Gamewell FC1 FIRE CONTROL INSTRUMENTS

by Honeywell

7100 Series Panel
Fire Alarm Control Panel
Installation/Operating Manual

Important Limitations

While a fire alarm system may lower insurance rates, it is not a substitute for fire insurance!

An automatic fire alarm system- typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control panel with remote notification capability - can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise following the recommendations of the current edition of the National Fire Protection Association, Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which are made available at no charge to all installing dealers. These documents can be found at http://www.systemsensor.co/html/applict.html. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons.

Smoke Detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

Particles of combustion or "smoke" from a developing fire may not reach the sensing chambers of smoke detectors because:

* Barriers such as closed or partially closed doors, walls, or chimneys may inhibit particle or smoke flow.
* Smoke particles may become "cold," stratify, and not reach the ceiling or upper walls where detectors are located.
* Smoke particles may be blown away from detectors by air outlets.
* Smoke particles may be drawn into air returns before reaching the detector.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).

Heat detectors do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. Heat detectors are designed to protect property, not life.

IMPORTANT! Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

Audible warning devices such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol or medication. Please note that:

* Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
* Studies have shown that certain people, even when they hear a fire alarm signal, do not respond or comprehend the meaning of the signal. It is the property owner's responsibility to conduct fire drills and other training exercise to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
* In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

A fire alarm system will not operate without any electrical power. If AC power fails the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

Equipment used in the system may not be technically compatible with the control panel. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup radio transmission systems are recommended.

The most common cause of fire alarm malfunction is inadequate maintenance. To keep the entire fire alarm system in excellent working order, ongoing maintenance is required per the manufacturer's recommendations, and UL and NFPA standards. At a minimum, the requirements of NFPA 72 shall be followed. Environments with large amounts of dust, dirt or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled monthly.

Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

WARNING - Several different sources of power can be connected to the fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until manuals are read and understood.

CAUTION - System Re-acceptance Test after Software Changes: To ensure proper system operation, this product must be tested in accordance with NFPA 72 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring. All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49° C/32-120° F and at a relative humidity 93% ± 2% RH (non-condensing) at 32° C ± 2° C (90° F ± 3° F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme termperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15-27° C/60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment FACP operation and reliability depend upon proper installation.

Survivability

Per the National Fire Alarm Code, NFPA 72, all circuits necessary for the operation of the operation of the notification appliances shall be protected until they enter the evacuation signaling zone that they serve. Any of the following methods shall be considered acceptable as meeting these requirements:

1) A 2-hour rated cable or cable system

2) A 2-hour rated enclosure

3) Performance alternatives approved by Authority Having Jurisdiction (AHJ).

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interference, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, or printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

This system contains static-sensitive components.

Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.

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FCC Warning

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause interference to radio communications. It has been tested and found to comply with the limits for Class A computing devices pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when devices are operating in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his or her own expense.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Classe A prescrites dan le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Software Downloads

In order to supply the latest features and functionality in fire alarms and life safety technology to our customers, we make frequent upgrades to the embedded software in our products. To ensure that you are installing and programming the latest features, we strongly recommend that you download the most current version of software for each product prior to commissioning any system. Contact Technical Support with any questions about software and the appropriate version for a specific application.

Documentation Feedback

Your feedback helps us keep out documentation up-to-date and accurate. If you have any comments or suggestions about our online Help or printed manuals, you can email us.

Please include the following information:

- Product name and version number (if applicable)
- Printed manual or online Help
- Topic Title (for online Help)
- Page number (for printed manual)
- Brief description of content you think should be improved or corrected
- Your suggestion for how to correct/improve documentation

Send email messages to:

FireSystems.TechPubs@honeywell.com

Please note this email address is for documentation feedback only. If you have any technical issues, please contact Technical Services

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Section 1: System Overview

1.1 Description

The Gamewell-FCI 7100 is a multiprocessor-based analog/addressable system, designed for commercial, industrial and institutional fire alarm applications. It is available with either one or two signaling line circuits. Figure 1.1.1 illustrates the 7100 Series sub-assembly.

The 7100 Series is Listed by Underwriters Laboratories, Standard UL 864, 9th Edition. It is suitable for the following signaling services:

• Automatic Fire Detector Alarm

• Manual Fire Alarm

• Waterflow Alarm

• Supervisory

• Automatic Smoke Alarm, non-coded and master coded operation

• Releasing Device Service

The 7100 Series complies with the requirements of the following National Fire Protection Association (NFPA) Standards:

• NFPA 13 - Installation of Sprinkler Systems

• NFPA 16 - Deluge Foam-Water Sprinkler Systems

• NFPA 72 - National Fire Alarm Code:

– Central Station Fire Alarm Systems

– Local Fire Alarm Systems

– Auxiliary Fire Alarm Systems

– Remote Station Fire Alarm Systems

– Proprietary Fire Alarm Systems
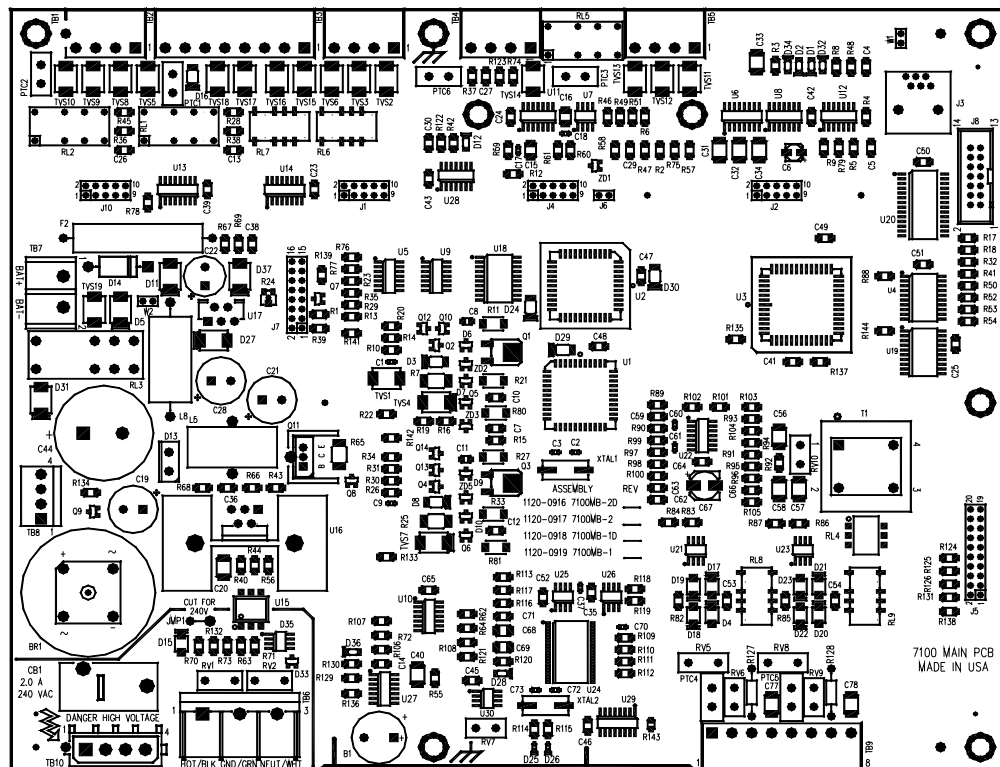
Figure 1.1.1   7100 Series Sub-Assembly

1.2 Features

1.2.1 Standard Features

The standard features for the 7100 Series fire alarm control panel are listed below:

- Two (2) Class B, Style 4 Signaling Line Circuits
- Two (2) Class B, Style Y Notification Appliance Circuits
- Alarm and Trouble dry contacts
- Accommodates 99 Gamewell-FCI Approved, UL Listed compatible analog sensors per SLC
- Accommodates 98 Gamewell-FCI Approved, UL Listed compatible addressable monitor/control devices per SLC
- 80-character alphanumeric LCD display
- 280 event history buffer (non-volatile) (4,000 events when the NGA Module is installed)
- Power-limited
- Resettable/Non-resettable 1.0 amp @ 24 VDC power output, FWR
- Alarm verification
- Walk test
- Multi-level alarm processing
- Positive alarm Sequence (PAS) operation
- NAC coding
- Trouble reminder
- Integral RS-232 port
- Key Switch - keyed alike with the door lock and renders the key pad inoperative until activated.

1.2.2 Optional Features

The following list the optional features for the 7100 Series fire alarm control panel.

- Class A Module (CAOM) with Disconnect Switches for NACs and SLCs
- Digital Alarm Communicator (DACT) (Model 7100-D)
- RS-232 Printer Transient Module (PTRM), Supervised
- Municipal Circuit Option Module (MCOM)

1.3 Control and Indicators

1.3.1 Switch Controls

The switch controls that appear on the 7100 Series fire alarm control panel are listed below:

- Alarm Acknowledge
- Trouble Acknowledge
- Signal Silence
- System Reset/Lamp test
- Programming buttons
  - Menu/Back
  - Back Space/Edit
  - OK
- 12 button keypad
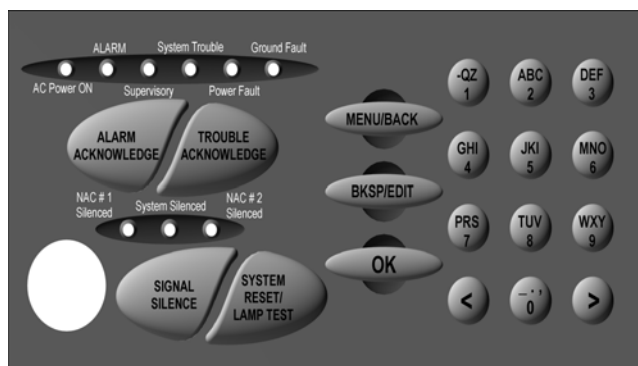
Figure 1.3.2   7100 Series Switch Controls

1.3.2 LED Indicators

The following list the LED indicators and color signals that appear on the 7100 Series display panel.

- AC Power On (green)
- Alarm (red)
- Supervisory (yellow)
- System Trouble (yellow)
- Power Fault (yellow)

- Ground Fault (yellow)
- NAC 1 Silenced (yellow)
- NAC 2 Silenced (yellow)
- System Silenced (yellow)

1.3.3 Audible Sounder

An Alarm/Trouble sounder is located on the Basic System Module (BSM). Figure 1.3.3.1 illustrates the BSM sub-assembly.
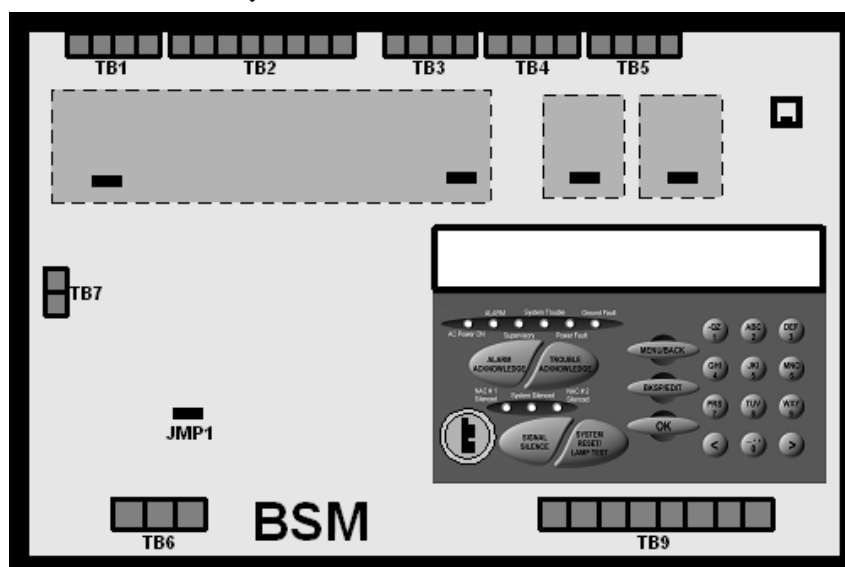
Figure 1.3.3.1 Basic System Module (BSM)

1.4 Optional Modules

The following optional modules and features are available with the 7100 Series:

1.4.1 Digital Alarm Communicator (DACT)

The Model 7100-D provides an integral digital communicator (DACT), fully programmable from the keypad, which is compatible with Digital Alarm Receivers (DACRs) that can receive the following formats:

- SIA DC8
- SIA DCS20
- Ademco Contact ID
- 3+1 1400 Hz
- 3+1 2300 Hz
- 4+2 1400 Hz
- 4+2 2300 Hz

1.4.2 Class A Option Module (CAOM)

All 7100 Models are supplied with Class B Notification Appliance Circuits and Class B Signaling Line Circuits. For Class A operation, the addition of a CAOM Module is required. This module operates with all 7100 Models and enables the signaling line circuits to operate as Class A, Style 6 or 7 and enables the notification appliance circuits to operate as Class A, Style Z. It supplies the additional terminals for these circuits.

1.4.3 Municipal Circuit Option Module (MCOM)

The MCOM Module can trip a Local Energy City Master Box or operate in reverse polarity mode for leased line connection. It can also energize a solenoid for releasing.

1.4.4 Printer Transient Module (PTRM)

The serial output on the BSM is connected via an existing RS-232 RJ-11 connector, J3. This connection can be used to communicate directly from the panel to the control using a laptop computer. The PTRM Module is intended for systems where a permanent connection is required. This type of connection requires the RS-232 port to have sufficient transient protection to comply with the applicable codes for wiring leaving the confines of the control box, as well as the proper isolation of the signal to prevent damage or interference caused by the connection to certain EDP devices. Connections are limited to the same room. The PTRM supplies supervision and transient protection as well as the necessary isolation.

1.4.5 LCD-7100/RAN-7100 Remote Serial Annunciator Module

The LCD-7100/RAN-7100 Serial Remote Annunciator Module provides an 80-character display and the function keys for the following:

- Alarm Acknowledge
- Trouble Acknowledge
- Signal Silence
- System Reset/Lamp Test
- System Drill Test

The 80-character display shows all pertinent information except for menus.

> **NOTE:** For additional information on the LCD-7100/RAN-7100, refer to the following documents:
> *- LCD-7100 Installation Instructions, P/N: 9000-0491*
> *- RAN-7100 Installation Instructions, P/N: 9001-0066*
> *- E3 Series Expandable Emergency Evacuation System Manual, P/N: 9000-0574*

1.4.6 LDM-7100 Remote LED Driver Module

Each LDM-7100 LED Driver Module provides the 7100 Series control panel output for thirty-three (33) remote LEDs. Three (3), LDM-7100 Modules may be mounted in a single annunciator for a maximum total of 99 points per annunciator.

The annunciator may be located up to 4,000 feet from the panel and up to four (4), additional annunciators can be connected, configured identically with the first.

1.4.7 INI-7100-UTP, Intelligent Network Interface, Unshielded, Twisted-Pair

The E3 Series® Broadband Network interface to the 7100 FACP uses copper wire network terminations only. It occupies one node on the E3 Series Broadband Network.

OR

1.4.8 INI-7100-FO, Intelligent Network Interface, Fiber-Optic

The E3 Series Broadband Network interface connection to the 7100 FACP uses either fiber-optic cable or copper wire network terminations. It occupies one node on the E3 Series Broadband Network.

📄 **NOTE:**   The Network Graphic Annunciator Module (NGA) is required when more than seven (7), 7100 Series panels are networked. For additional information , refer to the *E3 Series Broadband Installation/Operating Manual P/N 9000-0575.*

1.5 Specifications

The following list the specifications for the 7100 Series control panel.

Power Supply Output

Supervisory current   1.0 amp (max.) (24 VDC nominal)
Alarm current   3.335 amp (max.) (24 VDC nominal)

Notification Appliance Circuits (TB1)

The following list the specifications for the notification appliance circuits:

- Two (2) regulated power outputs
- Power-limited
- Supervised
- Non-coded
- Max. alarm load 1.5 amp /circuit

For a list of Gamewell-FCI Approved, UL Listed notification appliances, refer to the *Compatibility Addendum to Gamewell-FCI Manuals P/N 9000-0427*.

NOTE: Use UL Listed End-of-Line Resistor EOL-N (47K), P/N 4700-0512 Alarm Dry Contacts (TB2)

- Form "C"
- Rated 2A @ 30 VDC Resistive

Alarm signals latch in. Supervisory and System Trouble signals do not latch in.

Trouble Dry Contacts (TB2)

- Form "C"
- Rated 2A @ 30 VDC Resistive

Transfer Relay Control (TB2) (Special Application)

Transmit loss of AC power or brown out to Gamewell-FCI Model, FCI-CHG-120 battery charger.

- Power-limited
- Unsupervised

Signaling Line Circuits (TB3)

- One (1) or two (2) Class "B", Style 4 circuits
- 24 VDC nominal
- Power-limited
- Supervised
- 40 Ohm max. line resistance
- 0.5 µf max. capacitance

Capacity of 99 analog sensors and 98 addressable devices per circuit

Earth Ground Connection (TB4)

AC Input (TB6)

- 120/240 VAC, 50/60 Hz, 2A @ 120 VAC, 1 amp @ 240 VAC

- Non-power-limited

⚠ **CAUTION: EARTH GROUND CONNECTION REQUIREMENTS:**
TERMINAL TB4 MUST BE CONNECTED TO AN EARTH GROUND CONNECTION
PER ARTICLE 760 OF THE NATIONAL ELECTRICAL CODE. FAILURE TO MAKE A
PROPER EARTH GROUND CONNECTION TO A METALLIC COLD WATER PIPE OR
DRIVEN GROUND ROD TO THIS TERMINAL WILL RESULT IN LOSS OF
LIGHTENING PROTECTION, REDUCE THE TOLERANCE OF THE SYSTEM TO
TRANSIENTS, AND WILL ADVERSELY AFFECT THE OPERATION OF THE
SYSTEM. PANEL NEUTRAL OR CONDUIT GROUND IS NOT ACCEPTABLE;
MINIMUM WIRE SIZE IS 14 AWG.

24 VDC external power, system (TB4) (Special Application)

- Unregulated, FWR

- Resettable and non-resettable

- 1.0 amp max. each circuit, 1.0 amp max. combined

- Unsupervised

Battery Connection (TB7)

- Supervised

- 24 VDC nominal

- Maximum battery size 31 AH

- Non-power-limited

- 0.6 A max. battery charge current

The RS-232 port, consists of an RJ11 connector which provides a standard serial port for the
connection to a Listed output device for supplementary type service. Typical examples of such
devices include any UL Listed EDP device (remote printer or video terminal), any UL Listed
Signaling Device (such as the Keltron VS4095/5 printer), or any UL Listed Signal System Unit.

  Ratings: 15 VDC (max.)
                .05 amp (max.) current
                9600 baud
                8 bits, 1 stop bit, no parity.

Table 1.5.1 lists the connections to the RJ11 serial
connector:

Terminal	Description
2	RXD
3, 4	GND
5	TXD
6	Supervision

**Table 1.5.1 RJ11 Serial Connector
Connections**
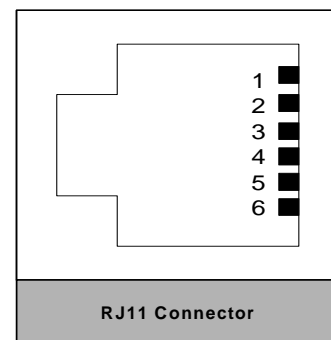
Figure 1.5.1 RJ11 Connector

Table 1.5.2 list the available cables used with the RS-232 connections. Figure 1.5.2 illustrates the BSM J2 connector.

