: Alarm, Supervisory and Trouble**
- **Low voltage memory write protection**



Complies to EN54 Part 2 and 4.

3-CPU3

Description

The 3-CPU3 is the Central Processing Unit Module monitoring the status of all modules and providing the link for network communications. Although each local rail card contains their own microprocessor, the 3-CPU3 provides all inter-module communication and has the ability to download rail module operating parameters. Upon power up the 3-CPU3 automatically learns all local rail module attributes and locations. Site specific software is loaded into the 3-CPU3 which then downloads data to each local rail module. Firmware upgrades are also done from the 3-CPU3 eliminating the need to unplug chips on rail modules. Internal rail communications is accomplished in a broadcast protocol for fast response.

Mounting must be in the first two local rail spaces. Options for the 3-CPU3 include the addition of an LCD display and User Interface, RS-232 Communication Card, and RS-485 Series Network Communication Cards.

The 3-CPU3 is fully compatible with the 3-CPU and 3-CPU1 modules.

Application

The 3-CPU3 helps make EST3 an extremely powerful and flexible system. As a single node, stand alone system a single 3-CPU3 controls 1 to 19 local rail modules. For larger systems, up to 64 nodes interconnect on a peer-to-peer multi-priority token ring protocol network.

The 3-CPU3 controls all local panel responses to automatic, user initiated, or network reported events. As a network node, it is an equal among peers, there is no master on the network. This gives exceptional response times over the network, less than three seconds.

Each 3-CPU3 provides slots at the back for mounting Network, and RS-232, cards. Removable terminal blocks on the 3-CPU3 support connection of network and audio data wiring. On board common relays also terminate at the 3-CPU3 terminals. To aid in trouble shooting and service, status LEDs monitor local rail, network, RS232 and audio data communications.

The **Network Communications** card mounts to the back of the Central Processor Unit. The 3-RS485A card provides a Class A (Style 7) or Class B (Style 4) circuit for network communications signals and two additional Class A (Style 7) circuits for the digitized audio signals. The 3-RS485B card provides a Class B (Style 4) or Class A (Style 7) circuit for network communications signals and a second Class B (Style 4) circuit for the digitized audio signals. Network messages received by the Network Communications card are re-transmitted to the next network node. Re-transmission maximizes the wire run lengths between nodes. With 64 nodes miles of network length is possible. Fail safe mechanisms built into the card direct connect the data input and output ports should the network card or its related Central Processor fail. Network communications may be configured via copper or fiber media using the 3-FIBMB.

The **3-RS232 Communication Card** mounts to the back of the 3-CPU3. The 3-RS232 has two optically isolated RS-232 ports. The ports support connection of a printer and/or an external command center. Entire network downloading from one location (to all 64 nodes) is available through the RS-232 card.

Specifications

Catalog Number	3-CPU3
Agency Listings	UL, ULC, CSFM, CE, EN54
Mounting	2 - Left most local rail spaces
Terminal Size	18-12 AWG (1.0mm² to 2.5mm²)
Standby Current	145 mA
Alarm Current	155 mA
Contact Ratings	Nonbypassable Alarm, Supervisory and Trouble Form 'C' 1A at 30 Vdc
Data Down Loading	RJ45 Jack
Operating Environment	0°C - 49°C (32° F - 120° F); 93% at 40° C Non-Condensing

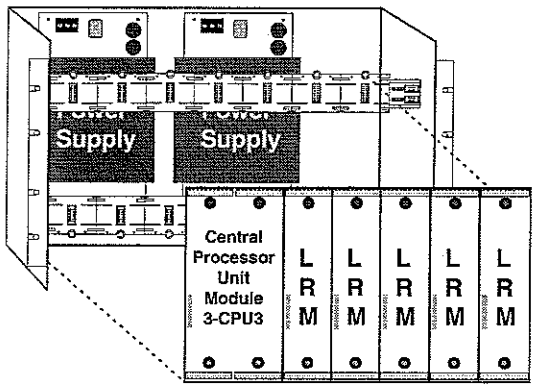
Option Cards

Catalog number	3-RS232	3-RS485A	3-RS485B
Standby Current	48 mA	55 mA	55 mA
Alarm Current	48 mA	55 mA	55 mA
Communication Ports	Two optically isolated RS-232	Three RS-485 Class A (Style 7)	One Class B (Style 4) or Class A (Style 7) network data circuit and one Class B (Style 4) audio data circuit
Agency Listings	UL, ULC. CSFM, CE, LPCB, EN54 Part 2 and 4		
Mounting	Back of 3-CPU3		
Operating Environment	0° C - 49° C (32° F - 120° F); 93% at 40° C Non-Condensing		

Engineering Specification

It must be possible to support a single stand alone node or up to 64 nodes communicating on a peer-to-peer token ring protocol network. Network and digitized audio wiring shall be run in a [choose one: Class A (Style 7) or Class B (Style 4)] configuration. Network alarm response from alarm input to signal activation must be under 3 seconds. All field wiring must be to removable terminal blocks. Status LEDs must be provided for communications of network and internal rail communications. Inter-node communication speed must be programmable. Internal rail communications speed must be programmable.

Installation and Mounting



Data

Maximum resistance between any 3 panels	90 Ohms
Maximum capacitance between any 3 panels	0.3 μF
Maximum distance between any 3 panels	5,000 ft. (1,524 m)

Capacitance, entire network
Maximum Accumulative Capacitance

Wire Size	38.4K Baud	19.2K Baud
18 AWG	1.4 μF	2.8 μF
16 AWG	1.8 μF	3.6 μF
14 AWG	2.1 μF	4.2 μF

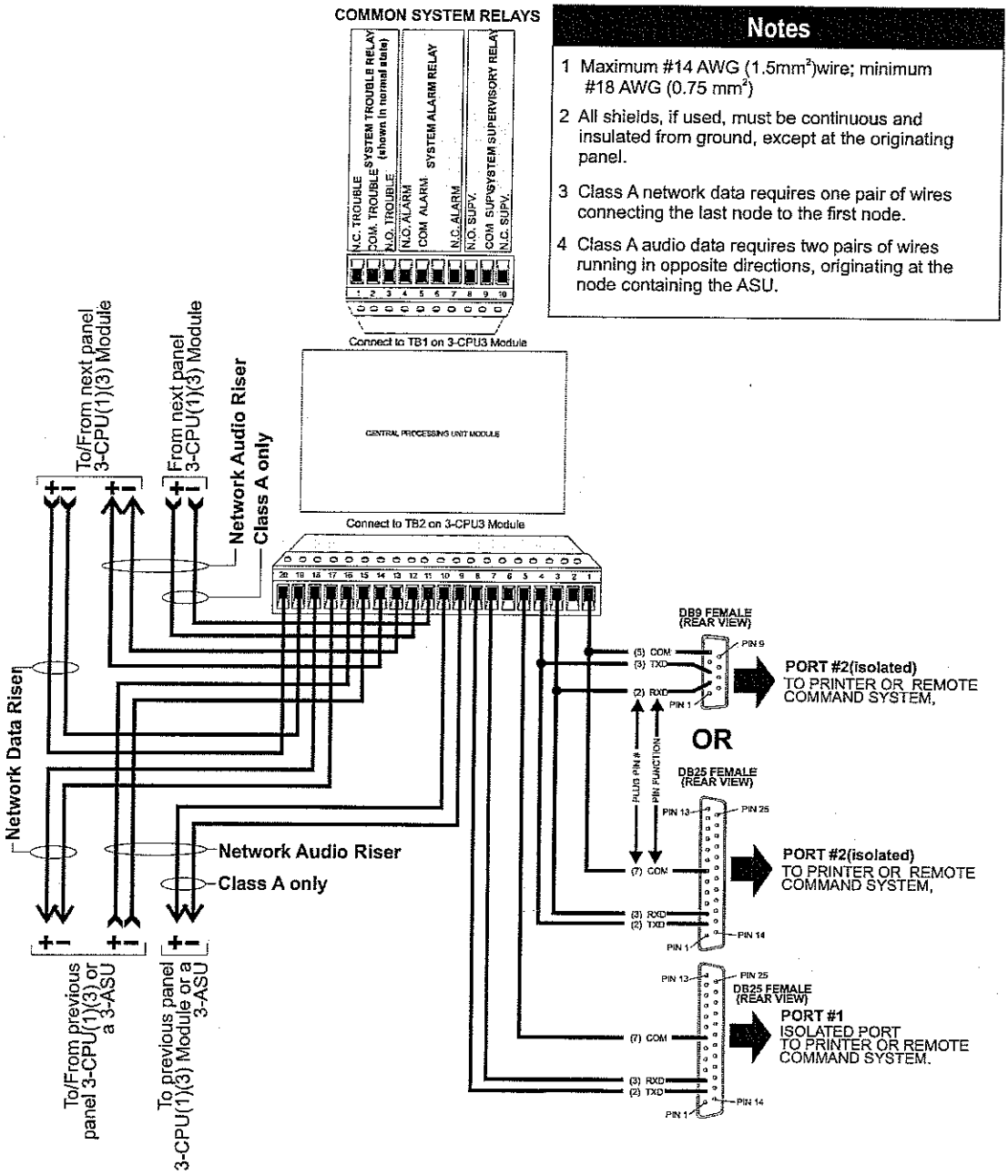
Audio

Maximum resistance between any 3 panels	90 Ohms
Maximum capacitance between any 3 panels	0.09 μF
Maximum distance between any 3 panels	5,000 ft. (1,524 m)

Ordering Information

Catalog Number	Description	Ship Wt. - lb (kg)
3-CPU3	Central Processor Unit Module	0.7lb (0.32kg)
3-RS485A	Network Communications Card, Class A (Style 7)	0.33lb (0.15kg)
3-RS485B	One Class A/B network data circuit and one Class B audio data circuit	0.33lb (0.15kg)
3-RS232	RS-232 Communication Card	0.33lb (0.15kg)

Typical Wiring



Notes

1 Maximum #14 AWG (1.5mm²)wire; minimum #18 AWG (0.75 mm²)

2 All shields, if used, must be continuous and insulated from ground, except at the originating panel.

3 Class A network data requires one pair of wires connecting the last node to the first node.

4 Class A audio data requires two pairs of wires running in opposite directions, originating at the node containing the ASU.

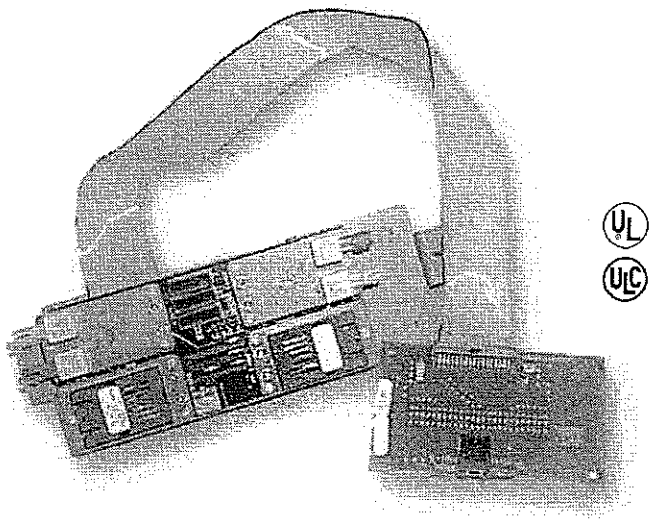
Literature Sheet #85010-0133
Not to be used for installation purposes.
For the most current literature and updates visit www.est.net.

Printed in U.S.A. (origin)
Issue 2

A product of EST Marketing, Bradenton, FL

Single Mode & Multi Mode Fiber Optic Communications Interface

Models: 3-FIBMB, SMXLO, SMXHI, MMXVR



Features

- **Class A or Class B (Style 7 or Style 4) network data connections**
- **Class A or Class B (Style 7 or Style 4) audio data connections**
- **Node to node distances up to:**
  8,000 ft. (2.4 km) using multi-mode fiber
  24.85 mi (40 km) using single mode fiber
- **Built-in test signal**
- **Secondary power input**
- **Transition from copper to fiber on same network**
- **Transition from single to multi-mode fiber on same network**

Description

EST3 networks easily configure to single or multi mode fiber optic or combination fiber optic / copper networks using the 3-FIBMB Fiber Optic Communications Interface and the appropriate fiber optic transceivers.

The 3-FIBMB electronics card plugs right into the CPU. A ribbon cable connects the 3-CPU directly to the 3-FIBMB fiber interface card. The interface card mounts in the ½ footprint space in a 3-CHAS7 chassis or 3-CAB5 enclosure.

The 3-FIBMB supports from one to four single or multi mode transceivers that plug into the interface card. Each transceiver provides the transmission and reception capability for the network data or digital audio data to/from a 3-FIBMB located in the next network node using single and/or multi mode fiber optic cables.

The SMXLO standard output single mode transceiver is suitable for distances up to approximately 8.7 miles (14km). The SMXHI high output single mode transceiver is available to span distances up to approximately 24-miles (40km).

For multi mode applications, the MMXVR transceiver is suitable for distances up to approximately 8,000ft (2,400m) Actual distances are dependent on the losses in each fiber optic circuit, and should be calculated for each installation. One transceiver is required for each fiber side of both network and audio links. Simply order the required type and number and type of transceiver(s) for your application.

The 3-FIBMB also supports copper wire connections, permitting network data and audio communications format changes from copper to single mode fiber, copper to multi-mode fiber, and single to multi-mode fiber, as job conditions require. All copper and fiber circuits can be configured as supervised Class A or Class B (Style 7 or Style 4) circuits.

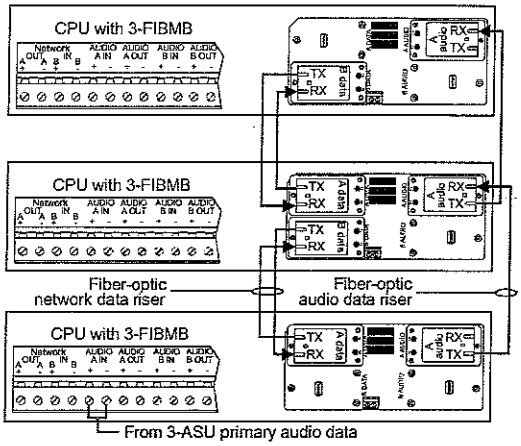
The 3-FIBMB has a constant output test signal that simplifies installing and testing multi-mode fiber circuits only, reducing setup and troubleshooting time. Secondary power input terminals and an external 24 Vdc source can be used to provide continuous network and audio data to flow through the 3-FIBMB, when the panel is powered down for servicing.

Application

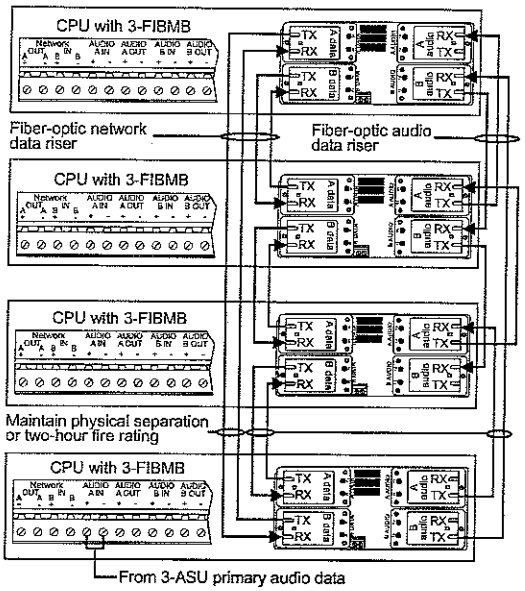
Fiber optics communication links provide a high level of immunity from electrical noise. The circuits are power limited and suitable for use through hazardous atmospheres. Fiber optic circuits also provide a high level of security and are resistant to the effects of moisture. The choice of either single mode or multi mode fiber links is one of cost vs the distances between nodes. System performance is identical with either single or multi mode fiber. *NOTE: The 3-FIBMB/MMXVR is compatible with 3-FIB(A) multi mode fiber modules.*

Typical Wiring

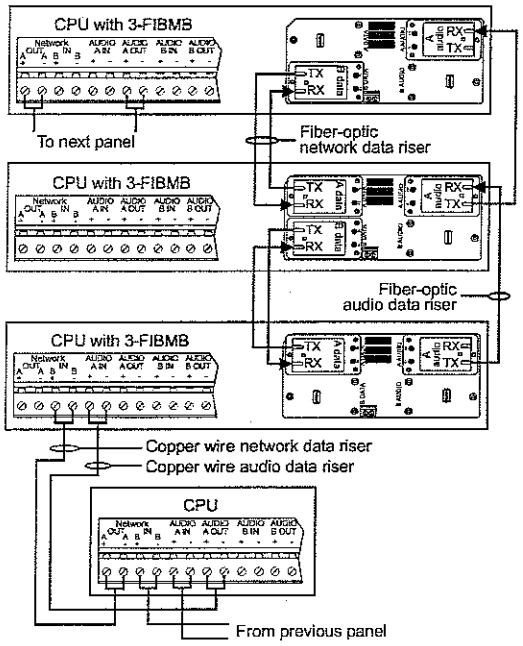
The following wiring diagrams can be used with single or multimode fiber. If using single mode use the SMXLO or SMXHI transceivers. If using multimode use the MMXVR transceivers.



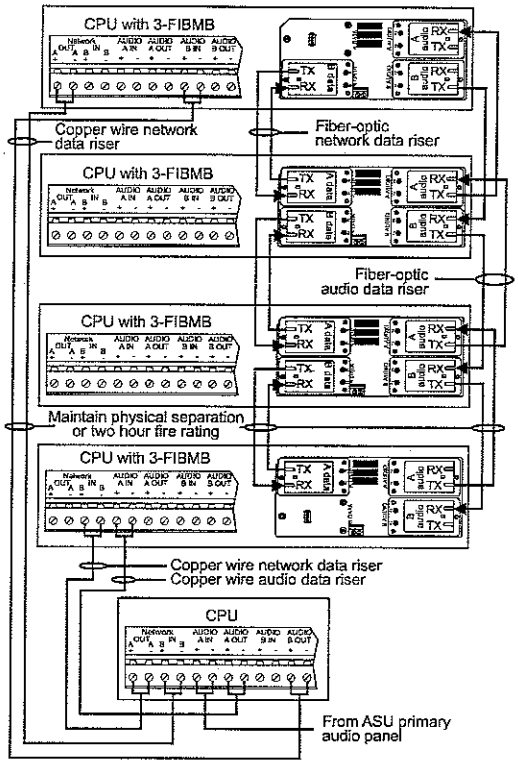
3-FIBMB Class B network and audio fiber-optic connections



3-CPU Class A network and audio fiber-optic connections



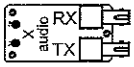
Class B hybrid fiber-optic and copper wire network and audio connections



3-CPU hybrid fiber-optic and copper wire network and Class A fiber-optic and copper wire audio connections

Legend

Single mode transceiver

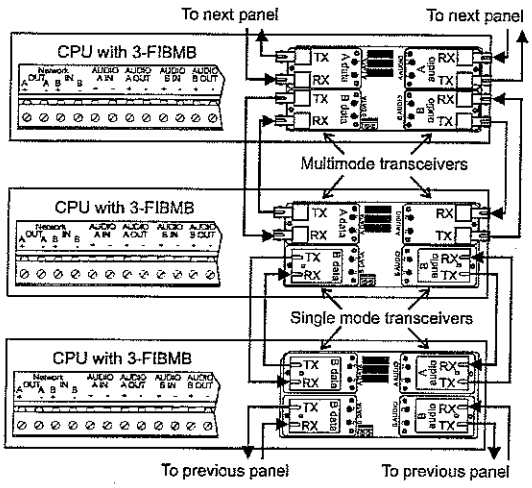


Multimode transceiver

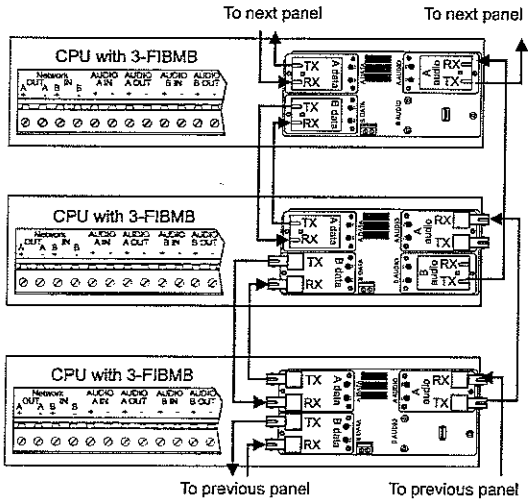
Note: These diagrams are for general information only. For more wiring diagrams and installation details, please refer to *3-FIBMB Fiber Optic Interface,* Installation Sheet 3100509.

Using single and multimode transceivers

Transition from single mode fiber to multimode fiber requires special configuration for the audio circuit. The following wiring diagrams show how to wire audio circuits in class B and class A using single mode and multimode fiber.



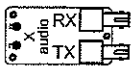
Data and audio circuit for Class A using single mode and multimode fiber



Data and audio circuit for Class B using single mode and multimode fiber

Legend

Single mode transceiver



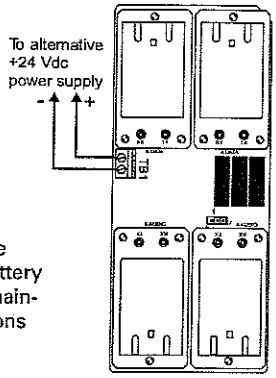
Multimode transceiver

Note: These diagrams are for general information only. For more wiring diagrams and installation details, please refer to *3-FIBMB Fiber Optic Interface,* Installation Sheet 3100509.

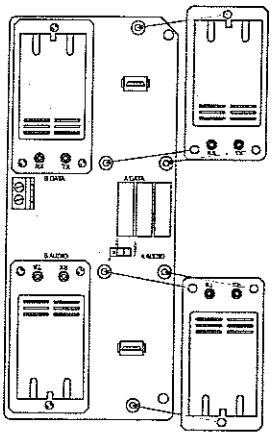
Wiring alternative power terminals

The 3-FIBMB provides a secondary power option, permitting communications to flow through the module, even with panel power disconnected.

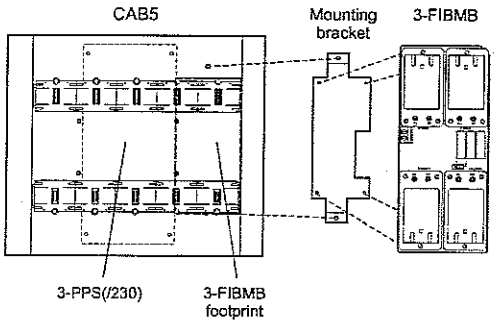
Note: In the event a panel needs to be powered down for service; a 24 V battery can be connected to the module to maintain network and audio communications during servicing.



Installation and Mounting

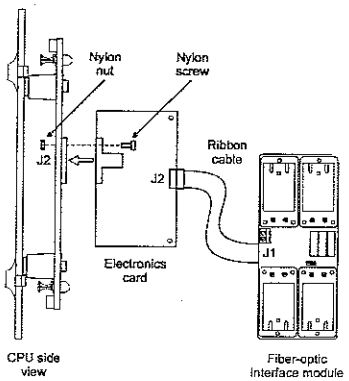


Attaching the transceivers. Any type of transceiver can be mounted in any of the four positions on the board.



Mounting the bracket and the 3-FIBMB to a CAB5 enclosure

Connecting the ribbon cable and adapter card.



Specifications

Agency Listings	UL, ULC
Installation	Connector J2 of 3-CPU1. Fiber card mounts on ½ footprint 3-CHAS7 or 3-CAB5 enclosure.
Compatibility	3-CPU1 and later
Single Mode (network & audio) Budget SMXLO SMXHI Wavelength Cable Type Connector	 15 dBm (approximately 8.7mi. [14km] max). 25 dBm (approximately 24.85 mi. [40km] max). NOTE: A minimum fiber attenuation of -8dBm is required when using the SMXHI in order to prevent overloading the receiver. 1300nm 8.3μ Single Mode Duplex SC
Multi mode (network & audio) MMXVR Budget Wavelength Cable Type Connector	 10 dBm (approximately 8,000 ft [2.4 km] max). 820nm 62.5/125μ or 100/140μ Multi mode ST
Network Data Circuit Circuit Configuration Data Rate Isolation	 Class B (Style 4) or Class A (Style7) 19.2K, or 38.4K Baud From "previous" 3-CPU using copper, total isolation using fiber optics
Digital Audio Data Circuit Circuit Configuration Data Rate Isolation	 Class B (Style 4) or Class A (Style7) 327K Baud From "previous" 3-CPU using copper, total isolation using fiber optics
Copper Wired Network Data Circuit Segment Circuit Length Circuit Resistance Circuit Capacitance Wire Type	 5.000ft (1,524 m) max. between any three panels 90 Ohms, max. 0.3μf max. Twisted pair, 18 AWG (0.75 mm²) min
Copper Wired Audio Data Circuit Segment Circuit Length Circuit Resistance Circuit Capacitance Wire Type	 5.000 ft (1,524 m) max. between any three panels 90 Ohms, max. 0.09 μf max. Twisted pair, 18 AWG (0.75mm²) min
Eye Safety	Complies with: FDA CDRH 2 -CFR 1040 Class 1 and IEC 825 Issue 1 1993:11 Class 1; CENELEC EN60825 Class 1
Power Consumption Supervisory and/or Alarm	3-FIBMB: 217 mA @ 24 Vdc; SMXLO: 45mA @24 Vdc each; SMXHI: 45mA @ 24 Vdc each; MMXVR: 20 mA @ 24 Vdc each
Operating Environment	Temperature: 32° F - 120° F (0° C - 49° C) Humidity 93% RH, Non-condensing @ 90° F (32° C)

Engineering Specification

The intra-node communications links for network and digital audio data shall utilize copper and/or fiber optic connections. The fiber optics interface card shall provide Class B (Style 4) or Class A (Style 7) connections. It shall be possible to convert from fiber optic cable to copper wiring or from copper wiring to fiber optic cable at any network panel node. The fiber optics interface card shall have provisions for an external power source input to permit continuous network and audio data to flow through a network node while primary node power is removed for servicing purposes. The fiber optics interface card shall provide a constant output test signal for maintenance and troubleshooting purposes. The fiber optics interface module shall utilize single/multi mode fiber with SC single mode or ST multi-mode connectors.

Ordering Information

Catalog Number	Description	Shipping Wt. lb (kg)
3-FIBMB	Fiber Optic Communications Interface (requires one or more transceivers) c/w mounting bracket for 3-CHAS7 or 3-CAB5 enclosure mounting	1.0(.45)
*SMXLO	Plug-In standard output single mode transceiver for 3-FIBMB	0.5(.23)
*SMXHI	Plug-In high output single mode transceiver for 3-FIBMB	0.5(.23)
*MMXVR	Plug-In standard output multi mode transceiver for 3-FIBMB	0.5(.23)

* 1 to 4 transceivers required, depending on application.

Literature Sheet #85010-0131
Not to be used for installation purposes.
For the most current literature and updates visit www.est.net.

Printed in U.S.A.
Issue 3

EDWARDS SYSTEMS TECHNOLOGY

Synergy

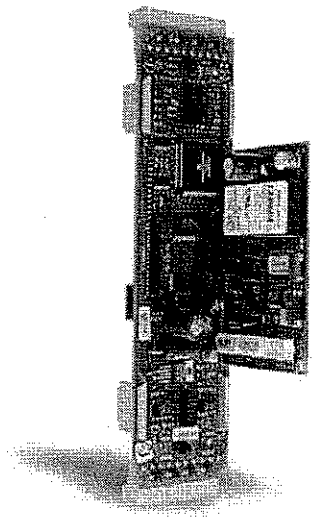
SIGNATURE SERIES

CONTROL AND ANNUNCIATION

Compatibility → EST3

Signature Driver Controller Modules

Model: 3-SSDC1, 3-SDDC1, 3-SSDC1-MB, 3-SDC1



Complies to EN54 Part 2 and 4.

Features

- **One or two circuit versions**
- **Dedicated microprocessor control**
- **Full digital communication**
- **Specialized communication protocol**
  - Less sensitive to cable characteristics
  - Utilize existing wiring in most applications
- **Loop alarm in under 750 milliseconds**
- **Device location supervision**
  - Unexpected additional device addresses
  - Missing device addresses
  - Switched device locations
  - Programmed device parameters
- **Automatic nonvolatile as-built mapping**
  - Stores "actual" and "expected" device data
  - Stores physical connection sequence including "T" taps
- **Automatic day/night sensitivity**
- **Supports up to 250 intelligent Signature detectors and 250 Intelligent Signature Modules**
- **Up to five 3-SDDC1s per node**
  - Total of 10 Signature circuits
- **Removable field wiring terminal blocks**
- **Multiple survival modes — stand alone**
- **Ground fault detection by loop and by Signature Module Circuit**
- **Automatic electronic device addressing**
- **Fully backward compatible with 3-SSDC and 3-SDDC**

Description

The 3-SSDC1 and 3-SDDC1 Signature Driver Controller modules provide an intelligent interface between the 3-CPU(1.3) module and Signature Series devices. Each module contains its own microprocessor used to coordinate, process and interpret information received from and sent to Signature devices. Power and communications is received directly from the control panel rail assembly. The 3-SSDC1 Single Signature Driver Controller module supports one Signature Data circuit, while the 3-SDDC1 Signature Dual Driver Controller module supports two Signature circuits. Both modules occupy one rail space in the fire alarm control cabinet and provide removable field wiring terminals to aid installation.

Innovative design gives the 3-SSDC1/3-SDDC1 and Signature devices truly "distributed intelligence". Signature detectors and modules have their own on-board microprocessor communicating with the loop controller in a fully digital communication format. This increases the accuracy of the information coming to and from the loop controller by reducing the effects of capacitance and noise.

With decentralized intelligence much of the decision making moves from the loop controller to the devices. Advanced fire detection algorithms processed within the Signature devices effectively end unwanted alarms. Environmental compensation and multiple sensing element decision making operations are resident in the devices. Intelligent devices allow the Signature Controllers to execute communication and system functions with greater speed and low baud rates, increasing the accuracy of information transmitted between the loop controller and devices.

To enhance survivability of the system the 3-SSDC1/3-SDDC1 supports a standalone mode for Signature devices. Two catastrophic failure modes are supported. If the 3-CPU(1/3) fails, the loop controller will continue to poll its devices. If an alarm is detected it will be sent on the local rail communication bus and received by other local rail modules. A common alarm condition throughout the panel will result. If the local rail module (3-SSDC1/3-SDDC1) fails, and a device (smoke or module) detects an alarm, specialized circuitry will make the node aware of the alarm condition. The 3-CPU(1/3) will communicate the alarm condition to the rest of the network. Having multiple redundant modes is paramount in a life safety system.

