



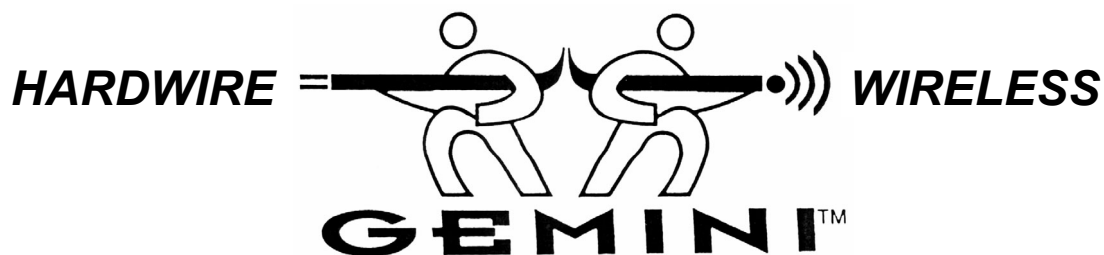
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# ***INSTALLATION INSTRUCTIONS***

## **COMPLIES WITH:**

- NFPA 72 NATIONAL FIRE ALARM CODE
- UL 864 (9<sup>TH</sup> EDITION)

## ***VOLUME 1***



### **COMMERCIAL / RESIDENTIAL**

**GEMC-255**

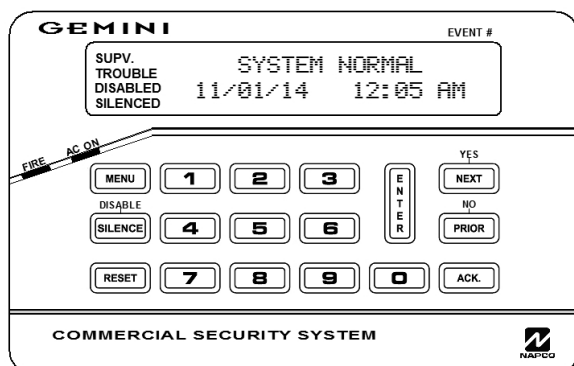
**GEMC-128**

**GEMC-96**

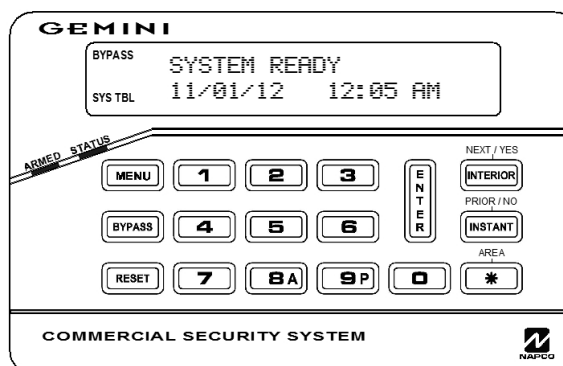
**GEMC-32**

### **CONTROL PANEL / COMMUNICATOR**

Installing the GEMINI C-Series Control Panels  
with the **GEMC-FK1** Keypad and the **GEMC-BK1** Keypad



**GEMC-FK1 Keypad**



**GEMC-BK1 Keypad**

**THIS MANUAL INCLUDES FEATURES WHICH ARE ONLY AVAILABLE IN CONTROL PANEL  
FIRMWARE VERSION 82G OR LATER, AND REFLECTS THE FEATURES FOUND IN  
PCD-WINDOWS QUICKLOADER DOWNLOAD SOFTWARE VERSION 6.0 OR GREATER.**

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#### THE FOLLOWING STATEMENT IS REQUIRED BY THE FCC.

This equipment generates and uses radio-frequency energy and, if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class-B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: reorient the receiving antenna; relocate the computer with respect to the receiver; move the computer away from the receiver; plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402; Stock No. 004-000-00345-4.

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#### UL LISTINGS for the GEMC-System

Police Station Alarm Units: UL365  
Local Burglar Alarm Units and Systems: UL609  
Commercial Fire: UL864 9th Edition  
Household Fire Warning System Units: UL985  
Household Burglar Alarm System Units: UL1023  
Central Station Burglar Alarm Units: UL1610  
Security Industry Association (SIA) False Alarm Reduction Standard CP-01  
Access Control Systems: UL294

#### UL LISTINGS for the GEMC-12V2APS-CF,-R

Power Supplies for Use with Burglar Alarm Systems: UL603  
Power Supplies for Fire Protective Signaling Systems: UL1481



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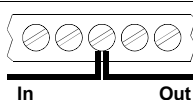
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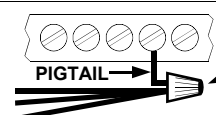
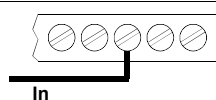
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[illegible]

**For single-conductor terminal blocks** (like the type shown at left), to terminate more than one conductor to a terminal, use the wiring methods shown at right:



**Incorrect**



WIRE NUT OR  
CRIMP  
CONNECTOR

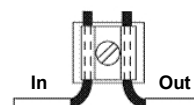
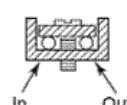
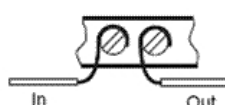
**Correct -- Single incoming and/or pigtail with wire nut / crimp connectors**



**For "barrier" type terminal blocks** (like the type shown at left), to terminate two conductors to a terminal, use the wiring methods shown at right:

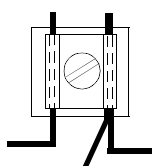


**Incorrect**

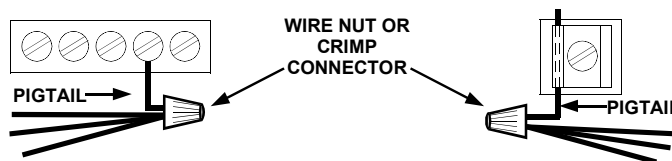


**Correct -- Separate incoming and outgoing conductors**

**To terminate more than two conductors or** conductors of different wire sizes to a terminal, use the "pigtail" type wiring method as shown at right. Use insulated wire for the pigtail, and firmly secure the conductors to the pigtail using an appropriate wire nut or crimp connector for the number and gauge of conductors used.



**Incorrect**



**Correct -- Use pigtail and wire nut / crimp connector**

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**NOTE: THESE INSTRUCTIONS ARE INTENDED AND WRITTEN FOR PROFESSIONAL INSTALLATION PERSONNEL HAVING SUITABLE TRAINING, EXPERIENCE AND INSTALLATION EQUIPMENT. IT IS RECOMMENDED THAT AFTER PROGRAMMING, THE ERROR CHECK UTILITY OF PCD-WINDOWS DOWNLOAD SOFTWARE BE USED TO VERIFY THAT THE CONTROL PANEL PROGRAM CONTAINS NO ERRORS OR CONFLICTS WHICH MAY INHIBIT ITS INTENDED OPERATION.**

# UL864 (COMMERCIAL FIRE) COMPLIANCE

## OVERVIEW

NAPCO's Gemini C-Series GEMC-255, GEMC-128, GEMC-96 and GEMC-32 combination Commercial Fire, Commercial Burglary, Residential Fire and/or Residential burglary alarm control panels provide features and options that permit the system to meet UL864 Commercial Fire requirements. Follow the guidelines below if your installation must meet these UL requirements. **Note:** The reference "GEMC-XXX" used in this manual is intended to include the Gemini C-Series control panel models GEMC-255, GEMC-128, GEMC-96 and/or GEMC-32. In addition, the reference "GEMC-NACXX" used in this manual is intended to include the NAC Extender models GEMC-NAC7L and/or GEMC-NAC7S.

- Do NOT use Audio Alarm Verification devices (such as Veri-Phone™) or any such devices that permit two-way voice communication (between an operator at the central station and a person at the premises).
- Remote downloading may be performed ONLY if a service person is physically located at the premises.
- All supervised zones in the polling loop, including keypads, NAC outputs, receivers, and Telco lines must be programmed as 24-Hour Zones. **Note:** The integral GEM-XXXMB motherboard NAC output circuits and GEMC-NACXX extender NAC output circuits all comply with NFPA Class B (Style Y) and Class A (Style Z).
- All bypassed zones must be enabled for central station reporting.
- All Fire alarm notification circuits, such as NAC bell outputs, must be supervised.
- System output devices must not override any automatic fire or building functions.
- Line cut detection monitoring must be enabled for all reporting lines including the main and backup central station receiver telephone numbers and/or NetLink communication lines.

## PERMISSIBLE AND RESTRICTED KEYPAD PROGRAMMING OPTIONS

The Napco Gemini C-Series control panels allow for address programming, both through the keypad and using PCD-Windows Quickloader software. To ensure compliance with the requirements in UL 864 ("Standard for Control Units and Accessories for Fire Alarm Systems") selected programming options and features must either be limited to specific values or disabled, as detailed in the following table:

### NOTICE TO AUTHORITIES HAVING JURISDICTION, USERS, INSTALLERS, DEALERS, AND OTHER AFFECTED PARTIES

FIRE PROGRAMMING OPTION	PERMITTED IN UL864? (Y/N)	AVAILABLE SETTINGS	REQUIRED UL 864 SETTINGS
ABORT DELAY (sec.) ADDRESS 5306 [Default = 000]	NO Do not enable on Fire Zones	0-255	000 for Fire Zones; (0-255 for non-Fire zones).
AC Fail Report Delay (x10 min.) ADDRESS 5308 [Default = 008]	Yes, required	0-255	60-180 minutes.
Auto Reset	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
AutoBypass	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
AutoBypass Re-entry	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Backup Report on Telco 2	Yes	Enable / Disable	Optional.
Burg Aux Relay	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).

# UL864 (COMMERCIAL FIRE) COMPLIANCE (CONT'D)

FIRE PROGRAMMING OPTION	PERMITTED IN UL864? (Y/N)	AVAILABLE SETTINGS	REQUIRED UL 864 SETTINGS
Burg Bell	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Burg PGM1	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Burg PGM2	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Central Station: Handshake Local Telemetry	No	Enable / Disable	Disabled.
Chime 2	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Chime Zone	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Day Zone /Trouble Open	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Day Zone /Trouble Short	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Dealer Security Code	Yes	4-6 digits	Optional.
Delayed Trip 1	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Delayed Trip 2	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Disable AC Fail Detection	No	Enable/disable	Must be disabled to allow for AC Fail to be detected.
Disable Call Waiting on 1st Attempt (Enable *70 Disable Call Waiting)	Yes	Enable / Disable	Optional.
Enable No Eol Resistor Zones? (Y/N)	No	Enable/Disable by Zone	Disabled.
Enable Report Test Mode Start/End	Yes	Enable/disable	Enabled.
Enable Telephone Line Fault Test	Yes	Enable / Disable	Enabled.
Exit/Entry #1	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Exit/Entry #2	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Exit/Entry Follower	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Ext Fire Output 1-8	Yes	Enable/Disable by Zone	Must be programmed to trip on one Fire Zone type.
Fire Trouble Resound	Yes	Enable/Disable	Enabled.
Interior 1 Bypass	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Interior 2 Bypass	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Keypad Area Assignment	Yes	For Fire: Area 1 only For Burg: Areas 2-8	Program at least 1 Fire keypad addressed as #1.
Keypad Sounder on Alarm	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Keypad Type	Yes	Burg or Fire or None	Program at least 1 Fire keypad addressed as #1.
Keyswitch Arming	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Low Battery	Yes	Report on Telco 1 or Telco 3	Must report on Telco 1 for reporting systems Reporting on Telco 3 is optional.
Memory Fail	Yes	Report on Telco 1 or Telco 3	Must report on Telco 1 for reporting systems Reporting on Telco 3 is optional.

# UL864 (COMMERCIAL FIRE) COMPLIANCE (CONT'D)

FIRE PROGRAMMING OPTION	PERMITTED IN UL864? (Y/N)	AVAILABLE SETTINGS	REQUIRED UL 864 SETTINGS
Monitor Zone	Yes	Enable/Disable by Zone	Must also be programmed as "Area 1 Fire".
NAC A-D	Yes	Enable/Disable by Zone	Must be programmed to trip on one Fire Zone type.
Never Arm	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in all other zones).
Pre-Alarm Warning	No	SIA CP-01 requires 15-45 seconds; default must be 30 seconds for non-Fire Zones	Disabled for Fire Zones Only; may be disabled for Burglary Zones.
Pre-Alarm Warning	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Priority / Bypass	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Priority Zone	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Selective Bypass	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Sensor Watch	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Shed Burg on AC Fail	Yes	Maximum 42 Hours, 30 minutes	Determined through battery standby calculations. Refer to Fire Glossary entry in Volume 2.
Silence Auxiliary Outputs (Turn off Auxiliary Outputs)	Yes	On/Off	Do not silence auxiliary outputs used for any required Fire system operation such as evacuation sounders or strobes.
Supervision Timer Options	Yes	10-2550 minutes	Program "23" (230 minutes) for the following device groups: GEMC-WL-WD2, GEMC-WL-SMK, GEMC-WL-HEAT.
Swinger Shutdown	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Test Timer	Yes	(Unlimited)	If the Central Station receiver telephone number to be programmed in the control panel is call forwarded to the receiver, it is required that the control panel be programmed to send a Test Signal once every 4 hours. Program <b>Test Timer</b> to send a signal every 4 hours in PCD-Windows Quickloader download software.
Test Timer	Yes	See Quickloader Event Scheduler screen for date and time parameters (for example, "Weekly", "Day of the Week", etc.)	Must be programmed to report every 24 hours.
Trouble on Night Open	No	Enable/Disable by Zone	Disabled.
Trouble on Open	No	Enable/Disable by Zone	Disabled.
Trouble on Short	No	Enable/Disable by Zone	Disabled.
Waterflow Retard Time	Yes	0-90	90 seconds, less any inherent delay of the waterflow sensor; see water sensor installation instructions.
Wireless Smoke Low Battery Re-sound	Yes	Enable/Disable	Enabled.
Zone Anding Group 1-8	No	Enable/Disable by Zone	Disabled for all Fire zones (may be enabled in Burg zones).
Zone Area 2-8	No	Enable/Disable by Zone	Enable Fire zones Area 1 only.

# INTRODUCTION

## GENERAL DESCRIPTION

NAPCO's Gemini C-Series GEMC-255, GEMC-128, GEMC-96 and GEMC-32 are state-of-the-art micro-computer-based combination Commercial Fire, Commercial Burglary, Residential Fire and/or Residential burglary alarm control panels of modular design. The GEMC-255 will support up to 255 zones with optional zone expansion modules, wireless receiver modules, Fire and Burg SLC modules and/or GEMC-BK1 keypads (with integral zone expander).

**A minimum system** requires a Gemini C-Series GEMC-XXXMB motherboard, a GEMC-PS24V7A or GEMC-PS24V4A power supply, a GEMC-HSKIT1425 or GEMC-HSKIT1416 enclosure, either a GEMC-FK1 or GEMC-BK1 keypad and at least one of the following:

- GEMC-FW-SLC: Fire SLC Module with associate Fire point devices
- GEMC-F8ZCPIM Conventional 8 Fire Zone Expander Plug in Module
- GEMC-BSLC: Burg SLC Module with associated Burglary point devices
- GEMC-EZM8: 8 zone expansion zone module listed for both commercial Fire and Burglary
- GEMC-RECV: RF Receiver with associated wireless transmitters

Each C-Series control panel includes an integral dual telephone line digital communicator, with two RJ-45 jacks for each supervised telephone line (with programmable delay), two RJ-25 jacks for local downloading, home automation (not permitted in UL installations) and NL-MOD integration; four 2A NAC circuits, relay output, trouble sounder output, active low E7 and E8 outputs, keyswitch input, remote bus and aux. power output and tamper input, two SLC module connectors, and an input for battery harness. Telephone Line 1 is inserted into TELCO # 1 (the top RJ-45 jack) and Telephone Line 2 is inserted into TELCO # 2 (bottom RJ-45 Jack). **Note:** Only two NAC circuit terminals (NAC A and NAC D with optional 12V or 24V) are available on the GEMC-96 and GEMC-32. **Note:** Telco wiring to the panel shall be a minimum of 26 AWG. In addition, when connecting the Local Download cable, a ground fault trouble may occur. Although this momentary ground fault is harmless to the system, it may be avoided by using an unplugged (running on batteries only) laptop or a notebook PC when performing a local download operation. If either of the two ports (RJ-25 #1 or RJ-25 #2) are permanently connected (for uses such as home automation (not permitted in UL installations)), isolation from earth ground requires the use of the GEM-RS232.

The control panel features programmable area partitioning. That is, the system may be divided into up

into 1 Fire area and 7 Burg areas, allowing access by only those users programmed for their respective area(s).

The panel has 88 programmable outputs plus 7 integral outputs on the motherboard. These programmable outputs require any combination of the modules listed the section "**SPECIFICATIONS AND RATINGS**" further in this manual.

There are three logs, including an 800 event burglary log, an 800 event Fire Log, and a 6000 event access control log (accessible through PCD-Windows Quickloader software and the keypad). These logs monitor control panel activity referenced to a precision real-time clock. A detailed event history may be displayed at the computer, using NAPCO's the PCD-Windows Quickloader Software.

Keypads feature a liquid-crystal display for messages. In normal use, the LCD shows zone identification, system status messages and 4 distinct status icons. Conventional LED's and a sounder are also provided for annunciation.

Data may be quickly and easily downloaded to the control panel using a PC-compatible computer with NAPCO's PCD-Windows Quickloader Download software and a PCI2000 computer interface. Or, the panel may be programmed using the keypad in its secondary mode of operation. In keypad programming modes (there are two: Dealer and User), the LCD shows memory address, data values, programming prompts, and the alphanumeric characters required for entering up to 195 user codes and custom zone descriptions. **Note:** In Commercial Fire applications, PCD-Windows Downloader software is required to ensure required programming, and prevent erroneous entries.