Part Number	Model	Description
6100-0077	RJ11-DB9PC	RJ11 to 9-pin DB9 (Connector only - PC Laptop)
6100-0074	RJ11-DB25	RJ11 to 25-pin (DB25) (connector only-printer)
6100-0075	RJ11C-6	RJ11 to RJ11 cable, 6-inches
6100-0076	RJ11C-20	RJ11 to RJ11 cable, 20 feet
NOTE: The BSM is shipped with jumpers installed on the middle three pairs of pins on J2. These jumpers must be removed when the PTRM is installed.		

Figure 1.5.2 Cables Used with the RS-232 Connection

BSM J2

Before installing the PTRM Module, remove these jumpers.
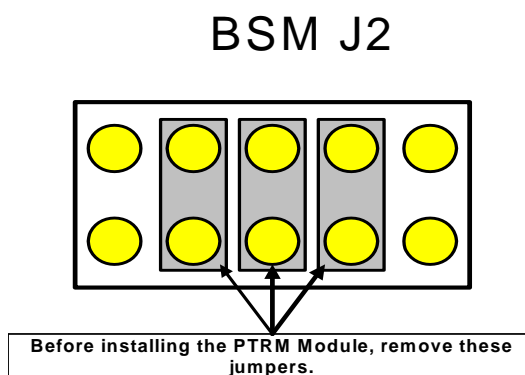
Figure 1.5.2 BSM J2 Connector

Section 2: Installation

2.1 General

Components are ordered and shipped in separate packaging for the enclosure and Basic System Module kit. The 7100 is intended for installation indoors, in a dry location. The shipping carton contains an installation drawing, backbox, Basic System Module (BSM), power transformer and door.

Installation Requirements

All components of the E3 Series® and 7100 Series Systems should be installed per the following requirements:

- Installations are to be indoors only, in dry locations, protected from rain, water, and rapid changes in temperature that could cause condensation. Equipment must be securely mounted on rigid, permanent walls.
- Operating temperature shall not exceed the range of 32° to 120° F (0 to 49° C).
- Operating humidity not to exceed 93% non-condensing at 90° F (32° C).
- There should be adequate space around the installation to allow easy access for operation and servicing.
- All sub-assemblies and components are to be located in compliance with the local and the national codes.
- All installation field wiring shall be in compliance with the local and the national codes.

2.1.1 LCD-7100 and RAN-7100 Remote Aphanumeric Annunciator Installation

The RAN-7100 Remote Alphanumeric Annunciator is a compact keypad display that is used for retrofit installations in the 7100 Series modular system. The LCD-7100 is used for new installations in the 7100 Series modular system.

> **NOTE:** For additional information on the LCD-7100/RAN-7100 installations, refer to the following documents:
> - E3 Series Expandable Emergency Evacuation System Manual, P/N: 9000-0574
> - LCD-7100 Installation Instructions, P/N: 9000-0491
> - RAN-7100 Installation Instructions, P/N: 9001-0066

2.1.2 BSM Module Installation

1. Refer to the System Assembly Drawing, P/N 9000-0457.
2. The BSM module consists of a main operating board with pluggable terminal strips, an 80-character LCD display and programming keypad. Install this module immediately unless any optional modules are to be used in the system. The optional modules are supplied separately, and should be installed on the BSM before it is mounted in the backbox. Before installing the BSM into the system backbox, refer to the installation instructions shipped with each module for the proper installation procedures.
3. Install the transformer into the backbox.
4. Connect the transformer to the BSM.
5. After the BSM is in place, install the door

> **NOTE:** The door can only be installed (or removed) when it is opened at least 90° from the backbox.

2.2 7100-Slim Cabinet Installation

The 7100-Slim Cabinet assembly typically houses the following:

*   Backbox
    *   Batteries
*   Outer Door
*   7100 Series Mounting Plate
    *   Transformer
    *   7100-Slim, BSM Sub-Assembly Plate
*   Hardware Kit
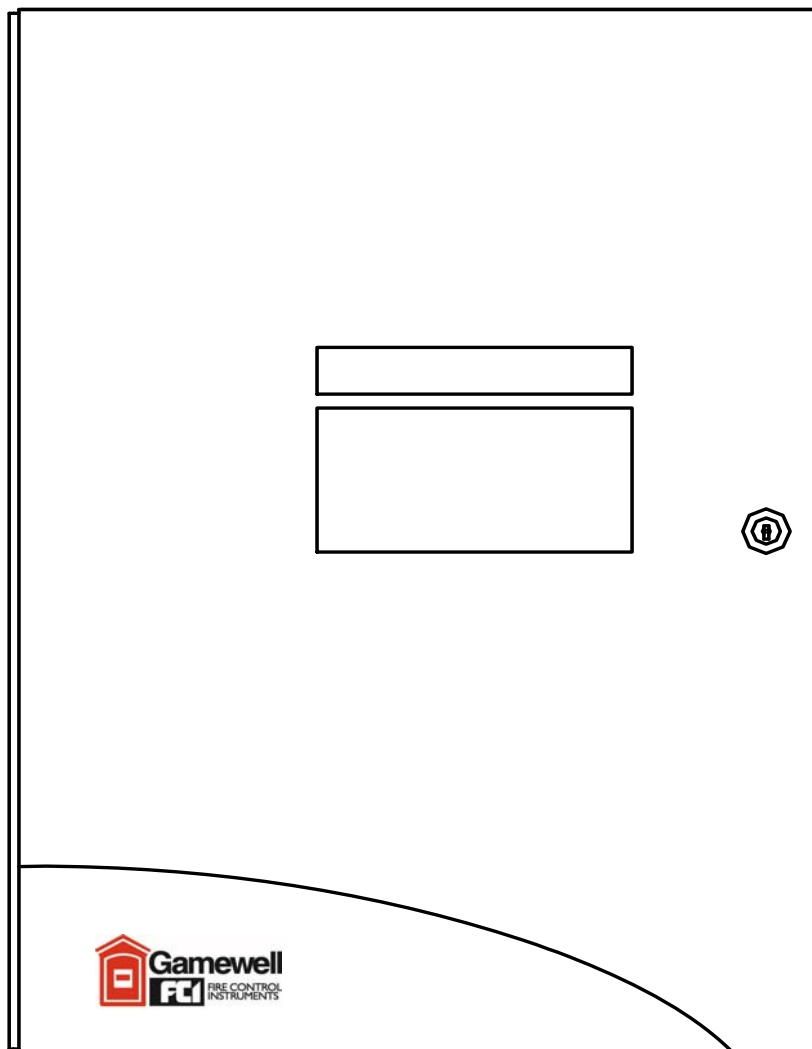
Figure 2.2.1 7100-Slim Cabinet, Standard View

2.2.1 7100-Slim Backbox Installation

1. To prepare the mounting site, pre-drill four (4), #10 screws, using the dimensions shown in the figure below. Use four (4), #10 screws.

NOTE: If the fasteners are anchored to a wallboard, use #10 wall anchors. Mountings to concrete walls should be backed by plywood to insulate the equipment from possible condensation.

2. Secure with two (2), #10 screws in the two-hole mounting pattern as shown in Locations 1 and 2 of the figure below.
3. Set the backbox over the top, two-hole mounting pattern, and hang the backbox over the two screw heads.
4. Insert and secure two (2), #10 screws in the two-hole mounting patterns as shown in Locations 3 and 4 of the Figure 2.2.1.1.

NOTE: Add knockouts to the left and right side of the rear panel of the backbox. Do not add knockouts in the center or top of the backbox. To add larger knockouts, increase the size of the existing knockouts.
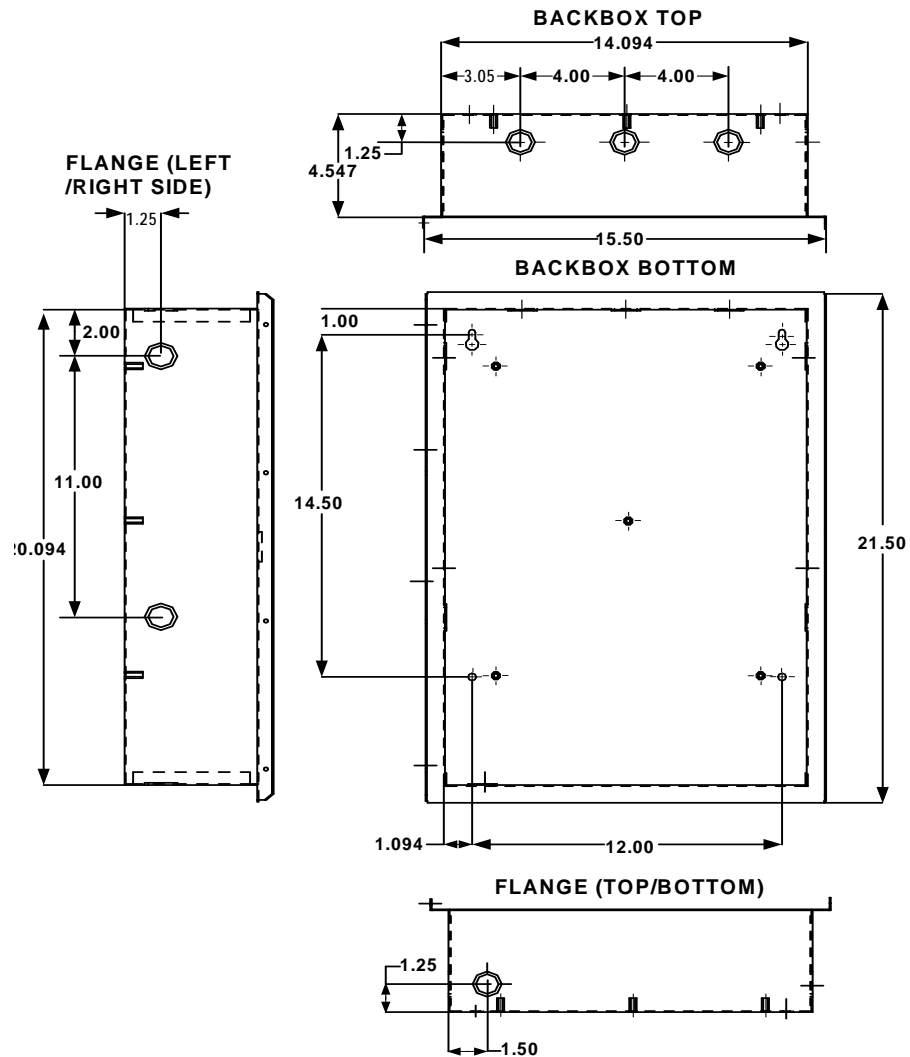
Figure 2.2.1.1 7100-Slim Backbox Dimensions

2.2.2 7100-Slim Outer Door Installation

To mount the 7100-Slim outer door to the backbox, secure four (4), #6-32 nuts in the four-hole mounting pattern on the left side of the backbox. See Locations 1, 2, 3, and 4 of Figure 2.2.2.1.
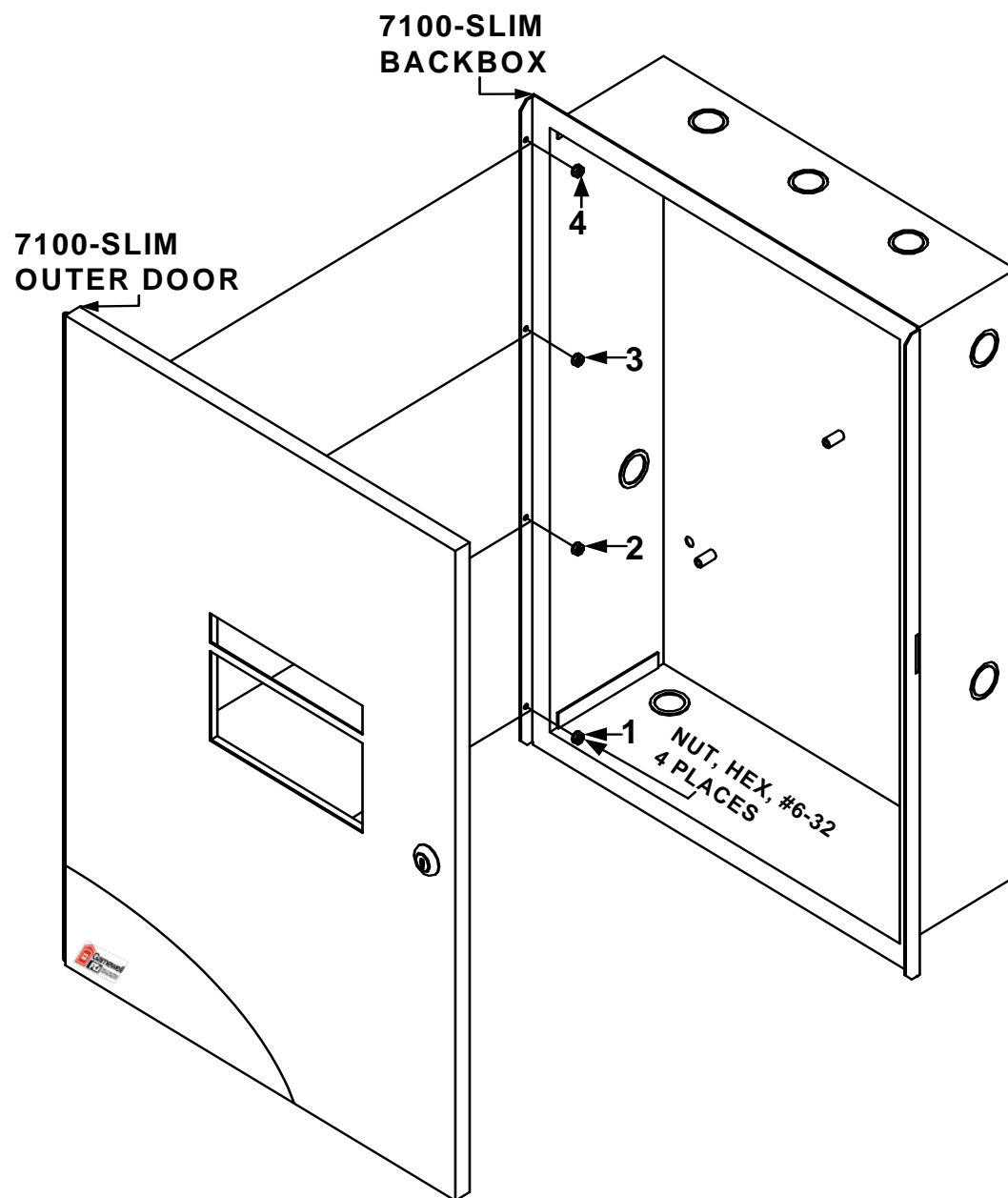
Figure 2.2.2.1   7100-Slim Outer Door Installation

2.2.3 7100-Slim, BSM Sub-Assembly Plate Installation

1. Insert and secure the four (4) standoffs (1/2" round, #10-32 x 7/8") in the four-hole mounting pattern on the 7100 Series mounting plate as shown in Location 1 of Figure 2.2.3.1.

2. Mount the 7100-Slim, BSM sub-assembly plate over the standoffs on the 7100 Series mounting plate and secure with four (4), nuts (#10-32 KEPS) as shown in Location 2 of Figure 2.2.3.1.

3. Install the Transformer on the 7100 Series mounting plate and secure with two (2), nuts (#10-32 KEPS) as shown in Location 3 of Figure 2.2.3.1.

4. Mount the 7100-Slim, BSM sub-assembly plate to the studs in the backbox and secure with four (4), screws (#8) as shown in Locations 1 thru 4 of Figure 2.2.3.1.

5. After the BSM is mounted in the backbox, install the door.

NOTE: To install the door, the door must be opened at least 90° from the backbox.

6. When the BSM is replaced, the system must be re-programmed.

For additional information, refer to the *BSM Installation Instructions P/N 9000-0453*.

Figure 2.2.3.1 7100-Slim, BSM Sub-Assembly Plate Installation

**7100-SLIM
BACKBOX**

1

2

1

**7100 SERIES, BSM
SUB-ASSEMBLY PLATE**

3

3

TRANSFORMER

4

4

**SCREW #8
4 PLACES**
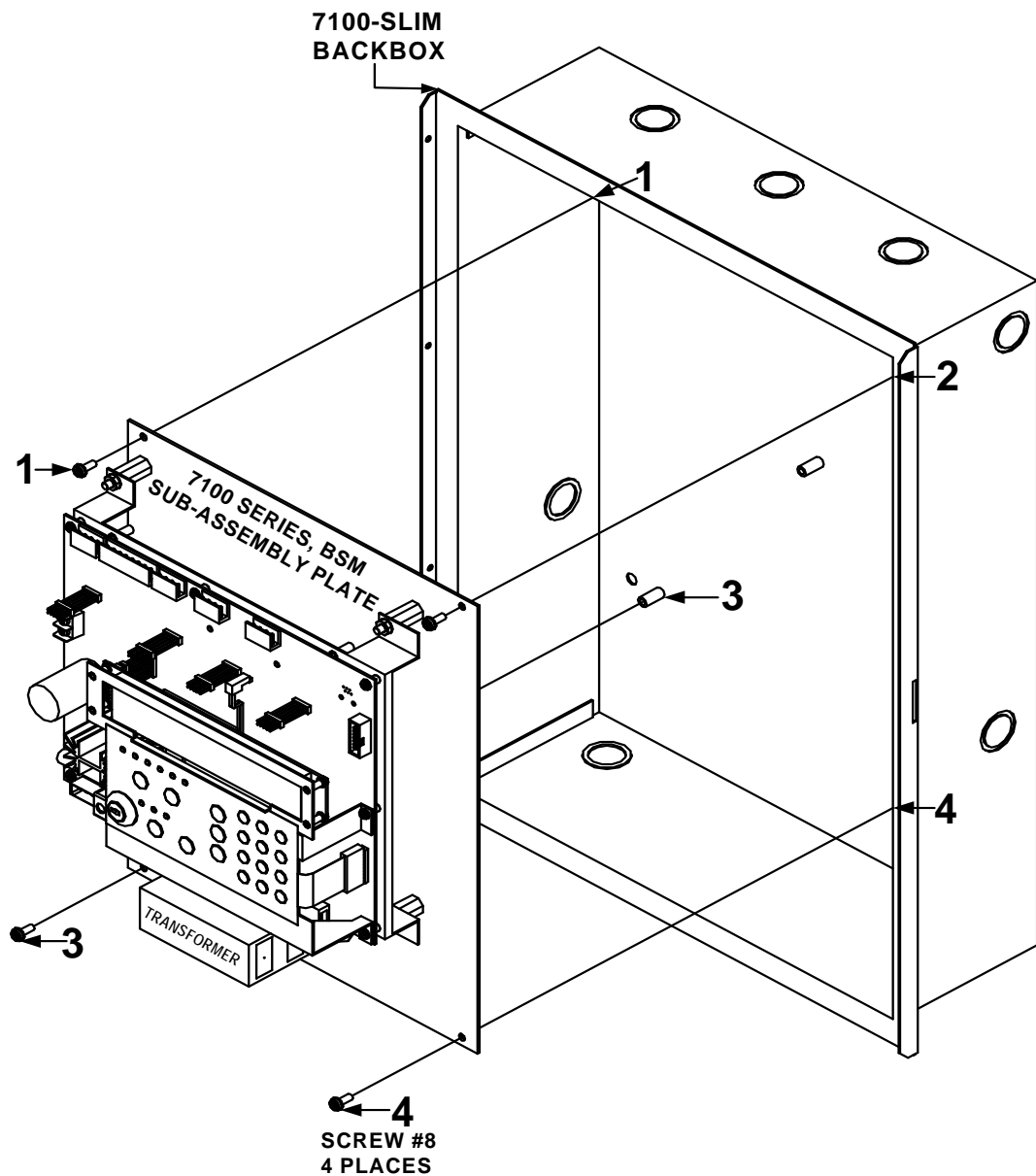
Figure 2.2.3.2 7100-Slim, BSM Sub-Assembly Plate (Exploded View)