Application

Up to 125 detectors and 125 modules are supported over a single pair of wires by the 3-SDC1 Signature Cards that plug into the Signature controller modules. Both Class A wiring (style 6 or style 7) and Class B (style 4) wiring are supported. Loop distances over 11,000 feet (3300m) are possible.

The 3-SSDC1 and 3-SDDC1 use advanced communication formats that provide exceptional response. Using a "BROADCAST POLL" the loop controller checks the entire device circuit for any changes of state. Should one or more devices report a change the 3-SSDC1/3-SDDC1 uses "DIRECT ADDRESS SEARCH" to find reporting device(s). Devices that have entered the alarm state or become active are located nearly instantaneously.

The unique use of "BROADCAST POLLING" combined with "DIRECT ADDRESS SEARCH" ensures that only new information is transmitted allowing a reduced baud rate with fast response time. The low baud rate is ideal for retrofit applications since in most applications existing wiring can be used.

Every time the 3-SSDC1/3-SDDC1 communicates with a detector the green LED on the detector flashes. Normal green LED activity is not disturbing to building occupants, but can be quickly spotted by a maintenance technician. The red LED on the detector turns on only in the alarm condition.

The 3-SSDC1/3-SDDC1 also supervises the device wiring, physical location of each device and the programmed device characteristics. This EST/Signature Series unique characteristic is accomplished by "MAPPING" the Signature circuit and committing the map to memory. Upon power up the loop controller will scan device serial numbers and map their physical location sequence on the loop, including "T" taps. After mapping is complete the controller automatically addresses each detector and module through downloading over the loop. There are no switches or dials to set. Each device is assigned a unique soft address generated by the site specific program.

The 3-SSDC1/3-SDDC1 then compares the "Actual" physical device data to the "Expected" site specific program data. If any correlations are different, the loop controller issues a trouble to the CPU identifying the devices which do not match and posting a map fault. Through the 3-CPU(1.3)'s RS-232 port a graphical map of the loop can be uploaded depicting each device's location on the loop, including branches (T-Taps) and all of the physical attributes associated with the device. This diagnostic information is unparalleled in the fire detection industry and vital for keeping accurate records on how the system was installed.

During installation a common problem with analog/ addressable systems is locating ground faults. The 3-SSDC1 and 3-SDDC1 controllers have the ability to locate ground faults by specific module, speeding up the troubleshooting process. Another significant advantage of the 3-SSDC1/3-SDDC1 controllers during commissioning is electronic addressing and mapping. This eliminates duplicate addresses, which are also very difficult for most systems to locate.

During maintenance, should groups of detector heads be removed for service and returned into the wrong smoke detector base (location), the 3-SSDC1/3-SDDC1 will automatically detect the problem. If the attributes of the switched devices are the same, the system will automatically download the correct soft addresses and algorithms to the devices (maintaining location supervision).

If the attributes are not the same the 3-SSDC1/3-SDDC1 will send a map fault indication to the 3-CPU(1.3) and post a trouble indicating the specific devices in fault.

The 3-SSDC1/3-SDDC1 also monitors the Signature Series devices for maintenance and trouble conditions. Each smoke detector contains intelligence to adjust with environmental changes. This expands the amount of time required between cleaning while maintaining a constant alarm threshold. As the detector begins to exhaust the environmental compensation, and reaches the 80% level, the 3-SSDC1/3-SDDC1 will indicate a maintenance alert or dirty condition to the 3-CPU(1.3) and indicate the specific device requiring cleaning. If cleaning is not performed the detector will continue to operate until all of its environmental compensation is utilized. At this point the 3-SSDC1/3-SDDC1 sends a dirty trouble indication to the 3-CPU(1.3) and posts a trouble condition. If maintenance is still not performed the Signature detector will automatically remove itself from service once the programmed threshold window has been breached (preventing a false alarm).

Remote test capability permits devices to be put in alarm, prealarm, supervisory, monitor, or security alarm or trouble from the panel menu or controls. This facilitates testing of smoke and heat detectors as well as monitor and security devices.

The 3-SSDC1 and 3-SDDC1 local rail modules modules are fully backwards compatible with the 3-SSDC and 3-SDDC local rail modules. 3-SSDC1 and 3-SDDC1 modules provide additional onboard memory to facilitate future Synergy functions. To upgrade a 3-SSDC/3-ADDC to a 3-SSDC1/3-SDDC1 respectively, replace the 3-SSDC/3-SDDC Local Rail Module with a 3-SDDC1-MB Local Rail Module and reuse the 3-SDC Signature Device Cards and filters.

Engineering Specification

The communication format between the control panel and analog devices shall be 100% digital.

Loop alarm recognition must be within 750 milliseconds of a device going into the alarm state, with system response time no greater than 3 seconds. All devices shall support remote testing.

It must be possible to wire the circuit as Class A or Class B with non-shielded, non-twisted wire. It must be possible to wire branches (T-taps) with Class B wiring.

The driver controller must be manufactured in accordance with ISO 9001 standards.

The system must have tolerance to multiple failures. There must be a standalone mode of operation that will ensure the system is aware of alarms even if the local rail or main CPU fails.

Specifications (Signature Circuits)

Charts assume wire and devices are evenly distributed over length of circuit

Non-twisted, non shielded wire

Device type	# of Detectors	# of Module Addresses	#14 AWG (20pf/foot) (2.53 Ohm/1000ft)	#16 AWG (20pf/foot) (4.02 Ohm/1000ft)	#18 AWG (20pf/foot) (6.38 Ohm/1000ft)
Detectors only	125	0	14,752 feet (4,497 meters)	9,275 feet (2,827 meters)	5,839 feet (1,780 meters)
Modules only	0	125	12,599 feet (3,840 meters)	7,921 feet (2,414 meters)	4,986 feet (1,520 meters)
Detectors and Modules	125	125	5,738 feet (1,749 meters)	3,608 feet (1,100 meters)	2,271 feet (692 meters)
Detectors and Modules with 2-wire smokes	63	55 + 9 SIGA-UM	7,623 feet (2,324 meters)	4,793 feet (1,461 meters)	3,017 feet (920 meters)
Modules with 2-wire smokes	0	107 + 9 SIGA-UM	3,798 feet (1,158 meters)	2,388 feet (728 meters)	1,503 feet (458 meters)

Twisted pair non shielded wire

Device Type	# of Detectors	# of Module Addresses	#14 AWG (38pf/foot) (2.53 Ohm/1000ft)	1.5mm² (36pf/foot) (3.75 Ohm/1000ft)	#16 AWG (36pf/foot) (4.02 Ohm/1000ft)	1.0mm² (25pf/foot) (5.51 Ohm/1000ft)	#18 AWG (25pf/foot) (6.38 Ohm/1000ft)
Detectors only	125	0	13,157 feet (4,010 m)	9,933 feet (3,028 m)	9,275 feet (2,827 m)	6,760 feet (2,061 m)	5,839 feet (1,780 m)
Modules Only	0	125	12,599 feet (3,840 m)	8,483 feet (2,586 m)	7,921 feet (2,414 m)	5,774 feet (1,760 m)	4,986 feet (1,520 m)
Detectors & Modules	125	125	5,738 feet (1,749 m)	3,864 feet (1,178 m)	3,608 feet (1,100 m)	2,630 feet (802 m)	2,271 feet (692 m)
Detectors and modules with 2-wire smokes	63	55 + 9 SIGA-UM	7,623 feet (2,324 m)	5,133 feet (1,565 m)	4,793 feet (1,461 m)	3,494 feet (1,065 m)	3,017 feet (920 m)
Modules with 2-wire smokes	0	107 + 9 SIGA-UM	3,798 feet (1,158 m)	2,558 feet (780 m)	2,388 feet (728 m)	1,741 feet (531 m)	1,503 feet (458 m)

Twisted pair shielded wire

Device Type	# of Detectors	# of Module Addresses	#14 AWG (84pf/foot) (2.53 Ohm/1,000ft)	#16 AWG (82pf/foot) (4.02 Ohm/1,000ft)	#18 AWG (58pf/foot) (6.38 Ohm/1,000ft)
Detectors only	125	0	5,952 feet (1,814 meters)	6,098 feet (1,859 meters)	5,839 feet (1,780 meters)
Modules Only	0	125	5,952 feet (1,814 meters)	6,098 feet (1,859 meters)	4,986 feet (1,520 meters)
Detectors & Modules	125	125	5,738 feet (1,749 meters)	3,608 feet (1,100 meters)	2,271 feet (692 meters)
Detectors and modules with 2-wire smokes	63	55 + 9 SIGA-UM	5,952 feet (1,814 meters)	4,793 feet (1,461 meters)	3,017 feet (920 meters)
Modules with 2-wire smokes	0	107 + 9 SIGA-UM	2,558 feet (780 meters)	2,388 feet (728 meters)	1,503 feet (458 meters)

Ordering Information

Catalog Number	Description	Shipping Wt. lb (kg)
3-SSDC1	Single Signature Driver Controller. Comes with one 3-SDC1 Device Card. Mounts to Local Rail.	0.5 (0.23)
3-SDDC1	Dual Signature Driver Controller. Comes with two 3-SDC1s. Mounts to Local Rail.	0.5 (0.23)
3-SDC1	Signature Device Card - upgrades a 3-SSDC1 to a 3-SDDC1	0.25 (0.11)
RFK1	Ferrite Clamp Kit required for EN-54 compliance.	0.25 (0.11)
3-SSDC1-MB	Dual Signature Driver Controller Motherboard (without 3-SDC1 device cards). Use this motherboard for upgrading 3-SSDC/3-SDDC to 3-SSDC1/3-SDDC1.	0.5 (.23)

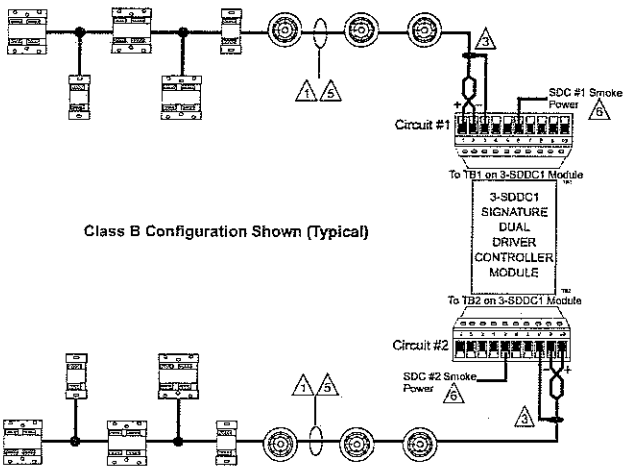
Specifications

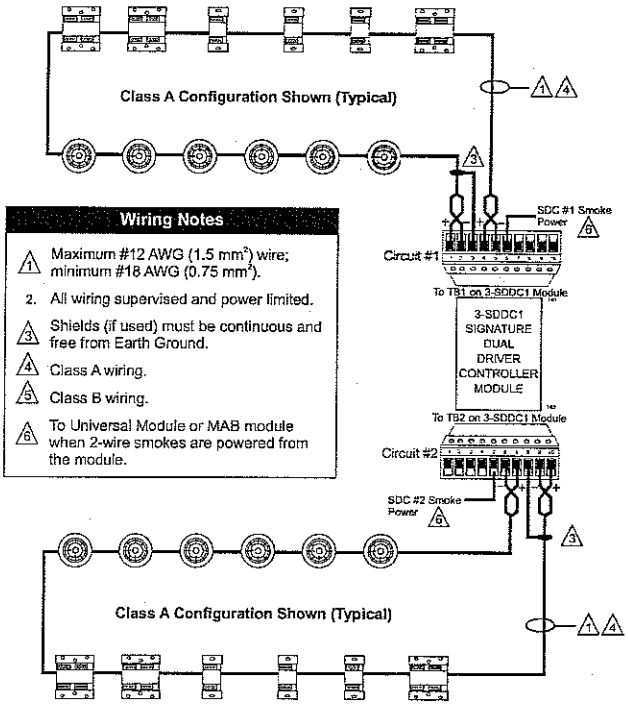
Catalog Number	3-SSDC1	3-SDDC1
Module Configuration	1 Addressable circuit (3-SDC1 Card) expandable to 2 circuits.	2 Addressable circuits (3-SDC1 Cards)
Operating Current	Standby 139 mA Alarm 158 mA	Standby 256 mA Alarm 294 mA
Operating Voltage	24 Vdc, Nominal	
Installation	1 LRM Space	
Address Requirements	Automatic	
Detectors Supported	125 per 3-SDC1 Card	
Modules Supported	125 Module Addresses per 3-SDC1 Card	
2-Wire Smoke Power Output	100 mA per 3-SDC1 Card (not included in "Operating Current" above	
Conventional detectors supported	150 of 100 μA type per circuit.	
Signature Circuit Voltage	20 VDC +/- 5%	
Maximum Signature Circuit Resistance	100 Ohms	
Maximum Signature Circuit Capacitance	0.5μF	
Communications Format	100% Digital	
Circuit Wiring Styles	Class A or Class B	
Termination	Removable plug-in terminal strip(s) on module	
Permissable Wire Size	18 to 12 AWG (0.75 to 2.5 mm^2)	
Agency Listings	UL, ULC, CE, and complies to EN54 Part 2 and 4. See Note 1.	
Operating Environment	32 °F (0 °C) to 120 °F (49 °C) 93% RH, non-condensing	

Note 1:

Other EST3 components are 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.

Typical Wiring





Wiring Notes

1. Maximum #12 AWG (1.5 mm^2) wire; minimum #18 AWG (0.75 mm^2).
2. All wiring supervised and power limited.
3. Shields (if used) must be continuous and free from Earth Ground.
4. Class A wiring.
5. Class B wiring.
6. To Universal Module or MAB module when 2-wire smokes are powered from the module.

EDWARDS SYSTEMS TECHNOLOGY

It is our intention to keep the product information current and accurate. We can not cover specific applications or anticipate all requirements. All specifications are subject to change without notice. For more information or questions relative to this Specification Sheet, contact EST.

Literature Sheet #85010-0129
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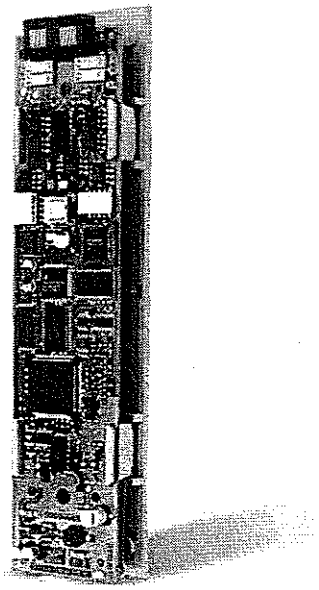
Issue 2

A product of EST Marketing, Bradenton, FL

Modem Communicator

Model: 3-MODCOM, 3-MODCOMP



Features

- **Listed for fire, security and access control**
- **V.32bis 14.4K full duplex modem**
- **Digital alarm communicator transmitter supporting: SIA DCS protocol, Contact ID protocol, 3/1 and 4/2 pulse format protocol**
- **Supports "tap" alphanumeric pager protocol**
- **Fully programmable messages**
- **Alarm override of upload/download**
- **Two phone line capability**
- **Field upgradable firmware**
- **Split and multiple reporting to as many as 80 different receivers**
- **255 subscriber accounts**
- **Supports control/display modules**
- **Supervised by the network controller**

Description

The Modem Communicator is a two-way local rail module that performs a variety of off-premise communications functions for the EST3 system.

Using the latest in digital signal processing (DSP) techniques, the Modcom provides off premise communication features unavailable on any other system.

The module has provisions for supervising two loop-start telephone lines. The module features a modular jack for telephone line connections. The Modcom's configuration and firmware can also be updated from any network node.

Modcom series modules occupy a single local rail space and can be mounted in any node on the network. Any EST3 Control/Display module can be mounted on the face of a Modcom series module. Power for the Modcom is supplied by the EST3 system supply.

The Modcom provides an enhanced level of survivability in the event of a network CPU failure by notifying the Central Monitoring Station of the failure and entering a degraded mode of operation. In degraded mode, the Modcom can transmit a default fire alarm message during a fire alarm condition.

Two versions of the Modcom are available:

3-MODCOM - Has an internal V.32bis 14.4K baud full duplex modem. The modem permits upload and download of system data remotely via a telephone line. In addition, the 3-MODCOM has a Digital Alarm Communications Transmitter (DACT) or dialer function that transmits network status information to Central Monitoring Stations (CMS) via telephone. Four DACT protocols are available:

1. Digital Communicator Standard (DCS) "SIA forma" Dialer – 300 baud format, which transmits alphanumeric system status data to the CMS;
2. Contact ID;
3. SIA 3/1 dialer; and,
4. SIA 4/2 dialer.

Alarm code content is determined by system rules.

3-MODCOMP – In addition to all modem and dialer (DACT) functions of the 3-MODCOM, the 3-MODCOMP can dial directly into paging systems using Telelocator Alphanumeric Protocol (TAP). Alphanumeric system data can be sent to a single pager or group(s) of pagers. Some pager services can forward messages via e-mail and Fax.

Multiple Priority
Each Modcom can buffer up to 500 events in its event queue. It reviews all active events in the queue and identifies the highest priority event and dials the associated receiver. When the receiver is contacted, the MODCOM will transmit the highest priority message for that receiver. If the message is successfully received, the MODCOM identifies the next highest priority message and the process repeats.

Phone Line Friendly
The Modcom series has been designed for installation on the same phone lines with other devices such as phones and faxes. The module makes its first dial out attempt on either of the two phone lines that is not in use. This prevents unnecessary interruption of calls in progress by the line seizure relays. In the event that both lines are busy, the module seizes line one.

A fixed DACT testing time can be set at an off-hour, e.g. 2:00am, again minimizing interruptions and phone line costs. The call time is programmable, and allows testing of the DACT with the central station.

The Modcom series also has the ability to detect Type 1, Type 2 and Type 3 distinctive ringing patterns, permitting it to share its phone lines with other devices and still have a unique phone number for incoming modem calls.

Application

Multiple Modcoms per Network
Multiple Modcoms can be installed in a single cabinet or located in nodes throughout the network to provide added availability and enhanced redundancy of off premise communications.

Multiple Receiver Capability
In large system applications the EST3 system may be partitioned such that it supports a number of different customers, each using different Central Monitoring Stations and/or paging companies. The Modcom can accommodate up to 255 different accounts using up to 80 different receivers.

The Modcom supports split reporting, a process where the system directs the Modcom to send some events or event types to one receiver, and different events to alternate receivers. The module's multi-dial reporting capability permits an individual event to be transmitted to multiple receivers, including pagers.

Remote Data Upload/Download
The modem permits data to be downloaded into the memories of the various components making up an EST3 system. Data can be remotely uploaded and downloaded for use with the EST Access Control Database Program. In the event that an alarm is received during upload/download activity, the Modcom automatically terminates the call and transmits the alarm events to the appropriate receivers. When completed sending the events, the download will continue where it left off.

Engineering Specification

The system shall provided an off premise communications module capable of transmitting system events to multiple Central Monitoring Station (CMS) receivers. The module shall provide the CMS with point identification of system events via 4/2, Contact ID or SIA DCS protocols. <The module shall also be capable of transmitting alphanumeric system activity by event to a commercial paging system using TAP Pager protocol.> The dialer shall have the capability to support up to 255 individual accounts and to send account information to eighty (80) different receivers, each having a primary and secondary telephone access number. System events shall be capable of being directed to one or more receivers depending on event type or location as specified by the system designer. The module shall have a degrade mode capable of transmitting fire alarm signals to the CMS in the event of system CPU failure. The module shall provide a high speed (V.32bis or greater) modem function in order to upload and download system data to/from a remote location.

Ordering Information

Catalog Number	Description	Shipping WT. lb (kg)
3-MODCOM	Modem/Dialer (DACT) version	.5 (.23)
3-MODCOMP	Modem/Dialer (DACT) w/TAP Pager Protocol	.5 (.23)

Specifications

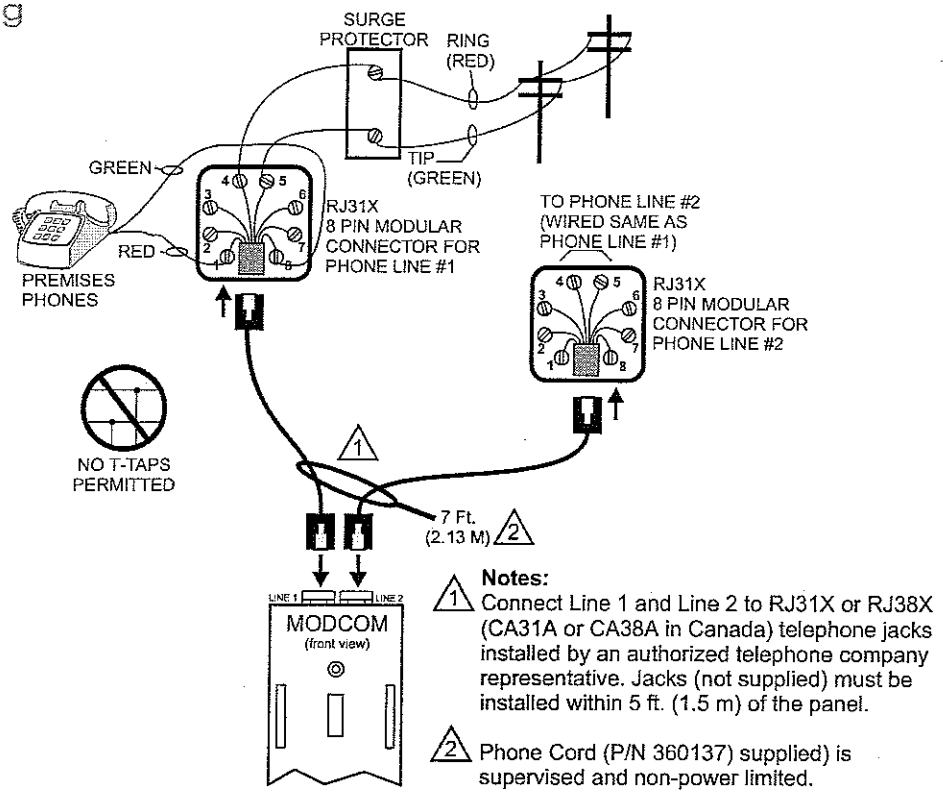
Agency Listings	UL, FCC Part 68 / CFR 47, ULC. See Note 1.
Installation	Takes up one LRM space in 3-CHAS7
Input Power	24 Vdc @ 60mA standby, 90 mA active
Modem Protocol	ITU - V.32bis 14.4K baud full duplex using standard PC modem compatible data
Dialer Protocol	SIA 3/1 (format P2) and 4/2 (format P3): 20 pulses per second, double round Contact ID (DTMF format) Digital Communications Standard (DCS) "SIA format": Level 2 (300 baud, Bell 103)
Pager Protocol (3-MODCOMP only)	Telocator Alphanumeric Protocol (TAP), Version 1.8, 300 baud, Bell 103
Telephone Dialing Connector	 Pulse or Tone (DTMF) Two 8-position modular phone jacks
CMS Telephone Numbers Quantity Available Digits	 Two per receiver - 160 max. Up to 24 digits per number
Receivers	Supports up to 80 individual receivers.
Event Buffer	500 events
Operating Environment	32°F (0°C) to 120°F (49°C), 93% RH Non-condensing

Receivers Tested			
Format	Manufacturer	Model	Receiver Card
4/2 and 3/1	Ademco	685	685-1 or 685-8
	FBI (Fire Burglary Instruments)	CP220	
	Osborne-Hoffman	OH2000	
	Radionics	D6600	
	Silent Knight	9000	9032
	Sur-Gard	MLR2, SG-SLR	
	MCDI	TLR, TLR+	
Contact ID	Ademco	685	685-8
	Osborne-Hoffman	OH2000	
	Sur-Gard	MLR2, SG-SLR	
	Radionics	D6600	
	Silent Knight	9000	9032
	MCDI	TLR, TLR+	
SIA DCS	Sur-Gard	MLR2, SG-SLR	

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 and ULC/ORD-C693
Please refer to EST3 Installation and Service Manual for complete system requirements.

Typical Wiring



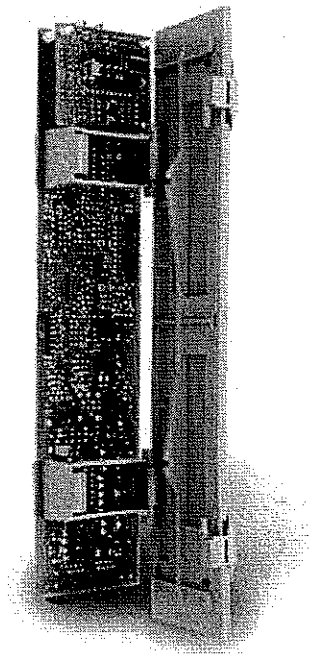
Notes:

1. Connect Line 1 and Line 2 to RJ31X or RJ38X (CA31A or CA38A in Canada) telephone jacks installed by an authorized telephone company representative. Jacks (not supplied) must be installed within 5 ft. (1.5 m) of the panel.

2. Phone Cord (P/N 360137) supplied) is supervised and non-power limited.

Security/Access Control Module

Model: 3-SAC



Features

- **Listed for fire, security, and access control**
- **Two supervised RS-485 device circuits**
- **Class A configuration supports 30 Card reader controllers and/or keypad/displays**
- **Class B configuration supports 62 card reader controllers and/or keypad-displays**
- **4,000 ft (1,220 m) max circuit length**
- **EST3 local rail module**
- **Supports control/display modules**
- **Supervised by the network controller**
- **100% digital communication**
- **Removable field wiring terminal block**

Description

The 3-SAC Security/Access Control Module is a key component in the true integration of security and access control functions into the EST3 multiplexed life safety system. The 3-SAC is the demarcation point between fire and security/access functions. For jurisdictions requiring independent wiring of fire and security devices, the 3-SAC offers two independent circuits. Where fire and security devices are permitted to be connected to the same circuit, both circuits can support both fire and security functions. All security devices that connect to a 3-SAC are designed and tested to strict fire alarm standards. For example, to enhance reliability, the 3-SAC can be wired in a Class A (Style 6) configuration, thus delivering an additional level of system survivability over traditional systems employing Class B wiring.

The 3-SAC can be used in combination with the Modcom Modem Communicator. The Modcom's dialer (DACT) function is used to transmit alarms to one or more central monitoring stations and/or paging terminals. Additionally, information received by the Modcom can be downloaded through the 3-SAC to individual security/access devices. Please refer to the Modcom catalog sheet for additional details

Total integration of the EST3 system assures that processing of fire alarm signals always receives the highest priority over routine signal processing. Power for the 3-SAC comes from the same highly reliable power supply/battery combination used to power the fire alarm components. Any Control Display module will mount in front of the 3-SAC, allowing great flexibility of the system user interface layout.

Application

The 3-SAC is used to connect the Card Reader Controllers and Keypad Displays to the EST3 network. This permits the network to perform functions network-wide in response to fire and/or security events. A common example is the network's ability to unlock specified doors in the event of a fire emergency, without the need for hardwired interconnections between fire and access control components.

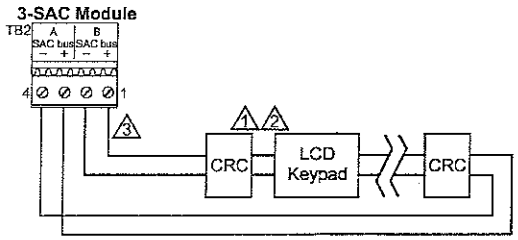
The 3-SAC and a simple program rule are all that is required to unlock the doors. Want to disarm security partitions automatically when an authorized cardholder enters the building, the 3-SAC and another system rule provide a simple solution.

Engineering Specification

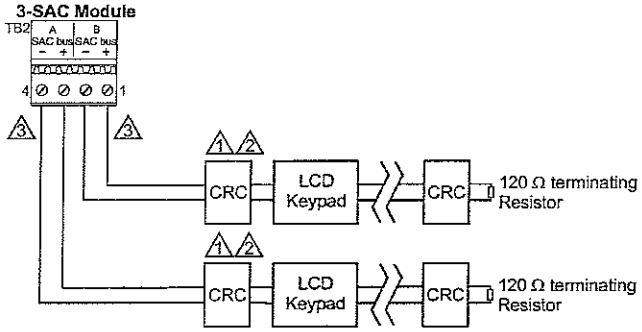
The security and access control module shall be capable of supporting 62 devices on two class B circuits or where added reliability is required, 30 devices on a single Class A circuit. It must be possible to wire Class A in Style 6 configuration. The module shall be capable of supporting both fire and security devices on the same circuit. The module shall permit total integration of the fire, security and access control functions by the system. The module shall be <UL> <ULC> listed for both fire and security applications.

Typical Wiring

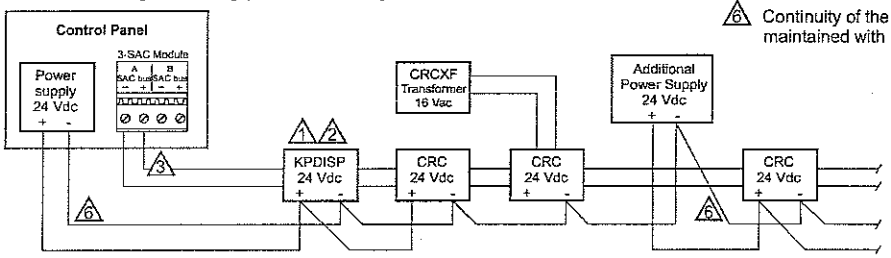
Class A wiring



Class B wiring



Class B wiring showing power cabling



Specifications

Agency Listings	UL, ULC. See Note 1.
Circuit Configuration	Class A or Class B
Circuit Capacity	30 devices on one Class A circuit, 62 devices on two circuits wired Class B
Input Current	40 mA under all conditions
Wire Size	22 AWG to 14 AWG (0.25mm² to 1.5mm²), depending on specifications of connected devices
Maximum Line Resistance	90 Ohms
Operating Environment	0°C to 49° Complete (32°F to 120°F) @ 85%RH, Non-condensing
Mounting	One Local Rail Space

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 and ULC/ORD-C693
Please refer to EST3 Installation and Service Manual for complete system requirements.