**Note:** The GEMC-128, GEMC-96 and GEMC-32 control panels each support up to 128, 96 and 32 zones, respectively.

## FEATURES

- Supports up to 255 Fire and/or Burglary zones programmable for Area, Exit/Entry Delay, Interior, Follower, Day Zone/Trouble, Chime, Fire options, Sensor Watch, Swinger Shutdown, Zone Anding and a variety of other features.
- Supports up to a total of 195 individually coded Burg and/or Fire users using the keypad (also 195 with PCD-Windows software), each with a programmable authority level.
- Supports four NAC circuits: Three 24V (2A) NAC circuits and one 24V or regulated 12V (selectable for use with UL Listed 12V sounding devices shown in the table "**EXAMPLES OF DEVICES COMPATIBLE WITH BELL OUTPUTS**") 2A NAC circuit. **Note:** The GEMC-96 and GEMC-32 only provide two NAC



circuits (one 24V (2A) NAC circuit and one 12V or 24V selectable 2A NAC circuit). **Note:** If a constant 24VDC power source is required to power a 24VDC device, one of the available NAC circuits can be converted to 24VDC Aux Power, thus reducing the total number of NAC circuits available in the system.

- *Opening Suppression* and *Closing Suppression*, available through Napco PCD-Windows Quickloader™ Download software, suppress reporting within programmed "windows of time".
- *Exception Reporting* can transmit a "Fail to Close Report" if the panel is not armed within programmed intervals and, similarly, a "Fail to Open Report" if the panel is not disarmed within programmed intervals of time.
- Panel can be programmed to automatically arm any area at any time.
- Trouble Sounder Output.
- Two Active low programmable outputs (2A maximum). **Note:** Relies on 2A over current protection of connected circuit.
- Key switch input.
- Aux Power: Output 12V Regulated @ 750mA maximum current.
- Remote Bus Power: 12V Regulated @ 750mA maximum current, supporting up to 7 keypads, zone expansion modules, or wireless receivers, etc. (use the GEMC-12V2APS power supply for additional current).
- Supports up to fifteen (15) system keypads maximum, with a maximum of seven (7) GEMC-FK1 Fire keypads allowed only in Area 1. The maximum number of Burglary keypads allowed decreases as Fire keypads (or GEM-ACM modules) are added to the system. System limit examples:
  - **Burg-Only System:** Zero Fire keypads in Area 1, 15 Burglary keypads in Areas 2-8
  - **Combination System:** 1 Fire keypad in Area 1, 14 Burglary keypads in Areas 2-8
  - **Combination System:** 7 Fire keypads in Area 1, 8 Burglary keypads in Areas 2-8
  - **Fire-Only System:** 7 Fire keypads maximum in Area 1 (one Area only in the system)
- Fire Aux Relay Output Power (when wet): 12V Regulated Maximum 750mA (dry contact Form C relay rated 30VAC / VDC, 2.5A maximum)
- Maximum combined 12V Regulated standby current (Remote Power + Auxiliary Power + NAC D 12V Output) = 1.4A
- Enclosure tamper input (for cover and/or enclosure back).
- Supports three burglary GEMC-BK1 keypad panics: Police, Auxiliary & Ambush.
- Supports up to 8 independent area partitions (1 Fire area and 7 Burg areas).

- English-language prompts & system status messages.
- User-customized zone descriptions, re-programmable as required.
- Supports eight 2-wire smoke detector zones or normally open Fire initiating device zones using a GEMC-F8ZCPIM Fire Zone Expander.
- Supports 8 different types of Fire SLC devices including a supervised output module.
- Reports alarms, restores and troubles by zone.
- 800 event Burglary log.
- 800 event Fire log.
- 6000 event access control log.
- 255 Event Schedule.
- 96 External Output Events.
- Burglary Keypad Overview Mode permits monitoring and control of total Burglary system from one keypad.
- Two programmable Entry Delay times.
- Two Interior-Zone groups.
- Dynamic System battery test interrupts charging and places battery under load, monitors battery voltage and battery charger voltage every 100 seconds.
- Chime 1 programmable by zone with programmable duration.
- Chime 2 programmable with distinct sound.
- Non-volatile FLASH memory retains data during power losses.
- Real-Time Clock IC retains accurate time for up to extended two week power loss.
- Napco PCD-Windows Quickloader™ Download software programmable, including two RJ-25 input receptacles. **Note:** In Commercial Fire applications, Quickloader™ software must be used to ensure valid programming and prevent erroneous entries; the system cannot be placed into operation without Quickloader™.
- Auto-Download Log.

### Communicator Features

- Two supervised telephone line RJ-45 inputs listed for Fire and Burglary signaling.
- Compatible with SIA and Point ID receiver formats.
- Two RJ-25 inputs for internet communication via the optional GEMC-NL-MOD for listed high security internet communication to the NL-RECV central station receiver.
- Rotary dial, TouchTone™ only, and TouchTone™ with Rotary backup.
- Three 20-digit telephone numbers.
- Backup Reporting; Dual Reporting; Split Reporting.
- 195 User Codes with Burglary area Open/Close Reporting by user.
- AC Failure Reporting with programmable report de-

lay (1-3 hours).

- GEM-ACM1D (version 2 firmware only) and GEM-2D Access Control Modules provide integrated access control to the burglary alarm functions of the GEMINI C-Series control panel.

### Compatible Receivers

The following receivers are compatible:

- Ademco MX-8000
- Surgard MLR-2
- Osbourne Hoffman 2000e
- NAPCO Net.Link™ NL-RCV-RMPCUL
- Ademco 685

### GEMC-FK1 Fire Keypad Features

- English-language LCD display with six visual indicators and sounder annunciators ("AC ON" and "FIRE" LED's, SUPV, TROUBLE, SILENCED and DISABLED icons).
- Supports a maximum of seven (7) GEMC-FK1 Fire keypads allowed only in Area 1.
- Communicator Test to Central facilitates testing.
- "One Man Test" menu option.
- Input for Primary User Interface trouble sounder

### GEMC-BK1 Burglary Keypad Features

- Separate Burglary bus (on the GEMC-BM / GEMC-BM/PS) isolates the Fire system from faults on Burglary devices.
- English-language LCD display; LED and sounder annunciators.
- Supports a maximum of 15 GEMC-BK1 Burg keypads (less the number of GEMC-FK1 Fire keypads and GEM-ACM modules).
- Provisions for Police, Auxiliary and Ambush panic alarms.
- Integral 4-zone EZM included in each GEMC-BK1 keypad.
- Communicator Test to Central facilitates testing; Fault-Find diagnostics simplify troubleshooting.
- PGM output.
- Jumper selectable "Burg Service Mode" (jumper JP2) allows the Burglary part of the system to be serviced (changed) while allowing the Fire system to continue to function as intended (for Combination Fire and Burglary systems).

**Note:** See individual accessory work instructions (WI's) for exceptions and other information.

## SPECIFICATIONS

**GEMC-255MB, GEMC-128MB, GEMC-96MB and GEMC-32MB Gemini C-Series Motherboards**

### ELECTRICAL RATINGS

**Motherboard Power Supply (GEMC-PS24V7A and**

**GEMC-PS24V4A) Input Power:** 120AC 60Hz, 3A; maximum 15A dedicated branch circuit.

**Motherboard (GEMC-255MB, GEMC-128MB, GEMC-96MB and GEMC-32MB) Input Power:** 24VDC, maximum 7A.

### Output Power:

**Note:** All outputs circuits are power-limited.

**Note:** The GEMC-96MB and GEMC-32MB provide two 2A NAC circuits (one 24V and one 12V or 24V selectable).

- **NAC A, NAC B, NAC C:** Regulated 24V NAC circuit; 2A maximum. When configured for 24V Auxiliary Power, it is a Special Application output only listed with the GEMC-24VR. The GEMC-24VR output is Regulated 24VDC, 1A maximum.
- **NAC D: When configured for 24V:** Regulated 24V NAC circuit; 2A maximum. When configured for 24V Auxiliary Power, it is a Special Application output only listed with the GEMC-24VR. The GEMC-24VR output is Regulated 24VDC, 1A maximum.
- **NAC D: When configured for 12V:** Regulated 12V NAC circuit, 2A maximum or Regulated 12V Auxiliary Power, 1.4A maximum.
- **Fire Aux. Relay Output:** Wet: 12V Regulated, 750mA max.; Dry: Remove shunt for dry contacts; see Wiring Diagram; dry contact Form C relay rated 30VAC / VDC, 2.5A maximum.
- **Two Active low programmable outputs:** (2A maximum). **Note:** Relies on 2A over-current protection of connected circuit.
- **Trouble Sounder Output:** 12V Regulated, 30mA.
- **E7 and E8 Terminals:** Active low open collector outputs; 0.1V, 2A (wire only to power limited circuits 30VDC or less).
- **Auxiliary Power Output:** Output 12V Regulated @ 750mA maximum current.
- **Remote Bus Power Output:** 12V Regulated @ 750mA maximum current, supporting up to 7 keypads, zone expansion modules, or wireless receivers, etc.
- **Auxiliary Power 24V Regulated:** Can only be supplied through NAC A, NAC B, NAC C or NAC D (configured for 24V) programmed for Reverse Polarity and wired to GEMC-24VR. 1.0A\* Maximum (must reduce total combined standby and alarm current by 1.1 times 24V Regulated current).
- **Maximum Combined 12V Regulated standby current:** Remote Power + Auxiliary Power + NAC D 12V Output and programmed for Reverse Polarity + AUX relay if shunt connector is installed:  
 plus GEMC-BM total standby current plus 25mA;  
 plus Fire Relay: 35mA (when energized);  
 plus GEMC-F8ZCPIM total combined standby cur-

rent +120mA = 1.4A\*.

**If additional 12V current is required, use the GEMC-12V2APS-CF (for Fire applications) and/or GEMC-12V2APS-R (for non-Fire applications) Auxiliary Power supplies.**

- **Maximum Total Combined 12V Regulated Standby and Alarm Current:** Remote Power + Auxiliary Power + NAC D 12V Output and programmed for Reverse Polarity + AUX relay if shunt connector is installed + NAC D alarm current:  
**plus GEMC-BM** total combined standby and alarm current + 25mA;  
**plus GEMC-F8ZCPIM** total standby and alarm current).
- **Maximum Total Combined 24V Standby:** (Total combined 12V standby plus alarm current times 0.6) + NAC A-D 24V standby current:  
**plus (GEMC-BM** total combined standby + 25mA) times 0.6;  
**plus (GEMC-F8ZCPIM** total combined standby + 120mA ) times 0.6;  
**plus GEMC-BM/PS** total combined standby + 25mA;  
**plus GEMC-FW-SLC** total combined 24V standby current;  
**plus GEMC-BSLC** total combined 24V standby current = 1A\*.
- **Maximum Total combined 24V Standby and Alarm Current:** (Total combined 12V standby plus alarm current times 0.6) + NAC A-D 24V standby plus alarm current:  
**plus (GEMC-BM** total combined standby and

alarm current + 25mA) times 0.6;

**plus GEMC-BM/PS** total 24V standby and alarm current + 25mA;

**plus GEMC-FW-SLC** total combined 24V standby and alarm current;

**plus GEMC-BSLC** total combined 24V standby and alarm current = 6.8A with 7A supply (GEMC-PS24V7A); 3.8A with 4A supply (GEMC-PS24V4A).

- **Maximum Battery Charging Current:** Refer to the GEMC-PS24V7A or GEMC-PS24V4A power supply specifications. The maximum charging current (trickle charge and fast charge) and the maximum ampere-hour capacity of the battery that the product is intended to charge:

**Standby Time:** See following charts.

**Battery Power:** See tables in sections "**GEMC-PS24V7A 7 AMP POWER SUPPLY**" and "**GEMC-PS24V4A 4 AMP POWER SUPPLY**" (data also located in WI1646 and WI1702).

**Loop Voltage:** See zone expansion modules.

**Loop Current:** See zone expansion modules.

**Loop Resistance:** See zone expansion modules.

**Operating Environment:** 0-49°C (32-120°F).

# COMPATIBLE SMOKE DETECTORS

## UL Compatible Two-Wire Smoke Detectors using GEMC-F8ZCPIM (Providing UL Recognition or Listing)

### 2 Wire Conventional Smoke Detectors

Manufacturer	Maximum # per Loop	Model	Base
NAPCO	25	FW-2, FW-2R	N/A
Sentrol/ESL (GE)	20	429C, 429CT, 511C, 511AFT, 521B/BXT, 521NB, 521NBXT, 521NCSXT, 711U-UT, 712U, 713-5U, 713-6U, 721U, 721UT, 722U	N/A
System Sensor	20	2W-B, 2WT-B, 2WTR-B	N/A
System Sensor	1	2WTA-B	N/A

**Note:** Any normally-open devices that do not require power from the control panel may be used (such as pull stations, waterflow and thermostats), if acceptable to the authority having jurisdiction.

**Important:** Smoke detectors with sounders are NOT intended to replace the main fire alarm sounding device.

# OTHER COMPATIBLE DEVICES

## EXAMPLES OF DEVICES COMPATIBLE WITH BELL OUTPUTS

Ademco	AD8-12; AD10-12; Ademco AB-12 Bell in Box
Amseco	MBL-8/12V; MBL-10/12V
Wheelock	46T-G4-12-R; 46T-G6-12-R; 46T-G10-12-R
Hochiki America	AL-VB-1012; AL-MB-612

Listed below are **System Sensor** models that provide audible and visible (AV) notification and conform to required synchronization protocols:

### WALL MOUNT

P2R	2 Wire Horn/Strobe Std Candela Red
P2RH	2 Wire Horn/Strobe Hi Candela Red
P2W	2 Wire Horn/Strobe Std Candela White
P2WH	2 Wire Horn/Strobe Hi Candela White
P2RK	2 Wire Horn/Strobe Std Candela Red Outdoor
P2RHK	2 Wire Horn/Strobe Hi Candela Red Outdoor
P2WK	2 Wire Horn/Strobe Std Candela White Outdoor
P2WHK	2 Wire Horn/Strobe Hi Candela White Outdoor
P4R	4 Wire Horn/Strobe Std Candela Red
P4RH	4 Wire Horn/Strobe Hi Candela Red
P4W	4 Wire Horn/Strobe Std Candela White
P4WH	4 Wire Horn/Strobe Hi Candela White
P4RK	4 Wire Horn/Strobe Std Candela Red Outdoor
P4RHK	4 Wire Horn/Strobe Hi Candela Red Outdoor
P4WK	5 Wire Horn/Strobe Hi Candela White Outdoor
SR	Strobe Std Candela Red
SRH	Strobe Hi Candela Red
SW	Strobe Std Candela White
SWH	Strobe Hi Candela White
SRK	Strobe Std Candela Red Outdoor
SRHK	Strobe Hi Candela Red Outdoor
SWK	Strobe Std Candela White Outdoor
SWHK	Strobe Hi Candela White Outdoor
SW-ALERT	Strobe Std Candela White Amber Lens with ALERT
SWH-ALERT	Strobe Hi Candela White Amber Lens with ALERT
SW-CLR-ALERT	Stroe Std Candela White Clear Lens with ALERT

### WALL SPEAKER STROBES

SPSR	Wall, Red, Selectable Candela, Speaker/Strobe
SPSR-P	Wall, Red, Selectable Candela, Speaker/Strobe, plain
SPSRH	Wall, Red, Selectable Candela, Speaker/Strobe; Hi Cd
SPSRH-P	Wall, Red, Selectable Candela, Speaker/Strobe; Hi Cd, plain
SPSW	Wall, White, Selectable Candela, Speaker/Strobe
SPSW-CLR-ALERT	Wall, White, Selectable Candela, Speaker/Strobe, clear lens alert
SPSW-ALERT	Wall, White, Selectable Candela, Speaker/Strobe, amber lens alert
SPSW-P	Wall, White, Selectable Candela, Speaker/Strobe, plain
SPSWH	Wall, White, Selectable Candela, Speaker/Strobe; Hi Cd
SPSWH-P	Wall, White, Selectable Candela, Speaker/Strobe; Hi Cd, plain
SPSRV	Wall, Red, Selectable Candela, Speaker/Strobe, Hi dB
SPSRV-P	Wall, Red, Selectable Candela, Speaker/Strobe, Hi dB, plain
SPSWV	Wall, White, Selectable Candela, Speaker/Strobe, Hi dB
SPSWV-P	Wall, White, Selectable Candela, Speaker/Strobe, Hi dB, plain
SPSRK	Wall, Outdoor, Red, Selectable Candela, Speaker/Strobe
SPSRK-P	Wall, Outdoor, Red, Selectable Candela, Speaker/Strobe, plain
SPSRK-R	Wall, Outdoor, Red, Selectable Candela, Speaker/Strobe, replacement
SPSRHK	Wall, Outdoor Red, Selectable Candela, Speaker/Strobe, Hi Cd
SPSWK	Wall, Outdoor, White, Selectable Candela, Speaker/Strobe
SPSWK-P	Wall, Outdoor, White, Selectable Candela, Speaker/Strobe, plain
SPSWK-R	Wall, Outdoor, White, Selectable Candela, Speaker/Strobe, replacement

## OTHER COMPATIBLE DEVICES (CONT'D)

SPANISH PAD PRINT "FUEGO"	
SR-SP	Strobe Std Candela Red - Fuego
SRH-SP	Strobe Hi Candela Red - Fuego
P2R-SP	2 Wire Horn/Strobe Std Candela Red - Fuego
P2RH-SP	2 Wire Horn/Strobe Hi Candela Red - Fuego
SCW-SP	Strobe Ceiling Std Candela White - Fuego
SCWH-SP	Strobe Ceiling Hi Candela White - Fuego
PC2W-SP	2 Wire Horn/Strobe Ceiling Std Candela White - Fuego
PC2WH-SP	2 Wire Horn/Strobe Ceiling Hi Candela White - Fuego