2.2.4 7100-Slim, BSM Sub-Assembly Plate to the Backbox Installation

Mount the 7100-Slim, BSM Sub-Assembly Plate to the studs in the backbox and secure the plate to the backbox with six (6), #10-32 nuts as shown in Locations 1 thru 4 in Figure 2.2.4.1.
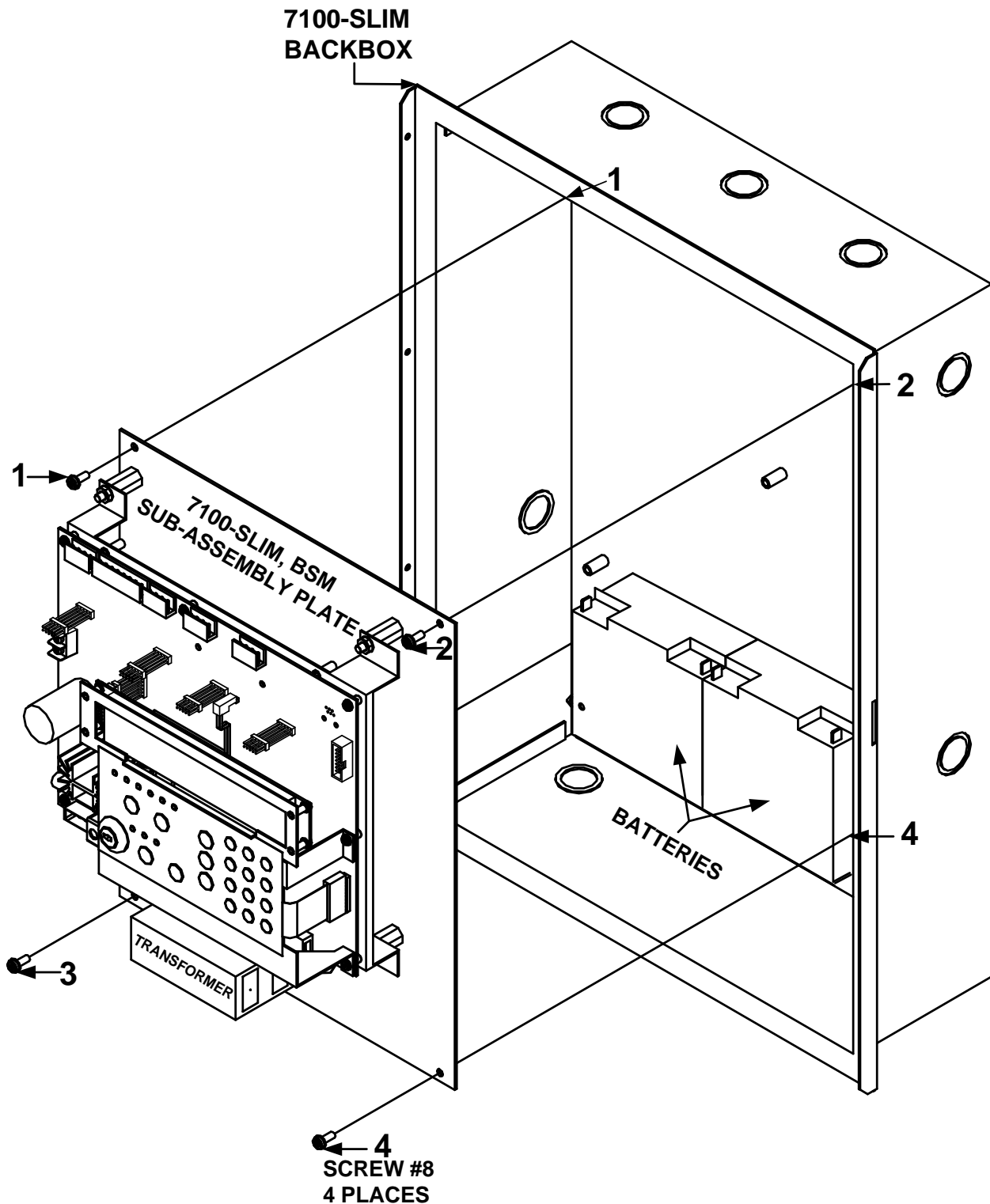
Figure 2.2.4.1   7100-Slim, BSM Sub-Assembly Plate to the Backbox Installation

2.3 7100 Cabinet Installation

The 7100® Cabinet assembly typically houses the following:

- Backbox
  - Transformer
  - Batteries
- Outer Door
- 7100, BSM Plate
  - INI-7100
- Hardware Kit
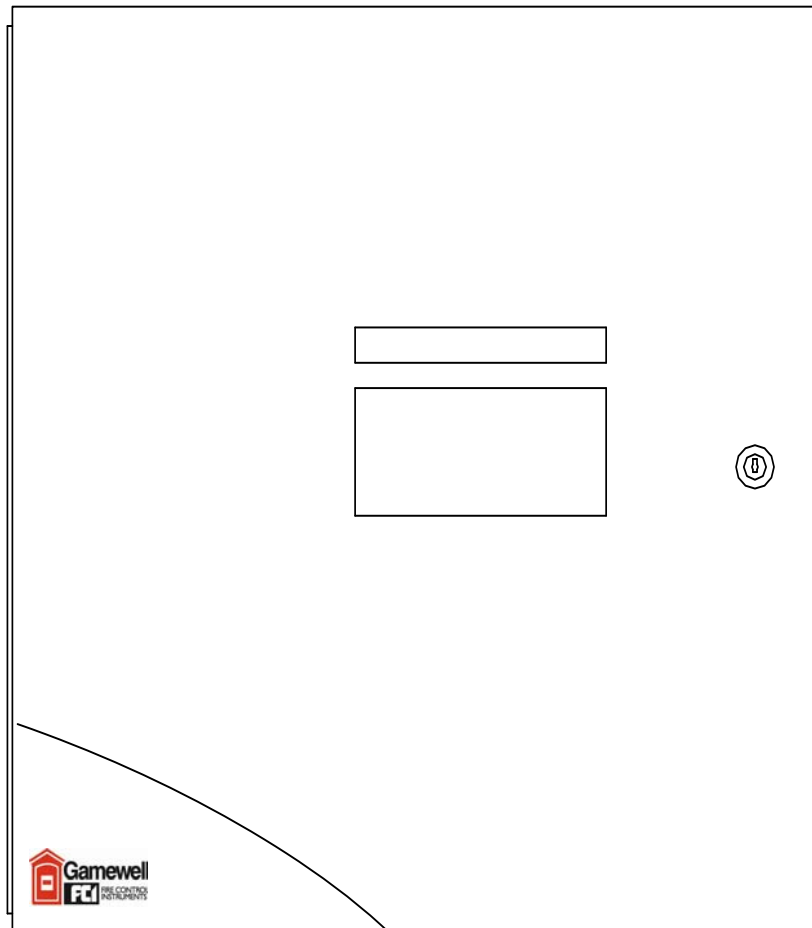
Figure 2.3.1   7100 Cabinet, Standard View

2.3.1 7100 Backbox Installation

1. To prepare the mounting site, pre-drill four (4), #10 screws, using the dimensions shown in the figure below. Use four (4), #10 screws.

NOTE: If the fasteners are anchored to a wallboard, use #10 wall anchors. Mountings to concrete walls should be backed by plywood to insulate the equipment from possible condensation.

2. Secure with two (2), #10 screws in the two-hole mounting pattern as shown in Locations 1 and 2 of the figure below.
3. Set the backbox over the top, two-hole mounting pattern, and hang the backbox over the two screw heads.
4. Insert and secure two (2), #10 screws in the two-hole mounting patterns as shown in Locations 3 and 4 of the figure below.

NOTE: Add knockouts to the left and right side of the rear panel of the backbox. Do not add knockouts in the center or top of the backbox. To add larger knockouts, increase the size of the existing knockouts.
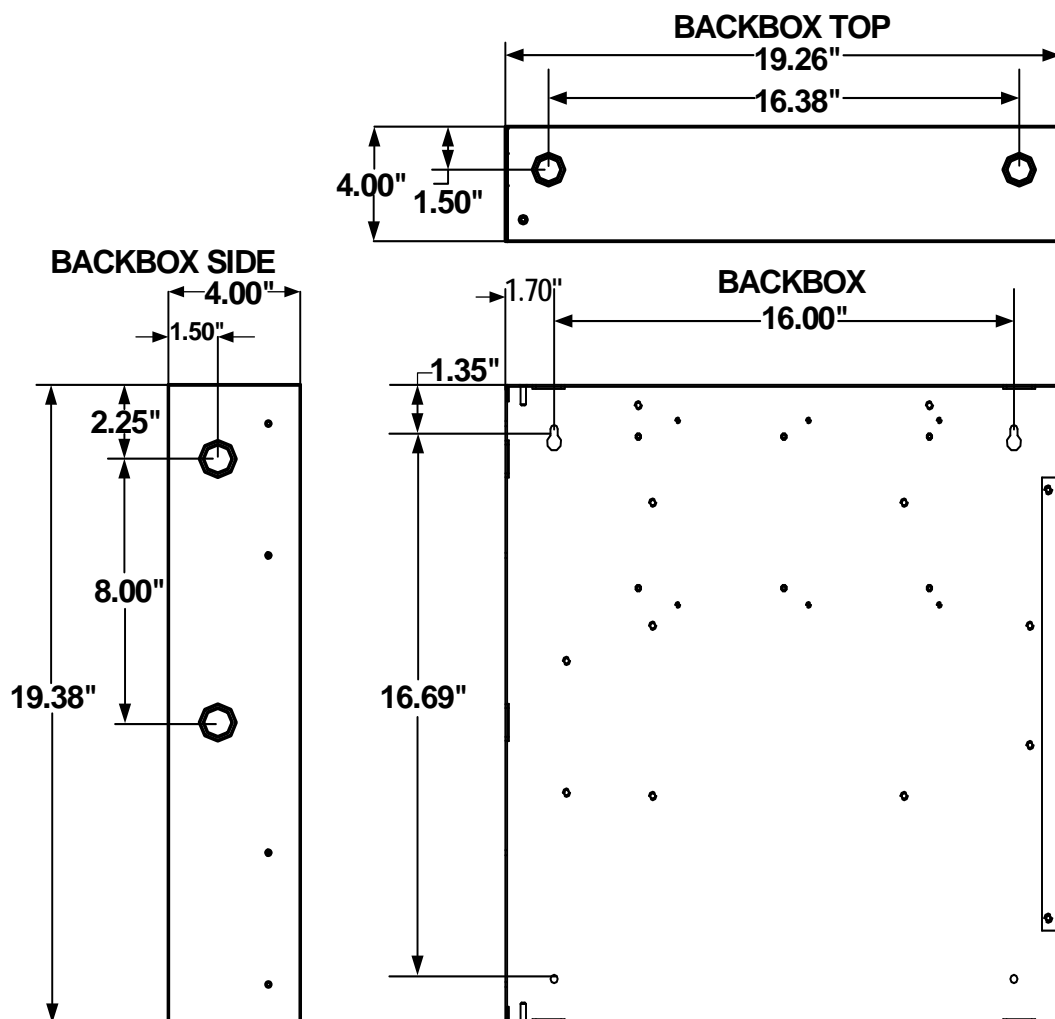
Figure 2.3.1.1 7100 Backbox Dimensions

2.3.2 7100 Outer Door Installation

To mount the 7100 outer door to the backbox, secure four (4), #6-32 nuts in the four-hole mounting pattern on the left side of the backbox. See Locations 1, 2, 3, and 4 of Figure 2.3.2.1.

7100 BACKBOX

4

3

7100 OUTER DOOR, METAL, RED

2

1

NUT, #6-32 KEPS (4 PLACES)
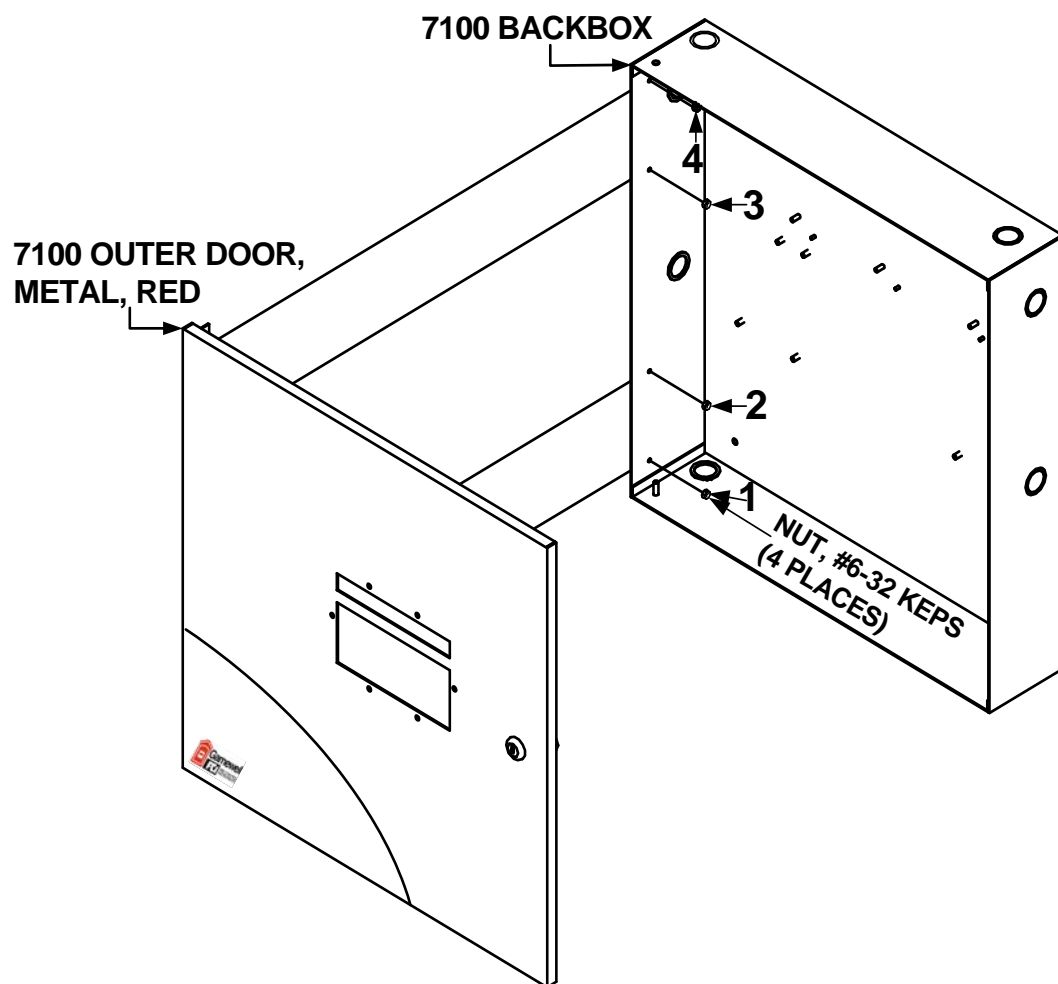
Figure 2.3.2.1 7100 Outer Door Installation

2.3.3 7100, BSM Plate to the Backbox Installation

1. Install the Transformer on the 7100 backbox and secure with two (2), nuts (#10-32 KEPS) as shown in Location 1 of Figure 2.3.3.1.

2. Mount the INI-7100 onto the 7100, BSM plate and secure with (4) screws (#6-32 x .25 sems) as shown in Location 2 of Figure 2.3.3.1.

3. Mount the 7100, BSM plate to the four-hole mounting pattern in the 7100 backbox and secure with four (4), nuts (#10 KEPS) as shown in Locations 3 thru 6 of Figure 2.3.3.1.

4. After the BSM is mounted in the backbox, install the door.

NOTE: To install the door, the door must be opened at least 90° from the backbox.

5. After the BSM is replaced, the system must be re-programmed.

    For additional information, refer to the *BSM Installation Instructions P/N 9000-0453*.
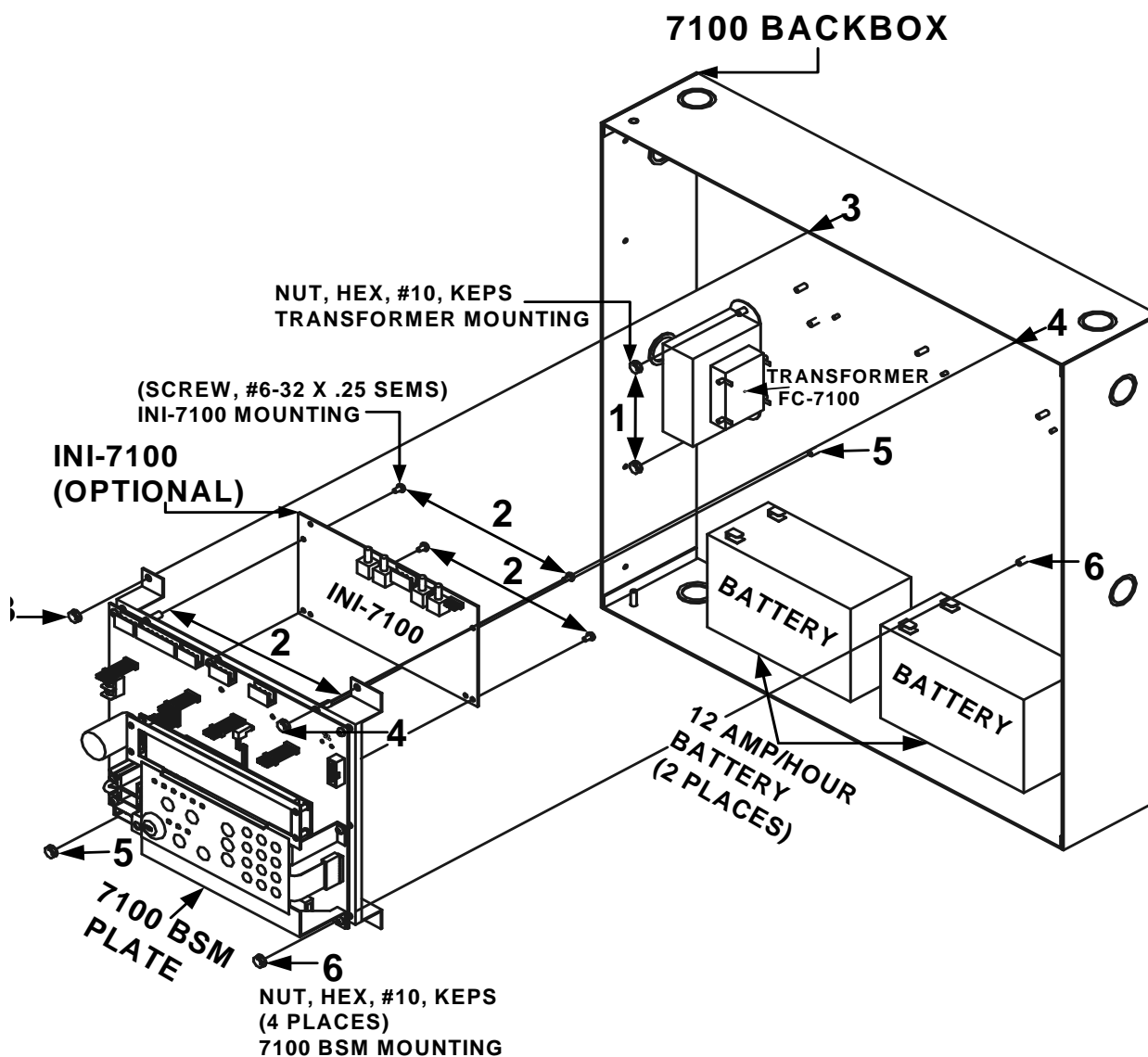
Figure 2.3.3.1 7100, BSM Plate to the Backbox Installation

Section 3: 7100 Series System Connections

3.1 Basic System Module (BSM)

3.1.1 BSM Wiring Connections

Table 3.1.1.1 lists the field wiring connections for the Basic System Module (BSM).