Ordering Information

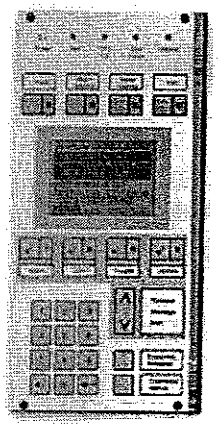
Catalog Number	Description	Shipping WT. lb (kg)
3-SAC	Security/Access Control Module	0.5 (.23)

Notes:

1. Refer to device installation sheets for proper wiring connections.
2. Maximum of 30 devices (Class A), 62 devices (31 per loop) (Class B).
3. Security Access Control Bus
4. Up to 4,000 ft. (1,220 m). All wiring is power limited and supervised.
5. CRCs require 24Vdc or local transformer for operational power. KPDISP requires 24Vdc for power.
6. Continuity of the minus from the control panel's power supply must be maintained with all devices communicating with the panel's 3-SAC.

Liquid Crystal Display Module

Model: 3-LCD



Features

- **Uses simple lights and switches**
- **Displays information important to user**
- **Hands free first alarm display**
- **Last event of highest priority always displays**
- **Eight lines by 21 character graphic LCD display — 168 characters total**
- **Multilingual**
  Supports English, French, Spanish, and Russian
- **Uses queues to sort events**
  A queue is a list of messages Alarm, Supervisory, Trouble and Monitor
- **Slide in LED and switch labels**
  Makes customization for regional language easy

Description

The Main Display interface is the primary user interface in the EST3 Life Safety System. The main display interface focuses on the emergency user by putting information important to the user up front. Hands free, the first highest priority event is shown. The display always gives the last highest priority event. Arriving at the panel and without opening the door the first and last alarm is given. Simple to understand lights and switches help the emergency user execute system commands with confidence.

A menu system supports maintenance functions such as disables or reports for use by staff or service personnel.

Application

The 3-LCD module mounts to the local rail over the nodes Central Processing Unit Module (3-CPU). The 3-LCD module is optional in any network node.

Ensuring information clarity the 3-LCD uses a backlit high contrast supertwist graphical display. Eight lines of 21 characters provide the room needed to convey emergency information in a useful format.

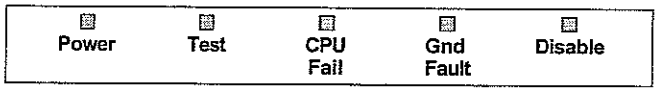
The 3-LCD always displays the last highest priority event even when the user is viewing other message queues. Further message flexibility is provided with EST3's message routing ability. Messages from a node can display at every node on the network or messages can route to specific nodes only. Routing can be initiated at a specific time/shift change. There is no need to have messages display in areas that are not affected by an event.

The 3-LCD can display messages in English, Spanish, French, and Russian. The bilingual display lets the operator select between either of two languages. Consult your representative for available language combinations.

The EST3 system configures for Proprietary, Local or EN54 market operations. The mode of operation is selected through the System Definition Utility (SDU) which may adjust the following operations slightly to fit the system operation selected.

About LEDs and Switches

Further enhancing the 3-LCD user interface are easy to read and understand lights and switches. All functions are laid out in a logical order. At the top of the 3-LCD are five system status LEDs. Here determining the general condition of the system is easy.



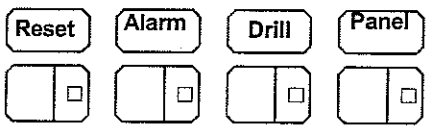
Power LED: Green, on when AC power is on.

Test LED: Yellow, on when any portion of the system (Group) is under test.

CPU Fail LED: Yellow, on when CPU stops running.

Gnd Fault LED: Yellow, on when a ground exists on the system (group)

Disable LED: Yellow, on when any point or zone is disabled by a user.



For EN-54 compliance, please see page 4.

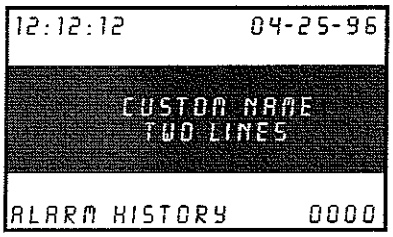
Below the general status LEDs are located four, LED / Switch common controls. The versatility of EST3 allows system designers to define the features as affecting a domain (defined group of nodes) or as global (affects all nodes) across the network. This feature is very useful when configuring systems with multiple buildings on one network. As an example, operating the reset in one building may have adverse effect in other buildings. With EST3 having operational differences between buildings on the same network is not a problem.

Pressing **Reset** starts the system's reset operation. The yellow LED has three flash rates during reset. The LED flashes fast during the smoke power down phase of reset, flashes slow during the restart phase, and turns on steady for the restoral phase. The Reset LED turns off when the system is normal.

Pressing **Alarm Silence** turns off all Notification Appliance Circuits defined as audible. The yellow LED turns on when silence is active via the Alarm Silence switch or via alarm silence software timers.

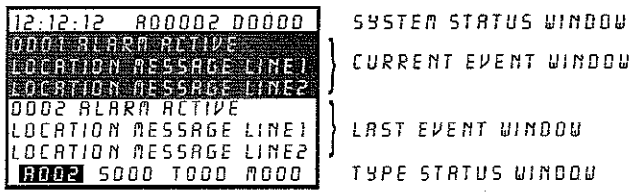
Pressing **Panel Silence** turns off the system's internal audible signal. The yellow LED turns on when panel silence is active. The EST3 panel buzzer has user programmable signal rates for alarm, supervisory, trouble and monitor conditions.

Pressing **Drill** turns on the drill LED and all signals sound evacuation. Drill does not activate city tie connections. Auxiliary relays will not activate unless programmed to do so with drill.



In the center of the 3-LCD is the Liquid Crystal Display. In the normal condition the date and time plus a definable system title display on the LCD. The last line of the display gives an alarm history. This total equals the number of times the system has entered the alarm state from the normal state.

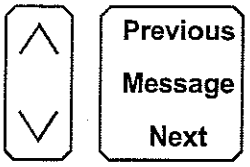
When active events are on display, the LCD formats into four logical windows.



In the system status window, the display shows the time and the status of active and disabled points.

The current event window, lines 2, 3, 4 automatically display the first active event of the highest priority if the user has not taken control of the system. Once the emergency user takes control, this window displays user message selections.

The second line of the display shows system event information. In the example above the display shows the chronological number of the event (0001 is the first alarm) followed by the event type (Alarm Active). EST3 supports over 45 event type messages from which system designers choose. The last two lines of the current event window are custom programmable location message lines with space for 42 characters.

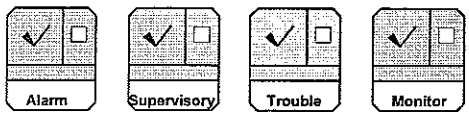


The last event window shows the last highest priority event. This window is always displayed and updated automatically by the system. Here the emergency user can monitor the progress of a fire.

When EST3 is configured for a local mode system viewing the second alarm message is easy, just press the NEXT key. The next message scrolls into the current event window. The last highest priority event always remains on view. No matter what queue the user selects for viewing, the LCD always displays the most recent alarm. A new alarm event resounds the panel audible signal and appears immediately on display without overwriting information the user selected for view.

The final window of the LCD the type status window shows the total number of active events by queue type. A is alarm, S is supervisory, T is trouble, and M is monitor. The number following each letter is the number of active events existing in each queue.

EST3 breaks down event types into queues and automatically displays the first event of the highest priority type.



For EN-54 compliance, please see page 4.

Priority order is alarm, supervisory, trouble, monitor. By using queues an emergency user does not waste time scrolling through a mixed event list looking for alarms or confusing an alarm message with other message types.

EST3 configures for **Remote proprietary** system operation where every event must be acknowledged by viewing them before the internal buzzer will silence. Or the EST3 will configure for **Local** operation. Here the internal buzzer silences by pressing panel silence. If any events exist in queues that have not been viewed the queue LED continues to flash informing the user of un-seen events.

When all events in a queue are acknowledged or 'seen', the LED associated with the queue turns on steady. If a new event is added to the queue, the EST3 internal buzzer resounds and the queue LED flashes.

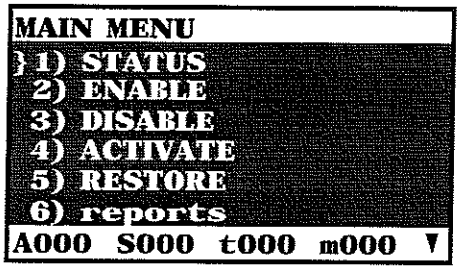
EST3 allows device grouping into logical group zones. Here two or more alarm devices (such as detectors or pull stations) make up the zone. When a device in the zone activates, the LCD displays the zone description. Each zone only displays once, regardless of the number of devices active within the zone.

To display device information the user presses the Details key. The device with the lowest address displays in the first window.

If multiple devices are active each is available for viewing by using the arrow associated with the Previous Message Next key and scrolling through the device list.

The common controls easily expand beyond the Main Display interface by adding a Control Display Module and assigning features to its switch controls.

For Maintenance users, the EST3 provides a smooth operating menu system providing powerful tools for system management, reports, and trouble shooting.



Engineers Specification

The system shall provide a user interface that displays system events in a text format, and supports basic common control LEDs and switches. The Common Control Switches and LEDs provided as minimum will be; Reset switch and LED, Alarm Silence switch and LED, Panel Silence switch and LED, Drill switch and LED. It must be possible to add additional common controls as required through the use of modular display units. The user interface must provide an LCD that will allow custom event messages of up to 42 characters. The interface must provide a minimum of eight lines by 21 characters and provide the emergency user, hands free viewing of the first and last highest priority event. The last highest priority event must always display and update automatically. Events shall be automatically placed in easy to access queues. It shall be possible to view specific event types separately. Having to scroll through a mixed list of event types is not acceptable. The total number of active events by type must be displayed. Visual indication must be provided of any event type which has not been acknowledged or viewed. It must be possible to customize the designation of all user interface LEDs and Switches for local language requirements. It shall be possible to have a custom message for each device in addition to zone messages. Custom device messages must support a minimum of 42 characters each. Instructional text messages support a maximum of 1,000 characters each. The display shall be capable of displaying English, Spanish, French, or Russian messages.

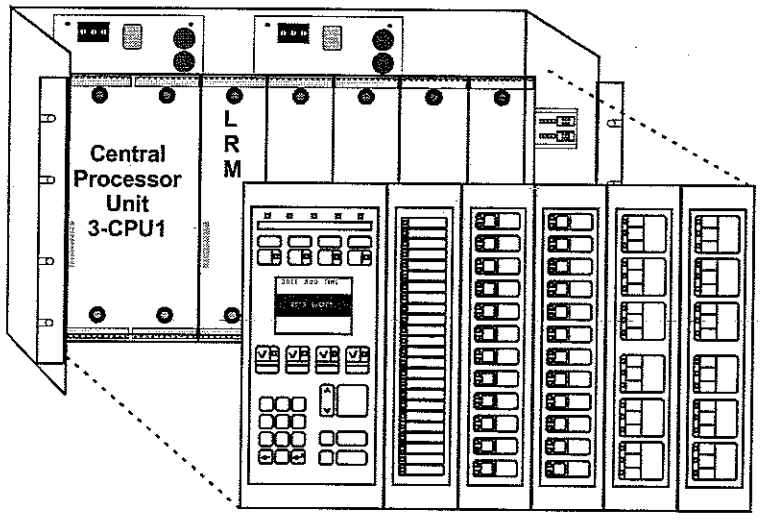
Specifications

Catalog Number	3-LCD
Agency Listings	UL, ULC, FM, CE, EN-54
LCD Display	Eight lines by 21 characters backlit LCD
Mounting	Two local rail spaces on top of 3-CPU
Common Control Switches and LEDs	Reset switch and LED Alarm Silence switch and LED Panel Silence switch and LED Drill Switch and LED
Alarm Current	53mA
Standby Current	53mA

Ordering Information

Catalog Number	Description	Shipping Weight lb. (kg)
3-LCD	Liquid Crystal Display Module	.8 (.36)
3-LKE	UK English Label Kit	.25 (.11)
3-LKF	French Label Kit	.25 (.11)
3-LKR	Russian Label Kit	.25 (.11)
3-LKS	Spanish Label Kit	.25 (.11)

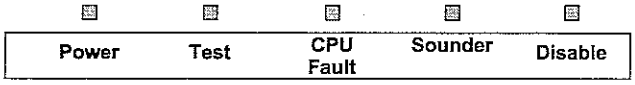
Installation and Mounting



EN-54 Compliance

In 1998 the British-based Loss Prevention Certification Board (LPCB) certified EST3 control panels and power supplies as having surpassed the requirements of the pivotal EN-54 standard, parts two and four. LPCB Certificate #257c for EST3 fire alarm control panels marks the first such certification since the stringent EN standards were ratified in 1997. In order to meet these standards, display and control functions have undergone slight modifications for the EN-54 marketplace. These differences are highlighted below. All other control and annunciation features remain unchanged.

System Status LEDs



Power LED (Green): on when DC power is on.

Test LED (Yellow): on when any portion of the system (Group) is under test.

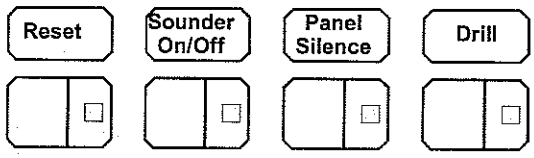
CPU Fault LED (Yellow): on when CPU stops running (processor failures must be manually reset).

Gnd Fault LED: Not available.

Sounder LED (Yellow): flashing indicates fault on sounder circuit. Steady indicates a disabled sounder circuit.

Disable LED (Yellow): on when any point or zone is disabled by a user (disabled conditions have priority over fault conditions).

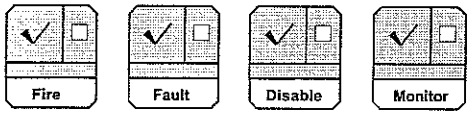
Switch Functions



Pressing **Sounder On/Off** turns off all sounder circuits defined as audible. The yellow LED turns on when silence is activated via the Sounder On/Off or via the alarm silence software timers.

See Page 2 for descriptions of Reset, Panel Silence, and Drill functions.

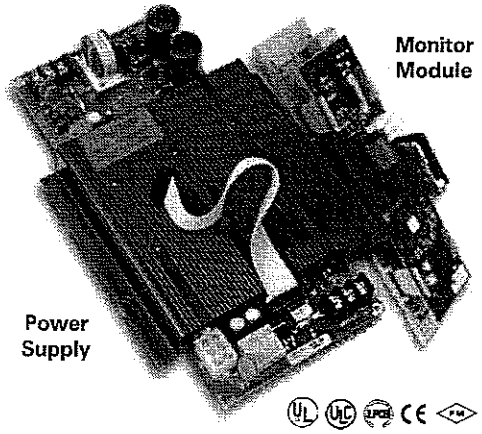
Event Queues



For EN-54 compliance, EST3 configures for remote proprietary system operation. This requires that every event must be acknowledged by viewing them before the internal buzzer will silence. The priority order is Fire, Fault, Disable, Monitor.

EST3 Power Supplies

Models: 3-PPS/M series, 3-BPS/M series, 3-BBC/M series



Features

- **High efficiency switch mode**
- **Increased power distribution efficiency**
  - power supplies parallel allowing up to 28 amps in a single node
- **120 or 230 Vac operation**
- **7 AMP filtered and regulated**
- **Two 3.5 AMP outputs**
- **Temperature compensated, dual rated battery charger**
- **Electronic power limiting**
- **Automatic load testing of batteries**

Description

EST3 Power supplies consist of two assemblies, a high efficiency switch mode power supply card and a power supply monitor module. The monitor module mounts to the local rail and distributes the power from its supply to the local rail. The local rail distributes power from all power supplies to other local rail modules and user interface cards resulting in "Shared Power" throughout the system. By paralleling the power supplies on a rail maximum utilization of available power is possible, resulting in fewer power supplies. Up to four power supplies combine in a single enclosure providing up to 28 amps of available power. Battery backup is provided using from one to four sets of batteries, depending on standby power requirements.

Power supplies mount to the back of the chassis units or wallboxes. The associated power supply monitor module mounts on the local rail providing system power distribution and mounting space for any control display module. Access to auxiliary power is via easily accessible terminal blocks located on the power supply monitor module. Each power supply produces 7 Amps of filtered and regulated power. With four power supplies located in an enclosure (one primary and three booster power supplies) 28 amps of current is available for local rail modules, control display modules and the eight auxiliary 3.5 amp power outputs (two per supply).

Application

The primary power supply provides the system with battery charging and voltage regulation. Software configures the charger to either 10-24 AH batteries or 30-65 AH batteries and controls the high/low charge rates. Batteries mounted in the same enclosure as the power supply, have their charge rate monitored and adjusted based on the local enclosure temperature, keeping charging rates within battery specification. For remote batteries a temperature probe is monitored in the remote battery cabinet and charge rates are adjusted automatically. Battery damage is unlikely to occur when environmental short term conditions are outside of normal operating ranges.

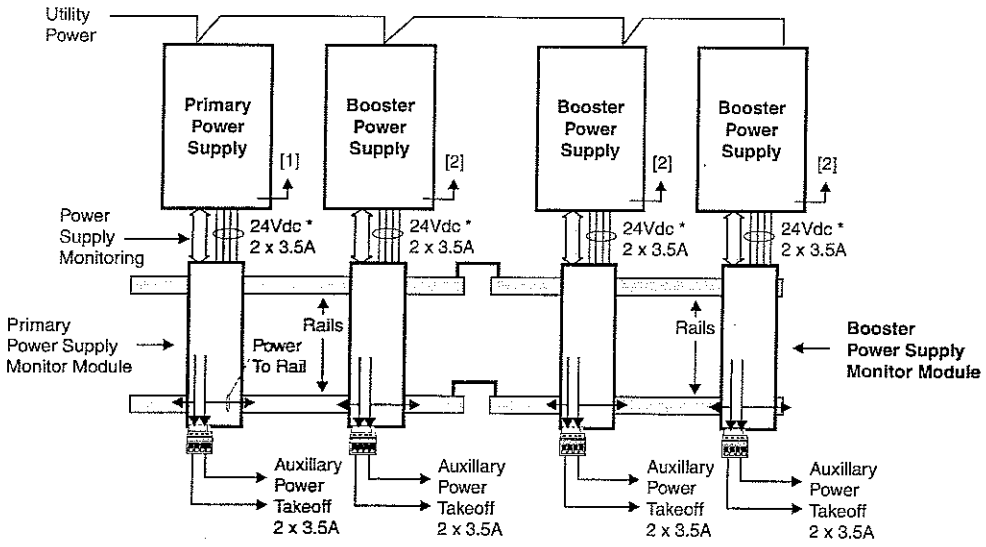
The EST3 power supplies automatically load test batteries by shutting down the battery charger and placing a load across the battery. If the battery voltage is outside the specification range the power supply reports a trouble. The trouble clears if the battery is able to recover and pass future load tests.

Battery leads are electronically short circuit protected. If a short occurs in the battery leads the charger automatically disables itself and causes a trouble. The system will constantly look to see if the short has cleared. If the short clears the system automatically restores.

During operation on standby batteries, battery voltage is constantly monitored. A trouble is reported if the battery voltage falls below a specified value.

EST3 power supplies provide specific information back to the 3-CPU(1) designed to help speed trouble shooting of system functions. Should a power supply detect a fault, specific diagnostic codes are available to speed trouble shooting. The 3-LCD will display the power supplies address, a specific trouble code, and a text message describing the specific trouble. Text messages are easy to understand and include items like: Battery Trouble, Aux Power Overload Circuit 1, Aux Power Overload Circuit 2.

Typical Wiring



[1] From battery temperature probe terminals.

[2] From battery and from temperature probe terminals if 3-BTSEN-E used.

* Nominal Voltage

Power Supply Rules

1. Each battery set needs one charger, either a 3-PPS/M or a 3-BBC/M.
2. Each power supply must be connected to a battery set using an identical length and gauge of wire to keep voltage drops identical.
3. Distribute power supplies and loads evenly across rails.
4. **All battery sets for a panel must be the same capacity (AH), same manufacturer, and same manufacturing date code.**

The Table below illustrates the combinations of power supplies and batteries that meet all the power supply rules.

	24 VDC Power Supply Output Current						
	7A	14A		21A		28A	
Battery Requirement	One Set, 65 AH max	One Set, 65 AH max	Two Identical Sets, 65 AH max	One Set, 65 AH max	Three Identical Sets, 65 AH max	One Set, 65 AH max	Four Identical Sets, 65 AH max
Required Modules	1 3-PPS/M	1 3-PPS/M 1 3-BPS/M	1 3-PPS/M 1 3-BBC/M	1 3-PPS/M 2 3-BPS/M	1 3-PPS/M 2 3-BBC/M	1 3-PPS/M 3 3-BPS/M	1 3-PPS/M 3 3-BBC/M

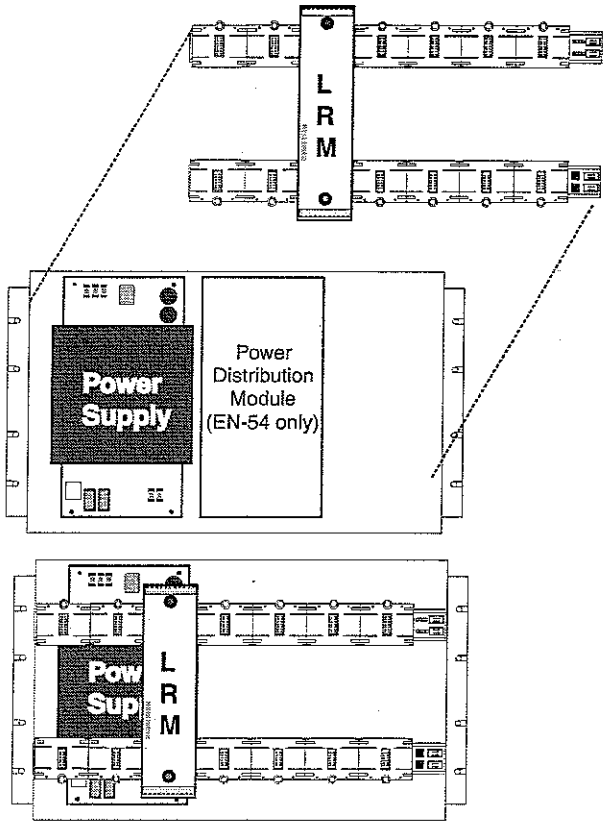
Engineering Specification

The fire alarm power supplies must be capable of being paralleled and to load share. Multiple power supplies must be capable of being backed up with a single 24 volt battery set. Each power supply shall be capable of charging up to 65 AH batteries. The power supply must be able to perform an automatic load test of batteries and return a trouble if the batteries fall outside a predetermined range. Power supplies must incorporate the ability to adjust the charge rate of batteries based on ambient temperatures. It shall be possible to adjust for ambient temperature changes in local cabinets as well as remote cabinets.

Specifications

Catalog Number	3-PPS/M & 3-BBC/M	3-BPS/M	3-PPS/M-230 & 3-BBC/M-230	3-BPS/M-230	3-PPS/M-230-E & 3-BBC/M-230-E	3-BPS/M-230-E
Agency Approvals	UL, ULC, FM				EN-54, LPCB, CE	
Input Voltage	120 Vac, 50-60 Hz		230 Vac, 50-60 Hz		230 Vac, 50Hz	
Brownout Level	< or = 102 Vac		< or = 195 Vac		< or = 195 Vac	
Input Current	2.0A		1.0A		1.0A	
Total Output Current	7.0 Amps					
Battery Charging Capacity	65AH Sealed Lead-Acid	None	65AH Sealed Lead-Acid	None	30AH Sealed Lead-Acid	None
Low Battery Trouble	24 Vdc				22.5 Vdc	
Deep Discharge Cutoff	19.5 Vdc				20.0 Vdc	
Mounting Requirements	One LRM space, One chassis footprint				1 LRM Space + 3-PPS: 2 footprints 3-BBC: 1 footprint	One LRM space, One chassis footprint
Output Voltage	24 Vdc Nominal					
Auxiliary Output Current	Two sources of 3.5Amps each taken from total output current					
Auxiliary Output Terminal Capacity	18 AWG to 12 AWG (1mm² to 2.5 mm²)					
Output Protection	Electronic power limiting & heat sink temperature					
Ground Fault Detection	10KOhm					

Installation and Mounting



Ordering Information

Catalog Number	Description	Ship Wt. lb. (kg)
3-PPS/M	Primary Power Supply w/ local rail module 120V 50/60 Hz	5 (2.3)
3-BPS/M	Booster Power Supply w/ local rail module 120V 50/60 Hz	5 (2.3)
3-PPS/M-230	Primary Power Supply w/ local rail module 230V 50/60 Hz	5 (2.3)
3-BPS/M-230	Booster Power Supply w/ local rail module 230V 50/60 Hz	5 (2.3)
3-PPS/ M-230-E	Primary Power Supply w/local rail module 230V 50 Hz, EN-54 Certified, CE	5 (2.3)
3-BPS/ M-230-E	Booster Power Supply w/local rail module 230V 50 Hz, EN-54 Certified, CE	5 (2.3)
3-BBC/M	Booster/Charger Supply w/local rail module 120V 50/60Hz	5 (2.3)
3-BBC/M-230	Booster/Charger Supply w/local rail module 230V 50/60Hz	5 (2.3)
3-BBC/ M-230-E	Booster/Charger Supply w/local rail module, 230V 50/60Hz, EN-54 Certified, CE	5 (2.3)
3-BBCMON(-E)	Booster/Charger Monitor Module with charger capability (upgrade 3-BPS/M(-230)(-E) to 3-BBC/M-(230)(-E))	5 (2.3)
3-BTSEN	Distribution Module required when battery installed in remote cabinet	.5 (.22)
3-BTSEN-E	Distribution and Temperature Sensor Module. Required in EN-54 Markets when battery installed in a remote cabinet.	.5 (.22)

GE
Security

EST Fire & Life Safety
Accessories

Overview

Rechargeable sealed lead-acid batteries are ideal for use as a secondary (standby) power source as defined by NFPA 72. Their low maintenance and high energy density make them ideal for fire alarm signaling applications.

Standard Features

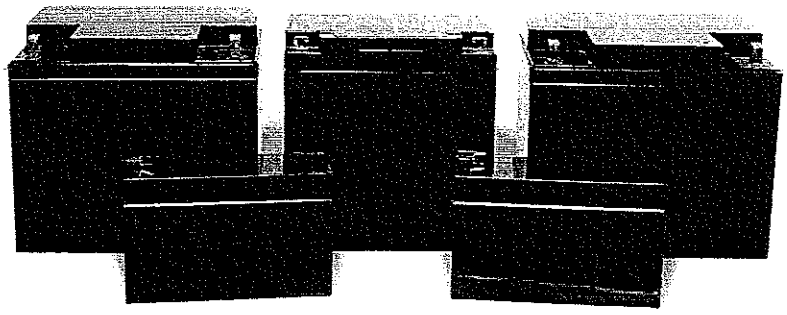
- Rechargeable
- Non-spillable
- Non-hazardous
- Low maintenance
- High energy density

Application

When multiple power supplies are provided, each power supply's battery requirements should be calculated individually. Consult the specific system manual to determine battery capacity requirements.

Safety Information
Due to a battery's low internal resistance and high power density, high levels of short circuit current can develop across battery terminals. Put on protective eye covering and remove all jewelry before working on batteries. Do not rest tools or cables on the battery, and only use insulated tools. Follow all manufacturers installation instructions and diagrams when installing or maintaining batteries.

Sealed Lead-Acid Batteries



GE
Security

U.S.
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F 519 376 7258

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F 852 2142 5063

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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

Case Material	ABS Thermoplastic
Regulatory Information	DOT Class 60, Batteries, non-hazardous, non-spillable
Operating Environment	32° F to 120° F (0° C to 49° C) 0 to 93% RH, Non-condensing

Ordering Information

Catalog Number	Description	Shipping Weight, lb (kg)
12V1A2	1.2 Ah Sealed Lead Acid Battery - 12 Vdc	1.25 (0.57)
12V4A	4.5 Ah Sealed Lead Acid Battery - 12 Vdc	5 (2.27)
12V6A5	7.2 Ah Sealed Lead Acid Battery - 12 Vdc	6 (2.72)
6V8A	8 Ah Sealed Lead Acid Battery - 6 Vdc	4 (1.81)
6V10A	12 Ah Sealed Lead Acid Battery - 6 Vdc	5 (2.27)
12V10A	11 Ah Sealed Lead Acid Battery - 12 Vdc	10 (4.45)
12V17A	18 Ah Sealed Lead Acid Battery - 12 Vdc	13 (5.90)
12V24A	26 Ah Sealed Lead Acid Battery - 12 Vdc	20 (9.07)
12V40A	40 Ah Sealed Lead Acid Battery - 12 Vdc	32 (14.51)
12V50A	50 Ah Sealed Lead Acid Battery - 12 Vdc	40 (18.14)
12V65A	65 Ah Sealed Lead Acid Battery - 12 Vdc	49 (22.23)

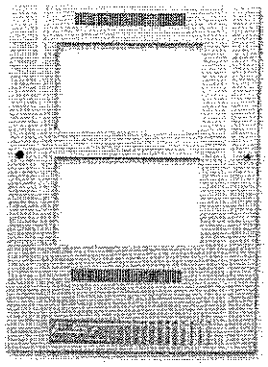
imagination at work

EST3 Cabinets and Chassis

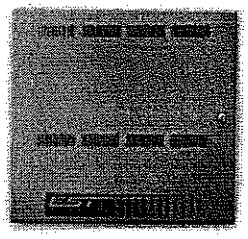
Models: 3-CAB series, 3-RCC series, 3-CHAS7 series

Features

- **Right or left hand hinging of doors**
- **Lag and Keyway holes for quick mounting**
- **Attack rated door for security applications**
- **Knockouts for 3/4 inch conduit**
- **Attractive contour door design on lobby enclosures**
- **Combination flush or surface mounting lobby enclosure design**
- **Remote closet cabinets for electrical closet mounting support up to 65 AMP hour batteries**



3-CAB Series



3-RCC Series

Description

EST3 has a wide selection of cabinet arrangements allowing the greatest use of EST3's flexible modular design. From the elegant contoured door design of the lobby enclosure through the standard design of remote closet cabinets both aesthetics and function are easily addressed.

Lobby enclosure wallboxes are manufactured from #14 AWG cold rolled steel with a gray baked enamel finish. Lobby enclosure doors are manufactured from #14 AWG cold rolled steel and have a modern contoured door design with integral viewing window. The exception is the small lobby enclosure 3-CAB5. The 3-CAB5 wallbox and non-contoured door are #16 AWG cold rolled steel. Lobby enclosure doors come with gray baked enamel or optional red baked enamel finishes. The EST3 lobby enclosures back boxes, doors and chassis units are ordered and shipped separately. The 3-CAB5 lobby enclosure comes complete with door and back box providing space to mount five local rail modules.