CEILING SPEAKER STROBES	
SPSCRH	Ceiling, Red, Selectable Candela, Speaker/Strobe; Hi Cd
SPSCW	Ceiling, White, Selectable Candela, Speaker/Strobe
SPSCW-CLR-ALERT	Ceiling, White, Selectable Candela, Speaker/Strobe, clear lens alert
SPSCW-P	Ceiling, White, Selectable Candela, Speaker/Strobe, plain
SPSCWH	Ceiling, White, Selectable Candela, Speaker/Strobe; Hi Cd
SPSCWH-P	Ceiling, White, Selectable Candela, Speaker/Strobe; Hi Cd, plain
SPSCRV	Ceiling, Red, Selectable Candela, Speaker/Strobe, Hi dB
SPSCRVH	Ceiling, Red, Selectable Candela, Speaker/Strobe; Hi Cd
SPSCWV	Ceiling, White, Selectable Candela, Speaker/Strobe, Hi dB
SPSCWV-P	Ceiling, White, Selectable Candela, Speaker/Strobe, Hi dB, plain
SPSCWVH	Ceiling, White, Selectable Candela, Speaker/Strobe, Hi dB, Hi Cd
SPSCWVH-P	Ceiling, White, Selectable Candela, Speaker/Strobe, Hi dB, Hi Cd, plain
SPSCWK	Ceiling, Outdoor, White, Selectable Candela, Speaker/Strobe
SPSCWHK	Ceiling, Outdoor, White, Selectable Candela, Speaker/Strobe; Hi Cd

CEILING MOUNT	
PC2R	2 Wire Horn/Strobe Ceiling Std Candela Red
PC2RH	2 Wire Horn/Strobe Ceiling Hi Candela Red
PC2W	2 Wire Horn/Strobe Ceiling Std Candela White
PC2WH	2 Wire Horn/Strobe Ceiling Hi Candela White
PC2RK	2 Wire Horn/Strobe Ceiling Std Candela Red Outdoor
PC2RHK	2 Wire Horn/Strobe Ceiling Hi Candela Red Outdoor
PC2WK	2 Wire Horn/Strobe Ceiling Std Candela White Outdoor
PC2WHK	2 Wire Horn/Strobe Ceiling Hi Candela White Outdoor
PC4R	4 Wire Horn/Strobe Ceiling Std Candela Red
PC4RH	4 Wire Horn/Strobe Ceiling Hi Candela Red
PC4W	4 Wire Horn/Strobe Ceiling Std Candela White
PC4WH	4 Wire Horn/Strobe Ceiling Hi Candela White
PC4RK	4 Wire Horn/Strobe Ceiling Std Candela Red Outdoor
PC4RHK	4 Wire Horn/Strobe Ceiling Hi Candela Red Outdoor
PC4WK	4 Wire Horn/Strobe Ceiling Std Candela White Outdoor
PC4WHK	4 Wire Horn/Strobe Ceiling Hi Candela White Outdoor
SCR	Strobe Ceiling Std Candela Red
SCRH	Strobe Ceiling Hi Candela Red
SCW	Strobe Ceiling Std Candela White
SCWH	Strobe Ceiling Std Candela White
SCRK	Strobe Ceiling Std Candela Red Outdoor
SCRHK	Strobe Ceiling Hi Candela Red Outdoor
SCWK	Strobe Ceiling Std Candela White Outdoor
SCWHK	Strobe Ceiling Hi Candela White Outdoor

NO PAD PRINT "PLAIN"	
P2R-P	2 Wire Horn/Strobe Wall Std Candela Red - PLAIN
P2RK-P	3 Wire Horn/Strobe Wall Std Candela Red - PLAIN Outdoor
P2W-P	2 Wire Horn/Strobe Wall Std Candela White- PLAIN
P2WK-P	3 Wire Horn/Strobe Wall Std Candela White- PLAIN Outdoor
P2RH-P	2 Wire Horn/Strobe Wall Hi Candela Red - PLAIN
P2RHK-P	3 Wire Horn/Strobe Wall Hi Candela Red - PLAIN Outdoor
P2WH-P	2 Wire Horn/Strobe Wall Hi Candela White - PLAIN
P2WHK-P	3 Wire Horn/Strobe Wall Hi Candela White - PLAIN Outdoor
P4R-P	4 Wire Horn/Strobe Wall Std Candela Red - PLAIN
P4RH-P	4 Wire Horn/Strobe Wall Hi Candela Red - PLAIN
P4W-P	4 Wire Horn/Strobe Wall Std Candela White - PLAIN
P4WH-P	4 Wire Horn/Strobe Wall Hi Candela White - PLAIN
SR-P	Strobe Wall Std Candela Red - PLAIN
SRK-P	Strobe Wall Std Candela Red - PLAIN Outdoor
SW-P	Strobe Wall Std Candela White - PLAIN
SWK-P	Strobe Wall Std Candela White - PLAIN Outdoor
SRH-P	Strobe Wall Hi Candela White -PLAIN
SRHK-P	Strobe Wall Hi Candela White -PLAIN Outdoor
SWH-P	Strobe Wall Hi Candela White -PLAIN
SWHK-P	Strobe Wall Hi Candela White -PLAIN Outdoor
PC2R-P	2 Wire Horn/Strobe Ceiling Std Candela Red - PLAIN
PC2W-P	2 Wire Horn/Strobe Ceiling Std Candela White - PLAIN
PC2RH-P	2 Wire Horn/Strobe Ceiling Hi Candela Red - PLAIN
PC2WH-P	2 Wire Horn/Strobe Ceiling Hi Candela White - PLAIN
SCR-P	Strobe Ceiling Std Candela Red - PLAIN
SCW-P	Strobe Ceiling Std Candela White - PLAIN
SCRH-P	Strobe Ceiling Hi Candela Red - PLAIN
SCWH-P	Strobe Ceiling Hi Candela White - PLAIN

CHIMES & CHIME/STROBE	
CHR	Chime, Red
CHW	Chime, White
CHSR	Chime/Strobe, Red
CHSW	Chime/Strobe, White

HORNS	
HR	Horn, Red
HW	Horn, White
HRK	Horn, Red, Outdoor

MINI-HORN	
MHR	Mini-Horn, Red
MHW	Mini-Horn, White

OUTDOOR	
P2RHK-R	Repl 2 Wire Horn/Strobe Wall Hi Candela Red Outdoor
P2RK-R	Repl 2 Wire Horn/Strobe Wall Std Candela Red Outdoor
P2WHK-R	Repl 2 Wire Horn/Strobe Wall Hi Candela White Outdoor
P2WK-R	Repl 2 Wire Horn/Strobe Wall Std Candela White Outdoor
P4RHK-R	Repl 4 Wire Horn/Strobe Wall Hi Candela Red Outdoor
P4RK-R	Repl 4 Wire Horn/Strobe Wall Std Candela Red Outdoor
SRHK-R	Repl Strobe Wall Hi Candela Red Outdoor
SRK-R	Repl Strobe Wall Std Candela Red Outdoor
SWHK-R	Repl Strobe Wall Hi Candela White Outdoor
SWK-R	Repl Strobe Wall Std Candela White Outdoor
HRK-R	Repl Horn Red Outdoor

## COMPATIBLE APPLIANCES

The following tables list the appliances produced by Cooper Wheelock that are compatible with the Wheelock synchronization protocol:

COMPATIBLE WHEELOCK SYNCHRONIZING HORNS	
AH-12	AH-24
AH-12WP	AH-24WP
HS-24	MIZ-24S
NH-12/24	HN
ZNH	HNC

COMPATIBLE WHEELOCK SYNCHRONIZING HORN STROBES	
AS-121575W	AS-241575W
AS-24MCW	AS-24MCC
AS-24MCWH	AS-24MCCH
AS-2415C	AS-2430C
AS-2475C	AS-24100C
ASWP-2475W	-----
NS4-121575W	NS-121575W
HS4-241575W	NS-2-41575W
HS4-24MCW	NS-24MCW
HS4-24MCWH	HS4-24150C
-----	HS
-----	HSC
HS4-24185W	-----
ZNS-MCW	-----
ZNS-MCWH	-----

COMPATIBLE WHEELOCK SYNCHRONIZING STROBES	
RSS-121575W	RSSP-121575W
RSS-241575W	RSSP-241575W
RSS-24MCW	RSSP-24MCW
RSS-24MCC	-----
RSS-2415C	ST
RSS-2430C	STC
RSS-2475C	-----
RSS-24100C	-----
RSS-2415CR	-----
RSS-2430CR	-----
RSS-2475CR	-----
RSS-24100CR	-----
RSS-24150C	-----
RSS-24177C	-----
RSS-24150W	RSSP-24150W
RSS-24177W	RSSP-24177W
RSS-24185W	RSSP-24185W
RSS-24150CR	-----
RSS-24177CR	-----
RSSWP-2475W	-----
ZRS-MCW	-----
ZRS-MCWH	-----

COMPATIBLE WHEELOCK NON-SYNCHRONIZING APPLIANCES	
MB-G6-12	MB-G6-24
MB-G10-12	MB-G10-24
MIZ-TC12	MIZ-TC24

COMPATIBLE WHEELOCK APPLIANCES WITH SYNCHRONIZING STROBES	
AMT-241575W	AMT4-241575W
AMT-2475W	AMT4-2475W
AMT-241575W-NYC	AMT4-241575W-NYC
AMT-2475W-NYC	AMT4-2475W-NYC
MT-12575W	-----
MT-241575W	MT-2475W
MTWP-2475W	ET70WP-2475W
CH70-24MCW	CH90-24MCW
CH70-24MCC	CH90-24MCC
CH70-2415C	CH90-2415C
CH70-2430C	CH90-2430C
CH70-2475C	CH90-2475C
CH70-24100C	CH90-24100C
CH70-24150C	CH90-24150C
CH70-24177C	CH90-24177C
CH70-24150W	CH90-24150W
CH70-24MCWH	CH90-24MCCH
CH70-24185W	CH90-24185W
E70-24MCW	E90-24MCW
E70-24MCC	E90-24MCC
E70-2415C	E90-2415C
E70-2430C	E90-2430C
E70-2475C	E90-2475C
E70-24100C	E90-24100C
E70-24150C	E90-24150C
E70-24177C	E90-24177C
E70-24150W	E90-24150W
E70-24MCWH	E90-24MCCH
E70-24185W	E90-24185W
ET70-24MCW	ET90-24MCW
ET70-24MCC	ET90-24MCC
ET70-2415C	ET90-2415C
ET70-2430C	ET90-2430C
ET70-2475C	ET90-2475C
ET70-24100C	ET90-24100C
ET70-24150C	ET90-24150C
ET70-24177C	ET90-24177C
ET70-24150W	ET90-24150W
ET70-24MCWH	ET90-24MCCH
ET70-24185W	ET90-24185W
SA-70-24-SL	SA-90-24-SL
SA-70-24-SLM	SA-90-24-SLM

COMPATIBLE WHEELOCK CODED AUDIBLE APPLIANCES	
AMT-12/24	AMT4-12/24
AMT-12/24-NYC	AMT4-12/24-NYC
CH70	CH90
CSX10-24-DC	CSXG10-24-DC
MT-12/24	MT4-12/24

## WIRE LENGTHS

Four Wire Conventional Bus Maximum Wire Length and Loading (See individual accessory installation instructions for exceptions)			
Gauge (solid)	Resistance ( $\Omega$ )	Length (ft)	Max. Current (ma)
22	16.8	1000	120
	8.4	500	240
	4.2	250	450
18	6.6	1000	240
	3.3	500	480
	1.65	250	850
16	4.2	1000	480
	2.1	500	850
	1.1	250	1700
14	2.6	1000	600
	1.3	500	1000
	.65	250	2000
12	1.7	1000	750
	.85	500	1500
	.51	300	2000

## NAC MAXIMUM LINE IMPEDANCE

GEMC SERIES NAC MAXIMUM LINE IMPEDANCE IS 1.8 OHMS				
AWG	RESISTANCE /1000 FEET	DISTANCE WITH 2A LOAD (FEET)	DISTANCE WITH 1A LOAD (FEET)	DISTANCE WITH 500MA LOAD (FEET)
18	6.6	125	250	500
16	4.2	200	400	800
14	2.6	325	650	1300
12	1.7	500	1000	2000

## POWER SUPPLY JUMPERS

GEMC-PS24V7A & GEMC-PS24V4A BATTERY CHARGE CURRENT JUMPERS			
No. of Jumpers	Trickle Charge	Total Charge	No. of Batteries
0	210 mA	1.50A	2 sets
1	440 mA	1.72A	3 sets
2	680 mA	1.96A	4 sets

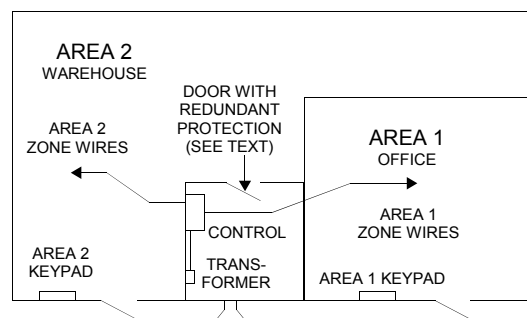
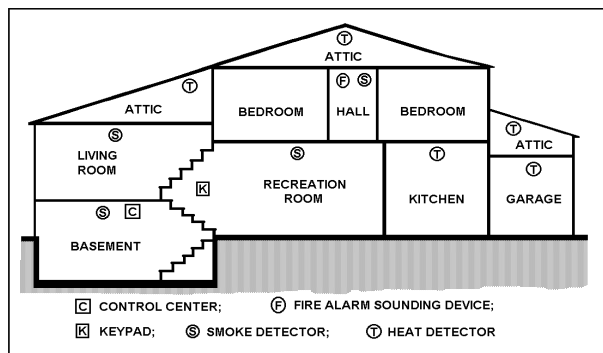
## TYPICAL INSTALLATIONS

### TYPICAL RESIDENTIAL FIRE INSTALLATION (Where permitted by local codes)

At least one smoke detector should be installed directly outside each sleeping area. If there is more than one floor, additional smoke detectors should be installed on each level, including the basement. The living-area and basement smoke detectors should be installed near the stairway of the next upper level.

For increased protection, additional detectors should be installed in areas other than those required, such as the dining room, bedrooms, utility room, furnace room, and hallways. Heat detectors, rather than smoke detectors, are recommended in kitchens, attics, and garages due to conditions that may result in false alarms and improper operation. Large areas and areas with partitions, ceiling beams, doorways, and open joists will require additional detectors.

Refer to NFPA Standard No. 74 (National Fire Protection Association, Batterymarch Park, Quincy, MA 02269) for additional information, including proper mounting of detectors.



### TYPICAL COMBINATION COMMERCIAL FIRE AND BURGLARY PARTITIONED INSTALLATION

Described and illustrated here are an example of a typical Combination Commercial Fire and Burg partitioned system. The Fire devices must be assigned to Area 1, leaving the remaining Areas (2-8) to be used for the partitioning of the Burglary system. Additionally, the system must provide for common-area protection of the control-panel room. This system meets all UL requirements for a partitioned installation.

- All areas in the GEMC system must be owned and managed by the same person(s).
- All Fire devices must be programmed and wired to Area 1. That is, the system may be divided into up into 1 Fire Area and 7 Burglary Areas, allowing access by only those users programmed for their respective area(s).
- Zone Expanders in Commercial Burg installations shall be installed within the protected area of the partition.  
**NOTE:** Expansion zone modules must be placed within the area their zones are protecting.
- Keypads must be located within the protected area of the partition they control--or--the integral keypad tamper switch enabled.
- All areas must be part of one building at one street address.
- The control panel and all wiring protecting each partitioned area must be confined to the respective area and may not encroach upon the other area. This requires that the control panel room have redundant protection; that is (a) multiple sets of door contacts, each wired to a separate zone and (b) one of those zones programmed for each area. In order to gain access to this protected area without causing an alarm, both partitions must be disarmed. In lieu of redundant protection, 24-Hour Zones may be used. Any zone protecting the control panel may not be programmed for bypass.
- The sounding device must be placed such that the bell test can be heard by all partitions.



## SUMMARY OF UL REQUIREMENTS

- **System must be tested at least weekly under AC/battery and Battery-Only conditions.**
- **Wiring must be performed in accordance with all local and national electrical codes.**
- **Listed or Recognized Limited-Energy Cable for initiating, indicating and supplementary circuits must be used.**
- **Do not map wireless or SLC devices to EZM zones to which conventional devices are wired.**
- **Smoke detectors are NOT intended to replace the main fire alarm sounding device.**

### UL COMMERCIAL FIRE (LOCAL)

#### INSTALLATION / WIRING

Types of devices to be used:

- Two wire Smoke detectors only to be used (see table in section "**COMPATIBLE SMOKE DETECTORS**") only on zones 1-8 on the GEMC-F8ZCPIM module or FWC-FSLC-CZM (see WI1714 for compatible detectors).
- Minimum one (1) GEMC-FK1 keypad required.
- Four-wire Smoke detectors shall to be used on the GEMC-F8ZCPIM or GEMC-EZM8 connected to the 4-wire Fire bus and the device powered by the reset power from the GEMC-F8ZCPIM module or NAC D configured for smoke power. The FWC-FSLC-CZM connected to the SLC loop and the device powered by the reset power from the GEMC-F8ZCPIM module or NAC D configured for smoke power.
- UL Listed End-of-Line Relay for Fire (if using 4-wire smoke detectors).
- Signaling Line Circuit (SLC) devices connect to the GEMC-FW-FSLC module. See table in section "**OTHER COMPATIBLE DEVICES**" for model numbers. See WI1647 for a description of the GEMC-FW-SLC's circuit ratings and wiring instructions.
- Dry contact devices such as Pull Stations and Thermals must connect to the GEMC-F8ZCPIM; the GEMC-EZM8 connected to the 4-wire Fire bus; or the FWC-FSLC-CZM, -EZM2, -EZM1 connected to the GEMC-FW-FSLC module.
- NAC (Notification Appliance Circuits): See table in section "**COMPATIBLE APPLIANCES**".

#### PROGRAMMING

- Must be programmed with PCD-Windows Quickloader Download software as account type "Commercial Fire".