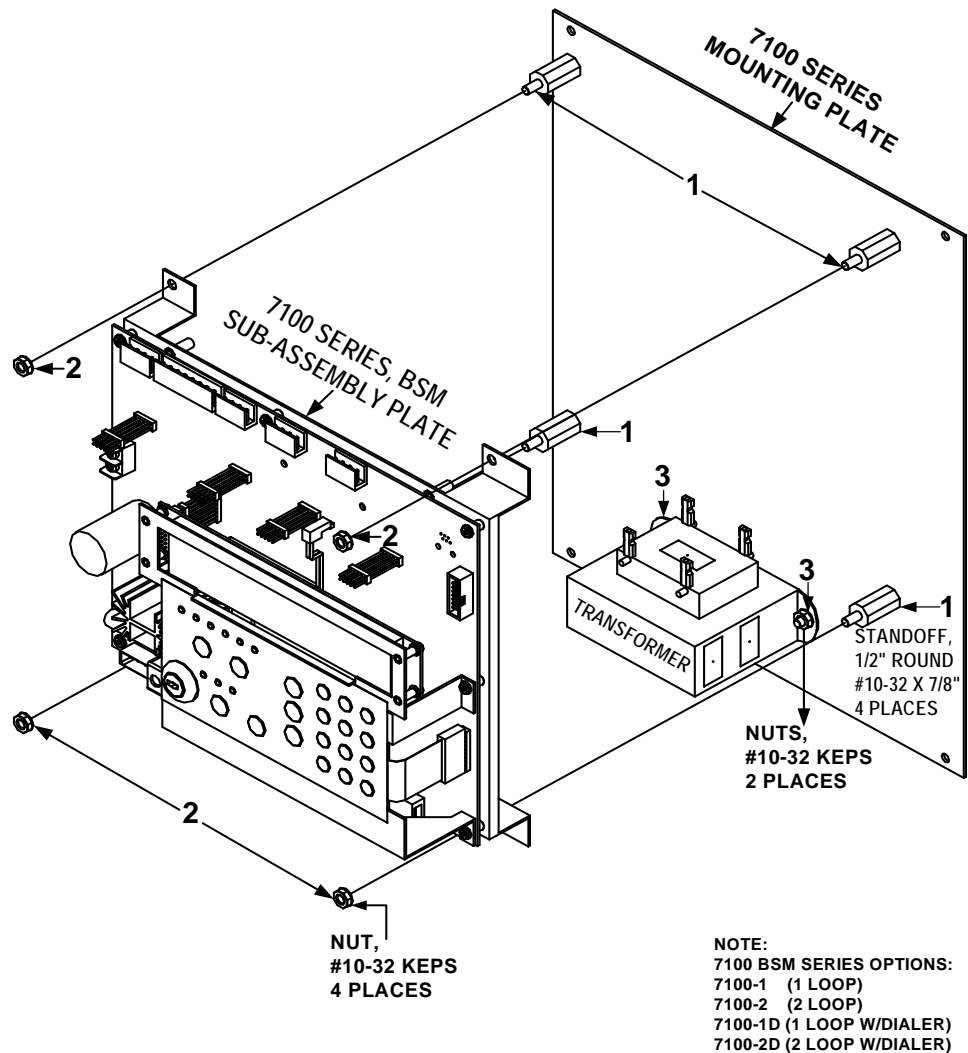| Designation	Description	Comments
TB1-1		NAC Circuit 1 (+) Class B, Style Y
TB1-2		NAC Circuit 1 (-) Class B, Style Y
TB1-3		NAC Circuit 1 (+) Class B, Style Y
TB1-4		NAC Circuit 2 (-) Class B, Style Y
TB2-1	TRBL	Trouble contacts, N/O, 2A @ 30 VDC (resistive)
TB2-2	TRBL	Trouble contacts, Common
TB2-3	TRBL	Trouble contacts, N/C
TB2-4	ALM	Alarm contacts, N/O, 2A @ 30 VDC (resistive)
TB2-5	ALM	Alarm contacts, Common
TB2-6	ALM	Alarm contacts, N/C
TB2-7		Transfer control
TB2-8		Not used
TB3-1		Signaling Line Circuit 1 (+) Class B, Style 4
TB3-2		Signaling Line Circuit 1 (-) Class B, Style 4
TB3-3		Signaling Line Circuit 2 (+) Class B, Style 4 (7100-2, -2D only)
TB3-4		Signaling Line Circuit 2 (-) Class B, Style 4 (7100-2, -2D only)
TB4-1		Resettable Power, 24 VDC 1.0 amp
TB4-2		Non-resettable Power, 24 VDC 1.0 amp
TB4-3		System Common
TB4-4		Earth Ground
TB5-1	COM B	To LCD-7100/RAN-7100 TB1-2
TB5-2	COM A	To LCD-7100/RAN-7100 TB1-1
TB5-3, -4		Not used
TB6-1	AC "Hot"	120 VAC "Hot", 50/60 Hz 2A, 240 VAC "Hot", 50/60 Hz 1 amp
TB6-2	Ground	Ground
TB6-3	AC Neutral	120 VAC Neutral, 240 VAC "Hot"
TB7-1	Batt+	Battery terminal (+)
TB7-2	Batt-	Battery terminal (-)
TB9-1	DACT	Line 1 Tip In (non-power-limited) From street
TB9-2	DACT	Line 1 Ring In (non-power-limited) From street
TB9-3	DACT	Line 1 Tip Out (non-power-limited) To phone
TB9-4	DACT	Line 1 Ring Out (non-power-limited) To phone
TB9-5	DACT	Line 2 Tip In (non-power-limited) From street
TB9-6	DACT	Line 2 Ring In (non-power-limited) From street
TB9-7	DACT	Line 2 Ring Out (non-power-limited) To phone
TB9-8	DACT	Line 2 Ring Out (non-power-limited) To phone

Table 3.1.1.1 BSM Field Wiring Connections

Basic System Module (BSM)   7100 Series System Connections

Table 3.1.1.2 lists the LEDs and jumpers for the BSM Module.

Designation	Description	Comments
LEDs		
LED25	Yellow	Line 2 Trouble
LED26	Yellow	Line 1 Trouble
Jumpers W1		Not used
W2		OUT to disable battery
W3		IN – No Local Phone Line 1
W4		IN – No Local Phone Line 2
J6		Connection to keypad
JMP1		Cut for 240 VAC input operation

Table 3.1.1.2 LEDs and Jumpers

7100 Series Installation/Operating Manual — P/N 9000-0447:K1 08/05/11   27

Figure 3.1.1.1 illustrates the 7100 Series-BSM wiring connections.
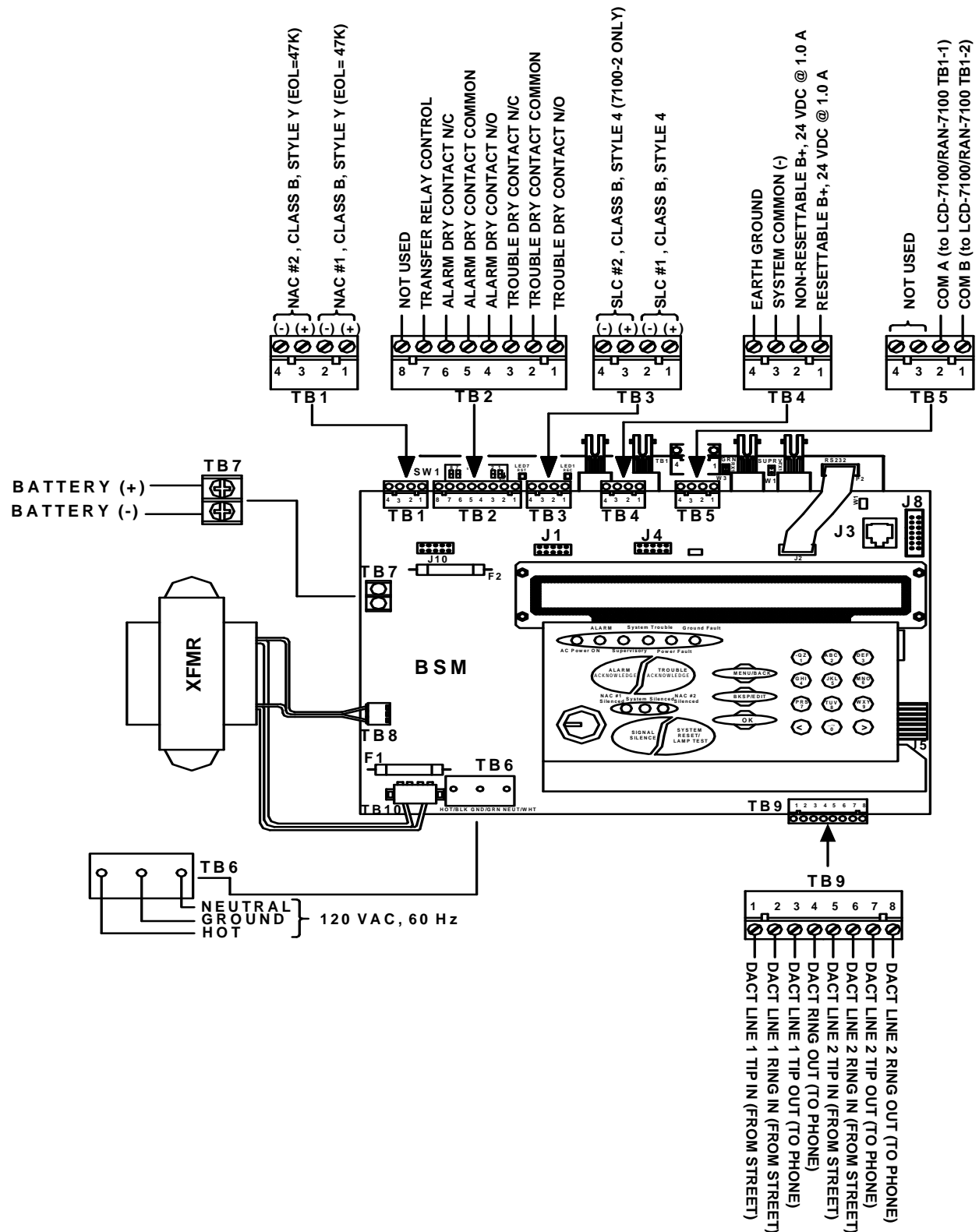
Figure 3.1.1.1 7100 Series/BSM Wiring Connections

3.2 Power

3.2.1 AC Input

The connection of the 120/240 VAC, 50/60 Hz power source must be made per the requirements of the National Electrical Code, NFPA 70, Article 760, the applicable NFPA requirements, and/or the Authority Having Jurisdiction.

Guidelines to follow are listed below:

- Connections must be to a dedicated branch circuit.
- Connections must be mechanically protected.
- All means of disconnecting the circuit must be clearly marked:
  "FIRE ALARM CIRCUIT CONTROL."
- Accessible only to authorized personnel.
- For 240 VAC operation, no conductor shall have a potential greater than 150 V to ground.

Table 3.2.5.1 lists the AC input and battery connections.

> **WARNING: AC POWER REQUIREMENTS:**
> **ALWAYS APPLY AC POWER FIRST, THEN CONNECT THE BATTERIES.**

3.2.2 Battery Connections

- TB7-1 is positive. (See Table 3.2.5.1)
- TB7-2 is negative. (See Table 3.2.5.1)
- Observe polarity

For information on the Battery Calculations, refer to Table 3.2.5.1.

3.2.3 Auxiliary Power Output, Resettable/Non-Resettable

(Special Application)

- TB4-1 Resettable, 24 VDC, max. 1.0 amp, FWR.
  Suitable for use with projected beam smoke detectors SPB-24, or DH Series duct detectors.
- TB4-2 Non-resettable, 24 VDC, max. 1.0 amp, FWR.
  Suitable for use with the FireMark door holders.

> **NOTE:**   Total output is 1.0 amp max. combined.

- TB4-3 Common negative
- TB4-4 Not used

3.2.4 Earth Ground Connection

- TB4-4 Earth Ground

3.2.5 Relay Connections

System Trouble Contacts

- TB2-1 Normally Open
- TB2-2 Common
- TB2-3 Normally Closed

Transfers on any trouble condition and/or supervisory alarm.

System Alarm Contacts

- TB2-4 Normally Open
- TB2-5 Common
- TB2-6 Normally Closed

Transfers upon any system alarm except supervisory.

Qty	Module	Description	Supv. Current	Alarm Current	Total Supv. Current	Total Alarm Current
	BSM-1	Basic System Module, 1 SLC	0.056 A	0.076 A		
	BSM-2	Basic System Module, 2 SLC	0.065 A	0.085 A		
	BSM-1D	Basic System Module, 1 SLC w/DACT	0.075 A	0.095 A		
	BSM-2D	Basic System Module, 2 SLC w/DACT	0.085 A	0.095 A		
	PTRM	Printer Transient Module	0.020 A	0.020 A		
	CAOM	Class A Option Module	0.001 A	0.001 A		
	MCOM	Municipal Circuit Option Module	0.005 A	0.710 A max.		
	LCD-7100/ RAN-7100	Optional Remote Serial Annunciator	0.012 A	0.023 A		
	LDM-7100	LED Driver Module	0.035 A	0.200 A (See Note 1)		
	INI-7100	Intelligent Network Interface Module	0.040 A	0.040 A		
		Addressable Modules				
		Smoke and heat sensors				
		Notification Appliances				
		Aux. Power Devices				
		Misc. Devices				
NOTES						

NOTE 1: With all LEDs and optional buzzer energized.

NOTE2 : 24 hrs for NFPA 72 protected premises or Central Station signaling, or Auxiliary, or Remote Supervising Station Fire Alarm Systems.

NOTE 3: Use the next size battery with a capacity greater than required. Maximum 31 A/H capacity.

USER CALCULATION TOTALS	
A	Total Supervisory Current.
B	Enter number of standby hours required. (See Note 2)
C	Multiply Line A times hours in Line B – enter.
D	Total alarm current from above.
E	Enter alarm sounding period in hours. (5 minutes = .084 hr.).
F	Multiply Line D times Line # - enter.
G	Total of Lines C & F – enter.
H	Multiply Line G by 1.2 – enter. (Total ampere/hours required (See Note 3)

Table 3.2.5.1   Battery Standby Chart

3.3 Notification Appliance Circuits

The 7100 Series provides two (2), 24 VDC Class B, Style Y notification appliance circuits. Class A, Style Z operation is accomplished by adding the Class A Option to the (CAOM) Module. (See Figure 3.3.1)

Wiring Instructions

*   NAC 1 - TB1-1 (+), TB1-2 (-)

*   NAC 2 - TB1-3 (+), TB1-4 (-)

(Polarity markings indicate the polarity of the circuit in alarm condition). Use UL Listed End of Line Resistor EOL-N (47K), P/N 4700-0512.

Circuit Ratings

*   24 VDC regulated
*   Max. alarm load 1.5A/circuit
*   Ground fault test impedance: 20k Ohms
*   18 AWG minimum
*   If synchronization of strobes is required

MDL-FC Synchronization Modules must be connected. Class B, Style Y operation only. For a list of Gamewell-FCI Approved, UL Listed notification appliances, refer to the *Compatibility Addendum for Gamewell-FCI Manuals, P/N 9000-0427.*

*   Supervised
*   Power-limited

DOTTED LINES INDICATE CLASS A, STYLE 6 WIRING
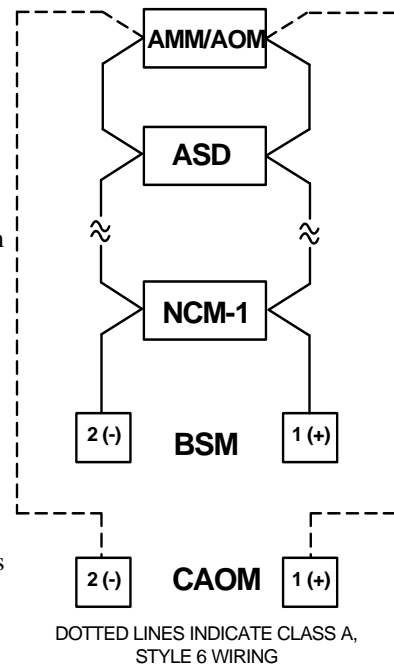
Figure 3.3.1 Notification Appliance Circuit Wiring

NOTE: The CAOM module is furnished with the End of Line resistor installed.

3.4 Signaling Line Circuits

The 7100 Series provides one (1), or two (2), 24 VDC Class B, Style 4 signaling line circuits. Class A, Style 6 or 7 operation is accomplished by adding the Class A Option (CAOM) Module. See Figure 3.4.1 for Style 4 or 6 wiring, and Figure 3.4.1.1 for Style 7 wiring.

Wiring Instructions

- SLC 1 - TB3-1 (+), TB3-2 (-)
- SLC 2 - TB3-3 (+), TB3-4 (-) (7100-2 only)

(Polarity markings indicate the polarity that should be maintained throughout the circuit. Polarity must be observed on all devices connected to the circuit).

Circuit Ratings

- 24 VDC (nominal)

Current: 0.090 amp max. (supervisory)
0.097 amp max. (alarm)
0.750 amp max. (short circuit)

- 40 Ohms max. line resistance
- 0.5 µf max. line capacitance
- Ground fault test impedance: 20k Ohms
- 18 AWG minimum, straight lay or twisted-pair unshielded
- Power-Limited
- Supervised

For a list of Gamewell-FCI Approved, UL Listed sensors and modules, refer to the *Compatibility Addendum to Gamewell-FCI Manuals P/N 9000-0427*.