The EST3 remote closet cabinet design allows the installation of control panel electronics in electrical closets. The remote closet cabinets have left hand hinged doors and are available with red finish only. Optional display modules used for system diagnostics display, mount behind the closet cabinet door and are not visible with the door closed.

Application

Lobby Enclosures

EST3 lobby enclosures provide space for control, monitoring and display modules. Ideal for mounting in lobby's where appearance is important, maximum mounting flexibility is provided with doors that will mount for right or left hand opening. Lobby enclosures come in several sizes to match individual project requirements.

The **3-CAB5 series** semi-flush or surface mounts. A built in rail assembly provides space for up to five local rail modules, no chassis assembly needed. Back space for 1-1/2 footprints gives room for a power supply and a 1/2 footprint module and 10 AH batteries. The local rail module spaces provide room for amplifiers, common control and annunciation modules.

The **3-CAB7** semi-flush or surface mounts and has a contoured front door with viewing window. Space is provided for two 17 AH batteries and one chassis assembly providing seven local rail module spaces.

The **3-CAB14** semi-flush or surface mounting and has a contoured front door with viewing window. Space is provided for two 17AH batteries and two chassis assemblies each providing seven local rail module spaces.

The **3-CAB21** semi-flush or surface mounts and has a contoured front door with viewing window. Space is provided for two 17AH batteries and three chassis assemblies each providing seven local rail module spaces.

Remote Closet Cabinets

Remote closet cabinets provide an economical way of installing equipment in locations where esthetics are not paramount, like electrical closets. You can have optional display modules used for system diagnostics display mounted behind the front door. These display modules will not be visible with the door closed. Remote closet cabinets are surface mounting and come in sizes providing space for one to three chassis with room for standby batteries. A UL Listed attack rated door having a 2-minute rating is available for the 3-RCC7R cabinet. This door is required for security applications.

Ordering Information

Catalog Number	Description	Equipment Mounting Space	Battery Space	Ship Wt. lb. (Kg)
Lobby Enclosures — Outer doors with viewing window				
3-CAB5	Cabinet w/Wallbox, door and chassis	Five local rail modules One footprint and 1/2 footprint module	Two - 12V10A	30 (13.6)
3-CAB7B	Wallbox only	One Chassis	Four - 6V8A Two - 12V10A Two - 12V17A	
3-CAB7B-E	Wallbox only, EN-54 certified CE			
3-CAB7D(R)	Inner and outer doors for 3-CAB7B	N/A		10 (4.5)
3-CAB7D(R)-E	Inner & outer doors for 3-CAB7B, EN-54 certified CE			
3-CAB14B	Wallbox only	Two Chassis	Four - 6V8A Two - 12V10A Two - 12V17A	42 (19.1)
3-CAB14B-E	Wallbox only, EN-54 certified CE			
3-CAB14D(R)	Inner and outer doors for 3-CAB14B	N/A		15 (6.8)
3-CAB14D(R)-E	Inner & outer doors for 3-CAB14B, EN-54 certified CE			
3-CAB21B	Wallbox only	Three Chassis	Four - 6V8A Two - 12V10A Two - 12V17A	55 (25)
3-CAB21B-E	Wallbox only, EN-54 certified CE			
3-CAB21D(R)	Inner and outer doors for 3-CAB21B	N/A		20 (9.1)
3-CAB21D(R)-E	Inner & outer doors for 3-CAB21B, EN-54 certified CE			
Remote Closet Enclosure — No viewing window				
3-RCC7R	Red wallbox and door	One Chassis	Four - 6V8A Two - 12V10A Two - 12V17A Two - 12V50A	37.5 (17)
3-RCC7R-E	Red wallbox and door, EN-54 certified CE			
ATCK	Attack rated door for 3-RCC7R	N/A		26 (11.8)
3-RCC14R	Red wallbox and door	Two Chassis	Four - 6V8A Two - 12V10A Two - 12V17A Two - 12V50A Two - 12V65[2]	53 (24)
3-RCC14R-E	Red wallbox and door, EN-54 certified CE	Two Chassis		
3-RCC21R	Red wallbox and door	Three Chassis		70 (31.8)
3-RCC21R-E	Red wallbox and door, EN-54 certified CE	Three Chassis		
Chassis Assemblies				
3-CHAS7	Chassis Assembly — Takes one chassis space in wallbox, provides seven local rail module spaces, space for up to two power supplies and a 1/2 footprint module.			8.4 (3.8)
3-ASU	Chassis Assembly — Takes one chassis space in wallbox, provides an audio source unit /w microphone and an inner door filler plate.			15 (6.8)
3-ASU/4	Chassis Assembly —Takes one chassis space in wallbox, provides an audio source unit /w microphone and four local rail module spaces.			15 (6.8)
3-ASU/FT	Chassis Assembly — Takes one chassis space in wallbox, provides an audio source unit /w microphone and Firefighters Telephone			20 (9.1)
3-FTCU	Chassis Assembly — Takes one chassis space in wallbox, provides Firefighters Telephone Control unit and inner door filler plate.			15 (6.8)
Accessories				
3-BATS	Battery Shelf for RCC Enclosures. Takes one chassis space. Room for up to one 65 AH or two 50 AH batteries.			3 (1.36)
3-BTSEN	Battery sensor/distribution module			.5 (.2)
3-TAMP	Tamper switch for 3-CAB7, 3-CAB14 and 3-CAB21 cabinets. Mounts to side of cabinet.			.5 (.2)
3-TAMP5	Tamper switch for 3-CAB5. Mounts to side of cabinet.			.5 (.2)
3-TAMPRCC	3-TAMPRCC Tamper Switch for RCC series cabinets. Mounts to side of cabinet.			.5 (.2)

Notes:

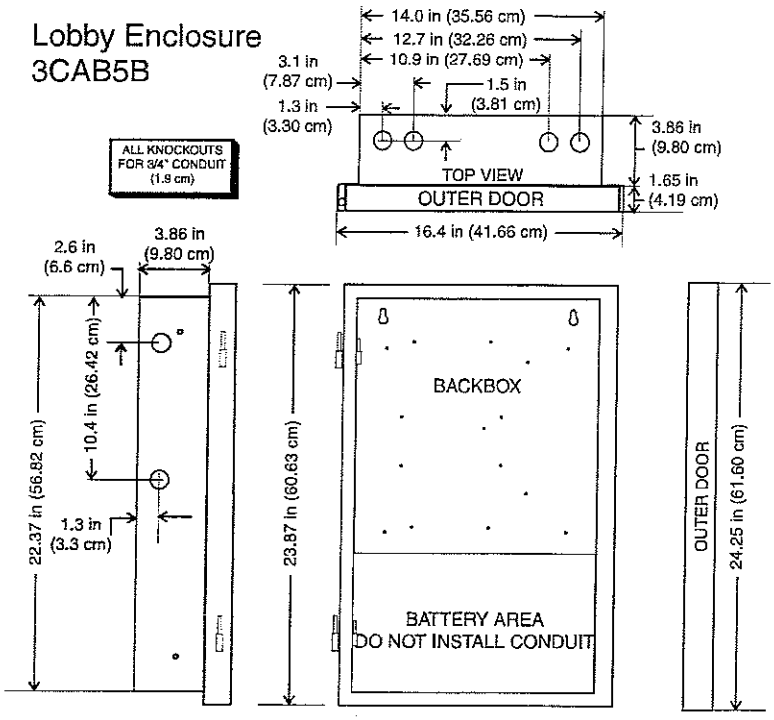
1) All lobby enclosures, wallboxes and doors have a textured gray enamel finish; outer doors are available in red by adding the suffix "R" to the catalog number, i.e. 3-CAB7DR.

2) Remote closet cabinets will support 65 AH batteries with the use of the 3-BATS Battery Shelf, which reduces the enclosure's chassis capacity by one chassis.

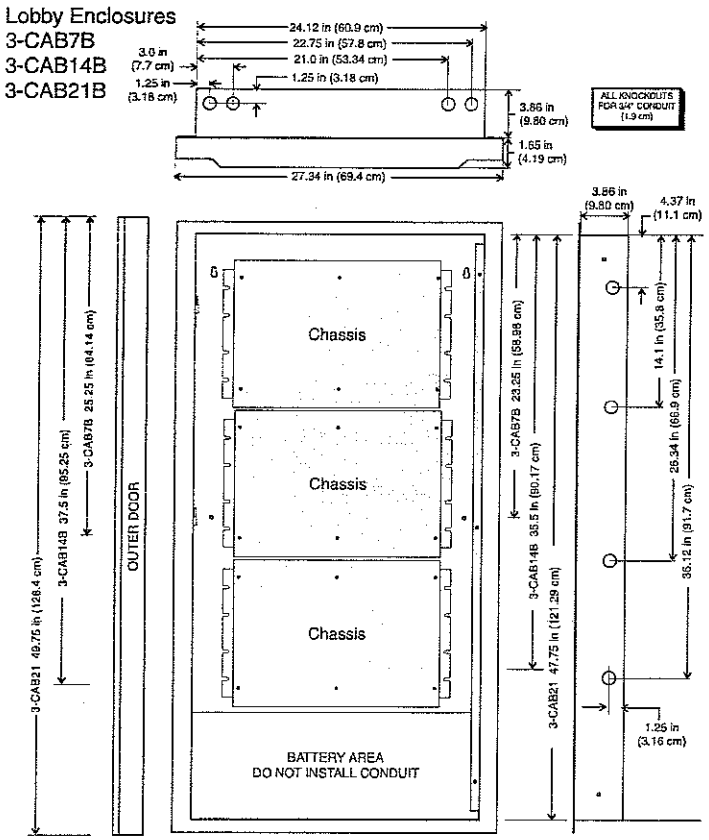
3) The EST3 is modularly listed under the following standards:
UL 864 categories: UOJZ, UOXX, UUKL and SYZV, UL 294 category ALVY, UL 609 category AOTX, UL 636 category ANET, UL 1076 category APOU, UL 365 category APAW, UL 1610 category AMCX, UL 1635 category AMCX
ULC-S527, ULC-S301, ULC-S302, ULC-S303,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

Installation and Mounting

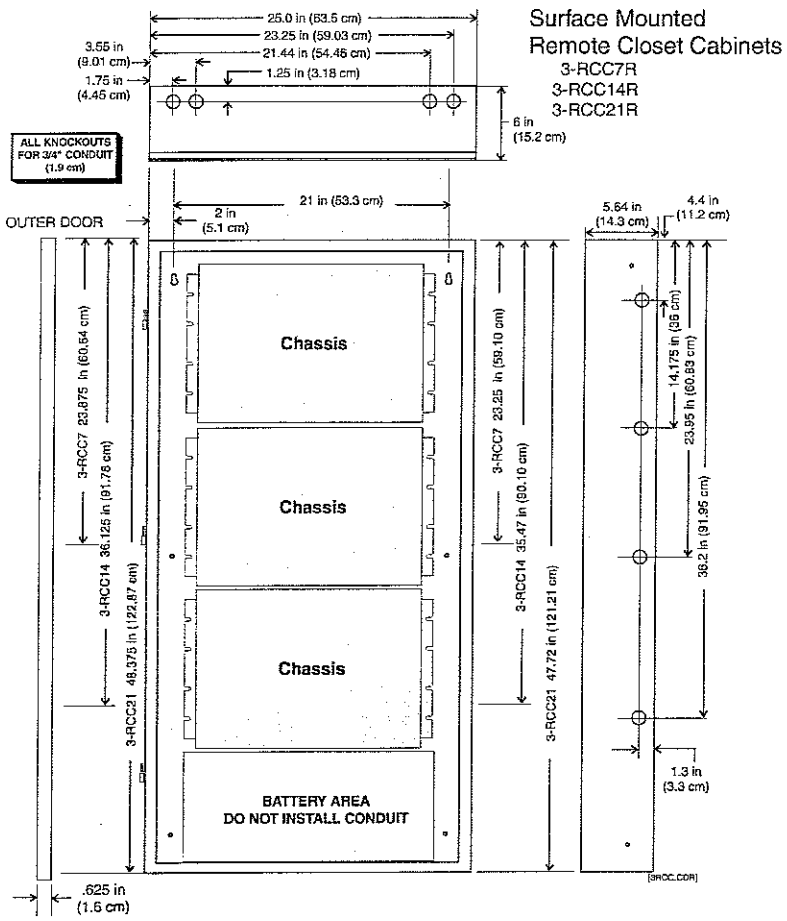
Lobby Enclosure 3CAB5B



Lobby Enclosures 3-CAB7B 3-CAB14B 3-CAB21B



Installation and Mounting



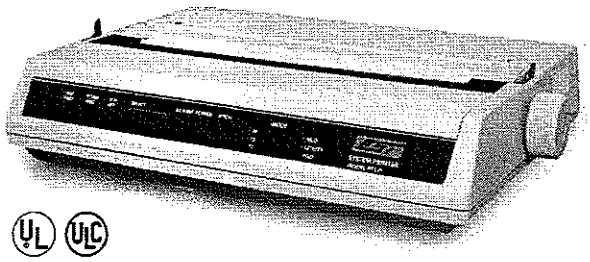
EDWARDS SYSTEMS TECHNOLOGY

System Event Printer

Models PT-1S and PT-1P

Features

- **High speed, bi-directional printing**
- **Serial (model PT-1S) or parallel (model PT-1P) interface**
- **Front panel setup**
- **Supports modems for remote installation**
- **Supports fiber optics module**
- **LED Status indicators**
- **RS-232 direct cable**
- **Printer self-test mode**



Description

The PT-1 series printers are high speed, 9-pin dot matrix type which use standard, continuous tractor feed computer paper. The PT-1 series printers are used to permanently record Life Safety System changes of state. All printed entries contain the date, time, event type and a user defined message for each printed event. The printer is required in proprietary type systems. In local, auxiliary or remote station systems the printer is ancillary and is optional. The printer must be backed up by a UPS in a proprietary system. Printer paper may be fed from the rear or bottom of the printer.

Application

The PT-1S (serial, RS-232 interface) is used when connecting to the CM1(N), CM2N, FCCD, 2-MCM or 3-CPU1. The PT-1P (Parallel interface) is used when the printer is connected to the VDU-3, CCA-1/4/8 or the CGP-1/4/8.

Listings

UL, ULC, MEA, FM, CSFM

Installation

The printer comes from the factory with all DIP switches and operating modes setup for proper operation with the system. The baud rate in some instances may have to be adjusted to provide reliable transmission over long distances. When configuring a system to meet the requirements of proprietary, the printer must be located adjacent to the Fire Command Center.

When the printer is located greater than 50 ft (15.2 m) from the Fire Command Center, Short Haul Modems (model SHM-M or SHM-F) may be used. Short Haul Modems will allow distances up to 5 miles (8 km) @ 2400 Baud. When Short Haul Modems are used the printer is considered ancillary and the connection is not supervised.

When the SHM modules are used with the CM1(N) or CM2N an IOP3A module must be used to properly power the modules. The IOP3A may be located on the inside of the Fire Command Center enclosure.

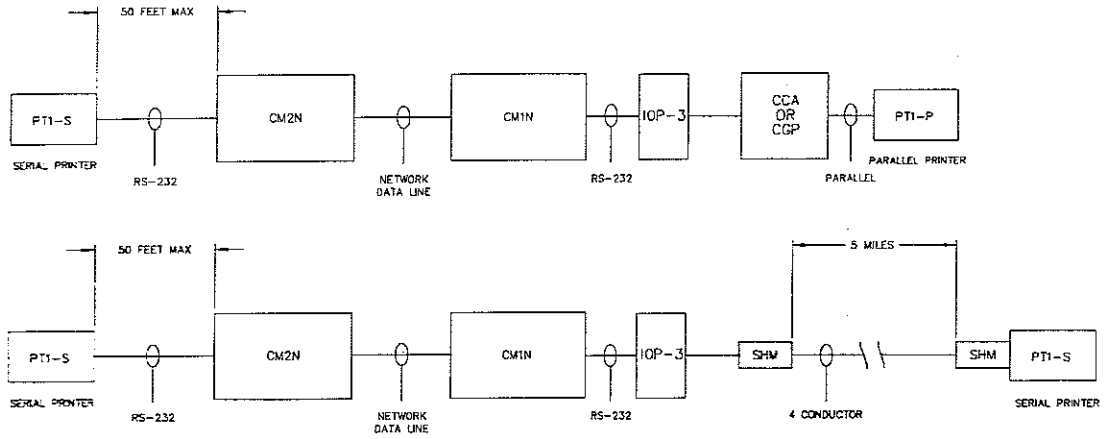
EDWARDS SYSTEMS TECHNOLOGY

U.S. SALES: SARASOTA, FL 941-739-4638; FAX 941-727-1214 • **CANADA SALES:** OWEN SOUND, ON 519-376-2430; FAX 519-376-7258
INTERNATIONAL SALES: 905-270-1711; FAX 905-270-9553 • **CORPORATE HEADQUARTERS:** CHESHIRE, CT • **U.S. MANUFACTURING:** PITTSFIELD, ME

Engineering Specifications

The event and status printer shall be a 9-pin, impact, dot matrix printer with a minimum print speed of 232 characters per second. Print parameters shall be set up with a menu drive program in the printer. The printer shall be capable of serial or parallel communications protocol. The communications speed for RS-232 communications protocol shall be adjustable from 300 to 9600 Baud. The serial or parallel cable shall be supervised. The serial printer shall support Short Haul Modems. The printer shall list the time, date, type and user defined message for each event printed.

Connection Diagram



Specifications

Print Speed	232 cps
Voltage	120 Vac, ±10% 220/240 Vac, ±10%
Power rating	48VA
Frequency	50/60 Hz
MTBF	4000 Hrs @ 25% duty cycle
Size	14.2 x 10.8 x 3.2 inches 36.1 x 27.4 x 8.1 cm
Weight	9.9 lbs (4.5 kg)
Operating Environment	Temperature: 32° - 120°F (0° - 49°C) Humidity: 85% non-condensing

Ordering Information

Model	P/N	Description
PT-1S	360038	Serial Printer
PT-1P	360039	Parallel Printer
PT-1S/220	360070	Serial Printer-220/240 Vac
PT-1P/220	360071	Parallel Printer-220/240 Vac
Related Parts Ordering Information		
SHM-M	360024	Short Haul Modem with male DB-25 connector
SHM-F	360025	Short Haul Modem with female DB-25 connector
IOP3A	130117	Isolated I/O port card

GE
Security

EST Fire & Life Safety
Power Supplies

Overview

The Remote Booster Power Supply is a self-contained 24 Vdc power supply designed to augment fire alarm audible and visual power requirements as well as provide power for auxiliary, access control and security applications. The booster contains all of the necessary circuits to monitor and charge batteries, control and supervise four Class B or two Class A NAC circuits and monitor two controlling inputs from external sources.

Simple switch selection provides a wide variety of operational configurations. Each remote booster power supply is supplied with its own enclosure providing ample space for additional interface modules and battery compartment.

The Remote Booster Power Supply is available in either a 6.5 or 10 amp version @ 24 Vdc.

Standard Features

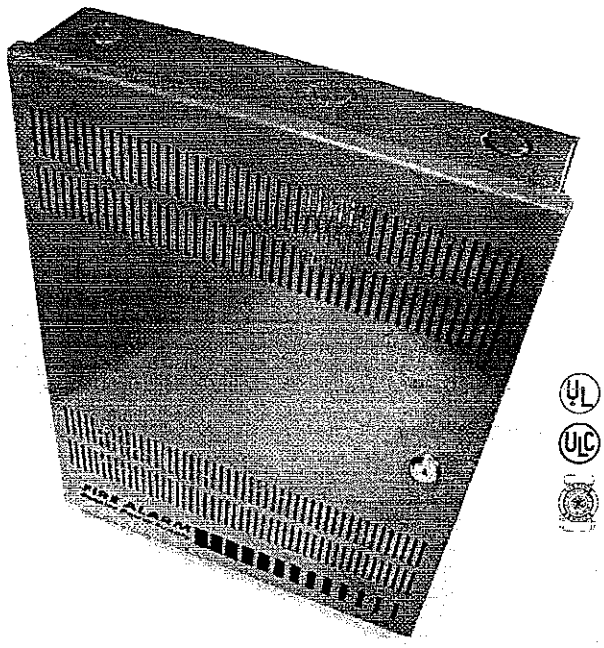
- Available in 10 amp and 6.5 amp versions.
- Includes four independent 3 amp NACs – each configurable as auxiliary outputs.
- Configurable signal rates.
- Field selectable input-to-output correlation.
- Extends power available to Notification Appliance Circuits (NACs).
- Provides strobe synchronization.
- Use as auxiliary Power Supply.
- Extensive UL Listings
  (Listed accessory under the following standards)

Standard	CCN	Description
UL864	UOXX	Fire Alarm Systems
UL636	ANET, UEHX7	Holdup Alarm Units and Systems
UL609	AOTX, AOTX7	Local Burglar Alarm Units and Systems
UL294	ALVY, UEHX7	Access Control Systems
UL365	APAW, APAW7	Police Station Connected Burglar Alarm Units and Systems
ULC-S527	UOXXC	Control Units, Fire Alarm (Canada)
ULC-S303	AOTX7	Local Burglar Alarm Units and Systems (Canada)
ULC-S304	AMCX7	Central and Monitoring Station Burglar Alarm Units (Canada)
C22.2 No. 205	Signaling Equipment (Canada)	
UL1076	APOU, APOU7	Proprietary Burglar Alarm System Units
UL1610	AMCX	Central Station Alarm Unit

- Two inputs allow activation by Signature Series modules or existing NACs.
- NACs configure for either four Class B or two Class A circuits.
- 110 Vac and 230 Vac versions
- On-board status LEDs for easy recognition of wiring faults.
- Supports up to 24 Amp hour batteries for fire and security applications, up to 65 Amp hour for access control applications.

Remote Booster Power Supplies

BPS6A, BPS10A



Application

The Remote Booster Power Supply provides additional power for audible and visual devices helping remove system capacity or site application constraints. The booster may also be used to power auxiliary, access control and security devices, in addition to fire devices.

Fault conditions detected by the BPS will open the main panel's NAC. This initiates a trouble condition and eliminates the need to wire a separate trouble contact back to the control panel. During alarm condition, detected faults are overridden and the main panel's default configuration is continuous 24 Vdc on all NACs typically used to drive visual devices. On board trouble contact is supplied for applications requiring trouble contact monitoring.

The booster power supply provides the capability to maximize available power by being able to supply power for multiple services including Access Control, Security and Fire. For security applications, space is provided to mount a tamper switch in the cabinet. When used for Fire Alarm notification with Genesis Notification appliances, the booster provides the ability to synchronize strobes as well as horn signals. The booster flexibility allows synchronization with upstream devices, or, the booster may be used to synchronize downstream devices, as well as other boosters and their connected devices. Up to 10 boosters deep may be configured while maintaining strobe synchronization.

BPS notification appliance circuits easily configure for either of two signaling rates: 3-3-3 temporal or continuous. California rate is also available on certain models. This makes the BPS ideal for applications requiring signaling rates not available from the main panel. It also allows independent setup of a notification appliance circuit without interfering with the main panel and its initiating circuits.

In addition to the generated signal rates, the BPS can also be configured to follow the signal rate of the main panel's notification appliance circuit. This allows seamless expansion of existing NACs.

The BPS includes seven on-board LED indicators: one for each resident NAC; one for battery supervision; one for ground fault; and, one for ac power. The trouble contact has a sixteen second delay when an ac power failure or brownout condition is detected. This reduces the reporting of troubles during short duration ac brownouts.

NAC configuration options include: ac power fail delay (16 seconds or 6 hours); sensing input to NAC output correlations; and, auxiliary outputs. All NACs are configurable as auxiliary outputs. Auxiliary outputs can be always on, or off after 30 seconds without ac power. As auxiliary output, the booster may power access control and security devices. Should an overcurrent occur, the booster automatically opens the circuit. The booster automatically restores the circuit when the overcurrent is removed. Jumpers configure the BPS for Class A or Class B wiring.

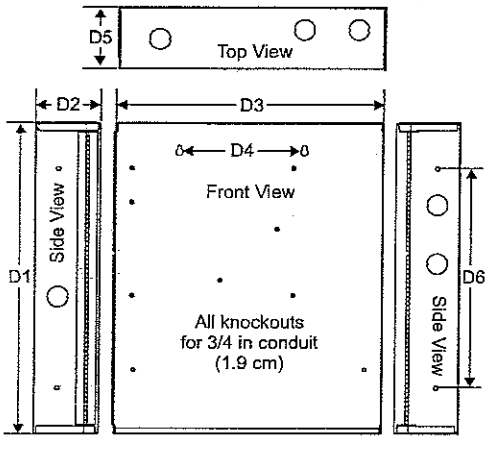
Engineering Specification

Supply where needed GE Security BPS series Booster Power Supplies as an extension of Notification Appliance Circuits. The extension shall be in the form of a stand alone booster power supply. The supply must incorporate its own standby batteries. Batteries must be sized for <24>, <60> hours of standby followed by <5>, <30> minutes of alarm. It must be possible to support up to 24 Amp hour batteries.

The booster supply must incorporate four independent supervised Notification Appliance Circuits. It shall be possible to configure the NACs to follow the main panel's NAC or activate from intelligent Signature Series modules. The booster NACs must be configurable to operate independently at any one of the following rates: continuous, California Rate, or 3-3-3 temporal. Fault conditions on the booster shall not impede alarm activation of host NAC circuits.

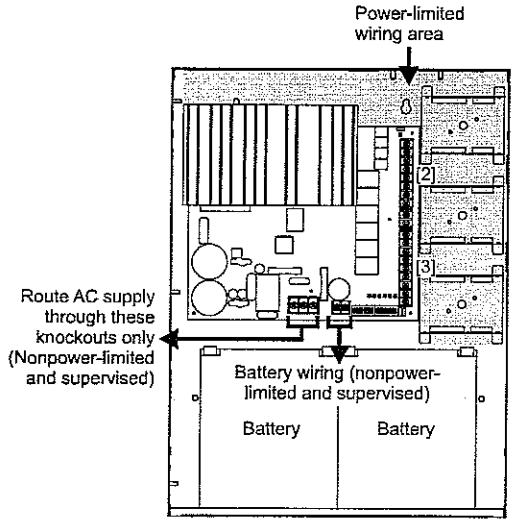
The booster must be able to provide concurrent power for Notification devices, Security devices, Access Control equipment and Auxiliary devices such as door holders. The BPS must provide the ability to synchronize Genesis series strobes and horns.

Dimensions



D1	D2	D3	D4	D5	D6
17.0 in (43.2 cm)	3.5 in (8.9 cm)	13.0 in (33.0 cm)	6.5 in (16.5 cm)	3.375 in (8.6 cm)	12.0 in (30.4 cm)

Wire routing



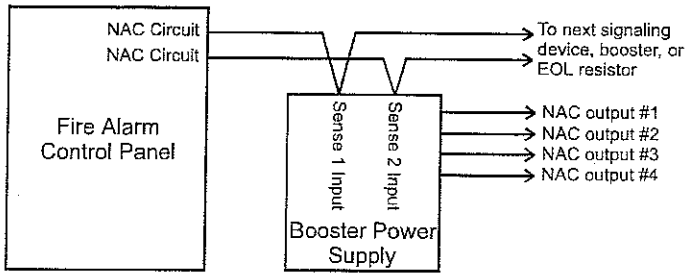
Notes

1. Maintain 1/4-inch (6 mm) spacing between power-limited and non-power-limited wiring or use type FPL, FPLR, or FPLP cable per NEC.
[2] Power-limited and supervised when not configured as auxiliary power. Non-supervised when configured as auxiliary power.
[3] Source must be power-limited. Source determines supervision.
4. When using larger batteries, make sure to position the battery terminals towards the door.

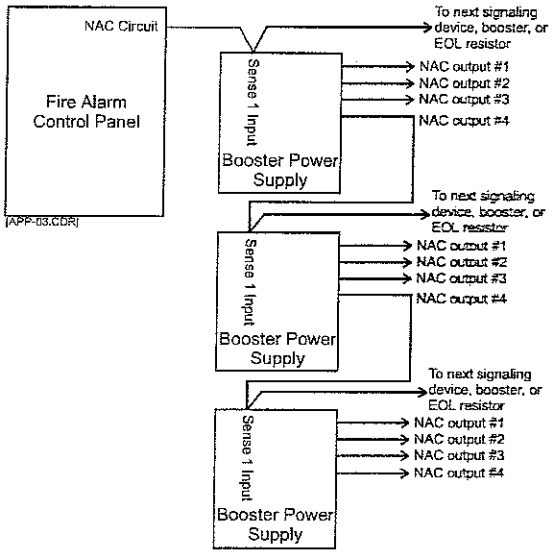
Typical Wiring

Single booster anywhere on a notification appliance circuit

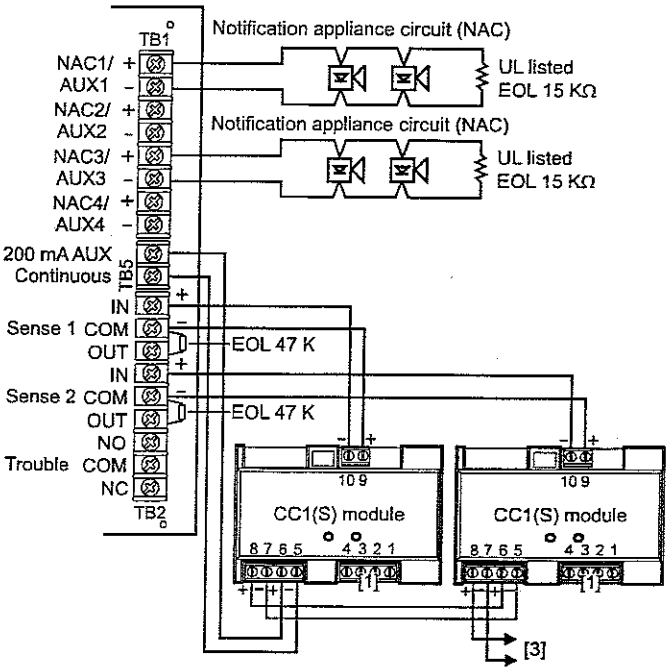
Existing NAC end-of-line resistors are not required to be installed at the booster's terminals. This allows multiple boosters to be driven from a single NAC circuit without the need for special configurations.