### UL COMMERCIAL FIRE (REPORTING)

Requires all requirements for UL Commercial Fire (Local).

#### INSTALLATION / WIRING

- Requires two telephone lines to be installed, a GEMC-NL-MOD, or GEMC-NL-MOD with a single telephone line (**Note:** Telco must always be Line 1).
- Minimum one (1) GEMC-FK1 keypad required.

#### PROGRAMMING

- Must be programmed and placed in operation with PCD-Windows Quickloader Download software.

### UL COMMERCIAL BURGLARY (UL609 LOCAL)

#### INSTALLATION / WIRING

- All partitions must be owned and managed by the same person/organization, part of the same structure, and be of the same street address.

- Required to be installed with either the GEMC-BM Burg module or the GEMC-BM/PS Burg module with power supply.
- The GEMC-HSKIT1425, GEMC-HSKIT1425W or GEMC-HSKIT1416W enclosure must be protected by the GEMC-KOTAMPERKIT (with two tamper and knockout protection); enable enclosure tamper programming option and cut enclosure tamper enable jumper
- The GEMC-BK1 keypad(s) must be installed within the protected area or back tamper switches must be wired and configured (cut jumper JP1 to enable).
- Install "Burg Only" jumper shunt if configuring system without Fire.
- Install Ademco AB-12 Bell in Box, with attack resistant housing, to Burg Bell output located such that it can be heard in all partitions.
- All zones must have EOL resistors installed at the last device in the zone.
- Maximum Entry delay is 45 seconds; Maximum Exit delay is 60 seconds

#### PROGRAMMING

- Programming must include Auto Output Test Upon Arming.
- Trouble on Night Open may not be programmed for any zone.
- Enable Bell on Keypad Tamper.
- Enable Burg Bell Tamper if any Burglary areas are armed.
- Burg Bell must be programmed for at least a 15 minute duration.
- All Burglary initiating zones must be programmed for Burglary Bell Output.
- A maximum Entrance and Exit Delay of 60 seconds.
- Enable Enclosure Tamper.

### UL COMMERCIAL BURGLARY (UL365 POLICE STATION CONNECT) and (UL1610 CENTRAL STATION UNITS)

Requires all requirements for UL Commercial Burglary (UL609 Local), plus the following:

#### INSTALLATION / WIRING

- Central Station UL1610 requires the NL-MOD with UL High Security Check-in programming option enabled—or—a standard TELCO telephone line with Line-Fault enabled (**Note:** Telco wiring to the panel shall be a minimum of 26 AWG).
- For systems without Line Security the DACT (Line 1) and/or DACT (Line 2) or GEMC-NL-MOD may be used. For DACT reporting the system must check in a minimum of once every 24 hours with the central station. For systems with Line Security the DACT (Line 1) and the GEMC-NL-MOD (Line 2) dual reporting must be used.

#### PROGRAMMING

- Must be programmed with PCD-Windows Quickloader Download software as account type "Commercial Fire".

### UL COMBINATION COMMERCIAL FIRE AND BURGLARY (LOCAL)

Requires all requirements for UL Commercial Fire (Local) and UL Commercial Burglary (Local).

#### INSTALLATION / WIRING

- For Maintenance to the Burglary system, the Fire system must continue to operate as intended, as per the "**INTRODUCTION**" section earlier in this manual.
- All Fire devices must be wired to the motherboard or the

GEMC-FSLC module(s);

- All Burg devices must be wired to the GEMC-BM or BM/PS or the GEMC-BSLC module.
- Minimum one (1) GEMC-FK1 and one (1) GEMC-BK1 keypad required.

#### PROGRAMMING

- Must be programmed with PCD-Windows Quickloader Download software as account type "Commercial Fire".

#### UL COMBINATION COMMERCIAL FIRE AND BURGLARY (REPORTING)

Requires all requirements for UL Commercial Fire (Reporting) and UL Commercial Burglary (Reporting).

##### INSTALLATION / WIRING

- For Maintenance to the Burglary system, the Fire system must continue to operate as intended, as per the "INTRODUCTION" section earlier in this manual.
- All Fire devices must be wired to the motherboard or the GEMC-FSLC module(s);
- All Burg devices must be wired to the GEMC-BM or BM/PS or the GEMC-BSLC module.
- Central Station UL1610 requires the NL-MOD with UL High Security Check-in programming option enabled—or a standard TELCO telephone line in TELCO 1 jack (**Note:** Telco wiring to the panel shall be a minimum of 26 AWG).
- Minimum one (1) GEMC-FK1 and one (1) GEMC-BK1 keypad required.

##### PROGRAMMING

- Must be programmed with PCD-Windows Quickloader Download software as account type "Commercial Fire".
- Must enable TELCO 1 Line Fault if telephone line is used.

#### UL COMBINATION RESIDENTIAL FIRE AND BURGLARY (LOCAL & REPORTING)

##### INSTALLATION / WIRING

- Initiating loops supervised if longer than 3 feet.
- UL Listed End-of-Line Relay for Fire (if using 4-wire smoke detectors).
- System must be tested at least weekly under AC/battery and Battery-Only conditions.
- Audible temporal pattern (ANSI 3.41) is required for UL Residential Fire alarm installations for at least one NAC.
- Replace the rechargeable battery at least every 4 years.
- Minimum one (1) GEMC-FK1 keypad required.
- If the battery is heavily discharged, replace it or have it tested by a qualified technician.
- For silent panic, connect only to UL-listed holdup devices.
- System must be serviced at least once every year.
- Must use a UL Listed sounding appliance; for required audible Burglary sounding appliances, refer to table named "EXAMPLES OF DEVICES COMPATIBLE WITH BURG BELL OUTPUT" earlier in this manual. Must use Listed Fire audible appliance rated for at least 85 decibels.

##### PROGRAMMING

- Minimum alarm timeout of 5 minutes.
- Maximum exit time: 60 seconds.
- Maximum entry time: 45 seconds.
- Do not program Swinger Shutdown, Force (Auto) Arming, Selective Bypass, Group (Interior) Bypass, 50ms Loop Response or Auto Bypass.
- Program Disable Callback Download.
- Abort Delay may not exceed 45 seconds (Reporting only).
- All zones must be programmed for Priority.
- Do not program any zones for Keyswitch Arming.

#### SIA CP-01 COMPLIANCE REQUIREMENTS

Refer to the "CP-01 Quick Reference Chart--SIA False Alarm Reduction" table for additional information.

#### PCD-WINDOWS QUICKLOADER ERROR CHECKING

The UL Commercial Fire Error Check is a subset of the UL Commercial Fire Reporting Error Check. **Note:** Fire zones must also be programmed to trip indicating circuits (NAC's).

In the **Feature** View screen:

1. Any Zone programmed for "Area 1 (FIRE)" shall not be programmed for any other feature except:
  - Report Alarm Tel1
  - Report Alm Restore Tel1
  - Report Trouble Tel1
  - Report Tbl Restore Tel1
  - Report Alarm Tel3
  - Report Alm Restore Tel3
  - Report Trouble Tel3
  - Report Tbl Restore Tel3
  - Fire Verification
  - Waterflow
  - Supervisory
  - Monitor Zone
2. The following are mutually exclusive:
  - Fire Verification
  - Waterflow
  - Supervisory
  - Monitor Zone
3. If the panel is selected for UL Commercial Fire Reporting then any Zone programmed for "Area 1 (FIRE)" shall be programmed for:
  - Report Alarm Tel1
  - Report Alm Restore Tel1
  - Report Trouble Tel1
  - Report Tbl Restore Tel1

They may also be programmed for

- Report Alarm Tel3
- Report Alm Restore Tel3
- Report Trouble Tel3
- Report Tbl Restore Tel3

#### System Assignment Screen

##### System Reporting and Outputs

Every Report Topic except the following shall be enabled on "Report on Alarm Telco 1" except the following optional reporting features:

- Sensor Watch
- Service Message
- Alarm Supervisory
- Telemetry Trouble
- Telemetry Failure
- ACM Power Failure
- ACM Low battery

# GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION

## 1. DETERMINE INSTALLATION TYPE

Before installing anything, determine if this installation is a commercial or residential installation type. Listed below are the 8 types.

- UL Commercial Fire (Local)
- UL Commercial Fire (Reporting)
- UL Commercial Burglary (Local)
- UL Commercial Burglary (Reporting)
- UL Combination Commercial Fire and Burglary (Local)
- UL Combination Commercial Fire and Burglary (Reporting)
- UL Combination Residential Fire and Burglary (Local)
- UL Combination Residential Fire and Burglary (Reporting)

See the UL requirements previously in this manual.

### Mounting Location

We recommend planning the final mounting locations for both the control panel and a separate electrical gang box as early in the installation process as possible. Select a control panel mounting location accessible to telephone lines (keep telephone wiring away from keypad wires) and/or a computer server for connection to the Internet.

**Note:** Because Fire devices can be sensitive to dusty environments, the installer may wish to wait until after any construction dust has settled before installing the devices themselves. In addition, prior to installing the actual devices, the installer can pre-program each device with the FWC-FSLC-PROG2 programming tool, physically marking each device with its assigned internal device address (001-126) to simplify the installation. The system can be powered or unpowered when the devices are installed; in the end, a powered system will look for and enroll each device.

*Unlike many other Fire Alarm control panels, the NAPCO control panel is NOT required to be mounted near the primary user interface (Fire keypad), this flexibility allows the control panel to be located in a more centralized location, thus simplifying installation and increasing costs savings with shorter wire runs.*

**Note:** If you wish map devices FWC-FSLC-SOM1 and FWC-FSLC-RM2, you must use PCD-Windows Quickloader download software; if you wish to install an FWC-FSLC-ISO device, see the instructions that are enclosed with the device.

**Important:** Do not map wireless or SLC devices to EZM zones to which conventional devices are wired.

### SPECIAL NOTE: FWC-FSLC-SOM1

To prevent a single break, single ground, or wire-to-wire fault on the installation conductors of a signaling line circuit for use with addressable notification appliances or modules shall not affect operation of more than one notification zone, the following is required when using FWC-FSLC-SOM1's on more than one zone:

1. The SLC must be configured and programmed as grade A style 7;

2. The Regulated 24VDC power circuit on different NAC zones must either be wired from different power circuits, or when circuits are shared, must be protected with rigid conduit suitable for the application;
3. To ensure survivability from attack of both the SLC and power circuits, the installation must meet or exceed the *Pathway Survivability Levels* 1-3 as described in NFPA 2010 edition, clauses 12.4.2, 12.4.3 and/or 12.4.4.

### Determine Enclosure Type

Three C-Series enclosures are available:

- The larger red-colored enclosure, **GEMC-HSKIT1425**, can hold up to four pairs of 7, 7.5, 8AH batteries, and one 4, 4.5, 5, 7, 7.5, 8AH Burglary battery. Use the larger enclosure for all Combination systems.
- The smaller red-colored enclosure, **GEMC-HSKIT1416**, can hold up to two pairs of 7, 7.5, 8AH batteries. Use the smaller enclosure with the following accessory combinations, each with their own special mounting hardware provided:
  1. one or two SLC boards;
  2. one GEMC-NL-MOD only;
  3. one GEMC-NL-MOD and one SLC board;
- A smaller white-colored enclosure, **GEMC-HSKIT1416-W**, for use with a Commercial Burglary stand-alone can hold up to two pairs of 7, 7.5, 8AH batteries. A large white-colored enclosure **GEMC-HSKIT1425-W** for use with Commercial Burglary stand-alone can hold up to 4 pairs of 7, 7.5, 8AH batteries.

For **Commercial Fire** applications, the larger enclosure permits the use of more batteries, thus allowing for more constant battery standby power (permitting the motherboard and all devices to be powered for a full 24 hours without AC present).

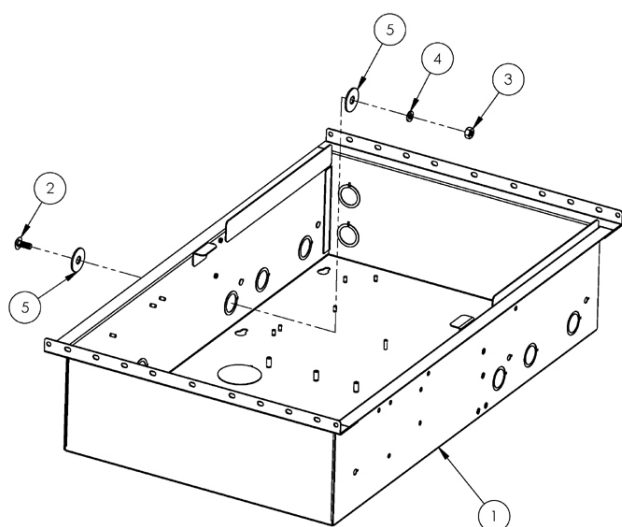
To obtain a general idea as to which enclosure will be needed for your system, use a detailed diagram of the Fire alarm system and calculate the number of devices to be used, the current required for each device, and number of batteries required. PCD-Windows Quickloader download software can be used to provide the standby current requirement with the System Current Calculator utility (click **Tools, System Current Calculator**).

**Note:** To enhance clarity, some parts shown in the diagrams that follow may appear in a simplified form or may have been removed entirely. Also note that some parts may be pre-installed at the factory.

**Note:** In Commercial Fire applications, Quickloader™ software must be used to ensure valid programming and prevent erroneous entries; the Fire Trouble "Requires Error Check" will always display without Quickloader™.

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 2. REMOVE ENCLOSURE KNOCKOUTS (OPTIONAL)



GEMC-KOTAMPERKIT INSTALLATION  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

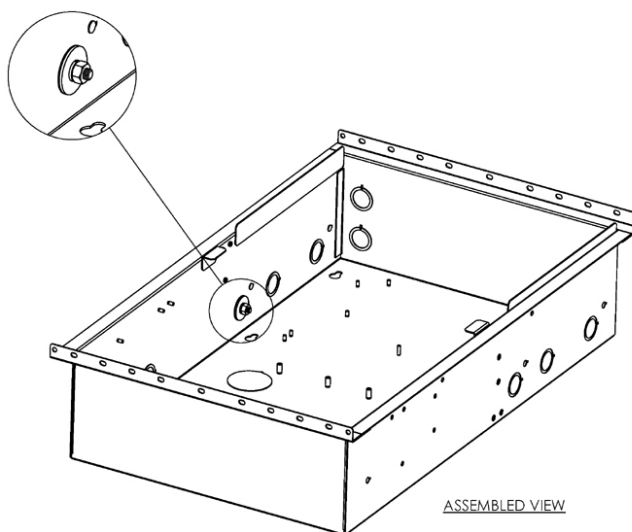
#### Enclosure Knockouts

Before mounting any control boards, you may wish to remove all required knockouts.

#### UL Commercial Burglary Installations

In UL Commercial Burglary installations, **ALL** enclosure knockouts **MUST** be removed and all *unused* knockouts be protected with a washer nut and bolt as provided by the GEMC-KOTAMPERKIT.

**Note:** In Commercial Burglary installations, recessed mounting the GEMC-KOTAMPERKIT is not required.

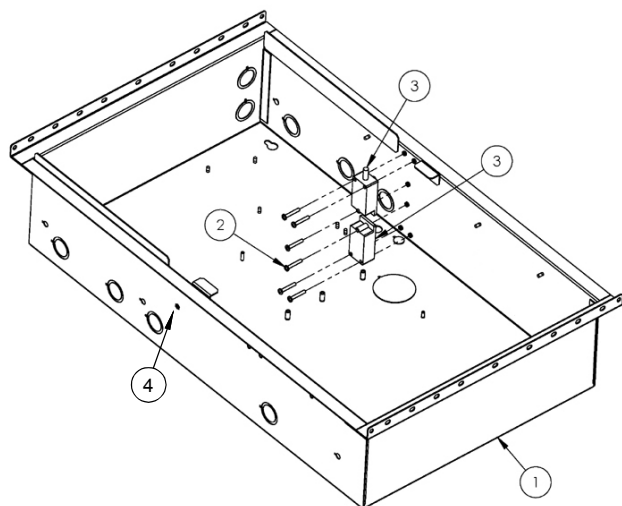


GEMC-KOTAMPERKIT INSTALLATION (ASSEMBLED VIEW)

Item No	Part Number	Description	Quantity
1	HW1688 base assembly	Enclosure base	1
2	SC546	1/4-20 x 5/8 bolt	1
3	N142	1/4-20 hex nut	1
4	WA179	1/4 lock washer	1
5	WA180	3/8 ID x 1.5 OD flat washer	2

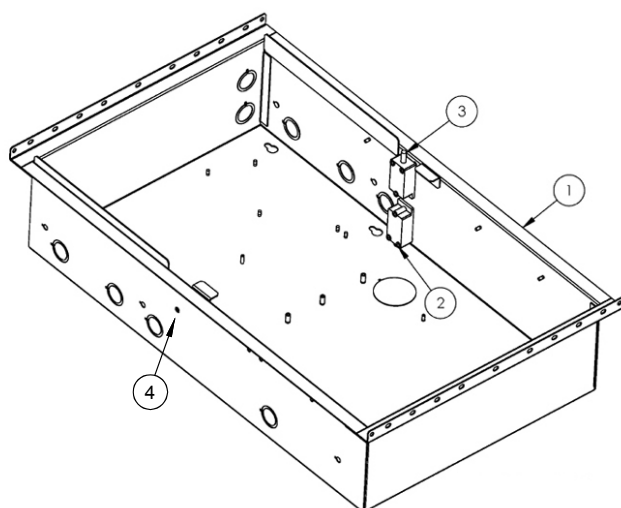
## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 3. INSTALL THE PANEL ENCLOSURE TAMPER SWITCHES



EXPLODED VIEW OF TAMPER SWITCHES:

- (1) = ENCLOSURE BASE;
- (2) = SCREWS (6-32 x 7/8 PPH);
- (3-LOWER) = TAMPER SWITCH TO PREVENT REMOVAL FROM WALL;
- (3-UPPER) = TAMPER SWITCH TO PROTECT THE ENCLOSURE DOOR (SHOWN FOR RIGHT TO LEFT DOOR SWING);
- (4) = IF DOOR SWINGS OPEN FROM LEFT TO RIGHT, INSTALL TAMPER ON THIS SIDE OF ENCLOSURE. SEE TABLE BELOW FOR ADDITIONAL INFORMATION.