DOTTED LINES INDICATE CLASS A, STYLE 6 WIRING
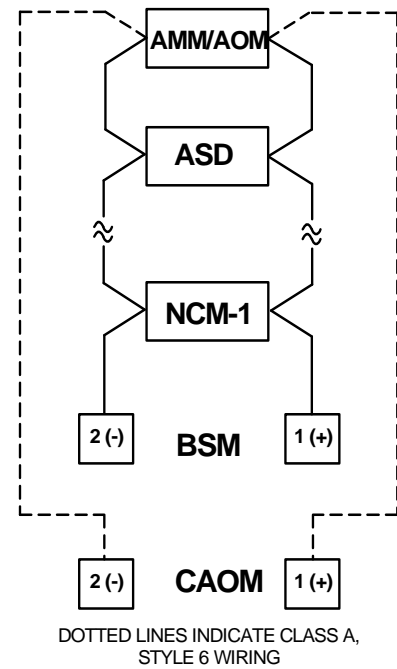
Figure 3.4.1 Signaling Line Circuit Wiring

3.4.1 Style 7 Signaling Line Circuit Installation

When you use a Control Module as a Notification Appliance Circuit (NAC), the isolation described in Section 3.4.1, Signaling Line Circuits, Style 7, Figure 3.4.1.1 is required, or riser conductors must be installed in accordance with the survivability from attack by fire requirements in the National Fire Alarm Code, NFPA 72.
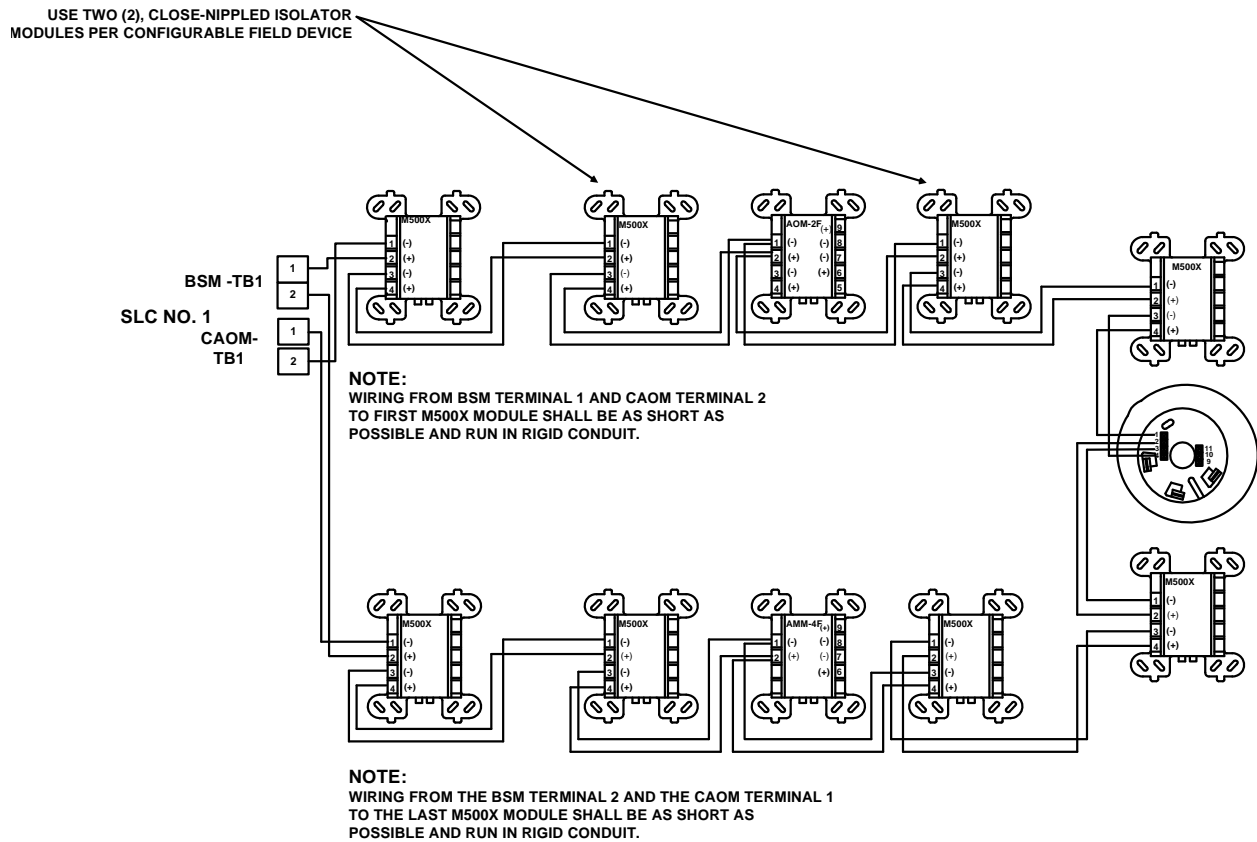
Figure 3.4.1.1 Signaling Line Circuits, Style 7

Figure 3.4.1.2 illustrates the typical releasing circuit wiring for the 7100 Series control panel.

NOTE: This installation has been approved by Factory Mutual only.

NOTICE:

USE ONLY THE LISTED AND APPROVED METHODS AND DEVICES REFERENCED IN THIS MANUAL TO ACTUATE
A FIRE EXTINGUISHING SYSTEM. REFER TO THE INSTALLATION MANUAL FOR THE PROPER USE OF THE
SYSTEM IN A PARTICULAR APPLICATION. EXTINGUISHING AGENTS THAT SUPPRESS FIRES BY OXYGEN
DILUTION SUCH AS CARBON DIOXIDE AND VARIOUS INERT GASES SHALL BE PROVIDED WITH LISTED,
APPROVED, MECHANICALLY OPERATED TIME DELAYS AND STOP VALVES TO CONTROL THE DISCHARGE
TO A PROTECTED AREA.
WIRING FROM THE POWER SUPPLY TO THE AOM MODULE NOT TO EXCEED 2 OHMS. POWER FOR ACTUATING
RELEASE SOLENOIDS MUST BE OBTAINED FROM THE NON-RESETTABLE POWER TERMINALS OF THE SPSU-V,
BSM-2, THE GAMEWELL-FCI FC-72 PS-6 OR APS-6, OR ANY 24 VDC REGULATED POWER SUPPLY LISTED FOR
FIRE SIGNALING SYSTEMS PER UL 864 AND/OR 1481 AND FACTORY MUTUAL SYSTEM APPROVED.
CONNECTIONS TO THE SOLENOID WIRE LEADS AND REL47K SUPERVISORY DEVICE MUST BE VIA LISTED
TERMINAL BLOCKS IN A STANDARD LISTED ELECTRICAL BOX CLOSE-NIPPLED TO THE SOLENOID.
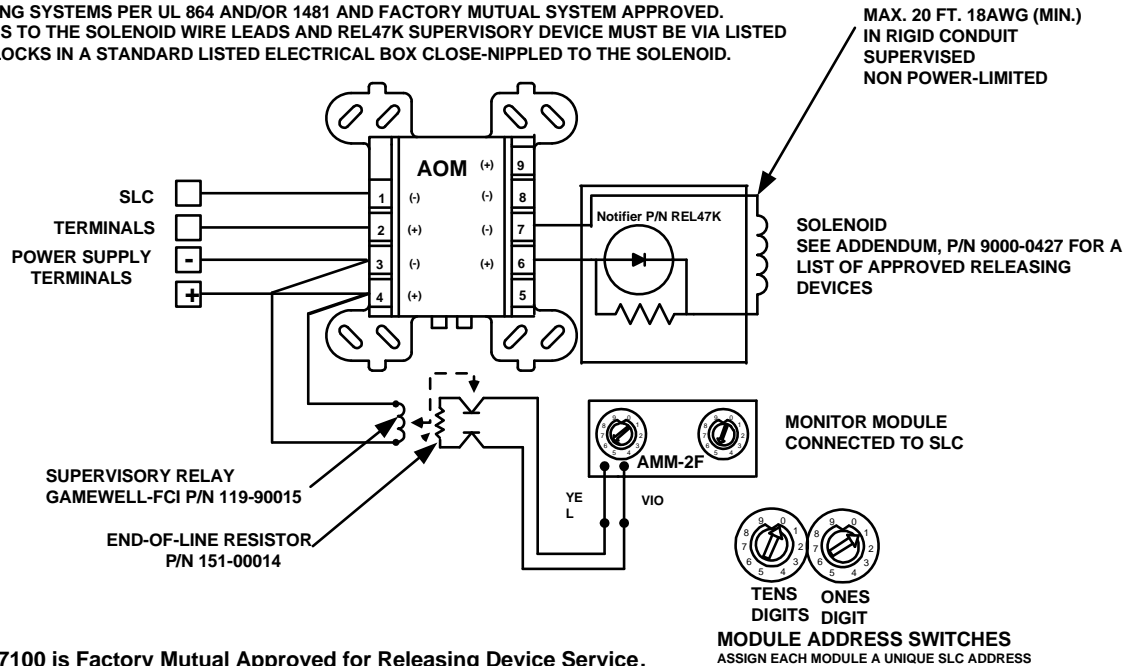
The 7100 is Factory Mutual Approved for Releasing Device Service.

Figure 3.4.1.2 Typical Releasing Circuit Wiring

3.5 Analog Sensors

The 7100 Series accommodates only Gamewell-FCI approved, UL Listed, analog sensors and bases. Each signaling line circuit can accommodate 99 sensor address points, using Address numbers 01 to 99.

For a list of approved sensors and bases, refer to the *Compatibility Addendum to Gamewell-FCI Manuals, P/N 9000-0427.*

3.5.1 Address Switches

Set the addresses using the rotary switches on each sensor or module. To set the address, turn each of the two (2) rotary switches until the rotary switches point to the numbers indicating the proper address (for example, SW1 @ #2 and SW2 @ #5 indicate Address #25).

3.5.2 Drift Compensation

The 7100 Series contains a program which performs continuous testing of analog sensors, including sensitivity tests. This program will compensate all analog sensors for age and environmental conditions. If a problem occurs in a sensor, a "Failed Test", "Dirty" or "Very Dirty" indication for the specific device will appear on the system display and will be recorded in the Event Log and the Serial Port.

3.6 Addressable Modules

The 7100 Series accommodates only Gamewell-FCI approved, UL Listed, addressable monitor and/or control modules. Each SLC can accommodate 98 addressable module points, using Addresses 101 through 198.

For a list of approved modules, refer to the *Compatibility Addendum to Gamewell-FCI Manuals, P/N 9000-0427.*

In the event of common mode noise problems, a Noise Control Module (NCM-1) may be installed. (See Figure 3.4.1). The white wire lead must be connected to earth ground.

3.6.1 Address Switches

Set the addresses switches using the rotary switches on each module. To set the address, turn each of the two (2) rotary switches until the rotary switches point to the numbers indicating the proper address (for example, SW1 @ #5 and SW2 @ #7 indicate Address # 157).

NOTE: The "100" digit is pre-set in all addressable modules.

WARNING: POSITIVE ALARM SEQUENCE RESTRICTION:
IN SYSTEMS INCORPORATING THE POSITIVE ALARM SEQUENCE (PAS) IN CONJUNCTION WITH ADDRESSABLE MODULES, (AMM-2F, -4F, -4SF), ONLY ONE (1) INITIATING DEVICE CAN BE CONNECTED TO EACH MODULE (ADDRESS). EXAMPLE: CONNECT ONLY ONE MANUAL STATION PER AN AMM-2F MODULE.

3.7 Optional Modules

3.7.1 Class A Option Module (CAOM)

The Class A Option Module (CAOM) provides Class A signaling for the notification appliance circuits and Class A, Style 6 or 7 signaling for the signaling line circuits. Style 7 wiring requires the the M500X Isolator Module to be used on both sides of a device. It also provides a disconnect switch for each signaling line circuit and a common disconnect switch for both notification appliance circuits.

For information on wiring connections, refer to Table 3.7.3.1.

3.7.2 Municipal Circuit Option Module (MCOM)

The Municipal Circuit Option Module (MCOM) provides output for a local energy city master box, releasing solenoid programmed via the FCP or CAMWORKS, or reversed polarity output for leased line connection intended for connection to a polarity reversal circuit of a remote station receiving unit having compatible ratings. Table 3.7.1 lists the MCOM ratings.

For information on wiring connections, refer to Table 3.7.3.1.

For a list of compatible solenoids, refer to the *Compatibility Addendum for Gamewell-FCI Manuals, P/N 9000-0427.*

Ratings	Master Box (NPL)	Polarity Reversal (PL)	Releasing Service
Nominal voltage	24 VDC	24 VDC	24 VDC
Supervisory current	.0018 amp	.012 amp	.0005 amp
Alarm current	.510 amp (max.)	.012 amp	.700 amp
Line resistance	35 ohms (max.)		2 ohms (max)
Trip coil resistance	14.5 ohms (max.)		

Table 3.7.1 MCOM Ratings

3.7.3 Printer Transient Module (PTRM)

The Printer Transient Module (PTRM) provides sufficient transient protection to the RS-232 output to comply with the applicable codes for the following conditions:

• wiring leaving the confines of the control box

• proper isolation of the signal to prevent damage or interference caused by a connection to certain EDP devices.

CAOM Module		
Designation	**Description**	**Comments**
TB1-1	NAC1	NAC Circuit 1, Class A return (+)
TB1-2	NAC1	NAC Circuit 1, Class A return (-)
TB1-3	NAC2	NAC Circuit 2, Class A return (+)
TB1-4	NAC2	NAC Circuit 2, Class A return (-)
TB2-1	SLC1	SLC Circuit 1, Class A return (+)
TB2-2	SLC1	SLC Circuit 1, Class A return (-)
TB2-3	SLC2	SLC Circuit 2, Class A return (+) (7100-2, -2D only)
TB2-4	SLC2	SLC Circuit 2, Class A return (-) (7100-2, 2D only)
MCOM Module		
TB1-1		Output (+)
TB1-2		Output (-)
Jumpers		
W1	MCOM	UP for Polarity Reversal operation DOWN for city master box or releasing operation.
W2	MCOM	UP for Polarity Reversal operation DOWN for city master box or releasing operation.
PTRM Module		
Jumper		
W1	PTRM	OUT for supervision of PTRM Module IN for no supervision
NOTE: The BSM is shipped with jumpers installed on the middle three pairs of pins on J2. These jumpers must be removed when the PTRM is installed.		

Table 3.7.3.1 Optional Module Wiring Connections

3.8 Digital Communicator Operation (7100-D Model)

The 7100-D digital communicator model features numerous formats for communication to a central station. The 7100-D provides the following functions:

- Line seizure - takes control of the phone lines, disconnecting any premises phones using the same lines.
- Off/On-Hook - perform on and off-hook status to phone lines.
- Listen for dial tone - 440 Hz tone typical in most networks.
- Dialing the Central Station phone number – programmable.
- Discern proper Central Station "ACK" and "Kiss-off" tone.
- Transmit data to the Central Station.
- Verify that data has been accepted by the Central Station.
- Hang-up and release phone lines.
- Communicate in a variety of formats.

3.8.1 Central Station Reporting

UL Listed receivers compatible with the 7100 are listed in Table 3.8.1.

Manufacturer	Receiver Model	Formats
Silent Knight	Model 9000 (See Note)	SIA-8 SIA-20 SK4/2 3/1 14 3/1 23
Silent Knight	Model 9800/9500	SIA-8 SIA-20 SK4/2 3/1 14 3/1 23 Contact ID
Ademco	Model 685	3/1 14 3/1 23
Sur-Gard (Ver. 1.64 or higher)	SG-MLR2-DG	SIA-8 SIA-20 SK4/2 3/1 14 3/1 23 Contact ID
Osborne Hoffman	Quickalert	SIA-8 SIA-20
NOTE: If you use the Model 9000 and the message "HELP" appears on the printer after you attempt to download, the 9000 software must be upgraded. The Model 9000 must have the Model 9307 software package, Revision 900501 or later, to print the PROGRAMMING PASS and PROGRAMMING FAIL messages.		

Table 3.8.1 UL Listed Receivers Compatible with the 7100

3.9 DACT Formats and Codes

3.9.1 DACT Contact ID Event Reporting Codes

In CAMWorks, you can configure the 7100 DACT to transmit Contact ID Reportings Codes. You can enable the 7100's built-in DACT using the DACT Settings screen in CAMWorks. When enabled, the 7100 will communicate with and supervise its internal serial DACT. When disabled, all other DACT configuration options on this screen are disabled. This setting is enabled by default.

NOTE: A DACT Missing trouble will be reported if this option is enabled on the 7100-1 and the 7100-2 models, since those models do not include the DACT.

For information on the DACT Contact ID Event Reporting Codes, refer to Table 3.9.1.1.

Figure 3.9.1.1 illustrates an example of the Contact ID Reporting Codes transmitted by the 7100 DACT.

STANDALONE SYSTEMS	CONTACT ID FORMAT			
CONTACT ID FORMAT **NOTE: Group Numbers are truncated to range [00-99].**	**[R]** [1]=New Event [3]=Restoral	**[EEE]** Event Type	**[00]** Not Used	**[GG T]** Group Response Number Type
EXAMPLE	**1** New Event	**110** Fire Alarm	**00** Not Used	**95 6** Group 95 Smoke Alarm

NETWORKED SYSTEMS	CONTACT ID FORMAT			
CONTACT ID FORMAT	**[R]** [1]=New Event [3]=Restoral	**[EEE]** Event Type	**[00]** Not Used	**[NN T]** Node Response Number Type
EXAMPLE	**1** New Event	**110** Fire Alarm	**00** Not Used	**25 6** Node 25 Smoke Alarm

Figure 3.9.1.1 Example of the DACT Contact ID Event Reporting Codes

Table 3.9.1.1 lists the DACT Contact ID Event Reporting Codes.

Event	SIA	Contact ID	4/2	3/1
Fire Alarm (Smoke or Manual Station)	FA [GGT]	1 110 [00] [GGT]	0 [T]	0
Fire Alarm Restored	FH [GGT]	3 110 [00] [GGT]	2 [T]	2
Waterflow Alarm	SA [GGT]	1 113 [00] [GGT]	0 [T]	0
Waterflow Alarm Restored	SH [GGT]	3 113 [00] [GGT]	2 [T]	2
Trouble (except Waterflow or Special AMM)	FT [GGT]	1 373 [00] [GG0]	8 [T]	8
Trouble Restored	FJ [GGT]	3 373 [00] [GG0]	7 [T]	7
Trouble (Waterflow AMM)	ST [GGT]	1 370 [00] [GG0]	8 [T]	8
Trouble Restored (Waterflow AMM)	SJ [GGT]	3 203 [00] [GG0]	7 [T]	7
Trouble (Special AMM)	UT [GGT]	1 370 [00] [GG0]	8 [T]	8
Trouble Restored (Special AMM)	UJ [GGT]	3 370 [00] [GG0]	7 [T]	7
Supervisory / Tamper (Module)	SS [GGT]	1 203 [00] [GGT]	6 [T]	6
Supervisory Restored (Module)	SR [GGT]	3 203 [00] [GGT]	7 [T]	7
PAS/Action/Supervisory (Sensor)	FS [GGT]	1 200 [00] [GGT]	6 [T]	6
PAS/Action/Supervisory Restored (Sensor)	FR [GGT]	3 110 [00] [GGT]	7 [T]	7
Disable (except Waterflow or Special AMM)	FB [GGT]	1 571 [00] [GGT]	8 [T]	8
Disable Restored	FU [GGT]	3 571 [00] [GGT]	7 [T]	7
Disable (Waterflow AMM)	SB [GGT]	1 570 [00] [GGT]	8 [T]	8
Disable Restored (Waterflow AMM)	SU [GGT]	3 570 [00] [GGT]	7 [T]	7
Disable (Special AMM)	UB [GGT]	1 570 [00] [GGT]	8 [T]	8
Disable Restored (Special AMM)	UU [GGT]	3 570 [00] [GGT]	7 [T]	7
AC Fail	AT 0	1 301 [00] [000]	80	8
AC Fail Restored	AR 0	3 301 [00] [000]	70	7
Phone Line 1 Fault	LT 1	1 351 [00] [000]	81	8
Phone Line 1 Fault Restored	LR 1	3 351 [00] [000]	71	7
Phone Line 2 Fault	LT 2	1 352 [00] [000]	82	8
Phone Line 2 Fault Restored	LR 2	3 352 [00] [000]	72	7
Automatic Test (NORMAL)	RP 0	1 602 [00] [000]	90	9
Automatic Test (With Exception)	RP 991	1 602 [00] [991]	91	9

For Contact ID and SIA Formats:

GG = In networked systems, the node number assigned to the device, 00-99.
    = In standalone systems, the group number assigned to the device, 00-99.

T = Type of device or event causing the event to be reported.
    0 = Any Device not listed below.
    1 = General Alarm Device
    2 = Manual Station Alarm
    3 = Supervisory Device (Non-latching)
    4 = Supervisory Device (Latching)
    5 = Waterflow (Non-silenceable)
    6 = Smoke Alarm
    7 = Non-reporting Device
    8 = Multi-level Device

NOTE 1: Special AMMs include the following functions: Reset Switch, Silence Switch, Drill Switch, Alarm Acknowledge Switch, Trouble Acknowledge Switch.