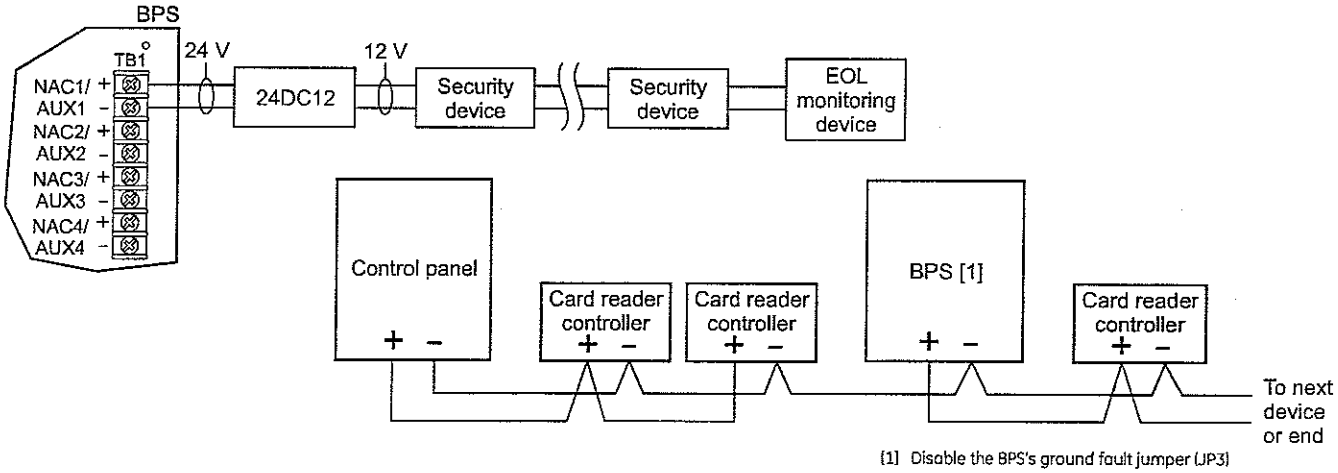
Multiple boosters cascaded from a single notification appliance circuit



Multiple CC1(S) modules using the BPS's sense inputs



Security and access



[1] Disable the BPS's ground fault jumper (JP3)

GE
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

Model	6.5 amp Booster	10 amp Booster
AC Line Voltage	120VAC or 220-240VAC 50/60Hz 250 watts	120VAC or 220-240VAC 50/60Hz 375 watts
Notification Appliance Circuit Ratings	3.0A max. per circuit @ 24Vdc nominal 6.5A max total all NACs	3.0A max. per circuit @ 24Vdc nominal 10A max total all NACs
Trouble Relay	2 Amps @ 30Vdc	
Auxiliary Outputs	Four configurable outputs replace NACs 1, 2, 3 or 4. as auxiliary outputs and 200 mA dedicated auxiliary. (See note 2.)	
Input Current (from an existing NAC)	3mA @ 12Vdc, 6mA @ 24Vdc	
Booster Internal Supervisory Current	70mA	
Signature Mounting Space	Accomodates three two-gang modules.	
Maximum Battery Size	10 Amp Hours (2 of 12V10A) in cabinet up to 24 Amp hours with external battery cabinet for fire and security applications; up to 65 Amp hours for access control applications in external battery box.	
Terminal Wire Gauge	18-12 AWG	
Relative Humidity	0 to 93% non condensing @ 32°C	
Temperature Rating	32° to 120°F (0° to 49°C)	
NAC Wiring Styles	Class A or Class B	
Output Signal Rates	Continuous, California rate, 3-3-3 temporal, or follow installed panel's NAC. (See note 1.)	
Ground Fault Detection	Enable or Disable via jumper	
Agency Listings	UL, ULC, CSFM	

Notes
1. Model BPS*CAA provides selection for California rate, in place of temporal.
2. Maximum of 8 Amps can be used for auxiliary output.

Ordering Information

Catalog Number	Description	Shipping Wt. lb (kg)
BPS6A	6.5 Amp Booster Power Supply	13 (5.9)
BPS6A/230	6.5 Amp Booster Power Supply (220V)	13 (5.9)
BPS6CAA	6.5 Amp Booster Power Supply with California rate	13 (5.9)
BPS10A	10 Amp Booster Power Supply	13 (5.9)
BPS10A/230	10 Amp Booster Power Supply (220V)	13 (5.9)
BPS10CAA	10 Amp Booster Power Supply with California rate	13 (5.9)

Related Equipment		
12V6A5	7.2 Amp Hour Battery, two required	3.4 (1.6)
12V10A	10 Amp Hour Battery, two required	9.5 (4.3)
3-TAMP	Tamper switch	
BC-1	Battery Cabinet (up to 2 - 40 Amp Hour Batteries)	58 (26.4)
BC-2	Battery Cabinet (up to 2 - 17 Amp Hour Batteries)	19 (8.6)
12V17A	18 Amp Hour Battery, two required (see note 1)	13 (5.9)
12V24A	24 Amp Hour Battery, two required (see note 1)	20 (9.07)
12V40A	40 Amp Hour Battery, two required (see notes 1, 2)	32 (14.5)
12V50A	50 Amp Hour Battery, two required (see notes 1, 2)	40 (18.14)
12V65A	65 Amp Hour Battery, two required (see notes 1, 2)	49 (22.2)

Notes
1. Requires installation of separate battery cabinet.
2. BPS supports batteries greater than 24 Amp hours for access control applications only.

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Overview

SIGA-CC1S and MCC1S Synchronization Output Modules are intelligent analog addressable devices that form part of GE Security's Signature line of products. The actual operation of the SIGA-CC1S and MCC1S is determined by the "personality code" selected by the installer, which is downloaded to the module from the Signature loop controller during system configuration.

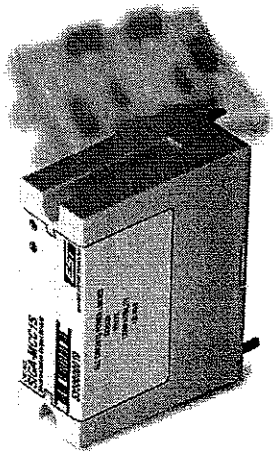
Depending on their assigned personality, Synchronization Output Modules may be used as a signal power riser selector to provide synchronization of fire alarm signals across multiple zones, or for connecting, upon command from the loop controller, supervised Class B signal or telephone circuits to their respective power inputs. The power inputs may be polarized 24 Vdc to operate audible and visible signal appliances or 25 and 70 VRMS to operate audio evacuation speakers and firefighter's telephones.

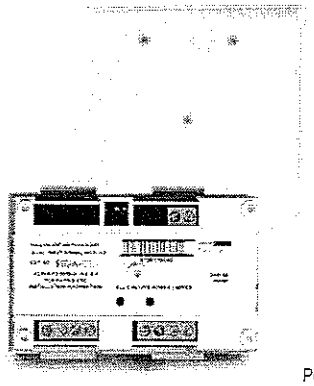
Standard Features

- **Provides UL 1971-compliant auto-sync output for visual signals**
  Use for connecting a supervised output circuit to a supervised 24 Vdc riser input and synchronizing multiple notification appliance circuits.
- **Functions as an audible signal riser selector**
  Use as a synch module or for connecting supervised 24 Vdc Audible/Visible signal circuits, or 25 and 70 VRMS Audio Evacuation and Telephone circuits to their power inputs.
- **Built-in ring-tone generator**
  When configured for telephone circuits, the SIGA-CC1S generates its own ring-tone signal, eliminating the need for a separate ring-tone circuit.
- **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.

Synchronization Output Module

SIGA-CC1S, MCC1S





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Application

The SIGA-CC1S mounts to a standard North American two-gang electrical box, making it ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

The SIGA-MCC1S is part of the UIO family of plug-in Signature Series modules. It functions identically to the SIGA-CC1S, but takes advantage of the modular flexibility and easy installation that characterize all UIO modules. Two- and six-module UIO motherboards are available. These can accommodate individual risers for each on-board module, or risers that are shared by any combination of its UIO modules. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in GE Security enclosures.

Personality Codes

The operation of the SIGA-CC1S 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.

Personality Code 5: Signal Power or Audio Evacuation (single riser). Configures the module for use as a Class B Audible/Visible Signal power (24 Vdc polarized) or Audio Evacuation (25 or 70 VRMS) power selector. The ring-tone generator is disabled. The output circuit is monitored for open or shorted wiring. If a short exists, the control panel inhibits the activation of the audible/visible signal circuit to prevent connection to the power circuit.

Personality Code 6: Telephone with ring-tone (single riser). Configures the module for use as a Telephone power selector. When a telephone handset is plugged into its jack or lifted from its hook, the module generates its own Ring-Tone signal. A separate ring-tone circuit is not needed. The module sends this signal to the control panel to indicate that an off-hook condition is present. When the system operator responds to the call, the ring-tone signal is disabled.

Personality Code 25: Visual Signal Synchronization. This personality code configures the module to provide synchronization of fire alarm signals across multiple zones. It functions as a signal power (24 Vdc) riser selector. The output wiring is monitored for open circuits and short circuits. A short circuit will cause the fire alarm control panel to inhibit the activation of the audible/visual signal circuit so the riser is not connected to the wiring fault.

Warnings & Cautions

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

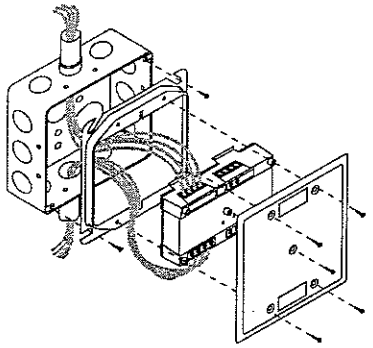
GE Security recommends that these modules be installed according to latest recognized edition of national and local fire alarm codes.

Compatibility

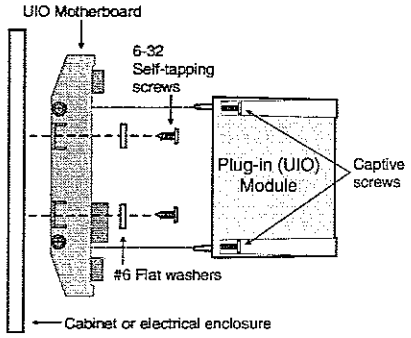
The Synchronization Output Module is compatible with GE Security's Signature Loop Controller operating under EST3 version 2.0 or higher, and QuickStart Signature Loop Intelligent Controller.

Installation

The SIGA-CC1S: mounts to North American 2-1/2 inch (64 mm) deep 2-gang boxes and 1-1/2 inch (38 mm) deep 4 inch square boxes with 2-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-MCC1S: mount the UIOxR 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). UIOxR 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.

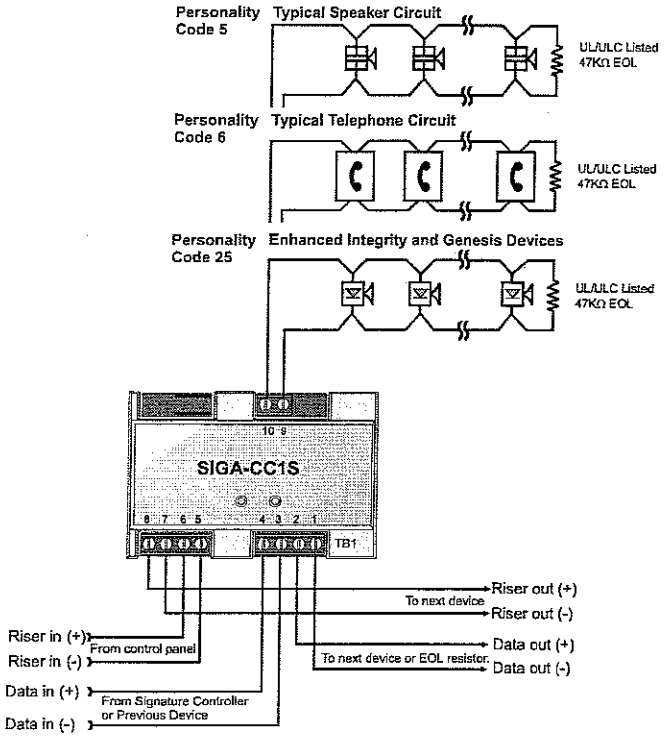
Testing & Maintenance

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 (de-activated) temporarily, from the control panel.

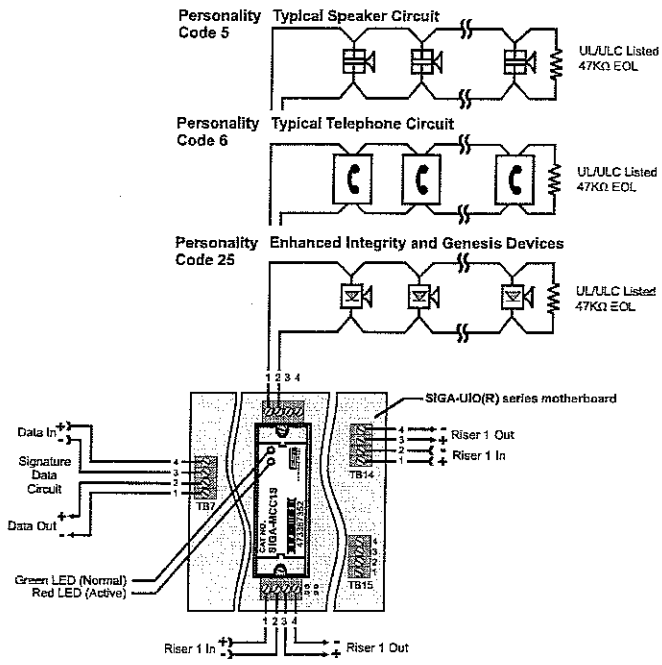
Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and ULC CAN/ULC 536 standards.

Typical Wiring

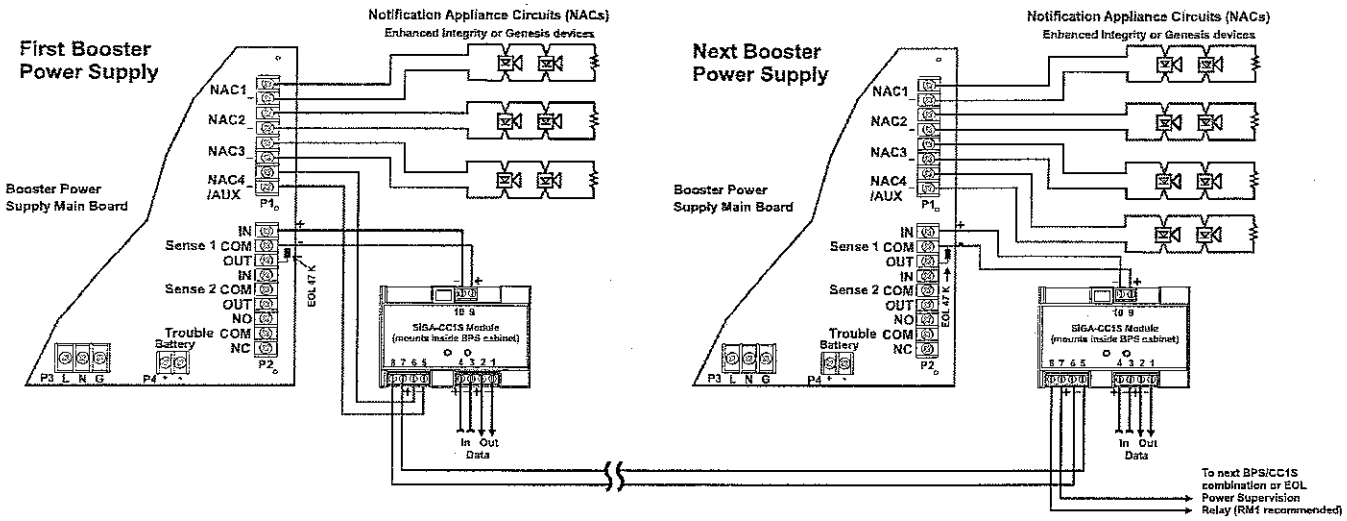
SIGA-CC1S (Standard Mount)



SIGA-MCC1S (UIO Mount)



Synchronization across NACs on multiple Booster Power Supplies



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Specifications

Catalog Number	SIGA-CC1S	SIGA-MCC1S
Mounting	North American 2½ inch (64 mm) deep two-gang boxes and 1½ inch (38 mm) deep 4 inch square boxes with 2-gang covers and SIGA-MP mounting plates	Plugs into UIO2R, UIO6R or UIO6 Motherboards
Description	Synchronization Output Module	
Type Code	50 (factory set)	
Address Requirements	Uses one module address	
Wiring Terminations	Suitable for #12 to #18 AWG (2.5 mm² to 0.75mm²)	
Operating Current	Standby = 223µA Activated = 100µA	
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)	
Output Rating	24 Vdc = 2 amps 25 V Audio = 50 watts 70 V Audio = 35 watts	
Construction	High Impact Engineering Polymer	
Storage and Operating Environment	Operating: 32°F to 120°F (0°C to 49°C) Storage: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 93% RH	
LED Operation	Green LED - Flashes when polled Red LED - Flashes when in alarm/active	
Compatibility	Use with: Signature Loop Controller under EST3 version 2.0 or higher	
Agency Listings	UL, ULC, CSFM, MEA	

Ordering Information

Catalog Number	Description	Shipping Wt. lbs (kg)
SIGA-CC1S	Synchronization Output Module (Standard Mount) - UL/ULC Listed	0.5 (0.23)
SIGA-MCC1S	Synchronization Output Module (UIO Mount) - UL/ULC Listed	0.18 (0.08)

Related Equipment		
27193-21	Surface Mount Box - Red, 2-gang	2 (1.2)
27193-26	Surface Mount Box - White, 2-gang	2 (1.2)
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)
235196P	Bi-polar Transient Protector	0.01 (0.05)
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)

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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.

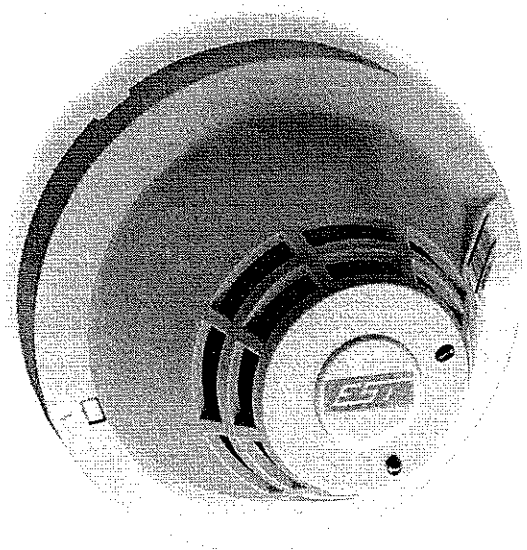
Fast Stable Communication - On-board intelligence means less information needs to be sent between the detector and the loop controller. Other than regular supervisory polling response, the detector only needs to communicate with the loop controller when it has something new to report.

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

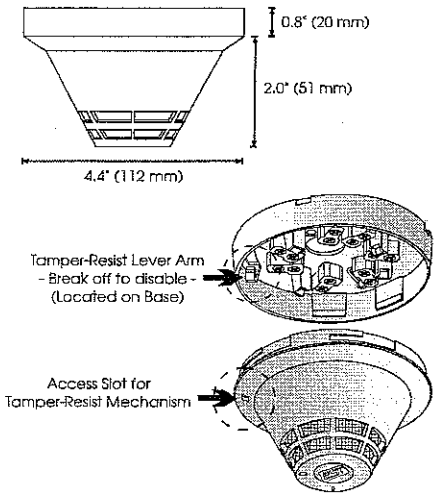
SIGA-PS



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.

SIGA-AB4G Audible Base | SIGA-SB Standard Base | SIGA-IB Isolator Base | SIGA-RB Relay Base | SIGA-LED Remote LED

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.

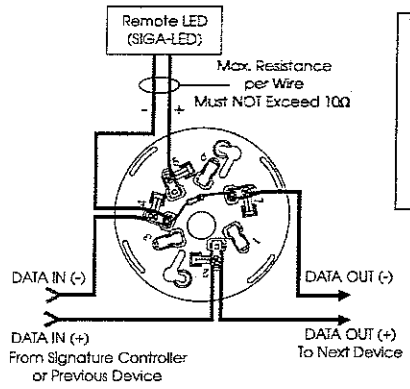
Test Fire	SIGA-IS Ion	SIGA-PS Photo	SIGA-HRS and SIGA-HFS Rate-of-Rise/ Fixed Temp.	SIGA-PHS Photo Heat 3D	SIGA-IPHS Ion/Photo/Heat 4D
Open Wood	**optimum**	unsuitable	**optimum**	very suitable	**optimum**
Wood Pyrolysis	suitable	**optimum**	unsuitable	**optimum**	**optimum**
Smouldering Cotton	very 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.

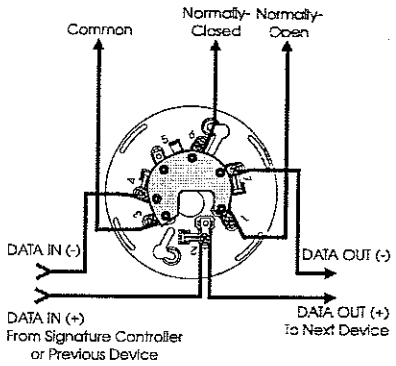
Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

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 (-)

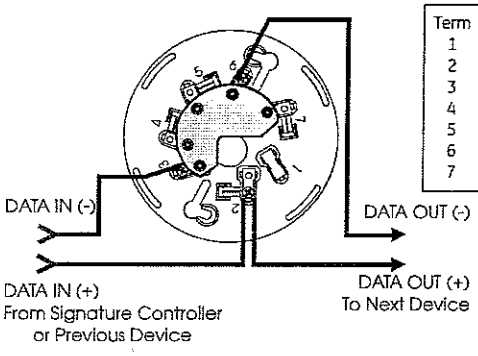
Relay Detector Base, SIGA-RB, SIGA-RB4



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

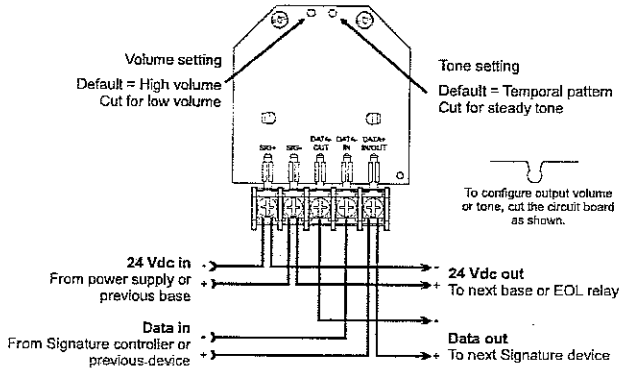
CONTACT RATING
1.0 Amp @ 30 VDC
(Pilot Duty)

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



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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)

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Overview

Signature Series Model SIGA-HFS and SIGA-HRS Intelligent Heat Detectors gather analog information from their fixed temperature and/or rate-of-rise heat sensing elements 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.

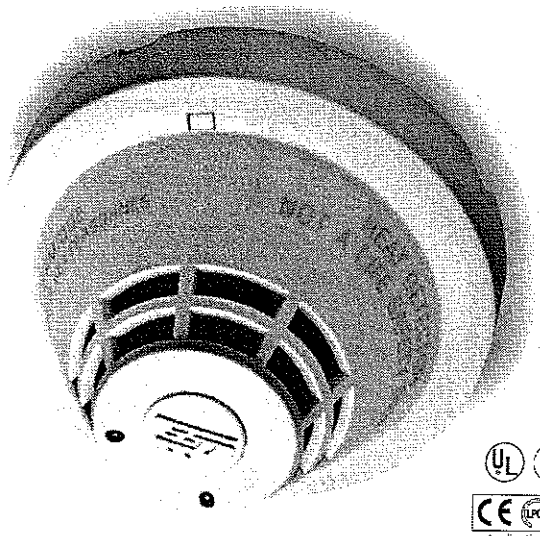
Standard Features

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

- 70 foot (21.3 meter) spacing
- 15° F (9° C)/min rate-of-rise/135° F (57° C) ft. and 135° F (57 ° C) fixed temperature type
- Intelligent detector c/w integral microprocessor
- Non-volatile memory
- Automatic device mapping
- Electronic addressing
- Identification of defective detectors
- Twin RED/GREEN status LEDs
- Standard, relay, fault isolator, and audible mounting bases
- Designed and manufactured to ISO 9001 standards

Intelligent Heat Detectors

SIGA-HFS & SIGA-HRS



Application Notes Available

Signature Series Overview

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. This information is accessible for review any time at the control panel, PC, or by using the SIGA-PRO Signature Program/Service Tool.

In the unlikely event that an unwanted alarm does take place, the control panel's history file can be called up to help isolate the problem and prevent it from happening again.

Automatic Device Mapping - The loop controller learns where each device's serial number address is installed relative to other devices on the circuit. This 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. The history log for the detector remains relevant and intact regardless of its new location.

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 wire branches (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.

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. Each detector on the circuit continues to collect and analyze information from its surroundings. Both the SIGA-HRS and SIGA-HFS detectors alarm if the ambient temperature increases to 135°F (57°C) or for the SIGA-HRS only, the temperature increases at a rate exceeding 15°F (9°C)/minute. If the detector is mounted to a relay base, the relay operates. Similarly, if it is mounted to an audible base, the on-board horn sounds.

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 control panel when it has something new to report. This provides very fast control panel response time and allows a lower baud rate (speed) to be used for communication on the circuit. The lower baud rate offers several advantages including:

- less sensitivity to circuit wire characteristics
- less sensitivity to noise glitches on the cable
- less emitted noise from the data wiring
- twisted or shielded wiring is not required

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

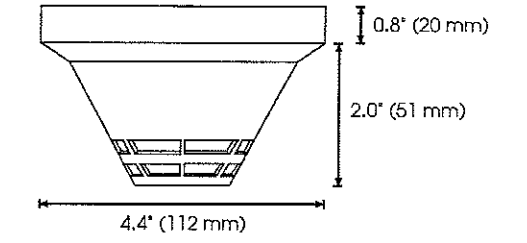
Installation Spacing - The SIGA-HFS (fixed temperature) and the SIGA-HRS (fixed temperature/rate-of-rise combination) intelligent heat detectors are rated for installation at up to 70 foot (21.3 meter) spacing. These detectors may be installed in rooms with ambient temperatures up to 100°F (38°C).

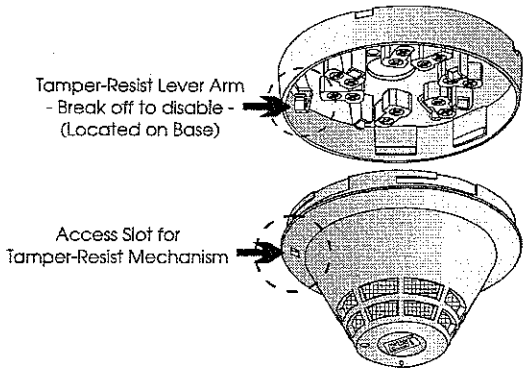
Status LEDs - Twin LEDs are visible from any direction. A flashing GREEN LED shows normal system polling from the loop controller. A flashing RED LED means the detector is in alarm state. Both LEDs on steady shows alarm state - stand-alone mode. Normal GREEN LED activity is not distracting to building occupants, but can be quickly spotted by a maintenance technician.

Quality and Reliability - GE Security detectors are manufactured in North America to strict international ISO 9001 standards. All electronics utilize surface mount technology (SMT) for smaller size and greater immunity to RF noise. A conformal coating is used for humidity and corrosion resistance. All critical contacts are gold plated.

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.





Application

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.

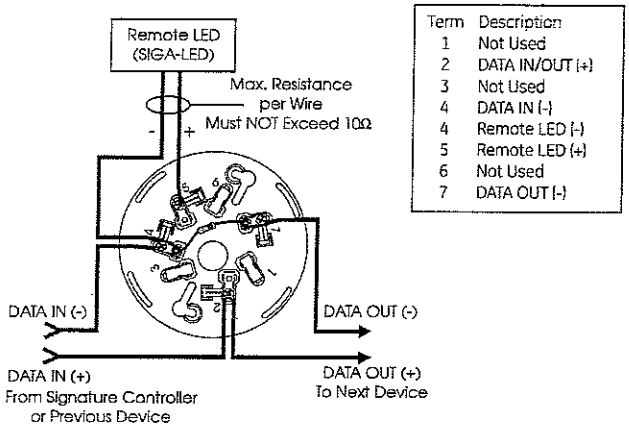
Test Fire	SIGA-IS Ion	SIGA-PS Photo	SIGA-HRS and SIGA-HFS Rate-of-Rise/ Fixed Temp.	SIGA-PHS Photo Heat 3D	SIGA-IPHS Ion/Photo/Heat 4D
Open Wood	**optimum**	unsuitable	**optimum**	very suitable	**optimum**
Wood Pyrolysis	suitable	**optimum**	unsuitable	**optimum**	**optimum**
Smouldering Cotton	very 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 will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.5mm²), and #12 AWG (2.5mm²) wire sizes.

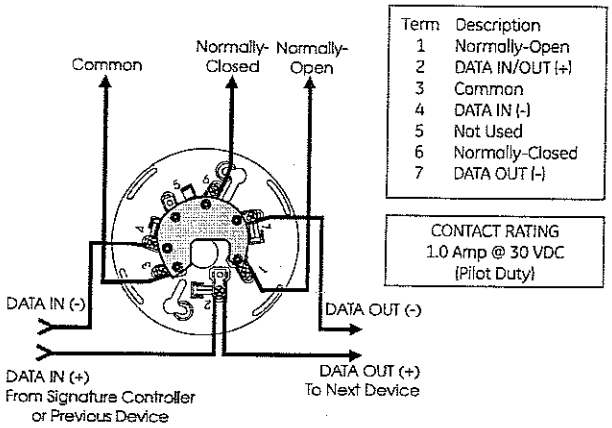
Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

Standard Detector Base, SIGA-SB, SIGA-SB4



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

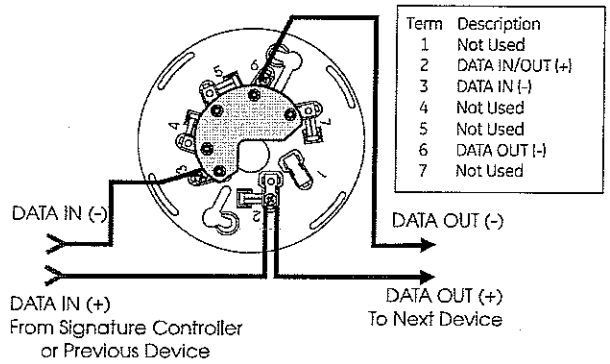
Relay Detector Base, SIGA-RB, SIGA-RB4



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

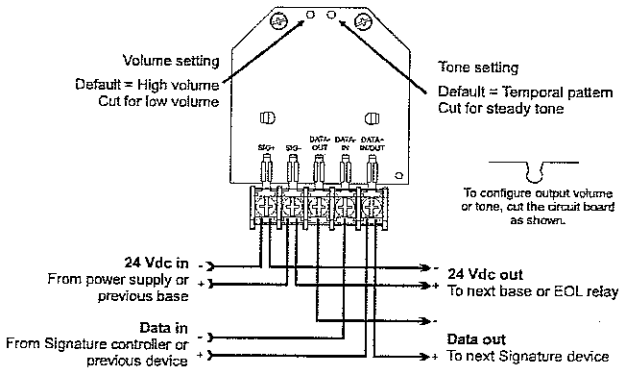
CONTACT RATING
1.0 Amp @ 30 VDC
(Pilot Duty)

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



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 four inch square 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.