ASSEMBLED VIEW OF TAMPER SWITCHES:

- (1) = ENCLOSURE BASE;
- (2) = SCREWS (6-32 x 7/8 PPH);
- (3) = TAMPER SWITCH TO PROTECT THE ENCLOSURE DOOR (SHOWN FOR RIGHT TO LEFT DOOR SWING);
- (4) = IF DOOR SWINGS OPEN FROM LEFT TO RIGHT, INSTALL TAMPER ON THIS SIDE OF ENCLOSURE. SEE TABLE AT RIGHT FOR ADDITIONAL INFORMATION.

#### Wiring the Tamper Switches (Required for UL Commercial Burglary)

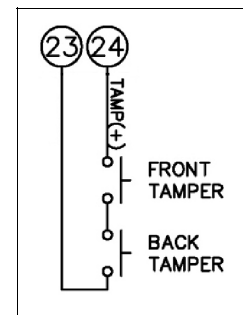
Before installation and wiring, the tamper switches are normally open devices; when placed into the circuit and into operation, they are normally closed devices.

Tamper switches protect against the opening of the control panel door or the removal of the control panel enclosure from the wall or other mounting surface. Before proceeding, determine the door swing (either right hand or left hand).

There are three places in the cabinet to mount tamper switches: (1) To prevent cabinet removal from the wall, located on the right side of the cabinet there is one mounting hole and three self-clinching mounting nuts (embedded in the enclosure sheet metal) that allow the switch button to contact the wall. (2) To protect the cabinet door, there are two mounting holes on both sides of the cabinet; the front cover may be positioned to open towards the left or the right to suit the installation. If the door swings open from right to left, the tamper must be positioned using the right mounting location; if the door swings opens from left to right, the tamper must be positioned using the left mounting location. When mounted, the switch button contacts the inside surface of the door. **Note:** Be sure to alert the user that opening the enclosure door will cause a tamper alarm. In addition, it is suggested a warning label be applied to the enclosure door indicating that the tamper switches are installed and active.

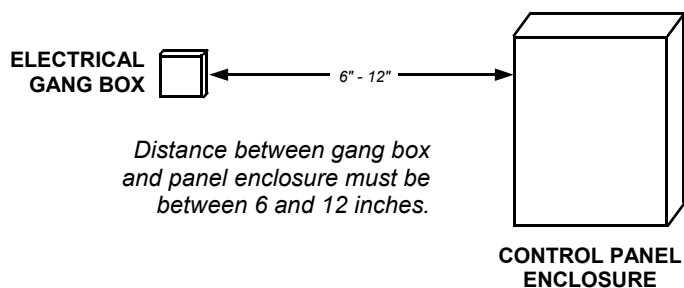
Item No.	Part No.	Description	QTY
1	HW1688 base assembly	Enclosure base	1
2	SC631	Screw 6-32 x 7/8 (Phillips Pan Head)	6
3	SW105	Tamper Switch	2
4	(If door swings open from left to right, use this stud to install tamper on this side of enclosure).		

Wiring a normally closed sensor loop for tamper supervision, wire to terminals 23 and 24 as shown.



## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 4. ROUTING CONTINUOUSLY POWERED 120VAC



If not already installed, mount a separate electrical gang box (single or double gang) located no closer than 6 inches and no further than 12 inches from the upper left side of the eventual mounting location of the control panel enclosure.

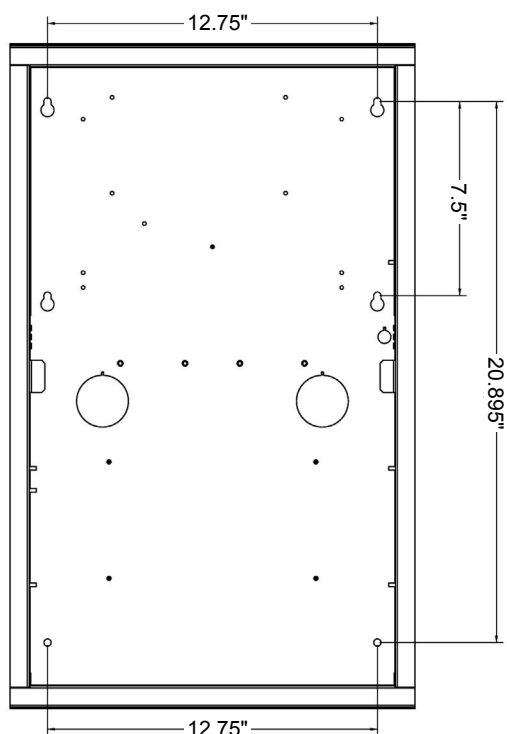
A continuously-powered (un-switched) 120VAC source with a maximum 15A dedicated branch circuit with grounding conductor must be wired into this gang box by a licensed electrician in accordance with all national and local electrical codes.

### 5. MOUNTING THE CONTROL PANEL ENCLOSURE

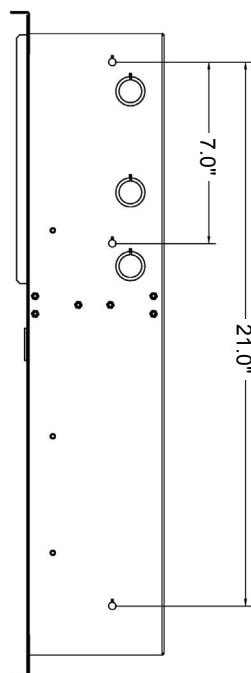
Choose a mounting location accessible to the electrical gang box (described above) and telephone lines (keep telephone wiring away from keypad wires) and/or a computer server for connection to the Internet.

DO NOT mount the control panel outdoors or in a damp location or where the environmental conditions exceed 0-49°C at any time. Remove appropriate knockouts for cables (in Commercial Burglary surface mount applications remove all unused side and top knockouts, as they must be protected with a washer nut and bolt as provided by the GEMC-KOTAMPERKIT Commercial Burglary Tamper kit). Place the control panel at a conven-

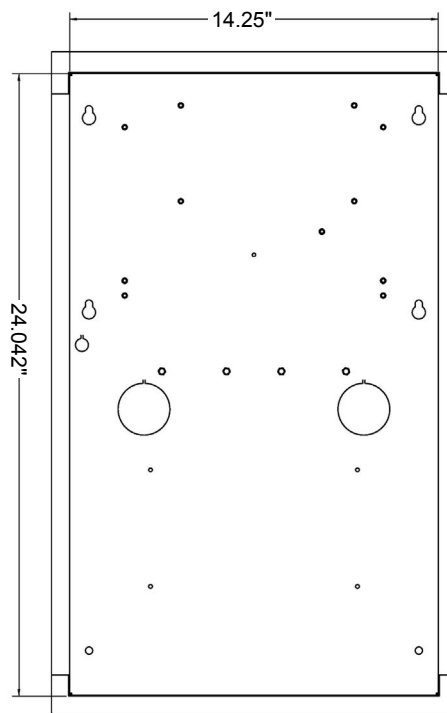
ient viewing height and mark the mounting holes. Attach the enclosure using screws suitable for the mounting surface. The enclosure is to be fastened to structural members, and the installation is to be made in a restricted access location. In Commercial Burglary recessed mounted applications, the GEMC-KOTAMPERKIT to protect unused knockouts is not required. In recessed mounted applications, holes shown in the "Side View" below are available for securing the housing to wall studs, if necessary.



Front View



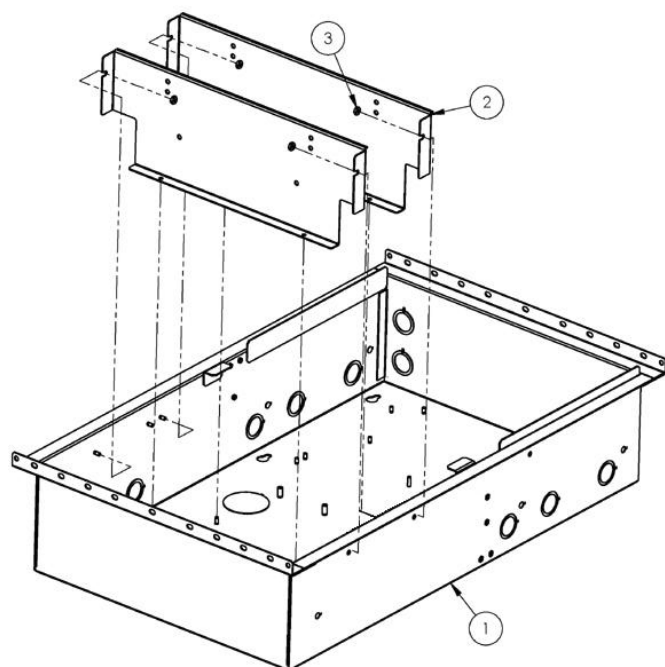
Side View



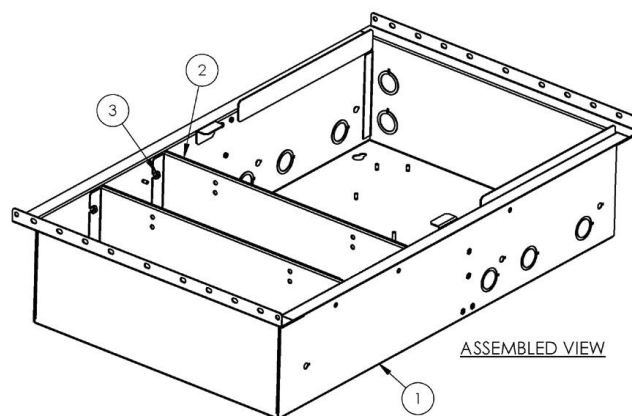
Rear View

**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)****6. INSTALL THE BATTERY SHELVES (IF NOT PRE-INSTALLED)**

If not already installed at the factory, install the interchangeable upper and lower HW1489 shelves for the batteries (see illustrations below).



INTERCHANGEABLE UPPER AND LOWER BATTERY SHELVES  
(EACH SHELF IS PART HW1489) SEE TABLE BELOW FOR NUMBER DESCRIPTIONS



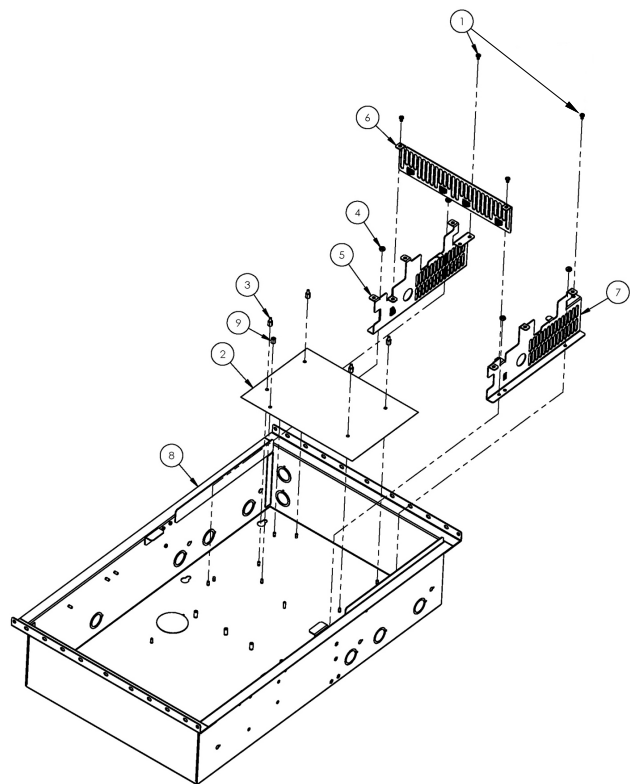
BATTERY SHELVES (HW1489) ASSEMBLED VIEW  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

Item No.	Part Number	Description	Quantity
1	HW1688 base assembly	Enclosure base	1
2	HW1489	Battery Shelf	2
3	N101	6-32 kep nut	4

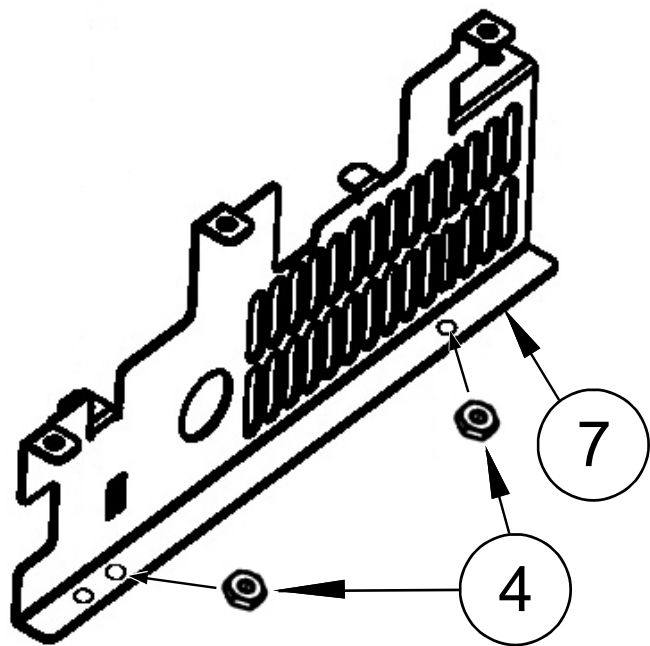
**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

7. (PRE-INSTALL POWER SUPPLY SHIELDS)



PRE-INSTALLED POWER SUPPLY SHIELDS  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS



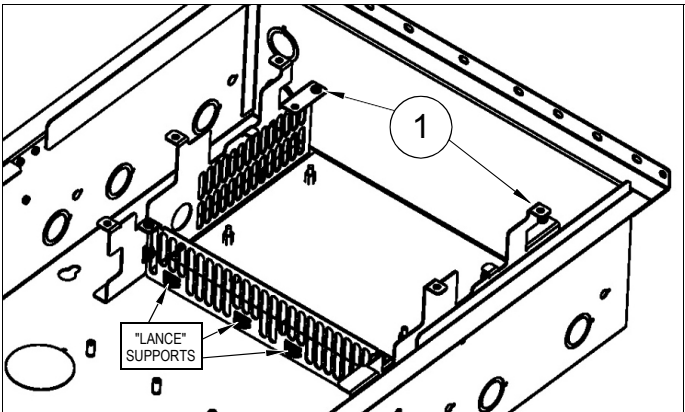
SHOWN ABOVE: THE "RIGHT SIDE PLATE" (ITEM 7 HW1492)  
AND THE TWO NUTS (ITEM 4) USED TO SECURE THE PLATE.  
USE THE TWO HOLES IN THE PLATE AS SHOWN.  
(NOTE: THREE STUDS WILL PROTRUDE THROUGH THE THREE  
HOLES SHOWN, BUT ONLY TWO NUTS ARE NECESSARY TO  
SECURE THE RIGHT SIDE PLATE).

Power Supply Shields and Other Hardware

These Power Supply Shields are pre-installed at the factory, but can be removed if required. If re-assembly is required, proceed as follows:

1. **Place Fishpaper inside enclosure**, with enclosure studs protruding through the Fishpaper holes as shown; secure with the four Male/female stand-offs (SO211) and the 6-32 Spacer (SO216).
2. **Secure the shields:** Ensure the HW1493 Power Supply Shield is oriented with the "lance" supports facing out towards the bottom of the enclosure. The HW1493 Power Supply Shield is secured to the HW1492 Right Side Plate; the HW1491 Left Side Plate is secured using the 6-32 screw with washer (SC270) and the 6-32 kep nuts (N101) provided. Tighten all screws and nuts to ensure adequate grounding.

**Note:** The two screws labeled as item 1 in the illustrations (6-32 screw with washer, part number SC270) have been loosely pre-installed at the factory, and will be tightened in a later step after the installation of a Power Supply Shield (HW1764).



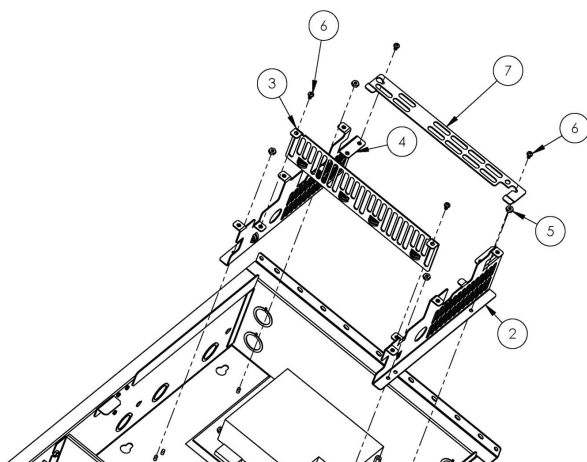
CLOSE UP OF ASSEMBLED VIEW

Item No.	Part Number	Description	QTY
1	SC270	Screw 6-32 x .25 with washer	4
2	SI175	fishpaper	1
3	SO211	Male/female standoff	4
4	N101	6-32 kep nut	4
5	HW1491	Left Side Plate	1
6	HW1493	Power Supply Shield	1
7	HW1492	Right Side Plate	1
8	HW1688	Enclosure base	1
9	SO216	Spacer 6-32 (1/4" x .313)	1



## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 8. INSTALL THE POWER SUPPLY BOARD



EXPLODED VIEW OF POWER SUPPLY BOARD.  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

Note that the GEMC-PS24V7A or GEMC-PS24V4A power supply boards are mounted inside the enclosure under the control panel motherboard, and therefore must be the first board installed in the enclosure.