Table 3.9.1.1 DACT Contact ID Event Reporting Codes

3.10 Telephone Requirements

The following list the telephone requirements:

- DC Ringer Equivalence Number (REN) = 0.5B
- AC Ringer Equivalence Number = 1.3
- Complies with FCC Part 8

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

3.11 Digital Communicator

Before connecting the 7100-D to the public switched telephone network, the installation of two (2) lines are required. The following information is provided if required by the local Telephone Company:

Manufacturer:

Gamewell-FCI

12 Clintonville Road

Northford, CT 06472-1610 USA

Product Model Number: 7100-D

FCC Registration Number: 6KWUSA-34215-AL-T

Ringer Equivalence: 0.5B

3.12 Telephone Company Rights and Warnings

The Telephone Company, under certain circumstances, may temporarily discontinue services and/or make changes in its facilities, services, equipment or procedures which may affect the operation of this digital communicator. However, the Telephone Company is required to give advance notice of such changes or interruptions. If the digital communicator causes harm to the telephone network, the Telephone Company reserves the right to temporarily discontinue service. Advance notification will be provided except in cases when advance notice is not practical. In such cases, notification will be provided as soon as possible. The opportunity will be given to correct any problems and to file a complaint.

WARNING: TELEPHONE SERVICES RESTRICTION:
DO NOT CONNECT THIS PRODUCT TO COIN TELEPHONE, GROUND START OR PARTY LINE SERVICES.

- When the digital communicator activates, premise phones will be disconnected.
- Two separate phone lines are required. Do not connect both telephone interfaces to the same telephone line.
- The digital communicator must be connected to the public switched telephone network upstream of any private telephone system at the protected premises.
- This equipment is designed to be connected to the telephone network or premises wiring via terminal blocks.

3.13 FCC Required Information

This equipment complies with Part 68 of the FCC Rules. The Ringer Equivalence Number (REN) is listed in Section 3.10, while the FCC Registration Number is listed in Section 3.11. These numbers must be provided to the telephone company, if requested.

3.14 Repairs

The 7100-D Digital Communicator does not contain any user-serviceable parts. The unit must be returned to the factory for repair through an authorized Gamewell-FCI distributor.

3.15 Optional Accessories

3.15.1 LCD-7100/RAN-7100 Serial Remote Annunciator

The LCD-7100/RAN-7100 Serial Remote Annunciator provides an 80-character display and function keys for the following:

– "Alarm Acknowledge"	– "System Reset/Lamp Test"
– "Trouble Acknowledge"	– "System Drill Test"
– "Signal Silence"	–

- The 80-character display shows all pertinent information except for menus.

- Keypad functions are enabled only when the keylock is turned to the "Unlocked" position, with the exception of the "Trouble Acknowledge" switch which silences the local audible trouble sounder.

- Operating LEDs provided are as follows:

– "Alarm"	– "Power Fault"	– "NAC #1 Silenced"
– "Supervisory"	– "System Silenced"	– "NAC #2 Silenced"
– "System Trouble"		

- The LCD-7100/RAN-7100 is flush or surface-mounted on a standard 4-gang electrical box.

- The 7100 Series control can accommodate up to five (5), remote LCD-7100/RAN-7100 annunciators which may be located up to 4,000 feet from the main control panel. Table 3.15.1 lists the resistance limitations of the connecting circuit

Number of LCD-7100/RAN-7100 Units	1	2	3	4	5
Maximum resistance of 24 VDC power circuit (Ohms) to most distant LCD	70	38	24	17	4

Table 3.15.1 LCD-7100/RAN-7100 Resistance Limitations

NOTE: For additional information on the LCD-7100/RAN-7100, refer to the following documents:
- LCD-7100 Installation Instructions, P/N: 9000-0491
- RAN-7100 Installation Instructions, P/N: 9001-0066

3.15.2 LDM-7100 LED Driver Module

Each LDM-7100 LED Driver Module provides 7100 Control Panel output for thirty-three (33), remote LEDs. Three (3), LDM-7100 modules may be mounted in a single annunciator for a maximum total of 99 points per annunciator.

The annunciator may be located up to 4,000 feet from the panel and up to four (4), additional annunciators can be connected, configured identically with the first. Table 3.15.2 lists the resistance limitations for the connecting circuit.

NOTE: If more than four (4), LDM-7100 modules are installed, an external regulated and power-limited power supply Listed for use with fire protective signaling units is required.

The module is intended for mounting inside the enclosure of a UL Listed remote annunciator. It may be mounted by means of mounting screws or stacked using a metal hex standoff kit. Wire routing and installation methods are to be in accordance with the annunciator installation instructions.

Quantity of LDM-7100 modules	1	2	3	4	5	to	15
Maximum resistance of 24 VDC power Circuit (ohms) to most distant LDM	40	20	14	10	See above.		

Table 3.15.2 LDM-7100 Resistance Limitations

NOTE: Maximum attenuation for the entire fiber-optic line is 8 dB.

WARNING: FIBER-OPTIC CABLE RESTRICTION:
THE USE OF FIBER-OPTIC CABLE IS NOT PERMITTED IN NEW YORK CITY.

Section 4: Programming/Operation Instructions

4.1 LED Indicators

Figure 4.1.1 illustrates the LED Indicators panel. Table 4.1.1 lists the LED indicators.
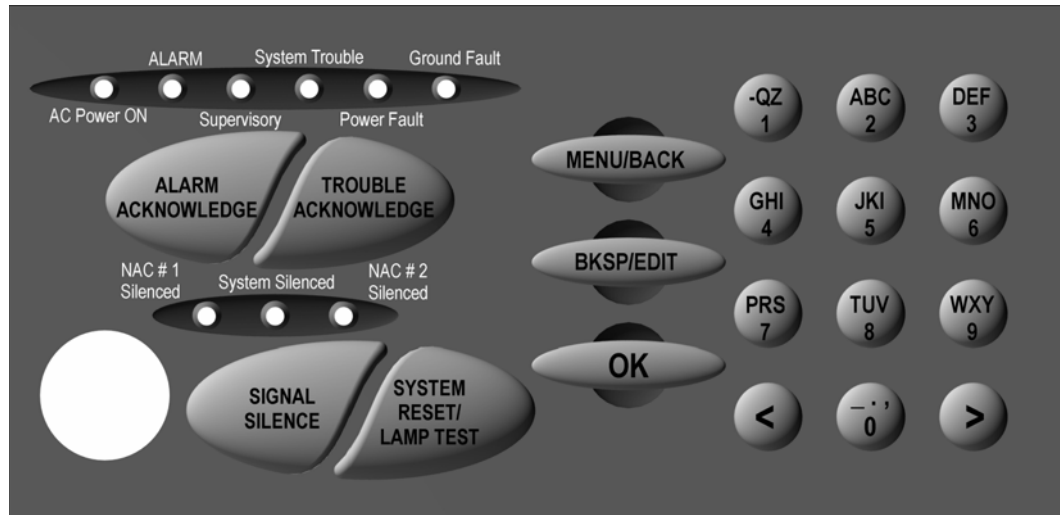
Figure 4.1.1 LED Indicators Panel

Designation	Description	Comments
AC Power On	(green)	Lights to indicate presence of 120/240 VAC input.
Alarm	(red)	Lights when system is in alarm, flashes until alarm is acknowledged.
Supervisory	(yellow)	Lights when supervisory condition exists, flashes until trouble acknowledge is performed.
System Trouble	(yellow)	Lights to indicate trouble condition, flashes until trouble is acknowledged.
Power Fault	(yellow)	Lights during a LOW or NO Battery condition.
Ground Fault	(yellow)	Lights to indicate a ground on a field conductor
NAC 1 Silenced	(yellow)	Lights to indicate that NAC Circuit has been silenced via the Signal Silence Switch (if programmed as silenceable).
NAC 2 Silenced	(yellow)	Lights to indicate that NAC Circuit has been silenced via the Signal Silence Switch (if programmed as silenceable).
System Silenced	(yellow)	Lights when a System Silence has been performed. Flashes when disabled.

Table 4.1.1 LED Indicators

4.2 Panel Switches

Figure 4.2.1 illustrates the LED Panel Switches. Table 4.2.1 lists the LED Panel Switches.
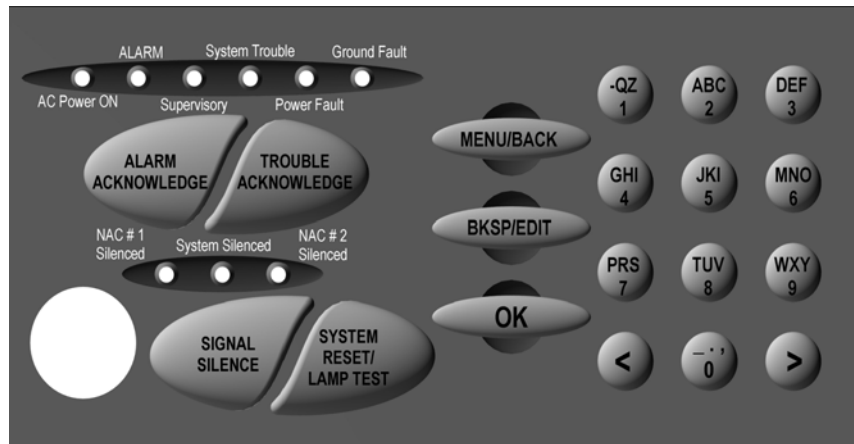
Figure 4.2.1 Led Panel Switches

Designation	Comments
Alarm Acknowledge	Silences the panel audible sounder. This switch must be pressed once for each Alarm condition present in the system.
Trouble Acknowledge	Silences the panel audible sounder. This switch must be pressed once for each Trouble or Supervisory condition present in the system.
Signal Silence	Press once and any outputs programmed as silenceable will be deactivated. (All applicable silence LEDs will light). A second activation will reactivate the previously silenced outputs. This switch only functions if an Alarm or Supervisory condition exists in the system.
Lamp Test/Reset	Press momentarily and all LEDs (including all elements in the display) will light momentarily. Press and hold to reset the system.
Menu/Back	Used in programming. The display will prompt the operator as to which function applies. "Menu" is pressed to initially put the 7100 into programming mode. The "Back" function will step the operator out of the programming mode one element at a time.
BKSP/Edit	Used in programming. The display will prompt the operator as to which function applies.
OK	Accepts any changes made in the programming field.

Alphanumeric Keys	These 12 keys allow the user to choose a specific point address by using the numbers for point sensitivity reading, disabling an address, etc.
	 Press each key the number of times necessary to display the correct character on the display.
	 Example: Pressing the "2" key,
	          Once will display the letter "A"
	          Twice will display the letter "B"
	          Three times will display the letter "C"
	          Four times will display the number "2"

PK-625 Key Switch	This key switch is keyed alike with the door lock, and must be operated in order to activate the keypad.

Table 4.2.1 LED Panel Switches

Notes

Section 5: System Programming

System programming can be performed either by front panel programming as shown below or via portable computer and the Gamewell-FCI Field Configuration Program.

5.1 MAIN Menu Selections

Table 5.1.1 lists the Main Menu selections and descriptions.

Menu Selection	Description
CONFIG	Where automatic configuration of the system is accomplished, as well as all of the system global programming, input to output group programming and NAC coding.
WALK/DRILL	Allows the user to select Audible or Silent Walk Test as well as activating and de-activating the System Drill function.
I/O	Allows the user to activate (turn on) or de-activate (turn off) any output in the system.
CLOCK	Selection supplies the options for programming the system time, date, day/night weekend and holidays.
LOG	Options for manipulating the Event Log are display, print, clear (buffer) and selecting to print only the Sensitivity Report.
INFO	Gives the user basic system information such as the current firmware version, the last configuration date as well as the last menu Designation used during the last system configuration update.

Table 5.1.1 Main Menu Selections

7100 MENU STRUCTURE

MAIN

CONFIG
Level 4

WALK/DRILL
Level 1

I/O
Level 2

CLOCK
Time Date
Level 1
Wkend/Holiday
Level 4

VIEW
Level 2

LOG
Level 2

INFO
Level 1
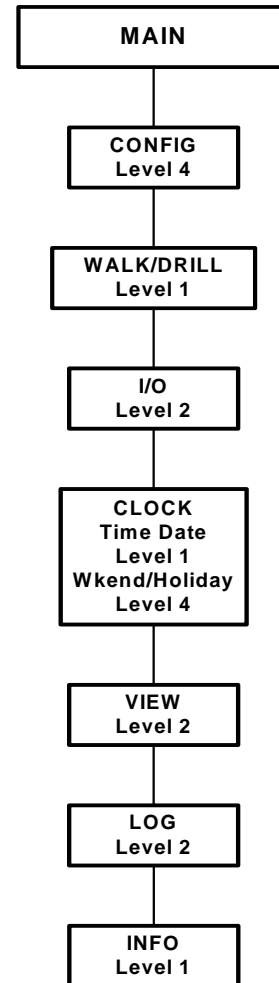
Figure 5.1   7100 Series Menu Structure

5.1.1 Addresses/Default Settings After Auto configuration

Sensors occupy Addresses 01-99 on the signaling line circuits. Sensors are ion, photoelectric, or thermal. They are latching and non-verified when auto configured. Monitor/Control modules occupy Addresses 101-198. The type of device assigned to a monitor module during auto configuration depends on the address as shown in Table 5.1.1.1.

Address	Device
100-149	Manual station
150-159	Supervisory switch
160-169	Waterflow switch
170	Silence switch
171	Reset switch
172	Fire Drill switch
173	Alarm/Acknowledge switch
174	Trouble/Supv. Acknowledge switch
175	Aux switch
176-179	Tamper switch
180-184	Control panel
185-189	Remote zone
190-198	Normally open contacts

NOTE: AOM modules are silenceable and activate on general alarm (day or night). AOM modules modified by breaking off tabs are non-silenceable and activate on general alarm (day or night).

Table 5.1.1.1 Address/Default Settings

5.1.2 Main Menu Programming

Table 5.1.2.1 lists the Menu Tree and display selections for the Config Menu.

Menu Tree	Display and Selections
Main **Any selection** (Only opens if adequate access has not already been obtained)	**[GAIN] Type password for level 3:** **[ACCESS] 000000**
	keypad: enters password (shows as "XXX…" on display)
	OK: if password is valid for desired level (or higher), opens access, logs the event, and continues to next menu. If not, returns to Main Menu.
Main **Config** **Password**	**[CHANGE] Level 1, User 1 111111** **[PASSWORD] select key in password**
	keypad: enters new password for specified level and user
	<>: scrolls through levels and users. If current access level is lower than selection, password is shown as XXXXXX, otherwise as digits.

Table 5.1.2.1   Main Menu Tree Display and Selections

Main
Config
    Inputs
        Type
            Edit
(If BKSP/EDIT is pressed, and editing is possible).
	[DEFINE] AMM Type 43 (Alarm)
	[TYPE] 1: select response

	<>: scrolls through available response categories: • Alarm • Tamper • Manual Station • Waterflow • Supervisory Note that Alarm, Manual Station and Waterflow all produce alarm response, except Manual Station which may use PAS (depending on the global PAS settings) and Waterflow disables silencing.
	OK: accepts the response selection and opens the Edit Device Type Menu.

Main
    Config
        Inputs
            Type
                Define Type
(After response category is accepted)
	[EDIT] Spark De (__ Alpha, repeat
	[TYPE LBL] move, EDIT flip case, OK

	Initially, label comes up all underscores.
	Keypad: enters text via telephone codes. Scrolls through the numeral's associated lower case letters, plus the numeral itself. Example: • Press "2" key once for 'a', again for 'b', again for 'c', and again for '2'. Press again to scroll back to 'a'. • To change to/from upper case, press "BKSP/EDIT", or scrolls to the previous or next letter. • "BACK" exits to the Add Type menu without making a change. • OK accepts new label and exits to the Select Input Type Menu.

Main
    Config
        Inputs (or Outputs)
            Select
                Location
                    Edit
_____or_____
Main
    Config
        System ID
            Edit
	[EDIT 1ST] (____ Alpha key, repeat
	[LOC WORD] move, EDIT flip case, OK

	Keypad: enters text (See Edit Device Type Menu). OK: accepts new text for selected address.
Various (If OK is pressed when an illegal value has been entered).	**Error! Entry is not valid. Press BACK, then change value or press BACK again.**

Table 5.1.2.1   Main Menu Tree Display and Selections (Continued)

5.2 CONFIG. Menu Selections

Table 5.2.1 lists the Config Menu selections and the description.

Figure 5.2.1 illustrates the Config Menu.

Menu Selection	Description
AUTO	Is the selection used to either initialize the system or update it.
GLOBAL	Is the key feature to the simplicity of programming. Most system as well as individual SLC device programming can be accomplished here.
INPUTS	Allow the user to insert point-to-point address information to sensors and monitor points individually for device type, location, input group(s), and to modify any of the global programming.
OUTPUTS	Gives the same programming capabilities supplied to the inputs.
GROUPS	Supply the option to allow either Alarm or Supervisory devices access to the system general output list for each type (General Alarm or General Supervisory outputs).
DIALER	Configuration gives the user the ability to turn the DACT on, program primary and secondary phone numbers and accounts, the format that the receiver requires, as well as the event types that are or are not transmitted.

Table 5.2.1 Config Menu Selections
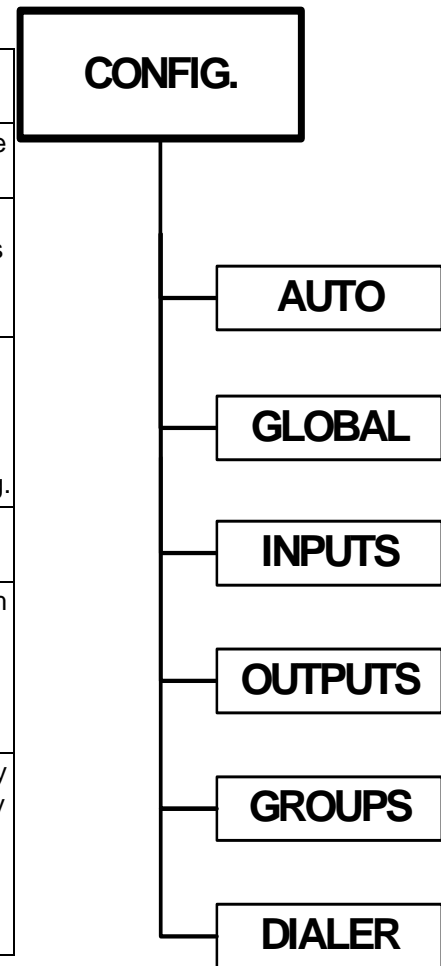
Figure 5.2.1   Config Menu

NOTE: events are defaulted to "MUST" in the Reporting Options section. In order to use this panel for remote signaling purposes all events must be transmitted off-premises.

If one account is used, it is required that the Reporting Option for each event (Alarm, Test, Trouble, Supervisory) be set to "MUST". If two accounts are used, it is required that the reporting option for each event be set to "MUST" between the two accounts.

Reporting options for each event (Alarm, Test, Trouble, Supervisory) are as follows:
OFF   Event will not be reported to the account.
CAN   Event can be reported to this account.
MUST Event must be reported. The DACT will continue to attempt to report this condition until all attempts have been made. If the DACT cannot report the event, the event will remain in the system memory and will be retransmitted with a subsequent event.

5.2.1 Config Menu Tree and Display Selections

Table 5.2.1.1, Table 5.2.1.2, and Table 5.2.1.4 thru Table 5.2.1.7 lists the Menu Tree and display selections for the Config Menu.