SIGA-AB4G Audible Base | SIGA-SB Standard Base | SIGA-IB Isolator Base | SIGA-RB Relay Base | SIGA-LED Remote LED

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
- if the isolator next to the short closes, it 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.

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 heat cannot reach the detector. Heat from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector to alarm it.

The heat sensor in this device only provides a source of information to supplement the information provided by photoelectric or ionization smoke detectors which may be located nearby. The heat detector by itself does NOT provide life safety protection. Under no circumstances should heat detectors be relied on as the sole means of fire protection.

Compatibility

The SIGA-HFS and SIGA-HRS detectors are compatible only with GE Security's Signature Loop Controller.

Specifications

Catalog Number	SIGA-HFS	SIGA-HRS
Heat Sensing Element	Fixed Temperature	Fixed & Temperature/ Rate-of-Rise
Alarm Point	Alarms at 135°F (57°C) Ambient	Alarms at 135°F (57°C) Ambient or Temp. increase above 15°F (9°C) per min.
UL Listed Detector Spacing	70 feet (21.3 meters) center to center spacing	
Operating and Storage Environment	Operating Temp: 32°F to 100°F (0°C to 38°C) Storage Temp: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 93% RH, Non-Condensing	
Operating Voltage	15.2 to 19.95 Vdc (19 Vdc nominal)	
Operating Current	Quiescent: 45µA @ 19 V Alarm: 45µA @ 19V Emergency Stand-alone Alarm Mode: 18mA Pulse Current: 100 µA (100 msec)	
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	

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-HFS	Intelligent Fixed Temperature Heat Detector - UL/ULC Listed	0.5 (0.23)
SIGA-HRS	Intelligent Fixed Temperature/Rate-of-Rise Heat Detector - UL/ULC Listed	
Accessories		
SIGA-SB	Detector Mounting Base	0.2 (.09)
SIGA-SB4	4-inch Detector Mounting Base c/w SIGA-TS Trim Skirt	
SIGA-RB	Detector Mounting Base w/Relay	
SIGA-RB4	4-inch Detector Mounting Base /w Relay c/w SIGA-TS Trim Skirt	
SIGA-IB	Detector Mounting Base w/Fault Isolator	
SIGA-IB4	4-inch Detector Mounting Base w/ Fault Isolator c/w SIGA-TS Trim Skirt	
SIGA-LED	Remote Alarm LED	
SIGA-AB4G	Audible (Sounder) Base	0.3 (0.15)
SIGA-TS4	Trim Skirt (supplied with 4-inch bases)	0.1 (.04)

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F 519 376 7258

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F 852 2142 5063

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F 61 3 9259 4799

Europe
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F 32 2 721 86 13

Latin America
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F 305 593 4300

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Overview

The GE Security *SuperDuct* Signature Series smoke detector is the most advanced and most reliable device in its class. Designed for easy installation and superb reliability, *SuperDuct* represents the perfect balance of practical design and advanced technology.

SuperDuct detectors feature a unique design that speeds installation and simplifies maintenance. Removable dust filters, conformally coated circuit boards, and optional water-resistant gaskets keep contaminants away from components, ensuring years of trouble-free service. When cleaning is required, the assemblies come apart easily and snap back together in seconds.

A Signature Series photoelectric sensor is incorporated into the design of each SIGA-SD duct smoke detector. This sensor inherits the power and benefits of this exceptional line of intelligent devices.

Signature Series sensors gather analog information from their smoke sensing elements and convert it into digital signals. The sensor measures and analyses these signals and 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, which virtually eliminates unwanted alarms.

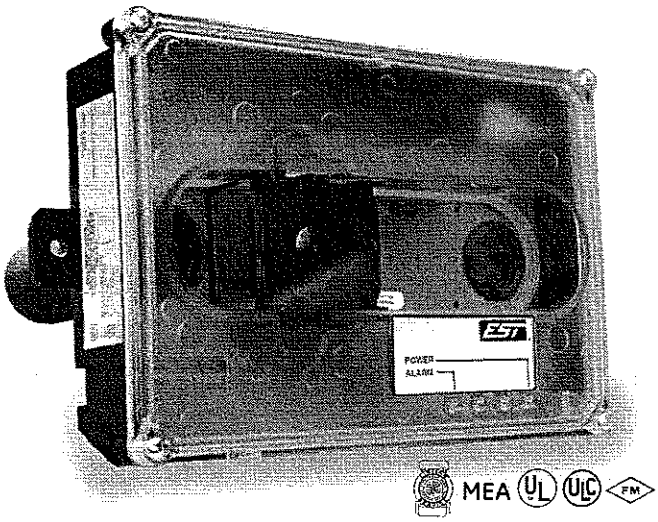
WARNING: Duct detectors have specific limitations. Duct detectors are not a substitute for an open area smoke detector. Duct detectors are not a substitute for early warning detection or a replacement for a building's regular fire detection system. Smoke detectors are not designed to detect toxic gases which can build up to hazardous levels in some fires. These devices will not operate without electrical power. As fires frequently cause power interruptions, GE Security suggests you discuss further safeguards with your local fire protection specialist.

Standard Features

- Less than 2" deep for easy installation and applications where space is tight
- -20 to 158 °F (-29 to 70 °C) operating range with 100 ft/min. to 4,000 ft/min air velocity rating assures reliability under harsh environmental conditions
- Status LEDs remain visible through clear assembly cover
- Cover monitor switch for added security
- Standard sampling tube spacing for easy drop-in migration from other detectors
- Sampling tube can be installed with or without the cover in place and can be rotated in 45-degree increments to ensure proper alignment with duct airflow
- 15.2 to 19.95 Vdc operation
- Magnet-activated test switch
- One Form C auxiliary alarm relay for controlling ancillary equipment (e.g., HVAC controls)
- No special tools required for easy access to field connections
- Signature Series intelligence
- Environmental compensation with differential sensing for reliable, stable, and drift-free sensitivity
- Wide 0.79% to 2.46% obscuration/ft. smoke sensitivity
- Identification of dirty or defective detectors

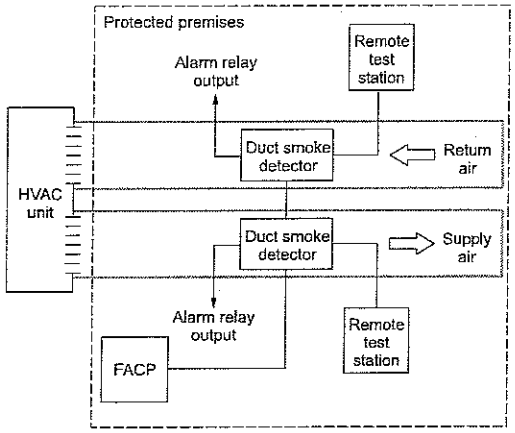
Intelligent Duct Smoke Detector

SIGA-SD



Application

SuperDuct detectors are ideally suited to duct smoke detection applications where early indication of combustion is required within the confined space of ventilation ductwork. Its primary purpose is to provide early warning of an impending fire and to prevent smoke from circulating throughout the building. It is typically used to detect smoke in the supply side of the HVAC system but can provide supervision of the return side as well.



SuperDuct detectors continually sample air flow in the HVAC duct and initiate an alarm condition whenever smoke is detected. An alarm is activated when the quantity (percent obscuration) of combustion products in that air sample exceeds the detector's sensitivity setting.

Signature Series Intelligence

Like all Signature detectors, the SIGA-SD features electronic addressing and issues a dirty sensor warning when it reaches its preset limit. The dirty sensor warning indicates the sensor is operating within its specified limits but is in need of servicing. When the detector's ability to compensate for environmental changes has reached its limit, the duct smoke detector signals a trouble condition.

The SIGA-SD also uses differential sensing to prevent gradual environmental changes from triggering unwanted alarms. A rapid change in environmental conditions, such as smoke from a fire, causes the detector to signal an alarm state, but dust and debris accumulated over time does not change alarm sensitivity.

Each Signature Series SuperDuct detector contains a microprocessor that performs comprehensive self-diagnostics and stores the results in nonvolatile memory. Stored results include details such as hours of operation, last maintenance date, and number of alarms and troubles. This information can be retrieved and reviewed when desired.

Detector Configuration

The detector assembly cover provides easy access to the smoke sensor, its wiring connections, sample and exhaust tubes, and the smoke chamber itself.

Air enters the detector's sensing chamber through a sampling tube (ordered separately) that extends into the duct and is directed back into the ventilation system through an exhaust tube (included). The difference in air pressure between the two tubes pulls the sampled air through the sensing chamber. When a sufficient amount of smoke is detected in the sensing chamber, the detector initiates an alarm.

The sampling tube may be installed from either the duct side of the assembly or from inside the sensor compartment, as preferred by the installer. (The exhaust tube must be installed from the duct side.) Sampling tubes may be rotated in 45-degree increments so that air-holes can be aligned to allow the unit to be mounted at virtually any angle relative to the air flow.

In installations where the duct smoke detector's controls and indicators are hidden from view, a remote test station or an LED indicator can be connected to the detector to provide these functions.

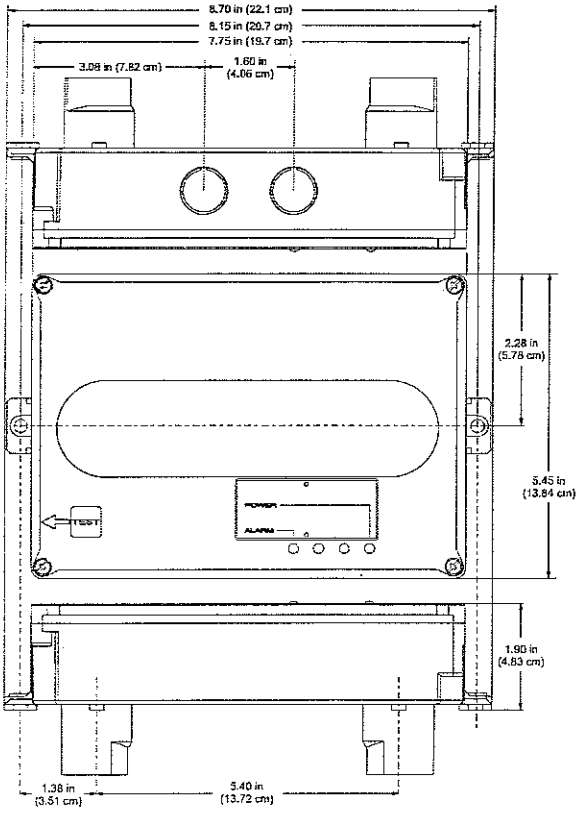
Remote Test Stations

Labor-saving Remote Test/Reset stations provide alarm testing from the convenience of a remote location. Tests can be performed quickly and safely – without having to climb to the roof. Magnetically-operated and key-operated one-gang models are available. Signature SuperDuct detectors are also compatible with SIGA-LED remote alarm LED.

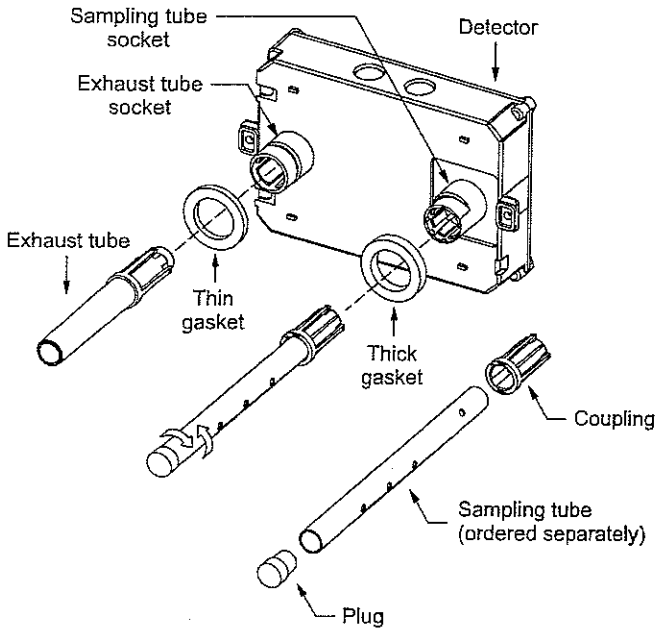
Air velocity in the duct as low as 100 ft/min. maintains adequate air flow into the sensor smoke chamber through air holes in the air sampling tube and discharges through the exhaust tube. *SuperDuct* air sampling tubes must be installed with the inlet holes facing the airstream. Sampling tubes may be rotated in 45-degree increments so that air-holes can be aligned to allow the unit to be mounted in virtually any angle relative to the airflow.

SuperDuct sensors are engineered to operate optimally under the harsh environmental conditions frequently found in HVAC ductwork. Nonetheless, before installing the detector, test the duct air velocity, temperature, and humidity to verify that it is within the operating range of the *SuperDuct* detector. Consult the *SuperDuct* installation sheet for details.

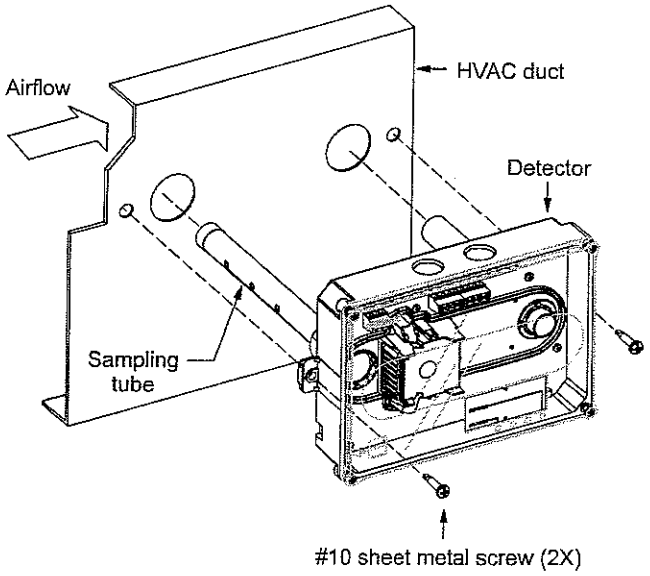
Dimensions



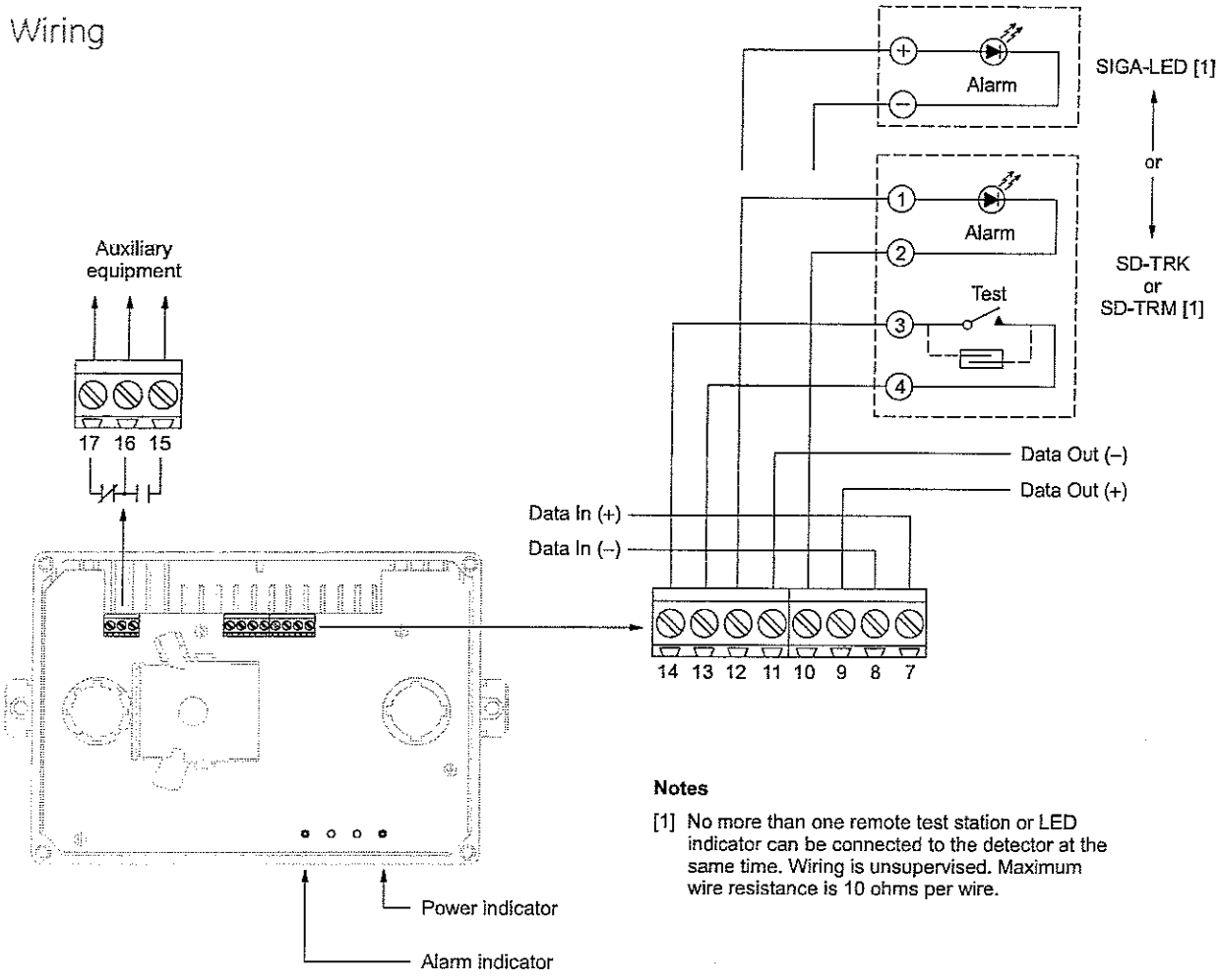
Assembly



Mounting



Wiring



Notes

[1] No more than one remote test station or LED indicator can be connected to the detector at the same time. Wiring is unsupervised. Maximum wire resistance is 10 ohms per wire.

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F 32 2 721 86 13

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Specifications, detector

Dimensions	8.70 x 5.45 x 1.90 inches (221 x 138 x 48 mm)
Wire size	14 to 22 AWG
Smoke detection method	Photoelectric (light scattering principle)
Air velocity rating	100 to 4,000 ft/min
Air pressure differential	0.005 to 1.00 inches of water
Sensitivity	0.79 to 2.46 %/ft obscuration
Alarm test response time	5 seconds
LED indicators	Alarm (red), Power (green)
Common alarm relay	Unsupervised and power-limited Quantity: 1 Type: Form C Ratings: 2.0 A at 30 Vdc (resistive)
Operating voltage	15.2 to 19.95 Vdc
Operating current	Standby: 45 µA Alarm: 45 µA Inrush: 1 mA Standalone alarm: 18 mA
Operating environment	Temperature: -20 to 158 °F (-29 to 70 °C) Humidity 93% RH, noncondensing
Agency listings	UL, ULC, CSFM, FM, MEA

Specifications, test stations

Remote Test/Reset Stations provide alarm test, trouble indication, and reset capability from a remote location. They include a one-gang plate, momentary SPST switch, red alarm LED, and terminal block. Magnetically-operated models (TRM) or key-operated models (TRK) are available.

Compatible electrical boxes	North American 1-gang box Standard 4-in square box, 1-1/2 inches deep, with 1-gang cover
LED indicators	Alarm (red)
LED type	Clear lens
Wire size	14 to 22 AWG
Resistance per wire	10 Ohms, max.
Current requirements	See controller specifications
LED circuit ratings	Voltage: 3 Vdc, max. Current: 30 mA, max.
Switch ratings (SD-TRK)	Voltage: 125 Vdc, max. Current: 4 A, max.
Switch ratings (SD-TRM)	Voltage: 200 Vdc, max. Current: 0.5 A, max.
Compatible detectors	SuperDuct conventional two-wire and Signature duct smoke detectors
Operating environment	Temperature: 32 to 131 °F (0 to 55 °C) Humidity: 93% RH, noncondensing
Storage temperature	-4 to 140 °F (-20 to 60 °C)
Agency listings	UL, ULC, CSFM

Ordering Information

Catalog Number	Description	Ship Wt., lb. (kg)
SIGA-SD	Intelligent SuperDuct Detector	2.4 (1.1)
Accessories		
SD-T8	8-inch sampling tube	0.5 (0.2)
SD-T18	18-inch sampling tube	1.5 (0.7)
SD-T24	24-inch sampling tube	2.7 (1.2)
SD-T36	36-inch sampling tube	3.0 (1.4)
SD-T42	42-inch sampling tube	3.5 (1.6)
SD-T60	60-inch sampling tube	5.8 (2.6)
SD-T78	78-inch sampling tube	7.5 (3.4)
SD-T120	120-inch sampling tube	11.5 (5.2)
SIGA-LED	Remote alarm LED	1.0 (0.5)
SD-TRM	Remote test station, magnetic	1.0 (0.5)
SD-TRK	Remote test station, keyed	1.0 (0.5)
SD-VTK	Air velocity test kit (stoppers only, etc)	1.0 (0.5)
SD-GSK	Cover gasket kit	0.5 (0.2)
SD-MAG	Test magnet kit	0.5 (0.2)
SIGA-SDPCB	Replacement PCB/Signature sensor kit	1.0 (0.5)

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Overview

The SIGA-DG Smoke Detector Guard protects Signature Series smoke detectors from damage and tampering without affecting airflow to the detector head. The sophisticated louver configuration on the detector guard allows Signature smoke detectors to be installed at their listed spacing and has no affect on the detector's selected operating sensitivity. The guard is constructed of rugged 16-guage steel and is finished with durable white baked powder coat enamel.

Standard Features

- **Agency listed with Signature Series smoke detectors**
  Tested and listed by Underwriters' Laboratories Inc.
- **Compatible with Signature Series 4D and PS smoke detectors**
  Advanced design does not affect detector sensitivity; does not reduce the listed detector spacing.
- **Rugged, tamper-proof design**
  16-gauge steel louvered construction provides superior physical protection. Special fasteners guard against unauthorized access to the detector.
- **Easy mounting**
  Simple design ensures very fast, very secure installation, yet allows easy removal for detector cleaning and inspection.
- **Flush or surface mount**
  SIGA-DGSB Surface Mount Accessory allows installation over surface mounted conduit and electric boxes.

Application

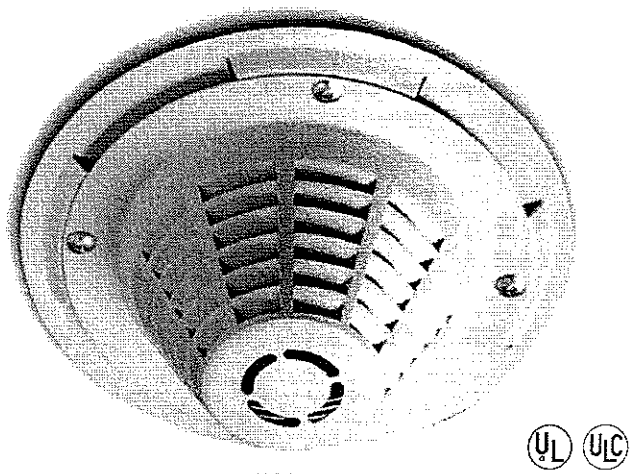
Detector guards should be used wherever flying objects may accidentally damage the detector, or wherever they may be intentionally damaged or used to conceal contraband. Typical applications include correctional or detention facilities, mental hospitals, industrial or warehousing spaces, sports facilities and gymnasiums.

NFPA 72 Section 5-1.3.1 states *"Where subject to mechanical damage, an initiating device shall be protected. A mechanical guard used to protect a smoke or heat detector shall be listed for use with the detector being used".*

The SIGA-DG Detector Guard is designed for use only with SIGA-IPHS 4D and SIGA-PS smoke detectors. The SIGA-DG fully complies with NFPA 72 when used with these detectors.

Smoke Detector Guard

SIGA-DG



SIGA-DG
(Shown with optional mounting flange)

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Europe
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F 32 2 721 86 13

Latin America
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F 305 593 4300

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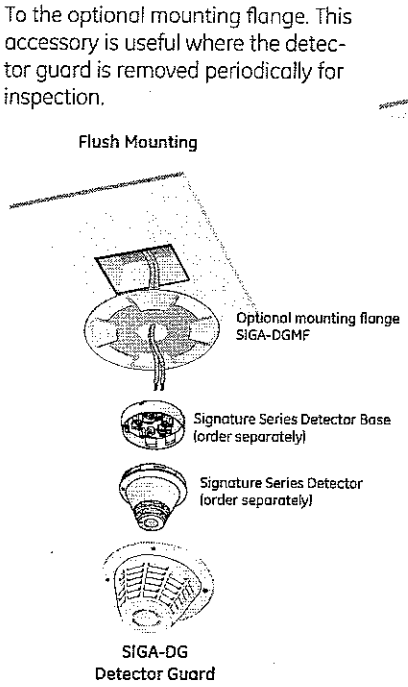
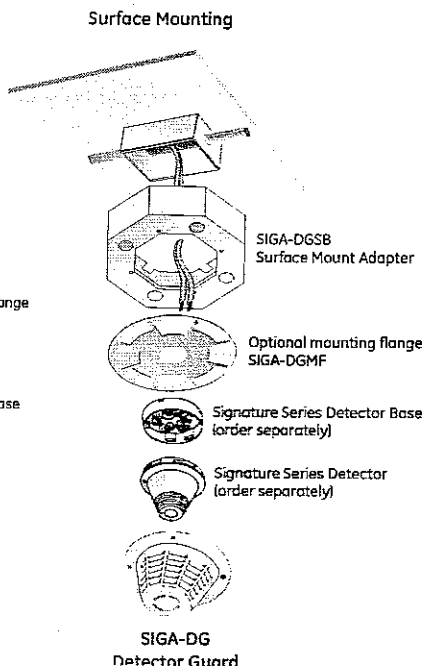
GE Security recommends that fire alarm systems and devices always be installed in accordance with the latest recognized edition of national and local fire alarm codes.

Installation and Mounting

The SIGA-DG may be mounted one of three ways:

1. Directly to the ceiling, enclosing a detector installed to a flush-mounted electrical box.
2. To the SIGA-DGSB Surface Mount Adapter, which encloses a surface-mount electrical box.
3. To the optional mounting flange. This accessory is useful where the detector guard is removed periodically for inspection.





Specifications

	SIGA-DG Detector Guard	SIGA-DGSB Detector Guard Surface Adapter
Construction	16 gauge steel	
Dimensions	6.5 inch (165mm) diameter x 3.25 inch (83mm) high	8.9 inch (225mm) octagonal x 2.25 inch (57mm) high
Finish	White; baked powder coat enamel	
Mounting	Mounts over flush 1-gang, octagon, and four-inch square North American electric boxes	Encloses surface mounted octagon or one-gang electric box
Compatible Detectors	Agency listed with the following Signature Series detectors at a maximum air velocity of 500 ft./min. Does not affect detector operating sensitivity, listed area of coverage, or spacing requirements: SIGA-IPHS 4D Multisensor; SIGA-PS Photoelectric	
Agency Listings	UL, ULC	-

Ordering Information

Catalog Number	Description	Ship Wt., lb. (kg)
SIGA-DG	Smoke Detector Guard	0.8 (0.36)
SIGA-DGSB	Detector Guard Surface Mount Accessory	2 (0.9)
SIGA-DGMF	Mounting Flange (optional)	2. (0.9)

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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-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.

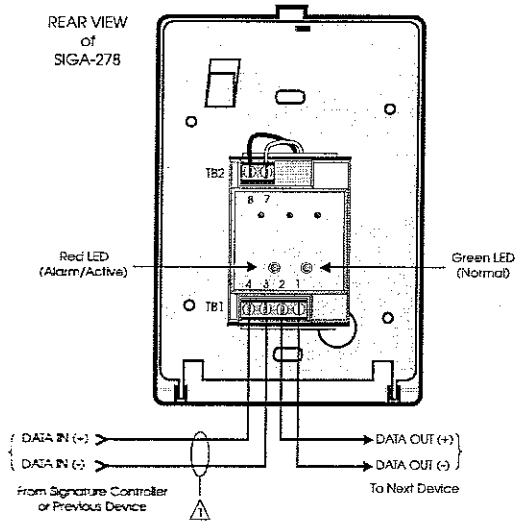

Figure 4. Single Stage Systems

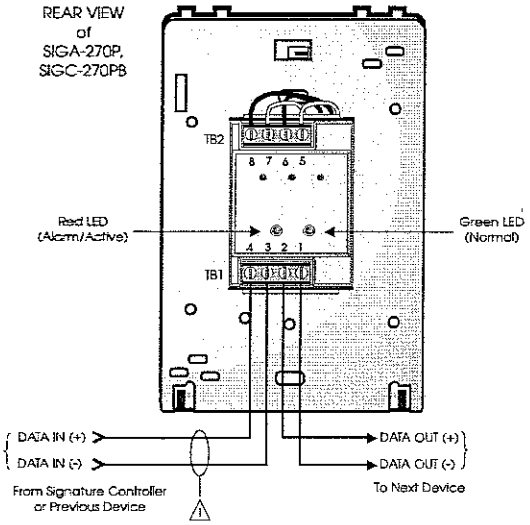

Figure 5. Two Stage Systems

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.