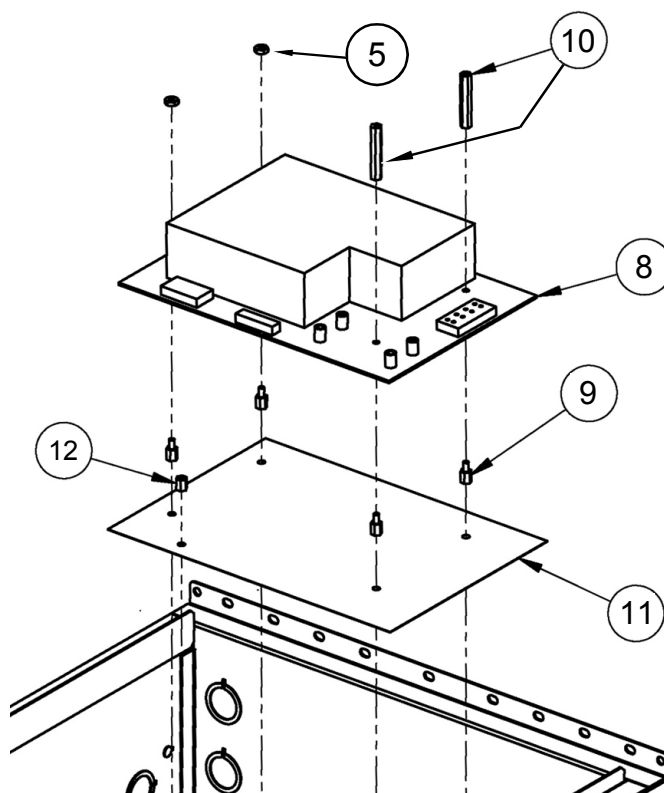
*Ensure the continuously-powered 120VAC source circuit breaker is turned off before proceeding.*

1. **Ensure the power supply fishpaper barrier** (item #11 in the illustration below) is situated below the four pre-installed male standoffs inside the Enclosure Base. This fishpaper provides an electrical barrier for the power supply board and **MUST** be installed.
2. **Install the four male/female standoffs** (item 9 in the illustration below), securing the fishpaper. Also install the spacer (item 12) as shown.
3. **Place the power supply board** over the four male/female standoffs (item 9) and secure the board with two locking keps provided (item 5).
4. **Install the two long brass standoffs** (item 10) into the upper and lower right male/female standoffs (item 9) as shown.
5. **Install the Power Supply Shield** (item 7). The keyed holes in the shield (see image below) allow you to place the shield over the two existing 6-32 screws (item 6) without removing them. The screws are pre-installed into the Left and Right Side Plates (items 4 & 2). Loosen and re-tighten to secure. Be sure "Notch" is installed to the right as shown.



"KEYED" HOLES IN THE HW1764 POWER SUPPLY SHIELD  
(ARROWS). NOTE LOCATION OF "NOTCH".

**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed. Also note that the physical power supply used in your installation may differ slightly in appearance from the image of the power supply shown in this manual.



CLOSE-UP VIEW OF POWER SUPPLY BOARD

Item No.	Part No.	Description	QTY
1	HW1688	Enclosure base	1
2	HW1492	Right Side Plate	1
3	HW1493	Power Supply Shield	1
4	HW1491	Left Side Plate	1
5	N101	6-32 keps nut	6
6	SC270	Screw 6-32 x .25 with washer	4
7	HW1764	Power Supply Shield	1
8	PCB	Power Supply Board	1
9	SO211	Male/female standoff	4
10	SO133	Long Brass standoff	2
11	SI175	Fishpaper	1
12	SO216	Spacer, 1/4" x .313 6-32 tapped	1

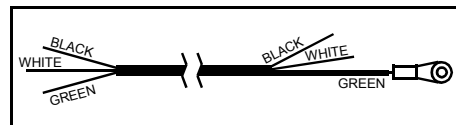
## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 9. ROUTING THE GEMC-120VAC HARNESS

At this point, both the control panel and electrical gang box are mounted, and the electrical gang box contains 3 wires that provide a continuously-powered (un-switched) voltage source and a grounding conductor. **IMPORTANT:** Turn off the 120VAC branch circuit breaker before proceeding.

#### GEMC-120VAC Harness

The GEMC-120VAC harness must run from the electrical gang box to the control panel enclosure inside either plastic or metal conduit. Mount this conduit between the electrical gang box and the control panel enclosure using fasteners appropriate for the installation. Note that one end of the GEMC-120VAC harness contains three protruding wires (green, white and black); the other end contains a ring connector connected to the green (ground) wire. *Route the GEMC-120VAC into the conduit such that the end of the harness with the ring connector is located within the enclosure, and the other end (with the protruding wires) remain inside the electrical gang box. The portion of the harness between the enclosure wall and Left Side Plate (HW1491) is protected by the harness tubing to ensure separation between power limited wires connected to the panel and the and non-power limited 120VAC wires of the harness.*

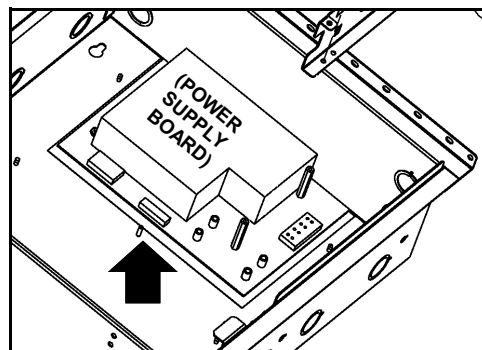


GEMC-120VAC HARNESS

Inside the electrical gang box are the three branch circuit 120VAC wires: Hot (black), neutral (white) and earth ground (green or bare copper). As with the previous electrical connections, all of the following electrical connections must be performed by a licensed electrician in accordance with all national and local electrical codes.

#### Connect Earth Ground

Inside the gang box, connect the branch circuit ground wire to the GEMC-120VAC harness protruding green ground wire using a suitable connector (such as a wire nut). Place the harness green ground ring connector (located inside the control panel enclosure) on the enclosure ground stud as shown in the illustration at right (this "branch circuit ground" *must always be first on and last off the enclosure ground stud*). Secure the ring connector to the stud with the 6-32 nut with star washer (part # N101) and tighten securely. Note that the ground stud is long enough for a second ring connector and nut, as described in the next step.

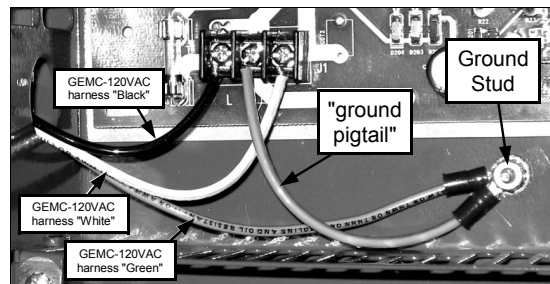


GROUND STUD LOCATION (ARROW)

Locate the power supply ground wire (a short 14 AWG green pigtail splice wire with a ring connector). Place this ground pigtail ring connector on the same enclosure ground stud used in the previous step, and secure this ring connector to the stud with another 6-32 nut with star washer (part # N101) and tighten securely. Lift the plastic terminal block cover and connect the other end of the pigtail to the center terminal (marked with a ground symbol) of the GEMC-PS24V7A or GEMC-PS24V4A power supply board.

#### Connect Hot and Neutral Wires

Inside the electrical gang box, connect the branch circuit white neutral and black hot wires to the white and black wires of the GEMC-120VAC harness using suitable connectors (such as wire nuts). At the other end of the GEMC-120VAC harness (located inside the control panel enclosure), connect each wire to the terminal block of the power supply board as follows: White neutral wire to "N" right terminal, black hot wire to "L" left terminal. Tighten all terminal screws securely.

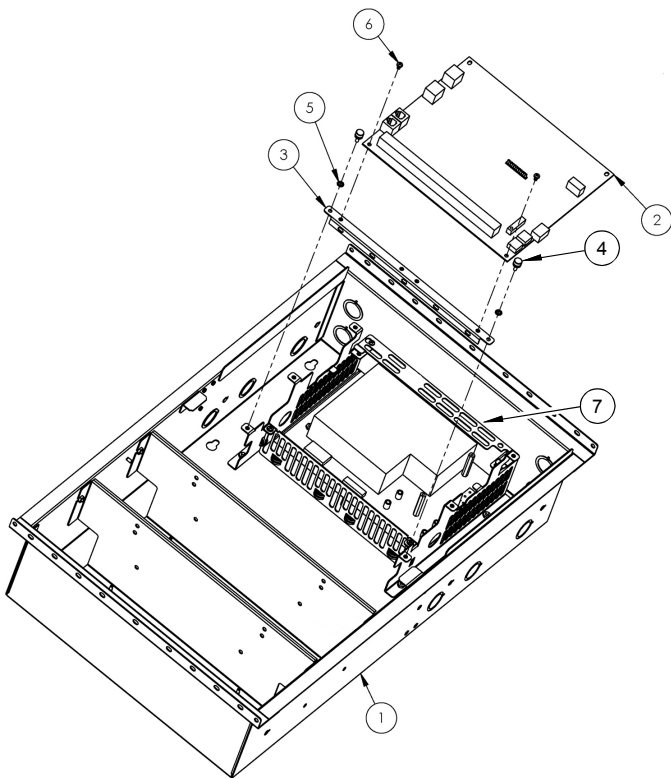


#### Enclosure Door Ground

The enclosure cover must also be connected to ground. On the inside of the enclosure is a pre-installed ground cable. Connect this ground cable to the earth ground stud located inside the enclosure on top of the other ground wires previously installed.

GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

10. INSTALLING THE GEMC-XXXMB MOTHERBOARD



MOTHERBOARD INSTALLATION  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

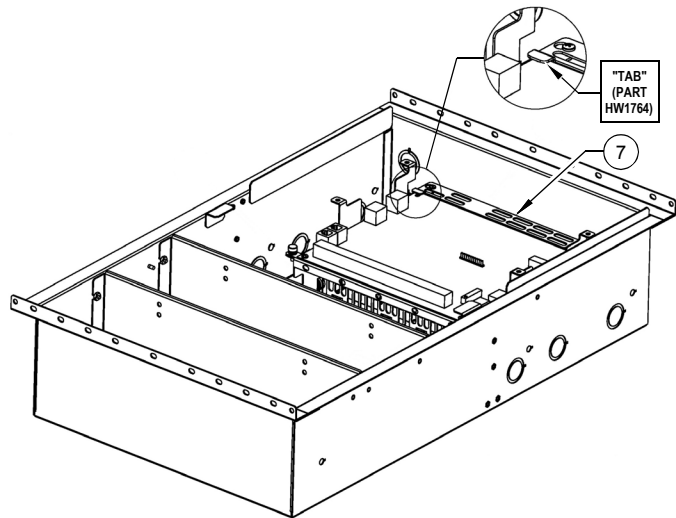
**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

- 1. **Install and secure the HW1490 Support bar** (item 3 in the illustration at left) to the motherboard with thumbscrews (item 4) as shown. **Note:** The HW1490 Support Bar may be pre-installed.
- 2. **Connect the power supply plug** into the socket located on the top side of the motherboard.
- 3. **Slide the top edge of the motherboard** under the tabs of the HW1764 Power Supply Shield (shown below). Secure the motherboard using two 6-32 screws (item 6) as shown.

Note the location of a second motherboard receptacle located on the top right side of the motherboard. In a future step, this receptacle will connect to the **9GEMCBHM1LE** battery harness.



THE HW1764 POWER SUPPLY SHIELD "TABS" (ARROWS).

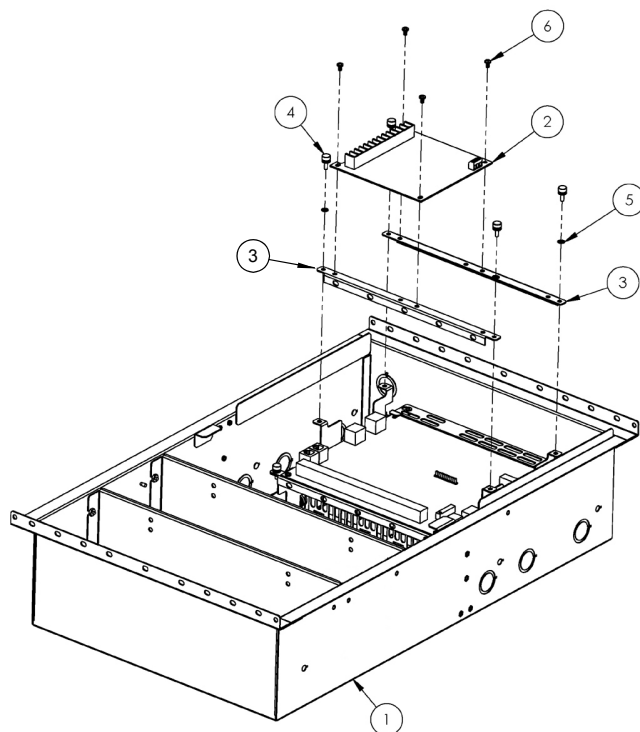


ASSEMBLED VIEW. THE EDGE OF THE MOTHERBOARD SLIDES UNDER THE TABS OF THE HW1764 POWER SUPPLY SHIELD (SHOWN IN CLOSE UP)

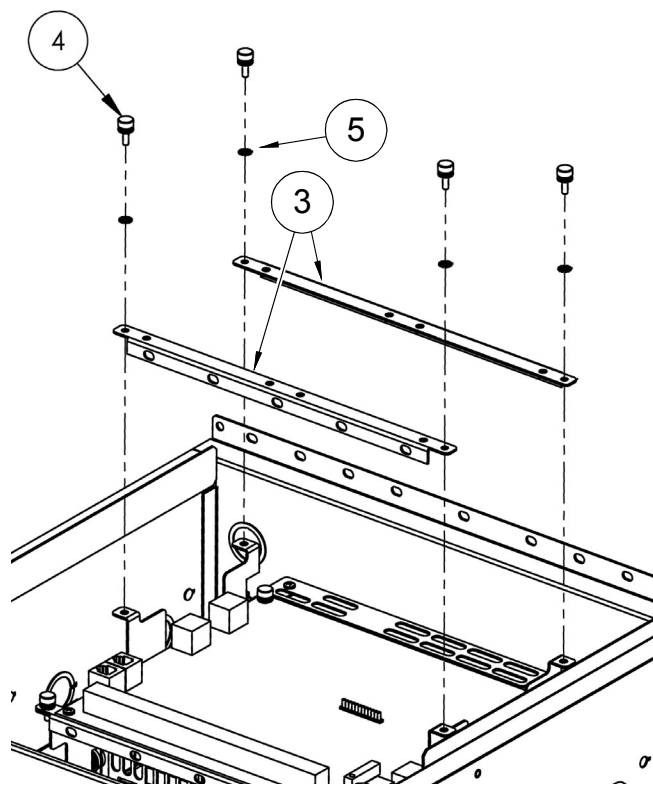
Item No.	Part Number	Description	QTY
1	HW1688	Enclosure base	1
2	PCB	Motherboard	1
3	HW1490	Support bar	1
4	SC628	Thumbscrew	2
5	WA107	#6 External Tooth Star Washer	2
6	SC270	Screw 6-32 x .25 with washer (sems)	2
7	HW1764	Power Supply Shield	1

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 11. INSTALLING BURGLARY MODULE PC BOARDS (OPTIONAL)



EXPLODED VIEW OF GEMC-BM / PS (OR GEMC-BM) BURG MODULE. NOTICE THE PCB IS MOUNTED WITH ITS TERMINALS TO THE LEFT. SEE TABLE BELOW FOR NUMBER DESCRIPTIONS



HW1490 SUPPORT BARS (MAY BE PRE-INSTALLED INTO THE PCB). SEE TABLE FOR NUMBER DESCRIPTIONS

#### **GEMC-BM/PS and GEMC-BM**

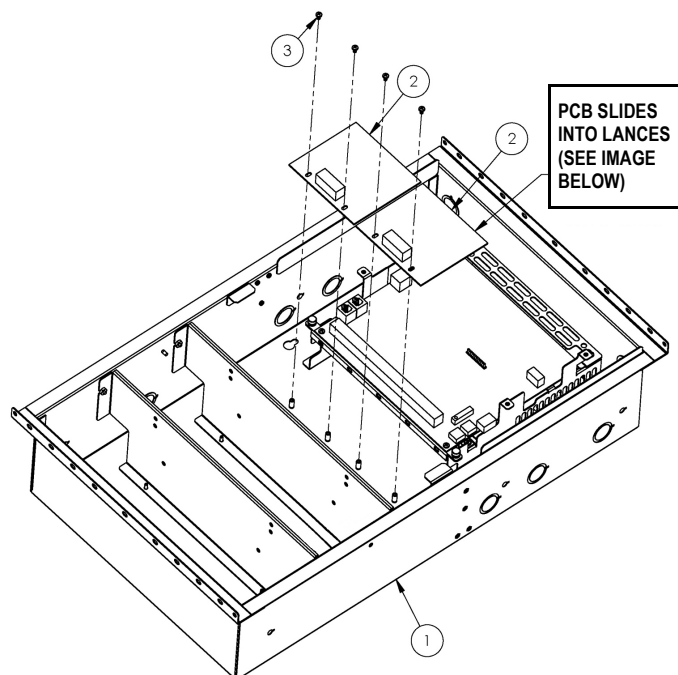
If installing a Burglary system, you must mount one of the two optional Burglary Modules. The GEMC-BM/PS contains separate battery monitoring and charging circuits and requires its own battery power supply; the GEMC-BM depends upon the motherboard battery standby power and supervision.