Menu Tree	Display and Selections
Main	**[MAIN] 1: Config 2: Walk/Drill 3:I/O** **4: Clock 5: View 6: Log 7:Info**
	1: Opens System Config Menu (PW-L4 required)
	2: Opens Walk Test / Drill Menu (PW-L1 required)
	3: Opens I/O Control Menu (PW-L2 required)
	4: Opens Set Clock Menu (PW-L1 required)
	5: Opens System Config Menu for viewing only (PW-L3 required)
	6: Opens Event Log Menu (PW-L1 required)
	NOTE: View option is identical to the Config option, allowing access to all the configuration menus, but prevents changing of any settings. The limiting factor between View and Config is the password level used.
Main **Config**	**[SYSTEM] 1: Auto 2: Global 3: Inputs** **[CONFIG] 4: Outputs 5: Groups 6: Passwords**
	1: Opens Autoconfig Menu
	2: Opens Global Config Settings Menu
	3: Opens Select Input Device Menu
	4: Opens Select Output Device Menu
	5: Opens Select Group Menu
	6: Opens Change Password Menu

Main
    Config
        Auto
	[AUTO-] 1: Clear, then … 2: Update SLCs
	[CONFIG]

	1: Clears system configuration, then reads SLCs.
	2: Reads SLC, finds changes. New devices get default config, missing devices are marked off-line. No change to globals or groups. (via confirm screen)

Main
    Config
        Global
	[GLOBAL] 1: I/O Devices 2: NACs 3: Codes
	[CONFIG] 4: System ID 5: Dialer 6: Misc.

	1: Opens Device Defaults Menu
	2: Opens NAC Settings Menu
	3: Opens Coded Pattern Setup Menu
	4: Opens System ID Menu
	5: Opens Dialer Settings Menu
	6, 7: Opens Misc. Globals Menus

Table 5.2.1.1 Config Menu Tree Display and Selections

NOTE: 1) In general, "BACK" exits the current menu and returns it to the previous menu without changing any settings. "OK" accepts any changes that have been made and returns to the previous menu, except in special cases where it continues to the next menu in a group. (See Menu 35).

2) The Set/View Configuration functions use the same menus, but behave differently depending on the Main menu selection and password given. If the "Config" option is selected and a valid Level 4 password is entered, the menus are fully operational. If the "Views" option is selected, or if the password is not valid for Level 4, then the menus may be examined but no changes can be made.

Menu Tree	Display and Selections

Main
    Config
        Global
            Device defaults
	[SET] 1: Verification 2: Sensitivity
	[DEFAULTS] 3: PAS 4: Multilevel

	1: Opens Set Default Verify Options Menu.
	2: Opens Set Default Sensitivity Menu.
	3: Opens Set PAS Parameters Menu.
	4: Opens Set Multilevel Parameters Menu.

Main
    Global
        ConfigDevice defaults
            Default Verification
	[DFLT] 1: Dflt Ion, Photo Verify (None)
	[VERIFY] 2: Dflt Manual Sta Verify (None)

	1: Scrolls through None, Smoke, PAS.
	2: Toggles between None and PAS.

Main
    Config
        Global
            Device Defaults
                Default Sensitivity
	[DFLT] DAY 1: Photo (Low) 2: Ion (Low)
	[SENS] NIT 3: Photo (Med.) 4: Ion (Med.)

	1: Scrolls through selections for photo sensor daytime sensitivity.
	2: As above for Ion.
	3: As above for photo night time sensitivity.
	4: As above for Ion.

Main
    Config
        Global
            Device Defaults
                PAS Parameters
	[PAS] 1: Night Bypass (ON)
	[OPTION] T1 (15sec) T2 (180sec)

	1: Toggles Night Bypass ON/OFF.
	T1 and T2 parameters are fixed in firmware; they are shown for reference only.

Main
    Config
        Global
            Device defaults
                Multilevel Params
	[MULTI] 1: Alert Threshold (35%)
	[LEVEL] 2: Action Threshold (65%)

	1: Scrolls through Alert Threshold options (20, 35, 50, 65%)
	2: Scrolls through Action Threshold options (35, 50, 65, 80%)
	OK: accepts settings as shown (if valid)

Main
    Config
        Global
            NACs
	[NAC] 1:Delay Times
	[OPTIONS] 2: Coding & Silencing

	1: Opens Set NAC Delays Menu.
	2: Opens Set NAC Coding Menu.

Main
    Config
        Global
            NACs
                Delay Times
	[NAC] 1: Silence Inhibit (None)
	[DELY] 2: Cutoff (None)

	1: Scrolls through Silence Inhibit Delay options (None, 1 min, 3 min, 5 min)
	2: Scrolls through Signal Cutoff Delay options (None, 5 min, 10 min, 15 min)

Main
    Config
        Global
            NACs
                Coding
	[NAC] NAC 1 1: (Coded) 3: (Silenceable)
	[MISC] NAC 2 2: (Steady) 4: (Nonsilenceable)

	1: Toggles NAC 1 between Coded and Steady.
	2: Toggles NAC 2 between Coded and Steady.
	3: Toggles NAC 1 between Silenceable and Non-silenceable.
	4: Toggles NAC 2 between Silenceable and Non-silenceable.

Table 5.2.1.2 Config Menu Tree Display and Selections

Table 5.2.1.3 lists the Sensor Sensitivity Settings.

	Photo	Ion
Low	2.0	1.3
L/M	1.75	1.2
Med.	1.5	1.0
M/H	1.25	0.88
High	1.0	0.77

Table 5.2.1.3 Sensor Sensitivity Settings

Menu Tree	Display and Selections
Main **Config** **Global** **Codes**	**[CODED] 1: Set Day Alarm (MT60) Config** **[PATTS] to select condition** <>: selects response condition from: Day Alarm, Night Alarm, Action, Supervisory, Aux. 1: Scrolls through coded pattern selections: MT60, MT120, Temporal, CA Code, Coded 4s.
Main **Config** **Global** **System ID** **or** **Main** **Config** **Inputs (or Outputs)** **Select** **Location**	**[L,AAA] FLR1 Lobby Config** **[LOCTN] 7,9 chng 1st ^ chng 2nd** Enter label using keypad and shift key. Press button until desired letter appears. Use BKSP/EDIT to capitalize. Use arrow keys <> to shift message from left to right or vice versa. **NOTE:** NOTE: If this menu is opened from the Global Config Menu, System ID selection (Menu 5 option 4), SYSTM ID is displayed; otherwise, L,AAA LOCTN as shown above. 1: Toggles Multiple Trouble Acknowledge ON/OFF 2: Toggles Alarm/Trouble Reminder ON/OFF 3: Scrolls Walk Test Timeout (30m, 60m, 90m) 4: Toggles RS232 Supervision Message ON/OFF
Main **Config** **Global** **Misc. [6]**	**[MISC] 1: MutiAck (ON) 2: Reminder (ON) Config** **[OPTS] 3: WT Timeout (30m) 4: SupvMsg (ON)**
Main **Config** **Global** **Misc. [7]**	**[LCD] Number of Remote Displays (1)** **[Annunc]**

Table 5.2.1.4 Config Menu Tree Display and Selections

NOTE: Some menus may appear in different contexts, but with slightly different behavior. For example, the "Select Device" menu is used in both the Config Inputs and Config Outputs sections to determine which device is to be affected. The process of selection is the same, but when the selection is complete, the result (that is, which menu opens next) differs.

WARNING: ALARM VERIFICATION
THE ALARM VERIFICATION FEATURE IS DISABLED WHEN SENSOR CROSS-ZONING IS EMPLOYED.

Menu Tree	Display and Selections

Main
  Config
    Inputs or Outputs
_____**or**_____
Main
  I/O
    Control or Ena/Dis
	[SELECT] Loop, Address: 1,001
	[DEVICE] Key in or use <,>

	# keys: enters SLC & address (restriction: Address 200)
	<>: Scrolls up or down to next available device.
	OK: Accepts address, opens Configure Input Device Menu, Configure Output Device Menu, Control Output Menu, or Enable/Disable Device Menu, as appropriate.

Main
  Config
    Inputs
      Select
	[CONFIG] 1: Type 2: Group 3: Verify 4: Sens
	[L, AAA] 5: Location 6: View 7: Copy L, AAA

	1: Opens Set Input Type Menu.
	2: Opens Assign Input To Group Menu.
	3: Opens Set Verify/PAS Function Menu (sensors only).
	4: Opens Set Sensitivity Menu (Ion, Photo devices only).
	5: Opens Set SLC Device Location Menu.
	6: Displays all settings for current device.
	7: Copies all settings of the specified device (last input modified)

Main
  Config
    Inputs
      Select
        Type
	[L, AAA] Ion Duct Det 01 (Alarm)
	[TYPE] ^ Key in Input Type # or use <,>

	<>: scroll through types which match this physical device. # keys: enter type number (no restrictions; see Type Table) Shows type and associated Response. BKSP/EDIT: If selected device type is editable, or if it is not editable but there is room to create a new user-editable type, opens Add Type menu (Menu 35). ^indicates that editing is possible.

Inputs
  Select
    Group
	[L,AAA] Group 007 (00=no group)
	[GROUP] Key in Group# or use <,>

	No restrictions on group assignment.

Input
  Select
    Verify
	[L,AAA] 1: Verification (Default)

	Options are: Default, None, Smoke Verify (Ion/Photo only), PAS

Inputs
  Select
    Sens
	[L,AAA] 1: Day Sensitivity (Default)
	[SENS] 2: Night Sensitivity (Default)

	1: Scrolls through Day Sensitivity options.
	2: Scrolls through Night Sensitivity options.
	Options vary by type, may include: Default, 1.00%, …2.00%

Inputs
  Select
    View
	[L,AAA] Ion Duct Det FLR2 Storeroom
	Alarm Grp23 Vfy:Default 1.75%

	Shows: SLC and Address, Device Type, Location Label, Device Response, and I/O Group. Shows Verify/PAS settings and day sensitivity setting if applicable (if device is set for default sensitivity, shows default day sensitivity). No changes can be made.

Table 5.2.1.5   Config Menu Tree Display and Selections

Menu Tree	Display and Selections

Main
  Config
    Outputs
      Select
	[CONFIG] 1: Type 2: General Resp 3: Groups
	[L,AAA] 5: Location 6: View 7: Copy L,AAA

	1: Opens Set Output Type Menu.
	2: Opens Assign Output To Group(s) Menu.
	3,4: Unused.
	5: Opens Set SLC Device Location Menu.
	6: Displays all settings for this device.
	7: Copies settings of the specified device (last output modified).

Main
  Config
    Outputs
      Select
        Type
	[L,AAA] 34 Silenceable Signal AOM
	Key in Output Type# or use <,>

	<>: scroll through types which match this physical device # keys: Enter type number (no restrictions: see Type Table) Output device types cannot be edited. If the new type is an input device, "OK" key returns to the System Config Menu, otherwise to Output Config.
Select **General Response**	**[L,AAA] Activates for Day Alarm (YES)** **[GNL RSP] select condition 1: YES/NO**
	1: Toggles specified general group membership YES/NO.
Select **I/O Group**	**[L,AAA] Group 1: 36 (00 = none)** **[GROUPS] Key in group # <,> change**
	<>: scrolls through list of general groups.
	Number keys: set group number.
Select **View**	**[L, 1AA] Slncbl NAC Main Lobby** **ALd ALn ACT SPV TOR WKT TBL 02 00 00**
	<>: select which of the three possible groups to set.
	Shows: SLC and Address, Type, Location, General responses, Group membership. General responses show above abbreviations.

Main
  Config
    Groups
	[SELECT] Group number: 03
	[GROUP] Key in group# or use <,>

	If the output is activated in that condition, or – if not. # keys: enters group number.
	<>: Scrolls up or down to next group.

Main
  Config
    Groups
      Select
        General
	[GROUP] Activates General Alarm (NO)
	[03] Activates Genrl Supervisory (YES)

	OK: Accepts group number, opens Configure Group Menu.
	1: Toggles General Alarm response on/off (applies to alarms initiated by Alarm, Manual, Waterflow, and Aux devices, for both Day and Night general alarm).
Response	2: Toggles General Supervisory response on/off (applies to off-normals initiated by Supervisory and Tamper devices).
	If a group contains inputs of several types (an unusual case), the appropriate general flag is applied for each new alarm/off-normal.

Table 5.2.1.6 Config Menu Tree Display and Selections

Menu Tree	Display and Selections

Main
    Config
        DACT
(opens only if DACT is installed)
	[CONFG] 0:Options 1:Line1 2:Line2
	[DACT] 3:Account1 4:Account 2

	0: Opens DACT Options Menu.
	1: Opens Phone Line Options Menu for Line 1.
	2: Opens Phone Line Options Menu for Line 2.
	3: Opens Account Options Menu for Account 1.
	4: Opens Account Options Menu for Account 2.

Main
    Config
        DACT
            Account Options
	[ACCTn] 1: Format 2: Reporting
	[OPTS] 3: AccountID 4: CIC & Phone#

	1: Opens Communications Format Menu Account n.
	2: Opens Reporting Options Menu for Account n.
	3: Opens Account ID Menu for Account n.
	4: Opens Account CIC / Phone Number Menu for Account n.

Main
    Config
        DACT
            Account Options
            Reporting Options
	[ACCTn] 1:Alarms (Must) 2:Test (Can)
	[REPRT] 3: Trbl (Can) 3:Spvsry (Off)

	1: Selects reporting option for Alarms [Off, Can, Must].
	2: Selects reporting option for Test [Off, Can, Must].
	3: Selects reporting option for Troubles [Off, Can, Must].
	4: Selects reporting option for Supervisory [Off, Can, Must].

Main
    Config
        DACT
            Account Options
            Account ID Options
	[ACCTn] 000000
	[ID #] Type all 6 digits (leading 0s)

	# keys: enters account ID number for account n.
	BKSP, <,> not operational.
	Note: all 6 digits must be entered, with leading zeroes if necessary.

Main
    Config
        DACT
            Account Options
            CIC Number
                - and -
            Phone Number
	[ACCTn] CIC:SSSSSSSS #:SSSSSSSSSSSSSSSS
	[CIC, #] Type digits, BKSP/EDIT,

	# keys: enters CIC (dialing prefix) or phone number for account n.
	<,>: moves backward or forward through numbers.
	BKSP: Scrolls through special characters S (no digit), *, #, comma (2 sec. Pause), and @ (dial Tone Select) without advancing cursor. When desired character appears, press ">" to advance.
	Note: Cursor is on first digit of phone # when menu opens.

Table 5.2.1.7   Config Menu Tree Display and Selections

Main
    Config
        DACT
            Line Options
	[LINEn] 1: Dialing Mode (0)
	[OPTS] 2: Line Monitor (ON)

	1: Scrolls through Dialing Mode options for Line n [0…4] 0=USA Tone or rotary (40/60), 1=USA Rotary only, 2=Tone only, 3=Tone or European Rotary (33/67), 4=European Rotary only.
	2: Toggles Line Monitoring ON/OFF for Line n.
	Note: periodic line test is enabled when either line's Line Monitor setting is 1.

Main
    Config
        DACT
            Account Options
            Comm Format
	[ACCTn] 1:Format (0)
	[FORMT]

	1: Scrolls through communication format options for Account n [0…6] 0=SIA DCS 8, 1=SIA DCS 20, 2=Ademco Contact ID, 3=4/2 1400 Hz, 4=3/1 1400 HZ, 5=3/1 2300 HZ, 6=4/2 2300 HZ

Main
    Config
        DACT
            Account Options
            Comm Format
	[DACT] 1: DACT (OFF) :FirstTest 00:00 Config
	[OPTS] 2:ACDelay (10) 3:Tests/day (1)

	1: Toggles DACT operation ON/OFF.
	2: Toggles AC Fault reporting delay (0, 10, 20 hours).
	3. Scrolls through number of lines tests per day [1…4].
	<,>: Scrolls First Line Test Time setting (15-minute steps).

Table 5.2.1.7   Config Menu Tree Display and Selections (Continued)

5.3 WALK / DRILL Menu Selections

Table 5.3.1 lists the Walk / Drill menu selections and description. Figure 5.3.1 illustrates the Menu Options.

Menu	Description
Drill ON/OFF	Is a simple ON or OFF selection. ON will activate the NACs, while OFF will deactivate them.
Audible Test	Is a simple ON or OFF selection for an audible walk test. The audible appliances will sound twice for a trouble, 3 times for a supervisory signal and 4 times for an alarm.

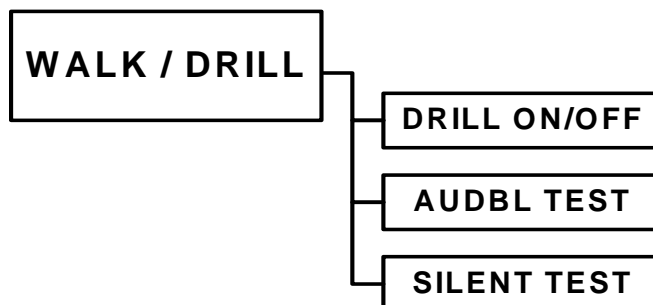**Table 5.3.1 Walk / Drill Menu Selections**

Figure 5.3.1 Walk/Drill Menu

5.4 I/O Menu Selections

Table 5.4.1 and Table 5.4.2 lists the I / O menu selections and description. Figure 5.4.1 illustrates the menu options.

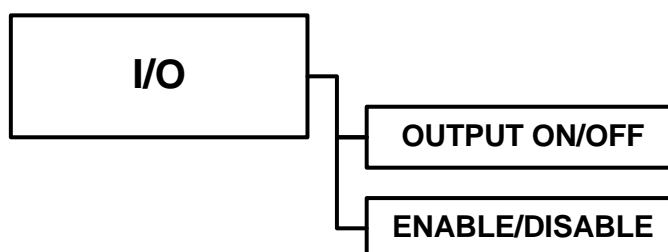| Menu	Descriptions
Output ON/OFF	Forces the toggling on or off of a specified output. These outputs can include NAC 1, NAC 2, Municipal Circuit (if present) and any Addressable Control Point.
Enable/Disable	Allows the user to take any addressable device on either SLC and disconnect it through software. While disabled, a point will report a trouble until it is enabled, but will not cause or respond to an alarm.

Table 5.4.1 I/O Menu Selections

Figure 5.4.1 I/O Menu

Menu Tree	Display and Selections
Main **Walk/Drill**	**[Walk/] 1: Drill (OFF) 2:Audble Test (OFF)** **[DRILL] 3: Silent Test (OFF)**
	1: Toggles Fire Drill ON/OFF.
	2: Toggles Audible Walk Test ON/OFF.
	3: Toggles Silent Walk Test ON/OFF.
Main **I/O**	**[I/O] 1: Output On/Off** **[CTRL] 2: Enable/Disable Device**
	1: Opens Select Device to Control Menu.
	2: Opens Select Device to Enable Menu.
	NOTE: These are the same menus as used in the Configure section, or similar, except after selection they proceed to the following menus.

Main
   I/O
     Select
       Output On/Off
	[CNTRL] NAC 1 (AUTO)
	[L,AAA] 1:On/Auto

	1: Toggles selected output ON/AUTO. Output selections include NAC1, NAC2, and Muni Circuit (if present). These appear at the bottom of the output device scroll list, and can be entered by keypad as addresses 0001, 0002, and 0003. (Note that AOMs start at address 1101. If the selected device is an AOM, its location is shown, otherwise NAC 1, NAC2, or Municipal Circuit. Status LEDs and relays are not considered to be programmable outputs.