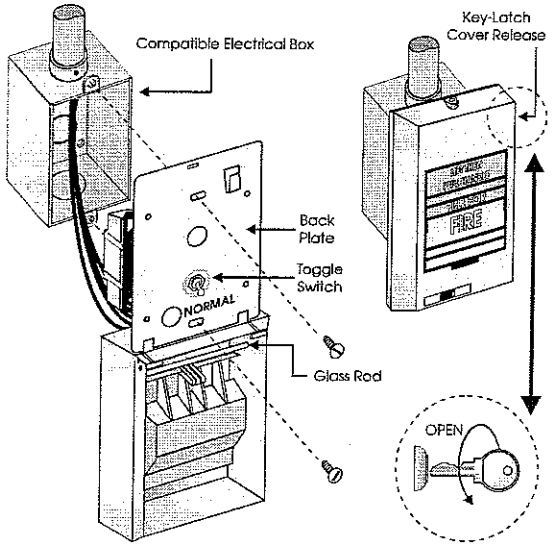

Figure 1. SIGA-278 installation

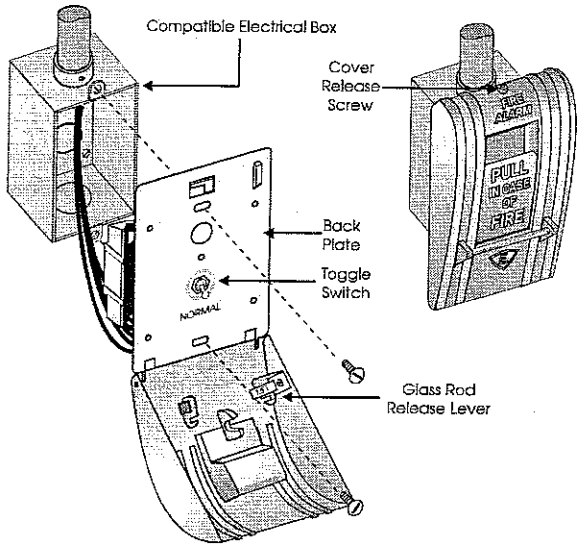

Figure 2. SIGA-270, SIGC-270F, SIGC-270B installation

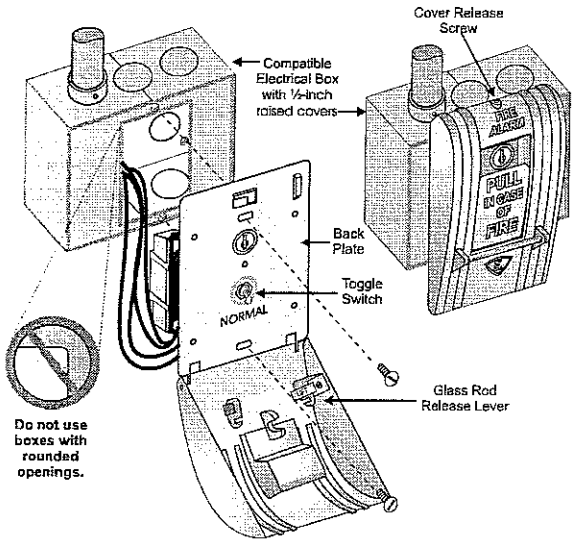

Figure 3. SIGA-270P, SIGC-270PB installation

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

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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)

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Overview

The SIGA-MM1 Monitor Module and SIGA-WTM Waterflow/Tamper Module are part of GE Security's Signature Series system. They 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 function of the SIGA-MM1 and SIGA-WTM is determined by the factory loaded "personality code".

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.

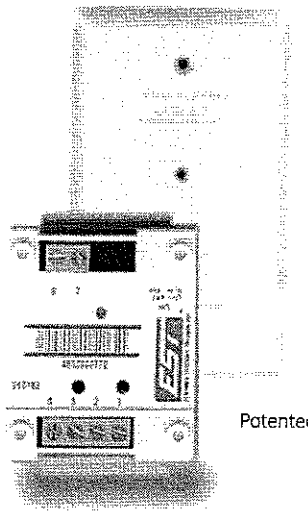
The microprocessor in each module provides four additional benefits - Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation and Fast, Stable Communication.

Standard Features

- **Monitor and waterflow/tamper applications**
  Includes Alarm with delayed latching (retard) for waterflow applications, Supervisory, and Monitor.
- **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 module 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.
- **Intelligent module c/w integral microprocessor**
  All decisions are made at the module allowing lower communication speed while substantially improving control panel response time. Less sensitive to line noise and circuit wiring properties; twisted or shielded wire is not required.
- **Ground fault detection by address**
  Detects ground faults right down to the device level.
- **Designed for high ambient temperature operation**
  Install in ambient temperatures up to 120°F (49°C).

Input Modules

SIGA-MM1 & SIGA-WTM



Patented

Application

The duty performed by the SIGA-MM1 and SIGA-WTM is determined by their factory assigned sub-type code or "Personality Code".

SIGA-WTM NORMALLY-OPEN ALARM - DELAYED LATCHING (Factory set Personality Code 2) - Assigned to one circuit. Configures circuit 1 for **Class B** normally-open **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.

SIGA-WTM NORMALLY-OPEN ACTIVE - LATCHING (Factory set Personality Code 4) - Assigned to one circuit. Configures circuit 2 for **Class B** normally open dry contact **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.

SIGA-MM1 NORMALLY-OPEN ACTIVE - NON-LATCHING (Factory set Personality Code 3) - Assigned to one circuit. Configures circuit 1 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.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 (de-activated) temporarily, from the control panel. 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. Availability of maintenance features is dependent on the fire alarm system used.

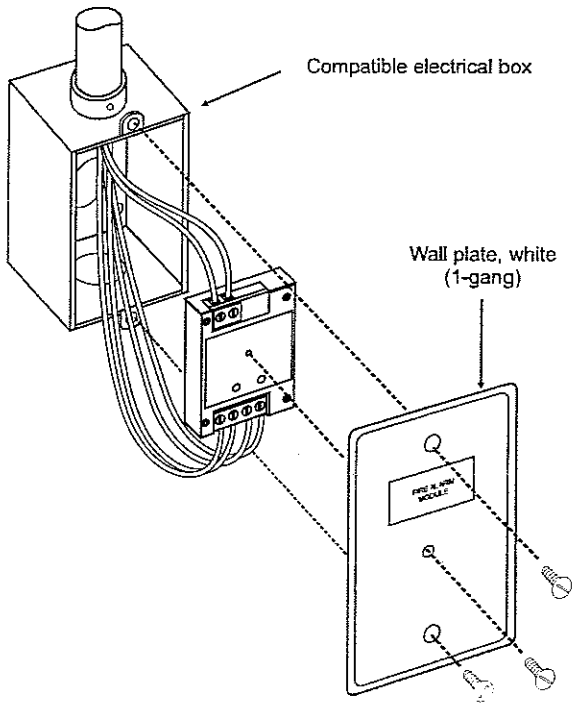
Installation

The SIGA-MM1 and SIGA-WTM modules mount to North American 2-1/2 inch (64 mm) deep one-gang boxes and 1-1/2 inch (38 mm) deep 4 inch square boxes with one-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm^2 to 0.75 mm^2) wire size.

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

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.

Personality codes are assigned by the factory. No user configuration is required for these modules.

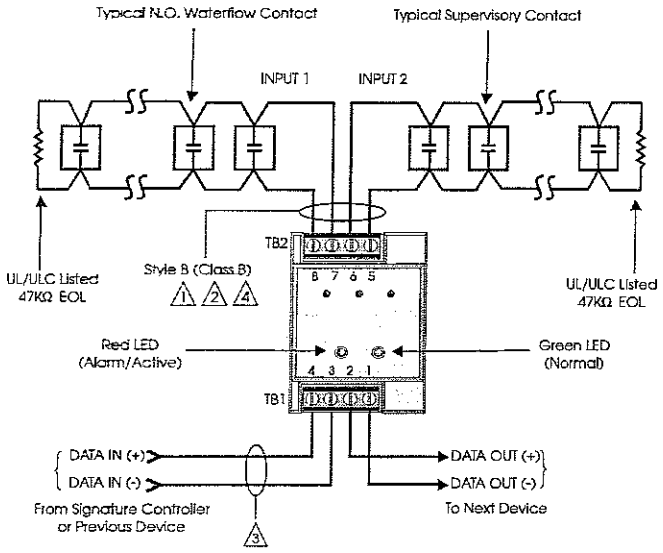


Typical Wiring

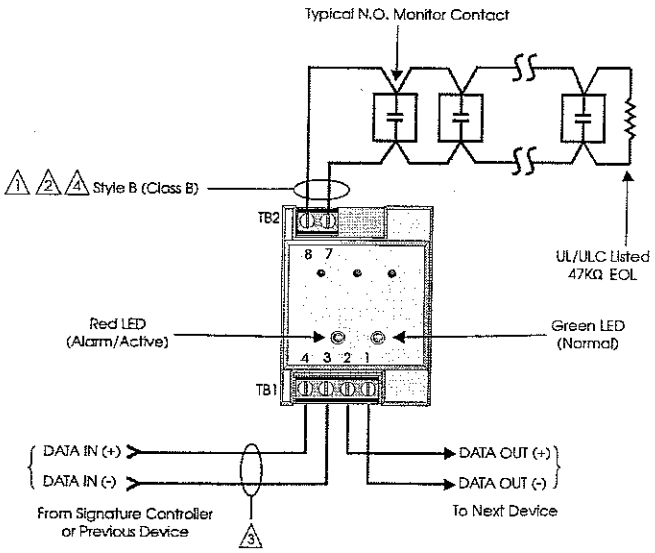
The module will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²), #12 AWG (2.50mm²) wire sizes.

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 (1219 m)
	#16 AWG (1.00 mm²)	
	#14 AWG (1.50 mm²)	
	#12 AWG (1.50 mm²)	



Model SIGA-WTM



Model SIGA-MM1

Notes

1. Maximum 25 ohms resistance per wire.
2. Maximum #12 AWG (2.5mm²) wire. Min. #18 (0.75mm²)
3. Refer to Signature Loop Controller Installation Sheet for wiring specifications.
4. Maximum 10 Vdc @ 350µA.
5) All wiring power limited and supervised.
6) This module will NOT support 2-wire smoke detectors.

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F 61 3 9259 4799

Europe
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F 32 2 721 86 13

Latin America
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F 305 593 4300

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Specifications

Catalog Number	SIGA-MM1	SIGA-WTM
Description	Monitor Module	Waterflow/Tamper Module
Type Code	48 (factory set personality code 3)	49 (factory set personality code 2,4)
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 & Finish	High Impact Engineering Polymer one-gang front plate - White	
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 Agency Listings	Use With Signature Loop Controller UL, ULC, CSFM, MEA	
Mounting	North American 2-1/2 inch (64 mm) deep one-gang boxes and 1-1/2 inch (38 mm) deep 4 inch square boxes with one-gang covers and SIGA-MP mounting plates.	

Ordering Information

Catalog Number	Description	Ship Wt lbs (kg)
SIGA-MM1	Monitor Module - UL/ULC Listed	0.4 (.15)
SIGA-WTM	Waterflow/Tamper Module - UL/ULC Listed	
Accessories		
27193-11	Surface Mount Box - Red, 1-gang	1.0 (0.6)
27193-16	Surface Mount Box - White, 1-gang	
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)

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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.

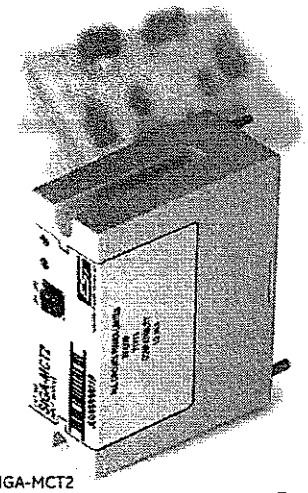
The SIGA-MCT2 is part of the UIO family of plug-in Signature Series modules. It functions identically to the SIGA-CT2, but takes advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards are available. All wiring connections are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

Standard Features

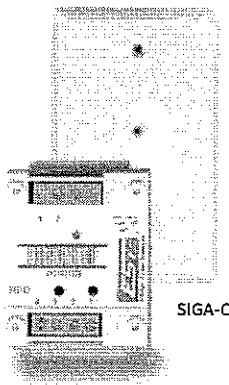
- **Multiple applications**
  Including Alarm, Alarm with delayed latching (retard) for waterflow applications, Supervisory, and Monitor. The installer selects one of four "personality codes" to be downloaded to the module through the loop controller.
- **Plug-in (UIO) or standard 1-gang mount**
  UIO 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

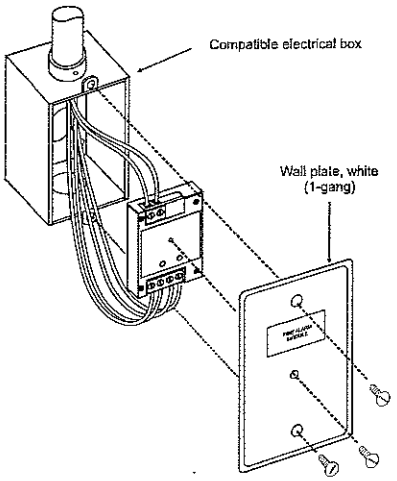
The Signature Series intelligent analog-addressable system from GE Security is an entire family of multi-sensor detectors and mounting bases, multiple-function input and output modules, network and non-network control panels, and user-friendly maintenance and service tools. Analog information from equipment 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.

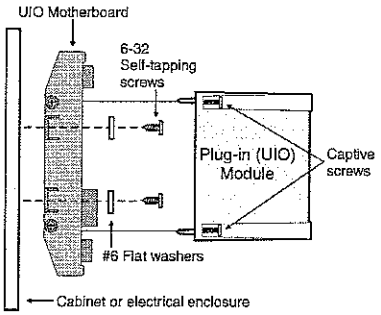
Automatic Device Mapping –The Signature Data Controller (SDC) learns where each device's serial number address is installed relative to other devices on the circuit. The SDC keeps a map of all Signature Series devices connected to it. The Signature Series Data Entry Program also uses the mapping feature. 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.

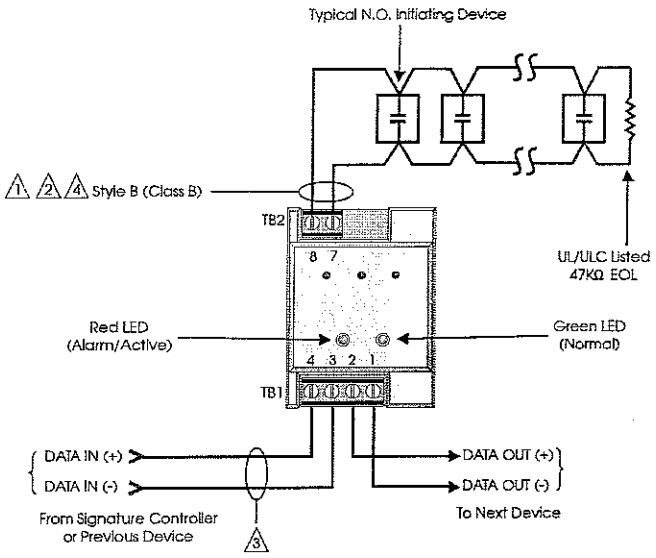
NORMALLY-OPEN ACTIVE - LATCHING (Personality Code 4) - Assign to one or both circuits. Configures either circuit A or B or both for Class B normally open dry contact monitoring input such as from Supervisory and Tamper Switches. An ACTIVE signal is sent to the loop controller when the input contact is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

Typical Wiring

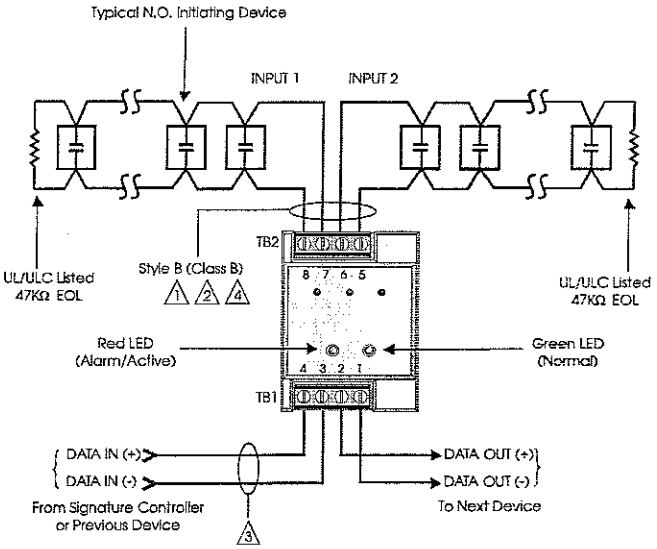
Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), and #14AWG (1.50mm²), and #12 AWG (2.50mm²) wire sizes.

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)	



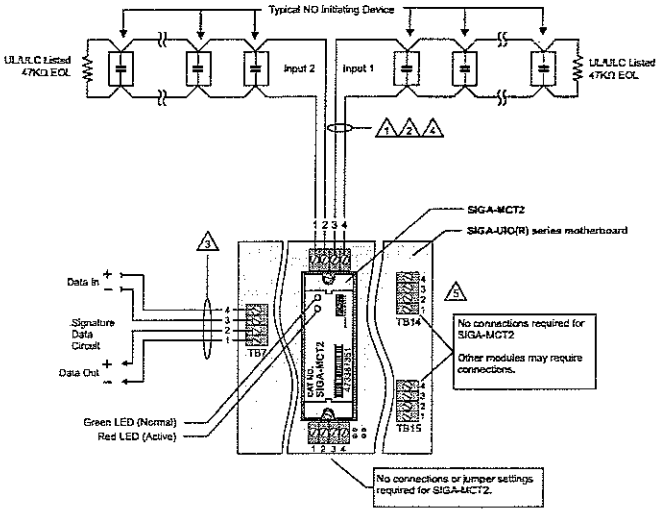
SIGA-CT1



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.

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Australia
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F 61 3 9259 4799

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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)

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EST Fire & Life Safety
Intelligent Input/Output

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.

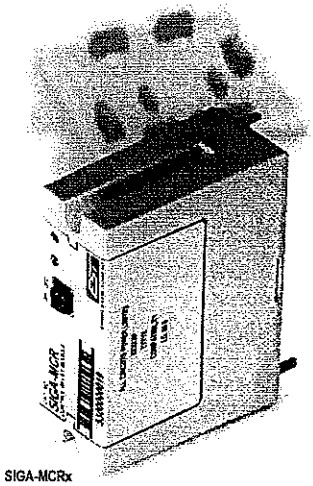
Plug-in UIO versions (SIGA-MCR and SIGA-MCRR) are part of the UIO family of plug-in Signature Series modules. They function identically to the standard mount versions, but take advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards 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-MCRR

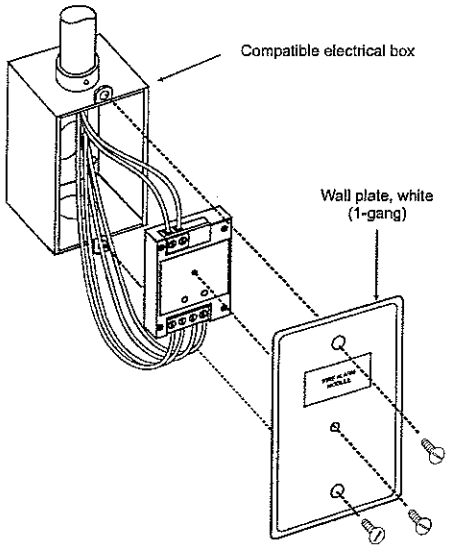

SIGA-MCRx


SIGA-CRx

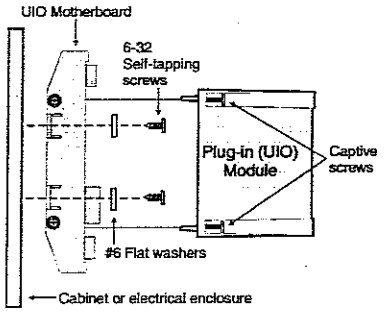
MEA
UL
ULC

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 mm^2 to 0.75 mm^2) 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 mm^2 to 0.75 mm^2) 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.

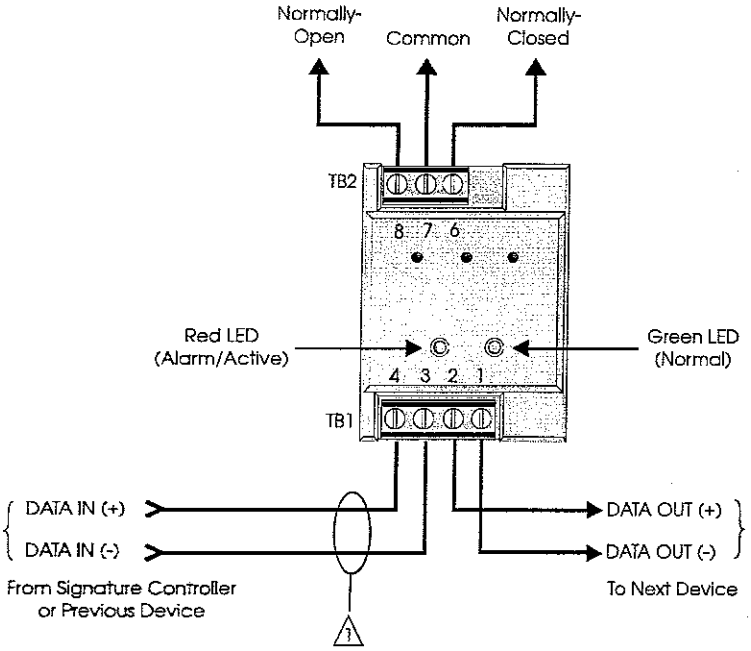
Testing & Maintenance

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.

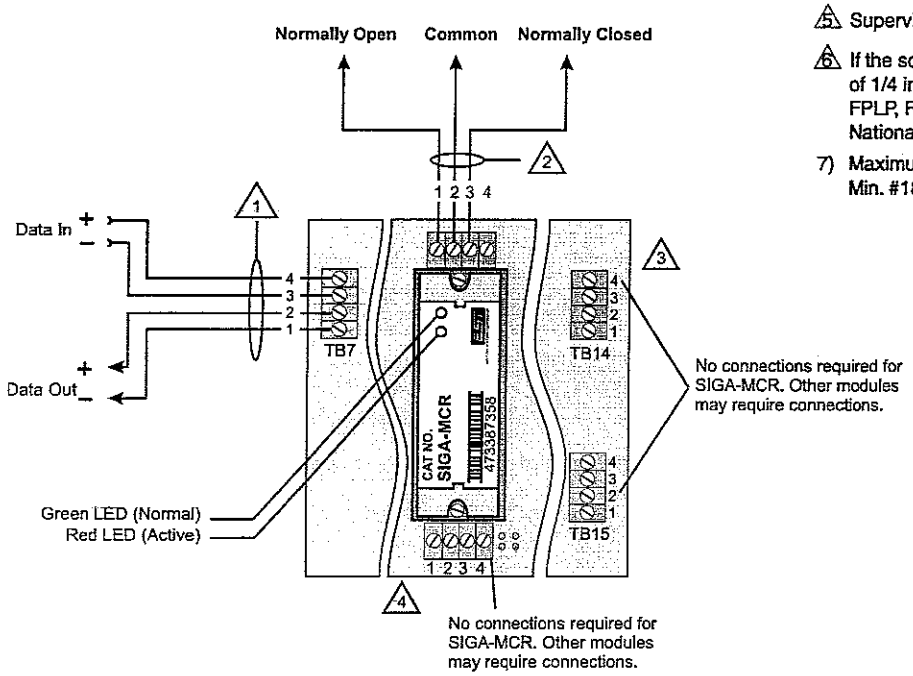
Typical Wiring

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

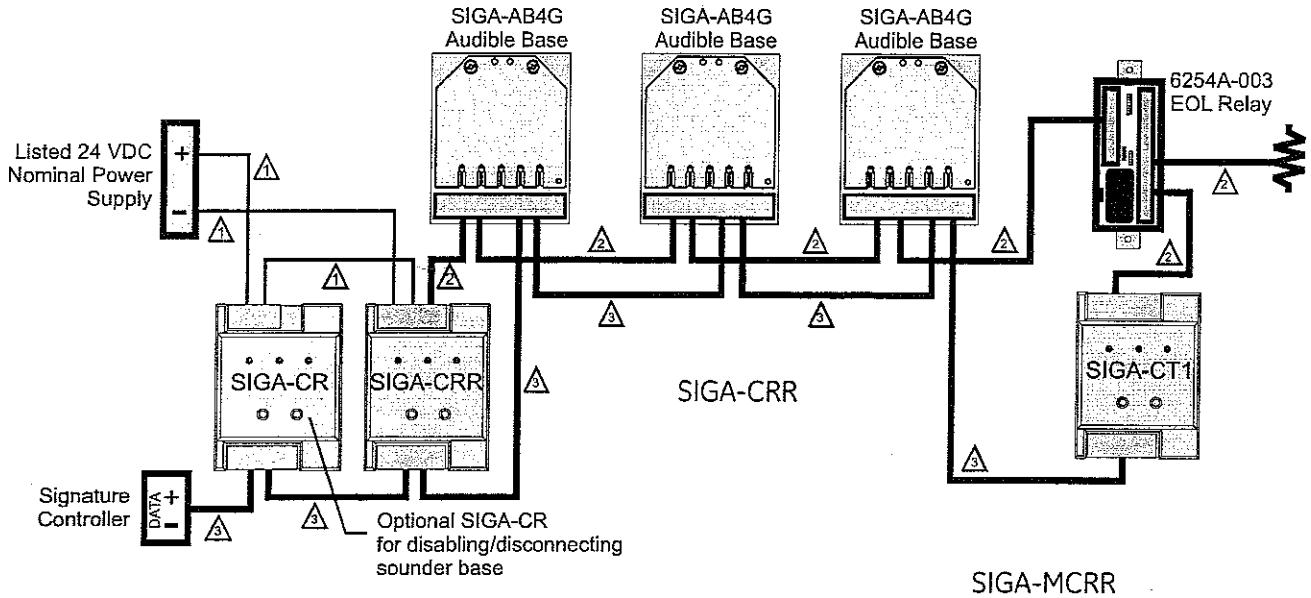
Notes

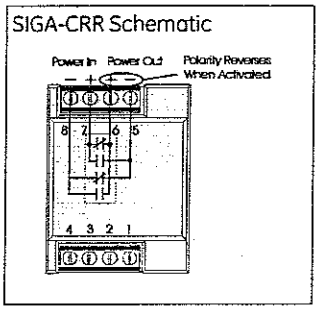
1. Refer to Signature Loop Controller Installation Sheet for wiring specifications.
2. NFPA 72 requires that the SIGA-CR/SIGA-MCR be installed in the same room as the device it is controlling. This requirement may not apply in all markets. Check with your local AHJ for details.
3. The SIGA-UIO6R and 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).

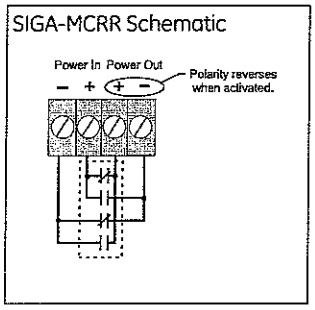
Typical Wiring

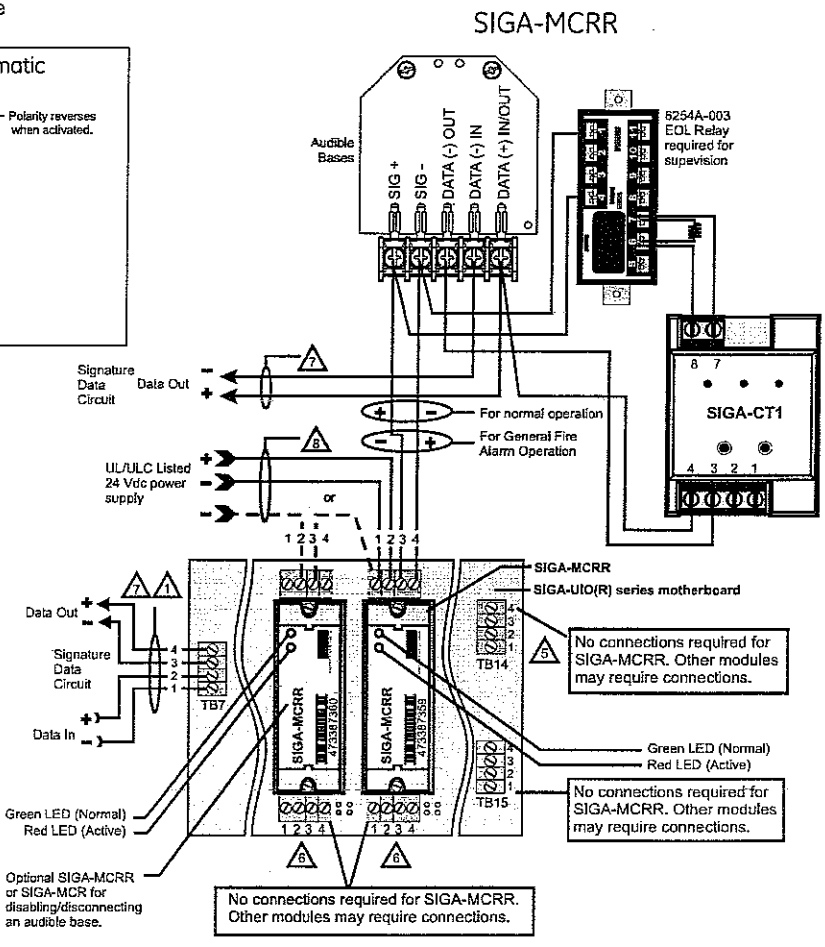
Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²) and #12 AWG (2.50mm²) wire sizes.

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.









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)

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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.

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Overview

The GE Security 1534-1 Key-operated Fire Alarm Station is ideal for use in buildings such as penal institutions or housing for the mentally handicapped, where ordinary pull stations would be operated maliciously. The 1534-1 station is fitted with a key-operated switch of which the key is not easily duplicated. GE Security 1534-1 Key-operated Stations use spanner head screws for mounting to the backbox. This further reduces tampering and deters unauthorized removal.

The 1534-1 has one Single Pole Normally Open contact rated for 1 amp at 24 Vdc. They feature 6 inch (150mm) wire leads for easy field wiring. They key can be removed in both the "ON" and "OFF" positions.

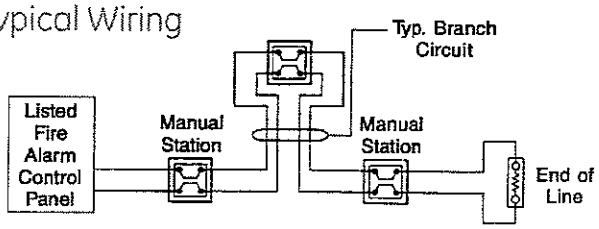
The oversize 6-1/8 inch x 7-1/8 inch (156mm x 181mm) faceplate is constructed using a 1/4 inch (6.3mm) thick clear lexan cover over steel faceplate finished in "Fire Red". English only markings are silkscreened in large white letters for high visibility.

The 1534-1 Station flush mounts to any standard North American 1-gang electrical box 2-1/2 inch (63mm) deep minimum, or surface mounts to GE Security Cat. Number 46292- 0200 Surface Mount Backbox. These backboxes are factory finished with a durable "Fire Red" baking enamel.