**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed. For example, the Support Bars (item 3 in illustrations) are pre-installed at the factory, but can be removed if required. In addition, the GEMC-BM/PS requires the connection of battery wires that must be routed behind the PCB. For first time installations, see the detailed installation instructions provided for each Burglary Module (WI1700 for the GEMC-BM/PS and WI1701 for the GEMC-BM). **If re-assembly is required**, proceed as follows:

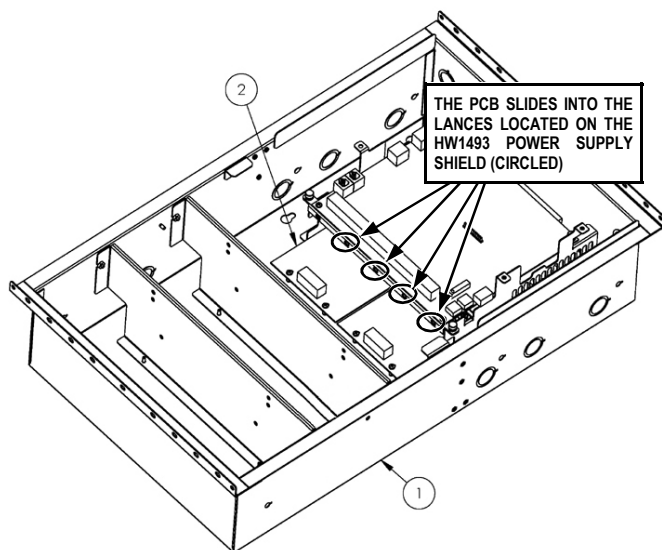
1. **Place two interchangeable HW1490 Support Bars** (item 3) on top and on the bottom of the motherboard with vertical edges facing out/down as shown. **Note:** The holes in the vertical edges of the support bars that are not used for mounting are tie wrap holes.
2. **Place the Burglary Module PCB** on top of the Support Bars and secure using the 6-32 screws (item 6).
3. **Align the combination HW1490 Support Bars** and Burglary Module PCB with the holes located in HW1492 Right Side Plate and the HW1491 Left Side Plate. Secure using four thumbscrews (item 4) and four external tooth star washers (item 5).
4. **Orient the Burglary Module** above the motherboard with its terminals towards the **left side**. On the right side of the Burglary Module is a polarized 12 pin female connector "J2"; insert J2 into the male 12 pin connector "J8" on the motherboard. Using the four 6-32 screws, mount the Burglary Module to the two HW1490 Support Bars.

When the GEMC-BM/PS is used, the red non-power limited battery flying lead must be secured at least 1/4" away from power-limited wires inside the enclosure using the provided tie wraps. Secure wires to the several tie wrap holes in the HW1490 Support Bar. **Note:** See installation instructions (referenced above) for terminal descriptions and correct jumper settings.

Item	Part No.	Description	QTY
1	HW1688	Enclosure base	1
2	PCB	Burg PCB	1
3	HW1490	Support Bar	2
4	SC628	Thumbscrew	4
5	WA107	#6 External Tooth Star Washer	4
6	SC270	Screw 6-32 x .25 with washer	4

**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)****12. INSTALLING THE SLC PC BOARDS (OPTIONAL)**

**EXPLODED VIEW OF FIRE / BURG SLC BOARDS  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS**



**ASSEMBLED VIEW OF FIRE / BURG SLC BOARDS;  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS.**

**Install the optional GEMC-FW-SLC and /or the GEMC-BSLC modules.** Any combination of two modules can be mounted as needed. Prior to mounting, correctly address the external output DIP switches and the address DIP switch. (For example, to address a board as number 1, the left switch marked "1" is up, and the right switch marked "2" is down).

First connect the 9SLCCBLASSY four wire harness into the upper right connector of the SLC board. Then place the SLC board into either the right or left location under the motherboard between the appropriate lances of the HW1493 Power Supply Shield and secure with two front 6-32 screws (part # SC270) screwed into the enclosure base. The other end of the 9SLCCBLASSY four wire harness must be inserted into the appropriate SLC jack number (1 or 2) that corresponds to the address DIP switch selected on the SLC board.

If needed, install a second SLC board in the same manner as the first.

**Note:** A maximum number of four (4) GEMC-RECV's may be used in the system; this maximum is reduced by one for each GEMC-FW-SLC (Fire SLC device) or GEMC-BSLC (Burg SLC device) used in the system.

**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

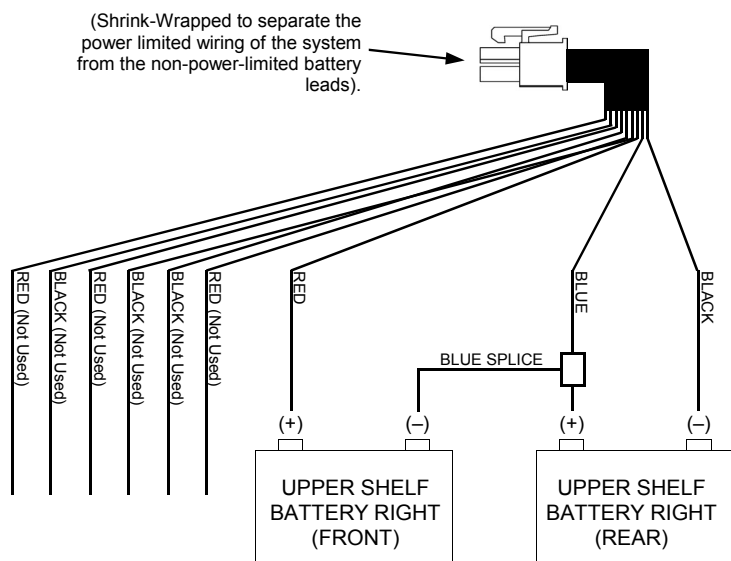
**Important:** Do not map wireless or SLC devices to EZM zones to which conventional devices are wired.

**Note:** *To maintain separation of power-limited and non-power-limited circuits, keep all field wiring above top battery shelf.*

Item No.	Part Number	Description	Quantity
1	HW1688 base assembly	Enclosure base	1
2	PCB SLC	SLC board	2
3	SC270	Screw, 6-32 x .25 sems	4

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 13. ROUTE THE 9GEMCBHM1LE BATTERY HARNESS



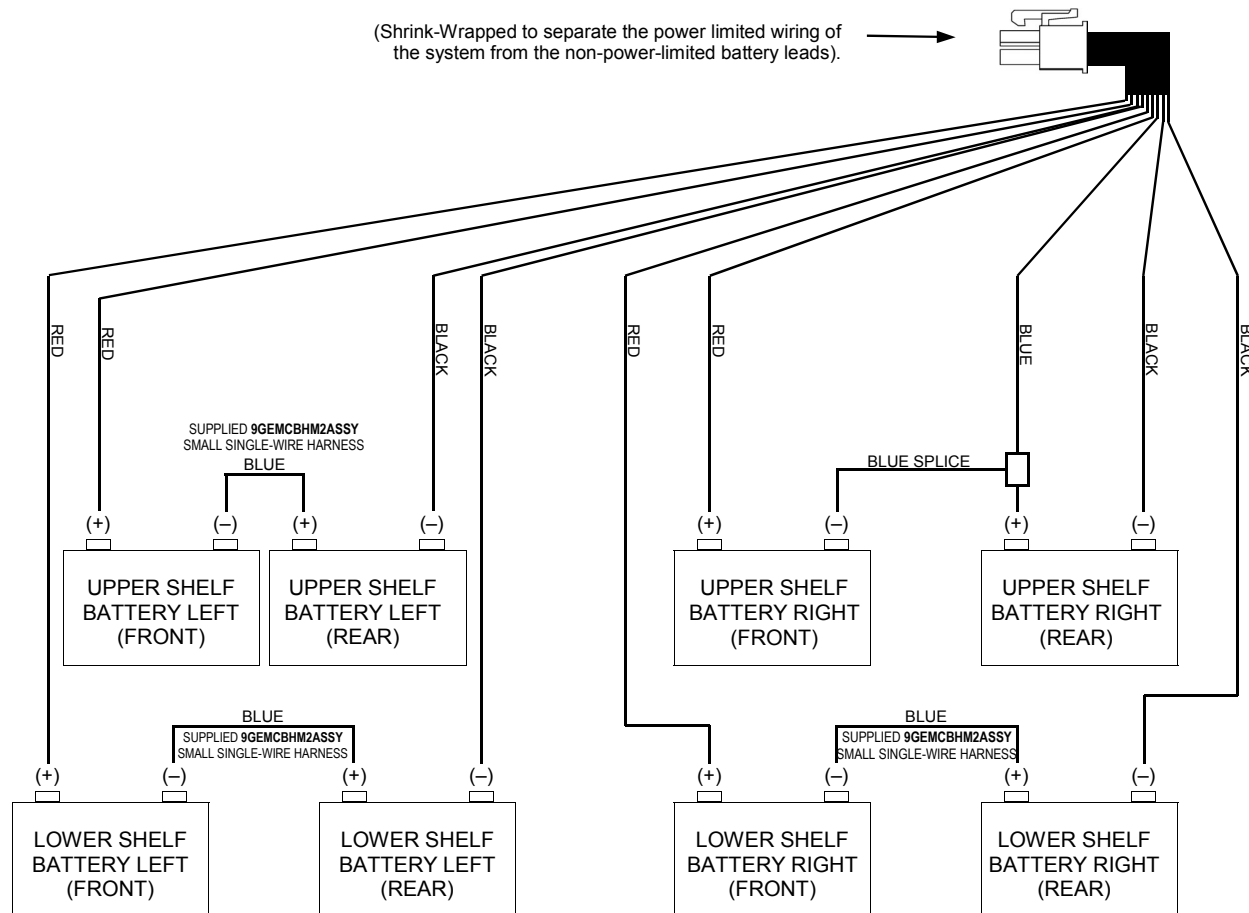
THE 9GEMCBHM1LE BATTERY HARNESS WIRED FOR MINIMUM REQUIREMENTS: 1 PAIR OF 12V BATTERIES

Before connecting the **9GEMCBHM1LE** battery harness to the Gemini C-Series GEMC-XXXMB motherboard or the GEMC-NACXX NAC Extender, be sure the connections made from the harness to the batteries are correct and polarized, as shown in the illustrations.

The polarized battery harness **9GEMCBHM1LE** supports up to 4 pairs of either 7AH, 7.5AH or 8AH 12V batteries (**Note:** All batteries must be of the same AH rating).

The minimum requirement is 2 pairs of 12V 7AH batteries that must be installed as shown in the illustration at left. The batteries will be placed in the upper HW1489 Shelf and situated to the right side (as detailed in the following section).

**Optional Configuration:** The illustration below displays the wiring for up to 3 pairs of 7AH, 7.5AH or 8AH 12V batteries (totaling 4 pairs maximum) used for additional standby current (See tables in sections "**GEMC-PS24V7A 7 AMP POWER SUPPLY**" and "**GEMC-PS24V4A 4 AMP POWER SUPPLY**" (data also located in W11646 and W11702).).



THE 9GEMCBHM1LE BATTERY HARNESS WIRED FOR MAXIMUM STANDBY CURRENT: FOUR PAIRS OF 12V BATTERIES

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### Routing the Harness (cont'd)

Take hold of the **9GEMCBHM1LE** harness plug and insert the plug through the bottom rear right corner of the upper HW1489 Shelf (see location "C" in the image below). Pull the harness plug up toward the motherboard receptacle (located on the right side of the motherboard); do not insert the connector yet—simply place the plug in the vicinity of the motherboard receptacle, awaiting insertion.

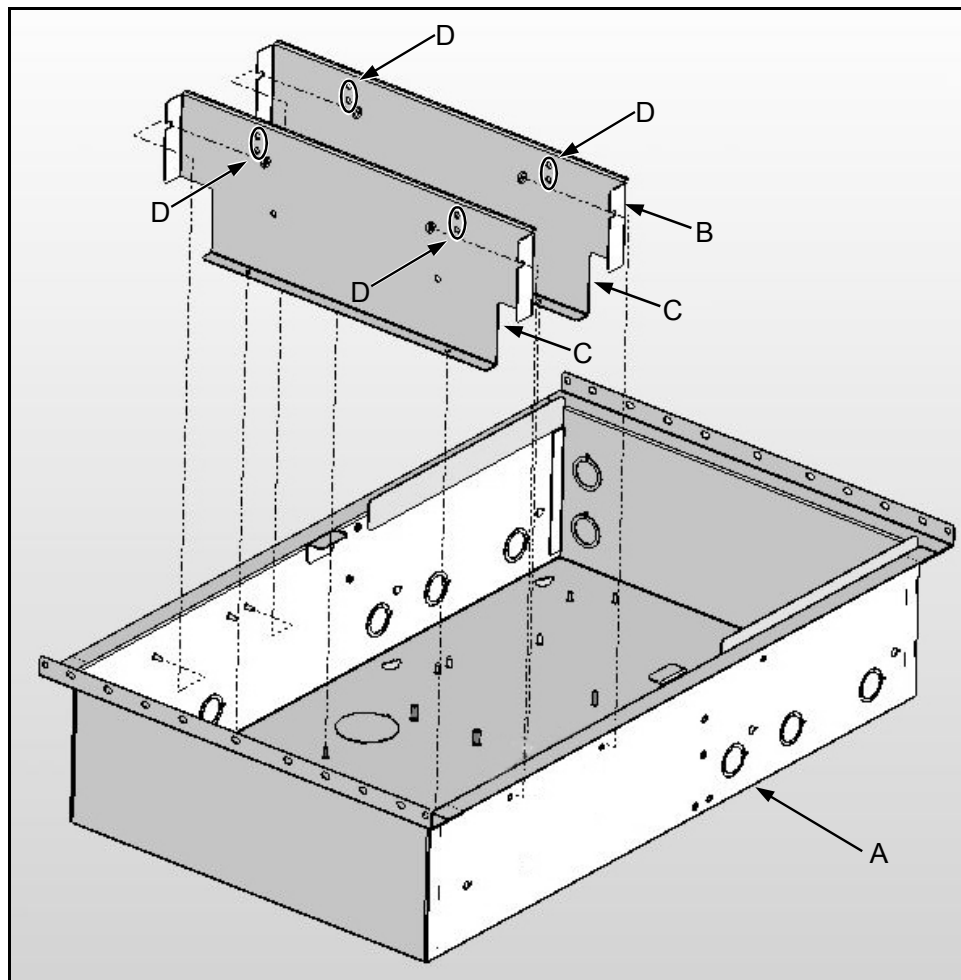
**Note:** Ensure **only** the shrink-wrapped part of the **9GEMCBHM1LE** harness is able to come in contact with the HW1489 Shelf.

With the harness plug situated next to the motherboard receptacle (awaiting insertion), seven (7) wires now protrude from the bottom rear right corner of the upper HW1489 Shelf. These seven wires can be organized (and should be physically separated into) the following three groups:

- Two long wires, Black and Red color
- Two medium-length wires, Black and Red color
- Three short wires, Black, Red and Blue (notice the Blue wire is spliced with a second lug)

Take hold of the two black and red long wires and two black and red medium-length wires and route these 4 wires through the bottom rear right corner of the **lower** HW1489 Shelf for access to the optional lower batteries.

The other three short wires (black, red and blue with its spliced lug) remain protruding from the bottom rear right corner of the **upper** HW1489 Shelf.



(A) = (H419) ENCLOSURE BASE; (B) = (HW1489) TWO BATTERY SHELVES; (C) = ROUTE THE 9GEMCBHM1LE HARNESS THROUGH THE BOTTOM REAR RIGHT (OR LEFT) CORNERS OF THE HW1489 SHELVES; (D) = TIE WRAP HOLES PROVIDED IF NEEDED.

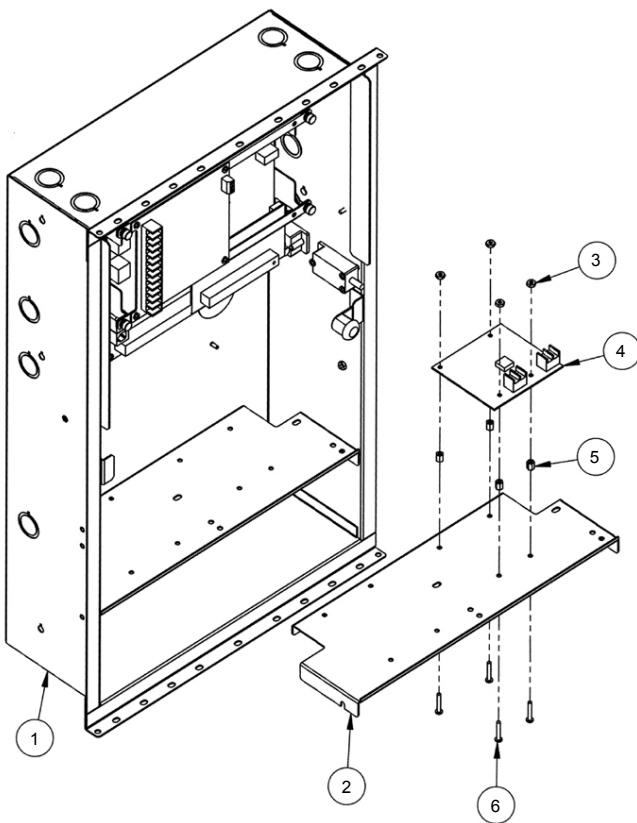
## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 14. INSTALL THE GEMC-24VR (OPTIONAL)

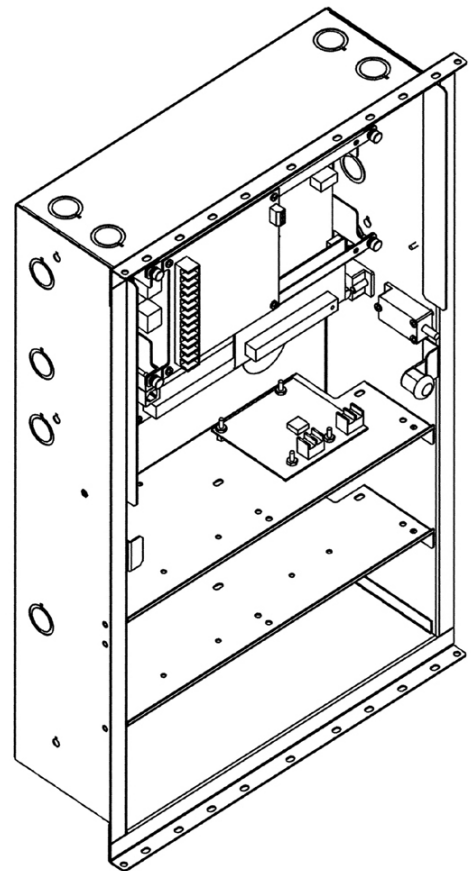
The GEMC-24VR boosts the output voltage of the battery to allow any 24V output to be "regulated" 24V as per the UL Standard for Safety for Control Units and Accessories for Fire Alarm Systems (UL 864). If the optional GEMC-NL-MOD (Internet network module) will not be used, secure the GEMC-24VR PC board to the HW1489 battery "Shelf" as shown below. **Note:** If the GEMC-NL-MOD will be used, install the GEMC-24VR PCB into the top of the GEMC-NL-MOD plastic enclosure shown on the next page. If the GEMC-NL-MOD

will NOT be used, you can install the GEMC-24VR PC board into the HW1489 battery Shelf as follows:

1. Insert four SC631 screws (item 6) such that the threads protrude from the bottom of the HW1489 battery Shelf as shown. Secure the screws into the SO216 Spacers (item 5) as shown.
2. Place the PC Board on top of the SO216 Spacers and secure with the 6-32 kep nuts (item 3) as shown. Do not over-tighten nuts.