Main
   I/O
     Select
       Enable/Disable
	[ENA/DIS] Municipal Circuit (ENABLED)
	[L,AAA] 1: Enable/Disable

	1: Toggles selected device ENABLED/DISABLED

Table 5.4.2 I/O Menu Tree Display and Selections

5.5 CLOCK Menu Selections

Table 5.5.1 and Table 5.5.2 list the Clock menu selections and description. Figure 5.5.1 illustrates the Clock Menu options.

| Menu Selections	Description
Time	Is set in 24 hour notation. It is set with hours then minutes "HHMM".
Date	Is set as month, date and year "MMDDYY".
Night Hours	Sets the Day/Night programming. If no time is set here, the system will always remain in the Day mode.
Night Start	Will initiate the Night/Weekend programming which is generally used to make certain sensors more sensitive to particles of combustion than during the day. This must be programmed in 24 hour notation (HHMM).
Night End	Will conclude the Night/Weekend programming. Weekend Days is where the user programs the days of the week that the premises are unoccupied (the same as Night).
Holidays	Is where the user programs the days of the year that the premises are unoccupied (the same as Night and Weekends). This must be programmed as month and date (MMDD).

Table 5.5.1 Clock Menu Selections
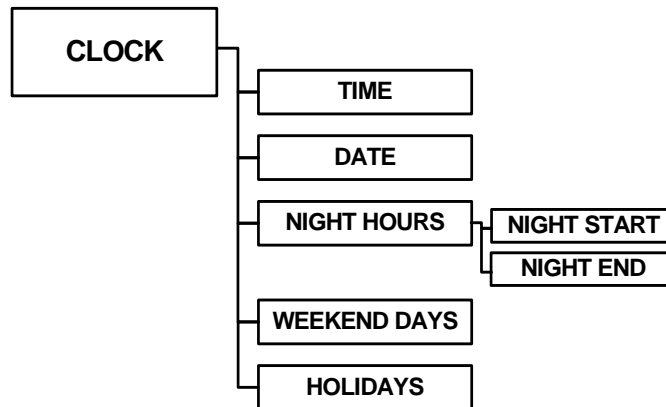
Figure 5.5.1 Clock Menu

Menu Tree	Display and Selections
Main **Clock**	**[SET] 1: Time 2: Date 3: Night** **[CLOCK] 4: Weekend 5: Holidays**
	1: Opens Set Time Menu.
	2: Opens Set Date Menu.
	3: Opens Set Night Hours Menu.
	4: Opens Set Weekend Schedule Menu.
	5. Opens Set Holiday Schedule Menu.

Main
   Clock
      Time
	[SET] 13:44 (1:44 PM)
	[TIME] Type HHMM (24-hour notation)

	keypad: enter time.

Main
   Clock
      Date
	[SET] 07/16/98 (Thu July 16, 1998)
	[DATE] Type MMDDYY

	keypad: enter date.

Main
   Clock
      Night Hours
	[SET] Start 17 End 07 (5:00P7:00A)
	[NIGHT] Type SSEE (24-hour notation)

	Keypad: enter night start and end hours.

Main
   Clock
      Weekend Days
	[SET] Saturday (YES)
	[WKEND] select day 1:Yes/No

	1: Toggles weekend mode YES/NO for day shown.
	<>: scrolls through days of the week.
	If YES, system will operate in Night mode during the entire day.

Main
   Clock
      Holidays
	[SET] 12/25 Type MMDD 0000-delete
	[HOLIDY] another holiday

	If NO, system will operate in Night mode during night hours only. Keypad: enters date to be treated as a holiday.
	<>: scrolls through list of holiday entries (accepting current one).

Table 5.5.2 Clock Menu Tree Display and Selections

NOTE: Level 1 access is required to enter the "Set Clock" menu. The "Set Time" and "Set Date" functions are available at Level 1 access, and it is also possible to view the other clock menu settings (day/night schedule, weekends, holidays) with Level 1 access. However, Level 3 access must be obtained before these configuration settings can be changed.

5.6 LOG Menu Selections

Table 5.6.1 lists the Log Menu selections and description. Figure 5.6.1 illustrates the Log Menu options.

Menu Selection	Description
Display Log	Opens the System Display to all events in the buffer memory.
Print Log	Sends the entire buffer memory to the RS-232 port.
Clear Log	(Hard reset) will eliminate all events stored in the buffer memory.
Sensitivity	Will send sensor sensitivity information to the RS-232 port.

Table 5.6.1 Log Menu Selections
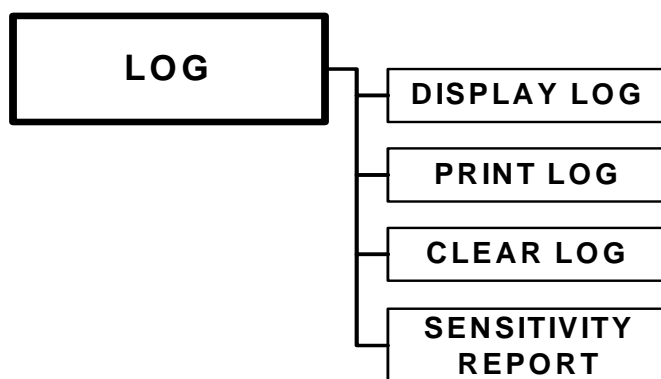
Figure 5.6.1 Log Menu

5.7 INFO Menu Selection

The INFO Menu Selection displays the following information:

• Firmware Version installed in the 7100 Series pane

• The last configuration

• The numerical designation of the menu item used for the last configuration update.

Figure 5.7.1 illustrates the Info Menu options. Table 5.7.1 lists the Info Menu tree and display selections.
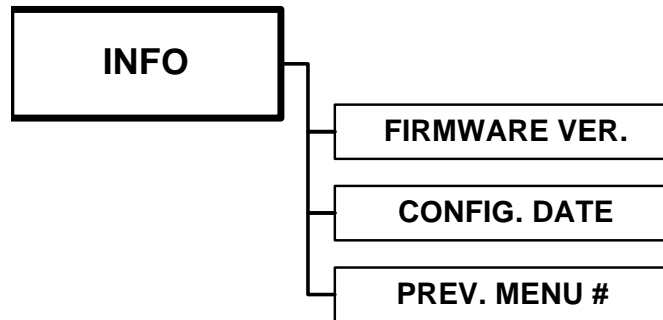

Figure 5.7.1 Info Menu

Menu Tree	Display and Selections
Main **Log**	**[VIEW] 1:Display Log 2: Print Log** **[LOG] 3:Clear Log 4:Sens. Report**
	1: Opens Show Events Menu.
	2: Opens Print Log Menu.
	3: Prompts for OK; if accepted, clears the Event Log and resets panel.
	4: Initiates a sensor sensitivity printout.

Main
    Log
       Show Events
	(Display shows a log entry)

	Scrolls through all logged events, beginning with the most recent event. If user attempts to scroll beyond the end (or beginning) of the log, End of log is displayed briefly, then the last (or first) event is redisplayed.
	Display cannot give instructions, since it contains all the information about the event being displayed (same as the display you would see when the event occurred).

Main
    Log
       Print Log
	[PRINT} 1: All events 2:Last 20
	[LOG]

	If there is no log printout in progress, starts a printout as shown above. Once the printout begins, or if a printout is in progress when this menu is opened, the message and function change to "3:Abort printout". Printout starts immediately, not when OK is pressed.
	If printout completes while this menu is still open, the text of the menu doesn't change until the user presses a key.
Main **Log**	**[PANEL] Software Last Cfg. Change** **[INFO] V1.2-001 12:23 07/23/99 33**
	Shows the system software version, time and date of the most recent change to the configuration program, and number of the menu used to make the change (i.e., what was changed).

Table 5.7.1 Info Menu Tree Display and Selections

Section 6: Power Up Procedure

6.1 General

Ensure that all cables and optional modules (if any) are installed and secured per the installation instructions. DO NOT install any field wiring at this time.

1. Connect the End-of-Line devices to the notification appliance and municipal (if installed) circuits.
2. Power the panel with AC first. The system initializes and indicates a "Battery Missing" condition.
3. Connect the batteries, be sure to observe polarity.
4. The system should be in normal condition. You may proceed with the installation of field wiring. Check all wiring prior to the connection to the control panel. Do not use this panel as a circuit tester.

6.2 To Set the System Time (Keyswitch must be engaged).

1. Press the MENU/Back button on the keypad and enter the Level 1 password, XXXXXX.
2. Press the OK button.
3. The Main Menu displays. Press the Number 4 and the Clock Menu displays.

    Table 6.2.1 includes the numbers and the function of each number.

Number	Description
Number 1	Opens the Time setup.
Number 2	Opens the Date setup.
Number 3	Opens the Day/Night setup.
Number 4	Opens the Weekend setup.
Number 5	Opens the Holiday setup.

Table 6.2.1 Clock Number Descriptions

NOTE: Use the keypad to enter the data. Use the OK button when each section is completed. The OK button is used in the same way as an Enter Key.

4. Press the System Reset/Lamp Test button and ensure that the time and the date remain correct.

6.3 Automatic Configuration

1. Press the Menu/Back button on the keypad and enter the Level 4 password, YYYYYY.
2. Press the OK button.
3. The Main Menu displays. Press the Number 1 and the Configuration Menu displays.
4. Press the Number 1 to open the Automatic Configuration Menu. Numbers 2 through 5 are used for specific programming and are covered in previous sections.
5. Since this is the first time the system is configured, press the Number 1 to initiate the **Clear, Then Configure** process.

    This process will place all of the system settings to the factory default and then read all of the devices correctly connected to the two (2), SLCs. After this process is complete, the system may be given an initial test to assure all of the devices have been installed into the system memory.

NOTE: Automatic configuration does not set the DACT. The DACT must be programmed.

6.3.1 7100 Series Device Types and Functions

Table 6.3.1 lists the 7100 Series control panel device types and functions.

#	Device Type	Physical	Response	Action in Alarm Condition	
1	Ion Sensor	Ion	Smoke Alarm	Trips ALARM LED and ALARM Relay	Alarm condition latches, trouble condition is restorable
2	Ion Duct Sensor				
3	Photo Sensor	Photo			
4	Photo Duct Sensor				
5	Photo/Thermal				
6	Thermal	Thermal	Alarm	Trips other output per Day Alarm or Night Alarm Response, or by group	
7					
8	Smoke Det	AMM			
9	Manual Station		Manual Alarm		
10	Plenum Det				
11	N.O. Contact			Smoke Alarm may be verified or PAS: Manual Alarm may be PAS.	
12	Heat Det				
13	SubLoop				
14	Waterflow Silenceable				
15	Beam Det				
16	Duct Det		Alarm		
17	FACP Alarm				
18	Remote Zone				
19	Smoke/Heat				
20	Supervisory Switch (Non Latching)	AMM	Supervisory NL	Trips general supervisory outputs, SUPERVISORY LED TROUBLE Relay.	Alarms and Troubles restore.
21	Tamper Switch (Latching)		Supervisory L		Alarms latch, Trouble restore.
22	Waterflow NonSilenceable	AMM	Waterflow NS	Same as ALARM but inhibits panel silence.	
23	Non-Reporting Actuator Latch	AMM	Non-Report	Activates group, but produces no other response	Alarm latch
24	Non-Reporting Actuator Nonlatch				Alarms restore
25	Non-Reporting Ion Non latch	Ion			
26	Non-Reporting Photo Non latch	Photo			
27	Ion Multilevel	Ion	Multilevel	Produces "Alert," "Action," or "Alarm" response depending on global %-of-alarm settings	
28	Photo Multilevel	Photo			
29	Signal Silence	AMM	Silence	Non-latching Produces the specified function	
30	Reset		Reset		
31	Drill		Fire Drill		
32	Alarm Acknowledge		Alrm Ack		
33	Trouble/Supv Acknowledge		Trbl/Supv Ack		
34	Aux		Aux		

Table 6.3.1   7100 Series Device Types and Functions

#	Device Type	Physical	Response	Action in Alarm Condition	
35	End-Of-Line	AMM	EOL	Used for Address M99 only	
36	Silenceable Signal	Signal AOM	(Output)	Produces "Short" indication	
37	Nonsilenceable Signal				
38	Silenceable Contacts	Form C AOM		No "Short" indication	
39	Nonsilenceable Contacts				
40 49	User-Defined Devices Types	AMM	Choice of Alarm, Supervisory NL, Tamper L, Waterflow NS	Per selected response	

Table 6.3.1   7100 Series Device Types and Functions (Continued)

6.4 Circuit Wiring Requirements

Table 6.4.1 provides the circuit wiring requirements for the 7100 Series control panel.

Circuit Type	Circuit Function	Wire Requirements	Distance (feet/meters)	Typical Wire Type (See Note)
SLC (power-limited)	Connects to intelligent and addressable modules.	Twisted-unshielded pair, 12 to 18 AWG (3.1 to 0.78 mm^2) 40 Ohms maximum per length of Style 6 & 7 loops. 40 Ohms combined-branch circuits maximum for Style 4 loop. MC cable with 2 conductor twisted.	10,000 ft. (3,000 m) 8,000 ft. (2,400 m) 4,875 ft. (1,450 m) 3,225 ft. (980 m)	12 AWG (3.1 mm^2) / 14 AWG (2.00 mm^2) / 16 AWG (1.30 mm^2) / 18 AWG (0.78 mm^2)
	Or	Shielded wire, in conduit or outside of conduit or MC cable. MC cable with 3 conductor twisted.	1,000 ft. (304.8 m)	12 to 18 AWG (3.1 to 0.78 mm^2)
		Note: Maximum total capacitance of all SLC wiring (both between conductors and from any conductor to ground) should not exceed 0.5 microfarads.		
EIA-485 (power-limited)	Connects to LCD-E3, ASM-16 and ANU-48 modules	Twisted-unshielded pair with a characteristic impedance of 120 Ohms. 18 AWG (0.78 mm^2) minimum.	3,000 ft (maximum)	16 AWG (1.30 mm^2)
EIA-232 (power-limited)	Connects to Printers, CRT, E3 or PC.	Twisted-unshielded pair. 18 AWG (0.78 mm^2) minimum	50/15.24 (without modem)	16 AWG (1.30 mm^2)
NAC Notification Appliance Circuit	E3 (power-limited)	12-18 AWG (3.1 to 0.78 mm^2). At alarm current level, no more than a 1.2 V drop at the end of the circuit, or sized to provide the minimum rated operating voltage of the appliances used.	To meet 1.2 V drop, or sized to provide the minimum rated operating voltage of the appliances used.	12 to 18 AWG (3.1 to 0.78 mm^2)
24 VDC Power Runs (power-limited)	To Transmitter Annunciator	12-18 AWG (3.1 to 0.78 mm^2). Size wire so that no more than 1.2 V drop across wire run from supply source to end of any branch.	To meet 1.2 volt drop	12 to 18 AWG (3.1 to 0.78 mm^2)
CHG-120	External battery charger	12 AWG (3.1 mm^2) in conduit	20/6.1 (maximum)	12 AWG (3.1 mm^2)
ARCNET (power-limited)	Provides interface wiring ARCNET should be installed in a separate conduit.	Twisted-unshielded pair, low capacitance 18 AWG	3,000 ft. (.914 m)	18 AWG (3.1 mm^2)

NOTE: Lightning arresters required on circuits extending between buildings; 999 meter length maximum to meet UL Standard 1459.

Table 6.4.1 7100 Series Control Panel Wiring Requirements

6.5 Power-Limited and Non Power-Limited Wiring

Figure 6.5.1 illustrates a typical backbox for the 7100 Series fire alarm control panel. Figure 6.5.2 illustrates the power-limited and non power-limited wiring.
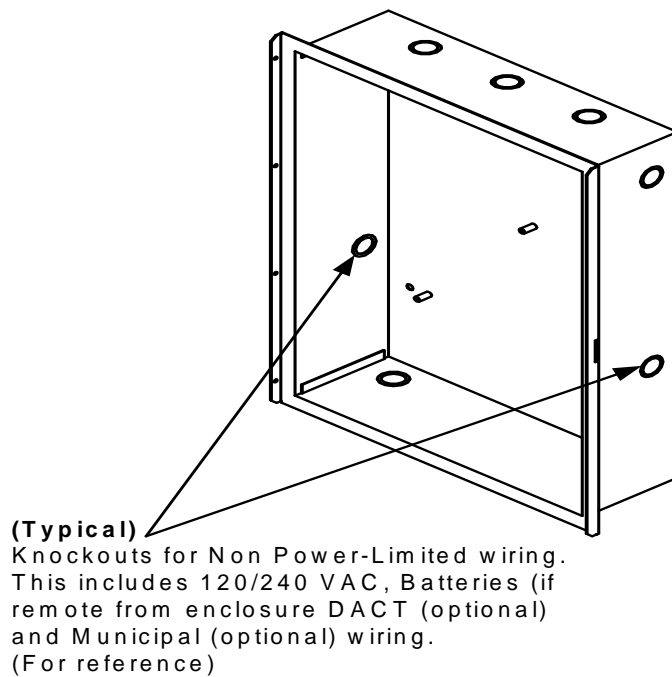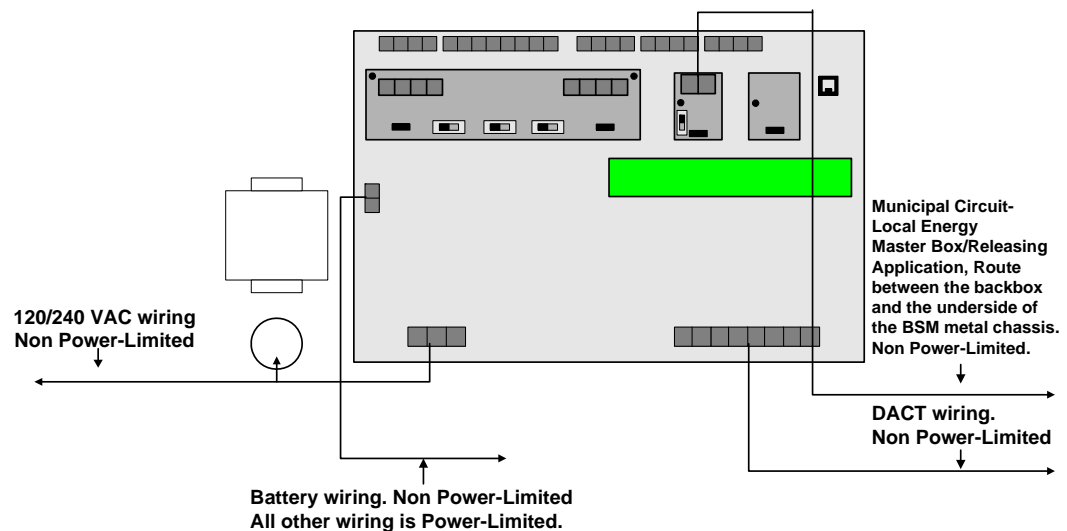
(Typical)
Knockouts for Non Power-Limited wiring. This includes 120/240 VAC, Batteries (if remote from enclosure DACT (optional) and Municipal (optional) wiring. (For reference)

Figure 6.5.1   Typical Backbox

Municipal Circuit-
Local Energy
Master Box/Releasing
Application, Route
between the backbox
and the underside of
the BSM metal chassis.
Non Power-Limited.

**120/240 VAC wiring
Non Power-Limited**

**DACT wiring.
Non Power-Limited**

**Battery wiring. Non Power-Limited
All other wiring is Power-Limited.**

Power-limited and non power-limited circuit wiring must remain separated in the cabinet. All power-limited circuit wiring must remain at least 0.25" away from any non power-limited wiring. Power-limited and non power-limited wiring must enter and exit the cabinet through different knockouts and/or conduits.

Power-limited wire must be type FPL, FPLR or FPLP according to Article 760 of the National Electrical Code.
NOTE: Non power-limited wiring must be 12-18 AWG.

Figure 6.5.2 Power-Limited/Non Power-Limited Wiring

Notes

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