Standard Features

- Tamper proof
- LEXAN over steel faceplate
- Single-stage operation
- Single-pole N.O. contact
- 6 inch (150mm) wire leads
- One-gang flush mounting
- Surface mount box available

Typical Wiring



Key-operated Fire Alarm Station

1534-1

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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

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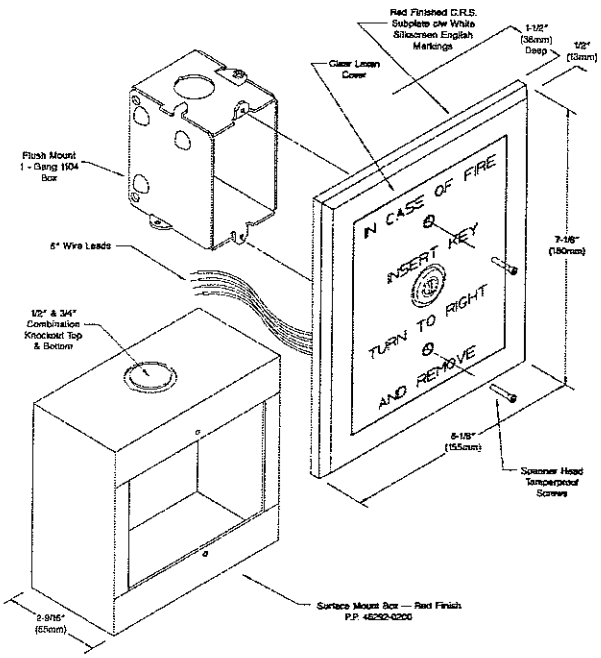
Installation

GE Security recommends that these Key-operated Fire Alarm Stations always be installed in accordance with the latest recognized editions of local and national fire alarm codes.



Specifications

Keyswitch Contacts	Single Pole Normally Open Rating: 1 amp at 24 Vdc
Wire Connection	6 inch (150mm) Wire Leads
Replacement Key	46151-0013 (Code C250)
Mounting	Flush to: One-gang 2-1/2 inch (63mm) deep standard North-American electrical box — 1104 style Surface to: Cat. No. 46292-0200 Surface Box
Frontplate	6-1/8 x 7-1/8 inches (156mm x 181mm) constructed using a 1/4 inch (6.3mm) thick Clear Lexan Cover over C.R.S. Faceplate finished in "Fire Red" English Only Markings Silkscreened In White
Operating Environment	Normal Indoor
Approvals	ULC—S528M, UL38, C.S.F.M.

Ordering Information

Catalog Number	Description	Shipping Weight
1534-1	Key-operated Fire Alarm Station — Normally Open	0.3 lb (0.6 lb)
46151-0013	Replacement Key — for 1534 -1 Station	0.2 lb (0.1 lb)
46292-0200	Surface Mount Box — Fire Red Finish	0.8 lb (0.35 lb)

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.

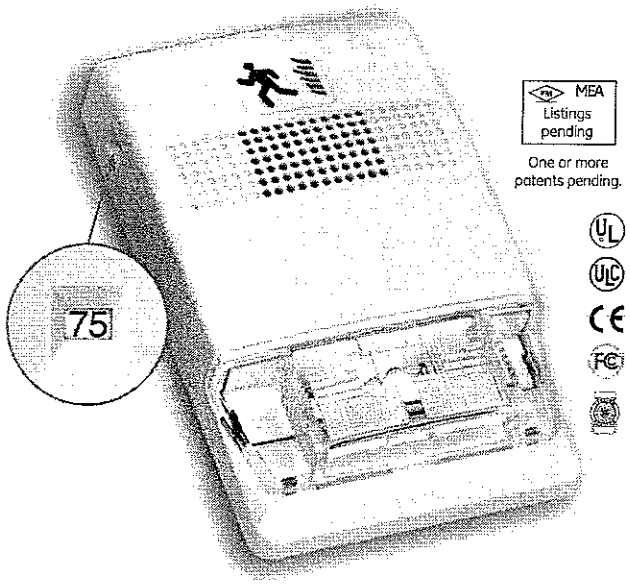
Genesis signals feature textured housings in architecturally neutral white or traditional fire red. An ingenious iconographic symbol indicates the purpose of the device. This universal symbol is code-compliant and is easily recognized by all building occupants regardless of what language they speak.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



MEA Listings pending

One or more patents pending.

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.

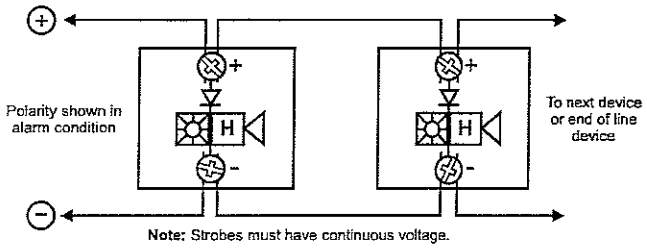
Genesis strobes and horn-strobes are shipped from the factory ready for use as **UL 1971 compliant** signals for public mode operation. These signals may be configured for **temporal flash** by cutting a jumper on the circuit board. This battery-saving feature is intended for private mode signaling only.

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.



Note: Strobes must have continuous voltage.

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	152	255	311
16 Vfwr	125	179	224	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*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	129	167	172	281	337
16 Vfwr	176	230	269	397	443

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

*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)

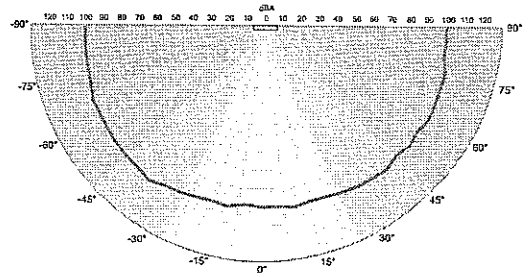
	UL464	Average	Peak
16 Vdc	77 dBA, min	85 dBA	91 dBA
16 Vfwr	77 dBA, min	85 dBA	91 dBA

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.

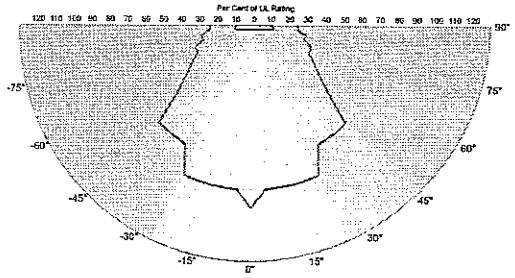
Average Sound Output (dBA)

(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.

GE
Security

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

Latin America
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F 305 593 4300

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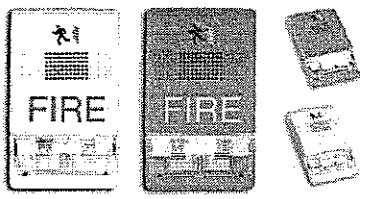
Ordering Information

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)	0.25 (0.11)
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	
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

EDWARDS SYSTEMS TECHNOLOGY

SECURITY/ACCESS CONTROL

Compatibility → EST3

Keypad/Display

Model: KPDISP

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**

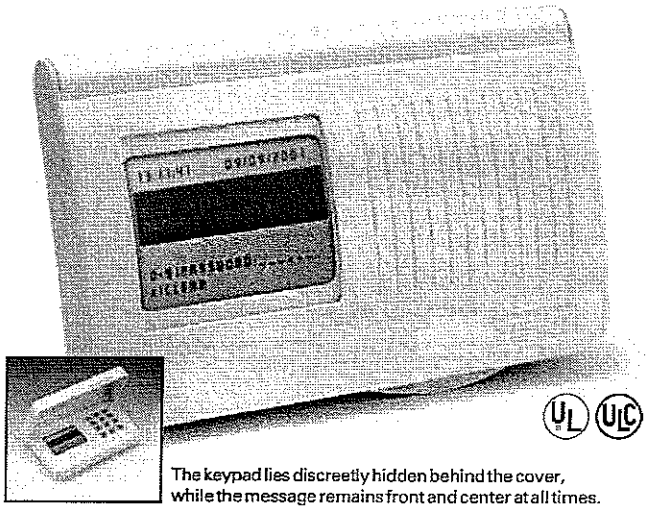
Description

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.



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.

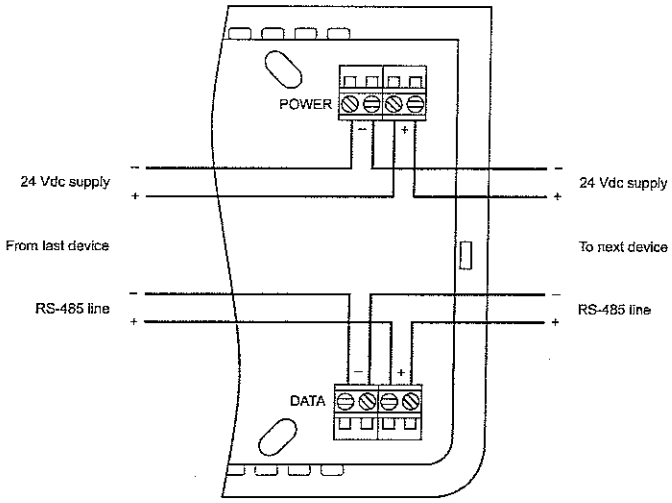
Each of up to 200 authorized users is assigned a pass code consisting of a unique three-digit number and a four-digit PIN number. Duplicate PINs are permitted by the KPDISP, so a user can pick a number that is easy for them to remember.

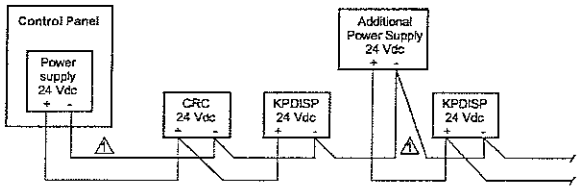
The KPDISP can also annunciate fire functions and be programmed to act as a full function fire annunciator. In the event of a problem, context-sensitive help is readily available using the HELP button.

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>.

Ordering Information

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

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.

TekTone®
SOUND & SIGNAL

Tek-CARE®NC300II
NC304 and NC304LCD Master Station
Specification Sheet

IL693
Section E
Rev. 4 - 01/2006

NC304 Master Station

NC304LCD Master Station

ARCHITECTS' AND ENGINEERS' SPECIFICATION

The nurses' master station shall be TekTone® NC304, NC304LCD or approved equal. The master station wiring shall be supervised. The master station shall include the necessary signaling circuitry and firmware to receive and answer calls from all patient, staff, and duty stations; and receive calls from code and emergency stations on the Tek-CARE®NC300II System.

The master station shall provide for handset or loudspeaker communication with patients and staff. Function buttons (with and without LEDs) shall be provided to initiate reset operation, staff emergency request, nurse/aide request, paging operations, and nurse-follower operations. Additional buttons for menu-driven programmable functions include: talk, monitor, capture and room priority programming.

For the NC304LCD, incoming calls shall be displayed by room numbers in plain English on an integral LCD display with a minimum of 2 lines capable of displaying 40 characters each. The calls will display in order of time of origination and in accordance with established priority. The master stations shall also provide a color VGA output to connect to a standard UL® 1069 Listed VGA monitor (TekTone®'s NC315) for color VGA call display. When used with TekTone®'s NC325 Versus Interface Software, a connected VGA monitor shall display information from a Versus Information System. A parallel port and serial port shall be available for connection to UL® 1069 Listed devices.

The user shall be able to access system programming via the keys on the master station or via the keyboard port which will accept any standard PC keyboard.

The master station shall be equipped with an integral handset, volume control, color-keyed function buttons, tone-off button, call LED, busy LED, CE fault LED, 2.5" speaker, electrostatic microphone. The master station will also include a 12-button digital keypad for entry of station numbers, zone and station assignments, and for selection of menu functions. All buttons shall also switch to alpha-character operation by depressing the switch marked **ALPHA**. Alpha-character operation shall allow for alphanumeric room numbering, room labeling, and calling of rooms so designated. All switches shall be of spill-resistant membrane switch design.

Each master station shall be able to address up to 512 single or dual stations per system, and up to 16 individual zones. The Tek-CARE®NC300II System shall support up to 8 master stations. The master station shall be UL® 1069 listed.

The station housing shall be high-impact, flame-retardant (UL® 94V-0) plastic and shall be desk mounted.

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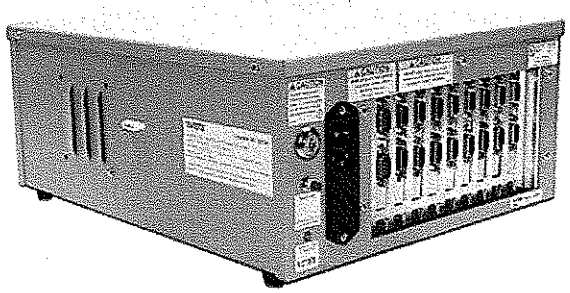
NC351A and NC351A/2 Central Equipment Specification Sheet

IL696
Section E
Rev. 4 - 01/2006



NC351A/2 Central Equipment

ARCHITECTS' AND ENGINEERS' SPECIFICATION

The nurse call central equipment shall be TekTone®'s NC351A or NC351A/2 or approved equal. The central equipment and associated wiring to master control stations and patient/staff stations shall be supervised. The central equipment shall include all necessary microprocessor multiplex-based circuitry to operate all Tek-CARE® NC300II system functions. It shall also support up to 4 (with NC351A) or 8 (with NC351A/2) nurses' master stations, plus 256 (with NC351A) or 512 (with NC351A/2) patient/staff stations, all associated lamp and other emergency and presence devices, and 2 isolated serial ports. The central equipment shall also provide the necessary firmware to operate all Tek-CARE® NC300II System functions, and shall allow for integration with the Versus Information System (VIS).

The central equipment shall include one central buss board, one or two master interface cards, one microprocessor/serial card, one or two station interface cards, all call/multiplex card, multiple output power supply, and firmware operating system.

The central equipment will be housed in a durable metal enclosure with provisions for plug-in field wiring connections.

The NC351A and NC351A/2 shall be UL® 1069 Listed.

FEATURES

A major component of the Tek-CARE® NC300II Nurse Call System, the NC351A and NC351A/2 supply the central point for system component integration. The NC351A supports up to 4 master consoles and 256 station addresses, while the NC351A/2 supports up to 8 master consoles and 512 station addresses. The NC351A and NC351A/2 house the necessary firmware to operate all the Tek-CARE® NC300II system functions. From a single durable metal enclosure, the central equipment supports 2 isolated serial ports, field station ports, master console ports, and power requirements for up to 256 patient, staff and duty stations (512 with external PK305 Supply).

- UL® 1069 Listed
- 2 isolated serial ports
- Plug-in connections with multiplexed common wiring
- Self-contained electronics and power supply
- 12 or 24-hour time display
- Modular construction—easily expandable
- Includes optional interface with Versus Information System (VIS)

SPECIFICATIONS

Dimensions:	19.5" × 15.5" × 5.25"
Capacity:	up to 4 (NC351A) or 8 (NC351A/2) masters, up to 256 (NC351A) or 512 (NC351/2A) stations
Power Input:	110–120V, 50–60Hz (internal jumper to switch to 220V)
Environments:	26°C, relative humidity maximum 80%
Terminations:	Plug-on connectors
System Supervision:	Continuous polling of all stations. Stations or wiring faults displayed at masters.
System Protection:	All outputs are protected by self-resetting current-limiting devices.
Audio:	Up to 4 (NC351A) or 8 (NC351A/2) audio paths provided. Amplifiers rated at 20 watts. Overload and short circuit protection included.

REQUIRED COMPONENTS

Tek-CARE® NC300II	Nurse Call System

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FEATURES

A major component of the Tek-CARE®NC300II System, the NC304LCD and NC304 master station supplies the user interface to respond to calls, issue staff requests and alter room programming status to accommodate differing patient needs. The NC304LCD and NC304 are functionally the same but the NC304LCD has an integral 2 line, 80-character LCD display for showing up to 4 active calls.

The master console allows for room and staff communication by either open speaker or handset for additional privacy. A VGA monitor can be used (required for the NC304) to display up to 22 active patient, staff or duty calls as well as columns for two levels of staff presence and STAT priority calls in English language format.

Master function buttons are provided to select the system functions as follows:

RESET	(black)	Terminates most operations.
AIDE	(yellow)	Enters an aide service request.
NURSE	(green)	Enters a nurse service request.
STAT	(red)	Enters an urgent staff emergency request.
MENU	(blue)	Displays functions menu for programming additional features.
PAGE	(gray)	Initiates paging operations.
FOLLOW	(orange)	Initiates nurse-follower operations.
TALK	(white)	Press to speak, press again to listen when using loudspeaker for communications.
ALPHA	(white)	Changes all function keys to the specifically labeled alpha characters.
MONITOR	(blue)	Enables room monitoring.
CAPTURE	(blue)	Allows for zone assignment.
VIEW	(blue)	Allows review of station information.
PRIORITY	(blue)	Activates menu for changing room priority.
TONE ON	(white)	Turns normal call-tone on/off.

Additional programmable functions include set station priority, set privacy, zone assignments, view station configurations, set password, reset time of day, time display, set overtime, transfer for master stations, paging, system configuration, and system reinitialization.

The master station is also equipped with volume control for adjustment of incoming voice communication; tone switch for controlling the lowest priority tone signal only; call light with indication of low, medium and high priority calls; CE fault LED; busy and alphanumeric keypad used for entry of station numbers, zone and station selection, and for selection of menu functions.

The master stations also provide a parallel port and serial port for connection to UL® 1069 Listed devices. The system programming is accessible to the user via the keys on the master station or via the keyboard port which will accept any standard PC keyboard.

- UL® 1069 Listed
- Supervised
- VGA output, Parallel port, Serial & Keyboard ports
- Spill-proof membrane switch with alphabetic characters
- Easy access to commonly used menu functions
- Simultaneous display of 22 calls
- Electrostatic microphone for clear voice communications
- Simple, menu-driven programmable functions
- Master-to-master intercom capability
- Single-button or handset intercom
- Calls displayed by priority and origination
- Calls identified by room and bed number
- Programmable patient priority and privacy
- Calls-waiting, calls-overtime and cord-out indication
- View station configuration capability
- Initiate **STAT** staff emergency request
- Upgrade patient call
- Distinct tones for high, medium and low-priority calls
- Nurse follower function
- Paging by zone or to all staff
- Overhead paging interface
- Patient monitor single or group
- Manual tone-silencing switch (for Routine calls only)
- High priority calls override tone-off feature
- Simplified multiplex wiring uses plug-in type connectors
- Continuous display of nurse/aide location and nurse/aide requested
- Use masters in parallel or independently
- Hands-free automatic staff presence registration with the Versus Information System and TekTone® NC325SW Versus Interface Software.

SPECIFICATIONS

Dimensions:	Console: 10.75" × 8.75" × 3.25"
Capacity:	Address up to 512 single or dual patient stations in up to 16 zones
Environments:	26°C, relative humidity should not exceed 80%
Terminations:	Plug-on connectors
System protection:	All outputs are protected by self-resetting current-limiting devices

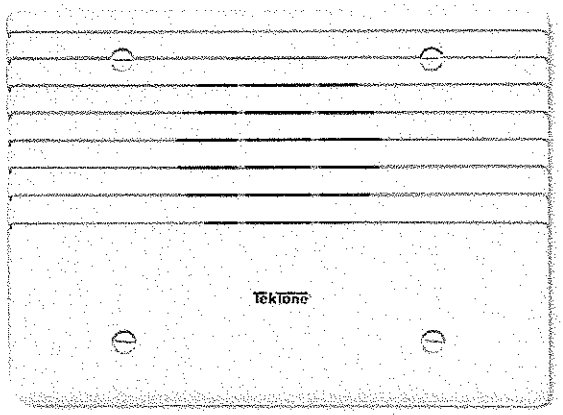
REQUIRED COMPONENTS

NC315	Flat Panel VGA Monitor
NC351(A)	Central Equipment (4 masters/256 stations)
–or–	
NC351(A)/2	Central Equipment (8 masters/512 stations)
IR300C series	Patient Stations

TekTone®
SOUND & SIGNAL

IR300C Multipurpose Station Specification Sheet

IL491
Section E
Rev. 7 - 12/2005



IR300C Multipurpose Station

ARCHITECTS' AND ENGINEERS' SPECIFICATION

Multipurpose Station shall be TekTone® IR300C and shall be designed to provide audible, visual, and digital communication to and from the central equipment (CE), including the nurses' master station. Each multipurpose station shall be capable of supporting remote devices such as switches, contact closures, speakers, or other signal originating devices. No operator controls or indicators shall be provided with the multipurpose station. All station electronics shall be mounted on an attractive, flame-retardant (UL® 94V-0) plastic panel. All connections shall be plug-in type. The IR300C and wiring from the CE shall be fully supervised. Model IR300C shall include solid-state LSI/microprocessor technology.

The IR300C shall be UL® 1069 Listed.

FEATURES

The IR300C Multipurpose Station provides for audible, visual and digital communications to and from the Tek-CARE®NC300II central equipment (CE) when receiving or sending signals to remotely connected devices. The IR300C includes inputs for contact closures and all types of emergency call switches for these systems. It also provides outputs to speakers or paging amplifiers, and dome or zone lamps. It does not have the controls, LEDs, or speakers normally associated with patient, staff or duty stations.

Some practical applications for the IR300C are as follows: provides input for code emergency call stations in an ICU; a PA amplifier interface for the nurse call master; a control point for exit/entry doors and narcotics cabinets; provides input for bath emergency call stations in public bath areas; provides input/output to a remote door intercom station for access control.

- UL® 1069 Listed
- Supervised
- LSI/microprocessor design
- Solid-state multiplex circuitry
- Simplified multiplex wiring using plug-in connectors
- Flame-retardant (UL® 94V-0) plastic faceplate

SPECIFICATIONS

Dimensions:	Height:	4.5"	(114 mm)
	Width:	6.375"	(162 mm)
	Depth:	2.75"	(70 mm)
	Projects:	0.375"	(9.5 mm)
Construction:	Flame retardant (UL® 94V-0) plastic		
Connections:	Plug-in type		
Housing:	Steel City #H3BD with Steel City #3GC plaster ring, or exact equal. Horizontal mount.		
Wiring:	Multiplex.		

REQUIRED COMPONENTS

Tek-CARE®NC300II	Nurse Call System

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HSS1/HSS2 High-Security Intercom Stations HSS13/HSS8 Call-In Switches

Rauland®

SECURITY SYSTEM COMPONENTS

DESCRIPTION

The Rauland HSS1 and HSS2 High-Security Stations are designed to provide two-way intercom functions in facilities such as correctional institutions or wherever vandalism is likely to be encountered. The stations interface readily with all Rauland Intercom Systems.

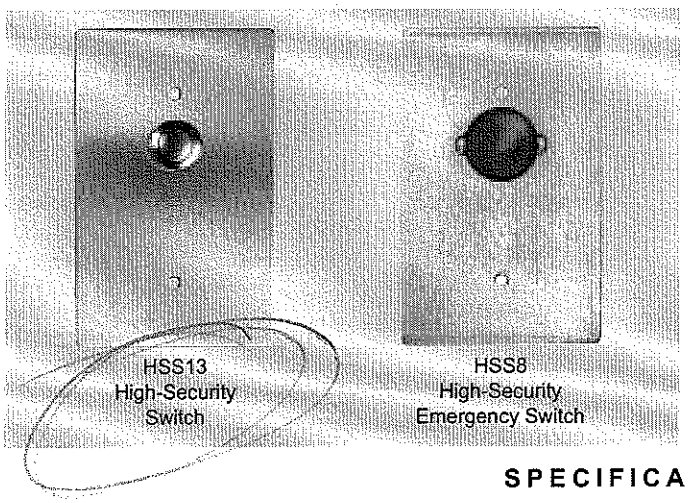
Two-way communications are accomplished through the use of the built-in speaker/microphone. A call origination switch is provided in the HSS1 station.

The Rauland HSS2 High-Security Station is identical to the HSS1 but does not have a call origination switch. It cannot initiate a call, but it can respond to a call through the built-in speaker/microphone.

The HSS1 and HSS2 are virtually indestructible. They are protected externally by an 11-gauge stainless steel face plate with a mar-resistant brushed finish. The call switch assembly of the HSS1 is a momentary push-button type, water-resistant, vandal-proof both in design and heavy-duty construction. A rugged steel actuator activates a momentary switch whose movement is limited by a mechanical stop to prevent damage caused by attempted vandalism or heavy impact. The call-in switch is normally open; the self-cleaning contacts are rated in excess of 350 watts @ 120V AC (non-inductive loads).

The speaker/microphone used in the stations is an acrylic impregnated cotton cloth cone speaker, ingeniously protected against tampering or damage caused by flame or liquids. The speaker is mounted internally to the last of three protective metal "barrier" plates which effectively deny access to the speaker cone. All speaker transformer terminations are accomplished by pigtail leads. The call switch terminations are screw terminals. The stations are designed for flush mounting in a standard three-gang electrical box.

HSS13/HSS8 HIGH-SECURITY AND EMERGENCY CALL-IN SWITCHES



FEATURES

- **Virtually Indestructible**
- **11-Gauge Stainless Steel Faceplate**
- **Tamper-Proof Switch**
- **Steel Activator Button (HSS13)**
  Red "Mushroom" Button (HSS8)
  Single-Gang Backbox Mount

SPECIFICATIONS

Switch Type: SPST normally open
Steel Actuator Button (HSS13)
Red "Mushroom" Button (HSS8)

Terminations: Color-coded pre-wired pigtails (HSS8)

Screw Terminals: (HSS13)

Size: 5-1/2" (13.97 cm) high, 3-1/2" (8.89 cm) wide, 2" (5.08 cm) deep

Weight: 1.7 lbs. (.77 kg)

Wiring Requirements: 2 conductors

Recommended Backbox: Raco 674 Single-gang (U.L. recognized)

Associated Equipment:
All Rauland Communications Systems

DESCRIPTON

The Rauland HSS13 High-Security Call-In Switch is intended for call origination where the speaker/microphone is not used or is located remotely, i.e. in ceiling or high on wall. For use in cells, at door locations or wherever call origination is desired.

A rugged steel actuator activates a momentary switch whose movement is limited by a mechanical stop to prevent damage caused by attempted vandalism.

The HSS8 Emergency Call-In Switch is identical to the HSS13, but incorporates a unique red metal "mushroom" call-in button which actuates with minimum pressure to meet the ADA recommendations.

Unit mounts in standard single-gang backbox; with tamper-proof hardware. (Not provided)

Specifications subject to change without notice.

RAULAND-BORG CORPORATION

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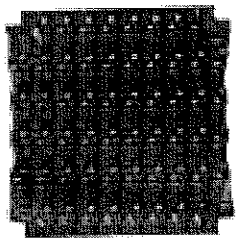
Rauland®

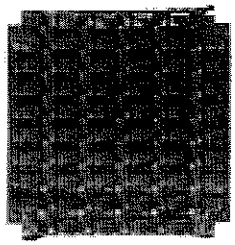
SECURITY SYSTEM COMPONENTS

HSS1/HSS2 High-Security Intercom Stations HSS13/HSS8 Call-In Switches

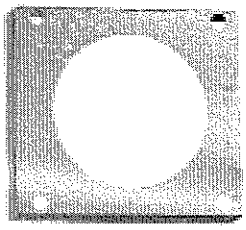
TRI-GARD TRIPLE BARRIER SPEAKER PROTECTION



1
An initial metal plate with offset perforations protects against direct penetration. . .

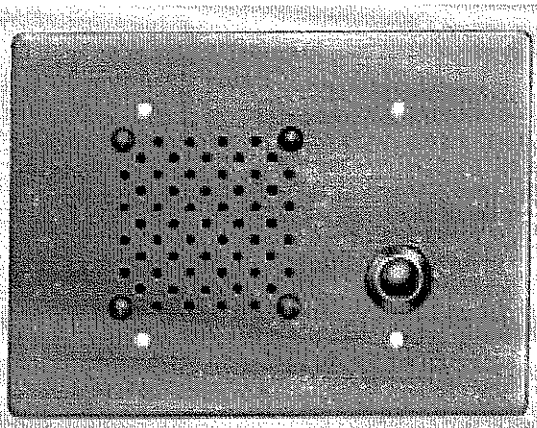


2
A second and a third metal plate are further barriers against vandalism as well as flame or liquid damage. . .

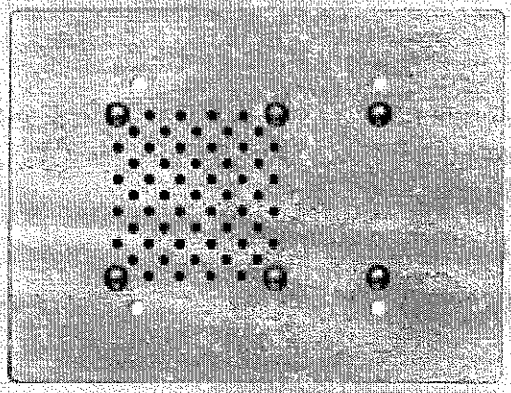


3
A final metal enclosure defies tampering, and enhances audio frequency response

Vandal-proof design



HSS1
with call button



HSS2
less call button

FEATURES

- **Heavy-Gauge Stainless Steel Construction**
- **Weather Resistant Speaker**
- **Vandal-Proof Speaker Mounting Design**
- **Water-Resistant Tamper-Proof Call Switch (HSS1)**
- **Standard 3-Gang Electrical Box Mount**
- **Integrates With All Rauland Communications Systems**

HSS1/HSS2 SPECIFICATIONS

SPL Output: 400 Hz to 4 KHz, +3dB @25V
.25 watt tap—81dB @ 1 KHz
0.5 watt tap—84dB @ 1 KHz
1.0 watt tap—87dB @ 1 KHz
2.0 watt tap—90dB @ 1 KHz
4.0 watt tap—93dB @ 1 KHz

Speaker/Microphone: 3" acrylic impregnated cotton cloth cone speaker.Waterproof and puncture-resistantconstruction. 2.5 ounce ceramic magnet. 8-ohm voice coil. With 25V matching transformer tapped at 1/4, 1/2, 1, 2 @ 4 watts

Microphone Output: 74dB SPL @ 1 KHz, 2.5 mV 0.25 watt tap
1.9 mV 0.5 watt tap
1.4 mV 1.0 watt tap
1.1 mV 2.0 watt tap
0.9 mV 4.0 watt tap

Switch: SPST normally open

Speaker Transformer Terminations: Color-coded pre-wired pigtails

Call Switch Terminations: Screw terminals

Size: 7-1/2" (19.05 cm) long, 5-1/2" (13.97 cm) high, 2-1/4" (5.71 cm) deep

Weight: 2-1/2" lbs. (1.13 kg)

Wiring Requirements: 3-conductor shielded

Recommended Backbox: Steel City 3G three-gang backbox with 3GC plaster ring or GW335-C masonry type, or equal (U.L. recognized)

Associated Equipment: All Rauland Communications Systems stations do not include mounting hardware.

(over)