GEMC-24VR (EXPLODED VIEW)  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS



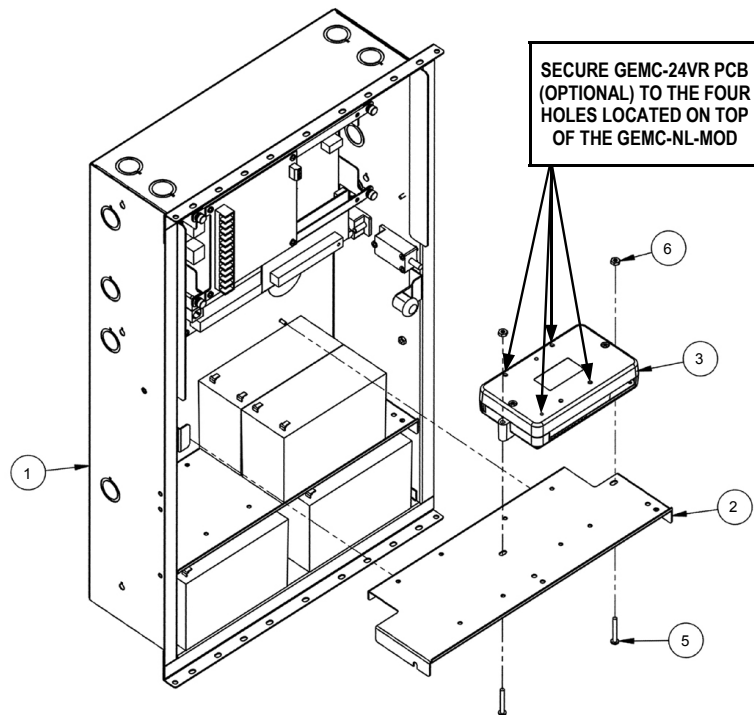
GEMC-24VR (ASSEMBLED VIEW)  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

Item No.	Part No.	Description	QTY
1	HW1688	Enclosure base	1
2	HW1489	Shelf	2
3	N101	6-32 kep nut	4
4	PCB	GEMC-24VR	1
5	SO216	Spacer, 1/4" x .313, 6-32 tapped	4
6	SC631	Screw 6-32 x 7/8 pph	4

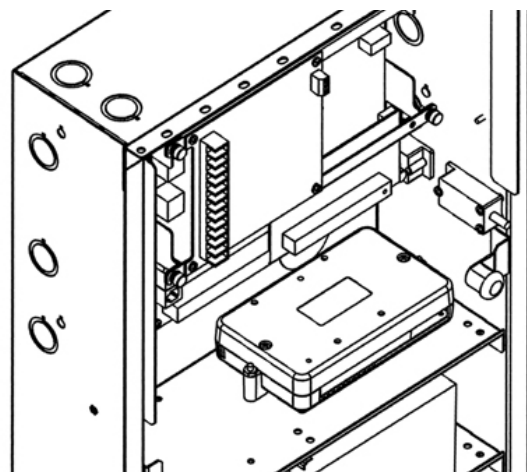


**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)****15. INSTALL THE GEMC-NL-MOD AND GEMC-24VR (OPTIONAL)**

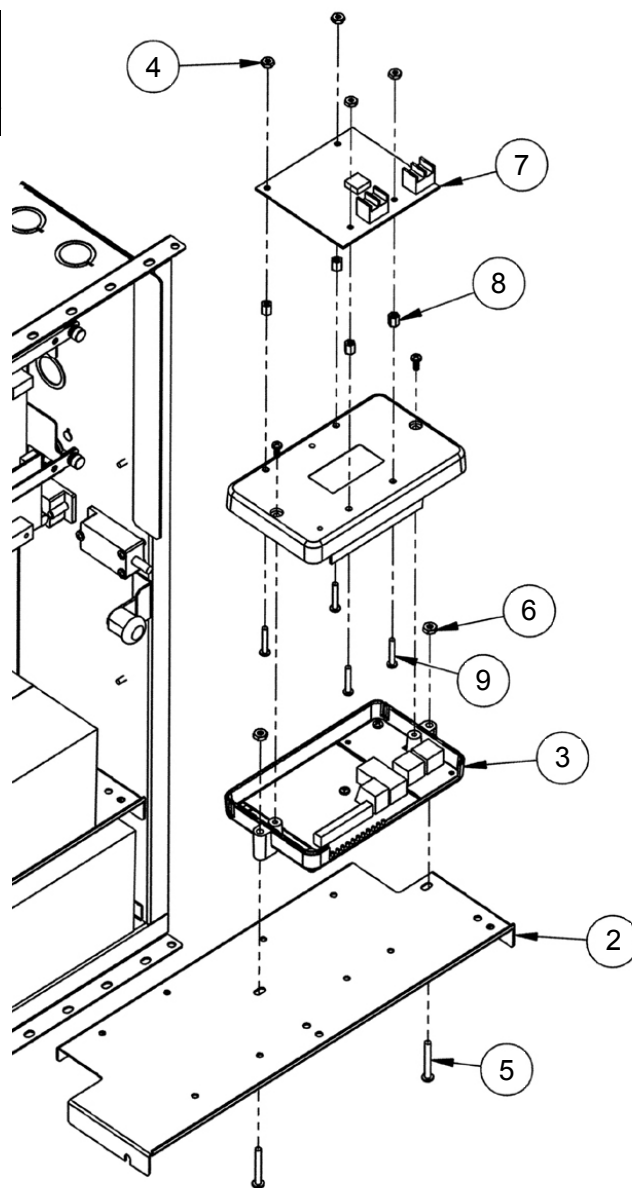
If using the Internet for communications, you must mount the optional GEMC-NL-MOD inside the enclosure as shown in the illustration below. Note the orientation of the installed GEMC-NL-MOD, with its terminals and jacks towards the right side. **Note:** If the GEMC-24VR PCB will be used, install the GEMC-24VR PCB into the four holes located in the top of the GEMC-NL-MOD plastic enclosure.



GEMC-NL-MOD (EXPLODED VIEW). SEE TABLES BELOW FOR NUMBER DESCRIPTIONS



GEMC-NL-MOD (ASSEMBLED VIEW)



INSTALL THE GEMC-24VR PCB INTO THE TOP OF THE OPTIONAL GEMC-NL-MOD. SEE TABLES BELOW FOR NUMBER DESCRIPTIONS

Item No.	Part No.	Description	QTY
1	HW1688	Enclosure base	1
2	HW1489	Battery Shelf	2
3	NL-MOD	assembly	1
4	N101	6-32 kep nut	4
5	SC575	Screw 8-32 x 1 1/4 pph	2

Item No.	Part No.	Description	QTY
6	N102	8-32 nut	2
7	PCB	GEMC-24VR	1
8	SO216	Spacer, 1/4" x .313, 6-32 tapped	4
9	SC631	Screw 6-32 x 7/8 pph	4

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 16. INSTALL OTHER DEVICES (OPTIONAL)

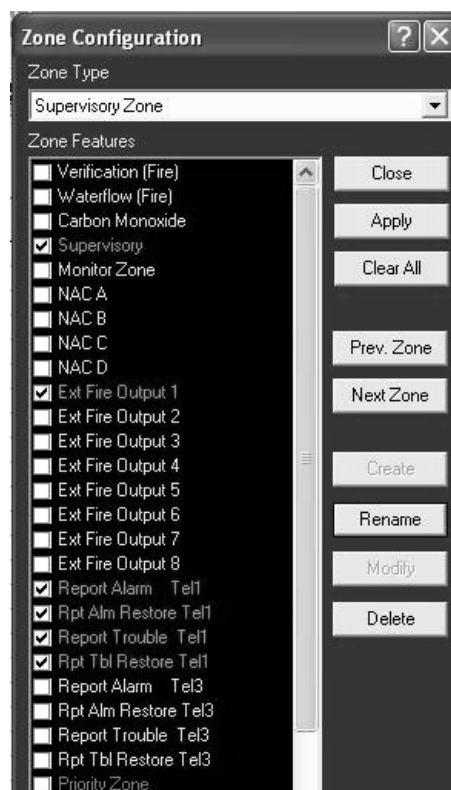
Install these devices as per the individual installation instructions for each device:

GEMC-12V2APS: see WI1828  
 GEMC-24VR: see WI1824  
 GEMC-BSLC-1PT: see WI1718  
 GEMC-BSLC-4PT: see WI1720  
 GEMC-BSLC-DT: see WI1721  
 GEMC-BSLC-PIR: see WI1719  
 GEMC-BSLC-RLY: see WI1723  
 GEMC-EZM8: see WI1683  
 GEMC-F8ZCPIM: see WI1651  
 GEMC-FPRINT: see WI1708  
 GEMC-HSKIT1416: see WI1705  
 GEMC-HSKIT1425: see WI1654  
 GEMC-NAC7L and/or GEMC-NAC7S: see WI1821  
 GEMC-OUT8: see WI1707  
 GEMC-RM3008: see WI1706  
 GEMC-RS232: see WI1823  
 GEMC-WL-GB: see WI1827  
 GEMC-WL-HEAT: see WI1744  
 GEMC-WL-WD: see WI1842  
 GEM-KEYF: see WI1730  
 FWC-FSLC-CZM: see WI1714  
 FWC-FSLC-DUCT: see WI1711

**Note:** If a Duct Detector mounted in an air distribution system is intended to be used solely for closing dampers or for equipment shutdown, the duct detector zone can be programmed as a Supervisory zone activating designated relays or outputs specifically used to close dampers or shutdown equipment. See figure at right for programming example in PCD-Windows Zone Configuration screen.

FWC-FSLC-EZM1: see WI1713  
 FWC-FSLC-EZM2: see WI1712  
 FWC-FSLC-HEAT: see WI1710

FWC-FSLC-ISO: see WI1716  
 FWC-FSLC-PROG2: see WI1738  
 FWC-FSLC-PULL: see WI1736  
 FWC-FSLC-RM2: see WI1715  
 FWC-FSLC-SMK: see WI1709  
 FWC-FSLC-SMK6B: see WI1737  
 FWC-FSLC-SOM1: see WI1717



### 17. EXTERNAL SYSTEM WIRING

Wire all keypads and peripheral equipment in designated locations. Keypads, points, wireless devices, receivers, EZM's, etc.

**Note:** To maintain separation of power-limited and non-power-limited circuits, keep all field wiring above top battery shelf.

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 18. INSTALL THE KEYPADS

**CAUTION:** This equipment generates and uses radio-frequency energy. If not installed using conventional installation practices for RF devices, it may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. However, there is no guarantee that interference will not occur in a particular installation. If it has been found to cause interference to radio or television reception, which can be determined by removing and reapplying AC and battery power to the equipment, the installer should try to correct the interference by one or more of the following measures: reorient the receiving antenna; connect the power transformer to a different outlet so that the control panel and receiver are on different branch circuits; relocate the control panel with respect to the receiver.

#### **Burg-Only and Combination Fire & Burg installations**

For "Burg-Only" installations, a GEMC-FK1 Fire keypad is not needed to be installed; for Combination Fire and Burg installations, at least one GEMC-FK1 Fire keypad and at least one GEMC-BK1 burglary keypad must be installed.

#### **Fire GEMC-FK1 Operator Interface Installation**

A GEMC-FK1 keypad is the operator interface to the Fire system. Each operator interface requires the 4-wire Fire bus of the motherboard be wired to it. To be a *primary* operator interface, the GEMC-FK1 keypad must also have the 2-wire trouble sounder from the motherboard wired to it. The location of the primary operator interface must be approved by the authority having jurisdiction (AHJ). Unlike other Fire systems, the GEMC system operator interface does not need to be located in the same room as the control unit, allowing the control unit to be centrally located for ease of wiring installation. The provided frame-able label (OI343) must be mounted adjacent to the primary operator interface.

To connect the trouble sounder, wire the violet wire (+) to motherboard terminal strip 13 and white wire (–) to terminal strip 14 (or screw terminals 13 & 14 on the motherboard).

See WI1649 for installation details.

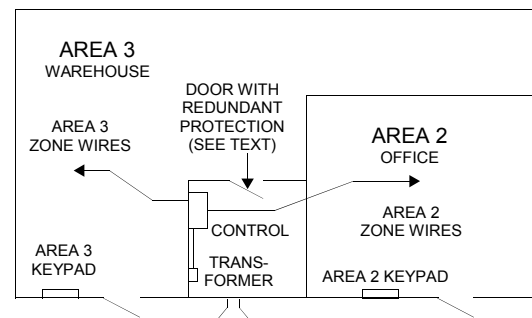
#### **Burglary GEMC-BK1 Keypad Installation**

A GEMC-BK1 keypad should be located near each exit/entry door. The keypad features a handy pull-up reference label. Before mounting the keypad onto the wall, push the Sliding Label Plate (with label and felt backing affixed and handle facing forward) down the guides at the rear of the keypad until it snaps into place. Once installed, the Sliding Label Plate cannot be removed without first removing the keypad from the wall. **Note:** Each GEMC-BK1 includes provisions for four additional zones. See the section **ADD EXPANSION ZONES**.

See WI1650 for installation details.

#### **Wiring**

Wire keypad(s), zones, expansion zone modules, Fire SLC modules, Burglary SLC modules, and output devices as shown on the Wiring Diagram. Note that the Wiring Diagram contains important information not available elsewhere in this manual.



**CAUTION:** Do not run telephone wiring near speaker wires; do not run keypad wiring with loop wiring.

**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)**

## 19. ADD EXPANSION ZONES

### *Adding Expansion Zones*

GEMC Series control panels do not provide any integral Fire or Burglary zones out of the box; a maximum of 255 zones may be added with the use of any combination of the several different zone expansion modules available to the system. Zones may be added by using the GEMC-F8ZCPIM, GEMC-EZM8, GEMC-FW-SLC, GEMC-BSLC, and the GEMC-RECV. A short description of each follows:

#### **GEMC-F8ZCPIM**

This device is a *Commercial Fire 8 Zone Plug-In Module*, provides up to 8 zones for conventional 2-wire Fire, 4-wire Fire or normally open Fire initiating devices. Also provides a constant 12VDC output and a re-settable 12VDC output, that provides momentary removal of power to unlatch latching devices when RESET is pressed at the keypad. **Note:** Can be used in conjunction with certain two-wire smoke detector models containing integral audible sounders, see **COMPATIBLE SMOKE DETECTORS** chart. Also see WI1651 for wiring diagram).

#### **GEMC-EZM8**

The capacity of the GEMINI C-Series control panels may be expanded through the use of a GEMC-EZM8 *Zone Expansion Module*. Each GEMC-EZM8 module provides up to 8 additional zones, and may be configured to provide for either 4 zones or 8 zones. Using either configuration, several GEMC-EZM8 modules may be combined as necessary to supply the required number of zones to the GEMC-Series control panel. When placed on Fire bus of the motherboard, only Fire-initiating and monitoring devices may be wired to the zone terminals; When placed on the Burg bus, only non-Fire devices may be wired to the zone terminals. Refer to the GEMC-Series Installation and Programming Instructions for wiring requirements. See WI1683.

#### **GEMC-FW-SLC**

The GEMC-FW-SLC *Fire Signaling Line Circuit* Module is the hardwired interface between compatible NAPCO Fire SLC devices and NAPCO's GEMC-FW-SLC compatible GEMINI C-Series control panels. The 2-Wire UL Commercial Fire Listed SLC system requires a GEMINI C-Series panel and at least one of the listed Fire devices in order to operate (see list below for SLC compatible devices and system accessories). The FWC-SLC Fire devices may be smoke detectors, heat detectors, NAC devices, single or quad Fire-initiating circuit-input devices, or other compatible devices that report zone status and supervision information to the GEMC-FW-SLC.

THE GEMC-FW-SLC supports up to 126 Fire SLC devices (both input and output). A maximum of two GEMC-FW-SLC modules may be used with the GEMINI C-Series panel for a maximum total of 252 Fire SLC zones. The maximum number of available receivers (4) and GEMC-BSLC devices (2) is reduced by each GEMC-FW-SLC device used. The GEMC-FW-SLC module is mounted inside the GEMINI C-Series panel metal enclosure and is connected to the Fire panel motherboard via the supplied connector. The GEMC-FW-SLC module polls each device, continually monitoring and updating the Fire status and conveying this information to the control panel. If there is no response from the Fire SLC device, a trouble will occur within 200 seconds. **Note:** The maximum number of devices supported includes output devices; therefore, for every output device used in the system, the total number of devices supported will be reduced by one. See WI1647.

#### **GEMC-BSLC**

The GEMC-BSLC is the hardwired interface between NAPCO's Burglary *Signaling Line Circuit* (SLC) Points and compatible control panels. The 2-wire system comprises a compatible GEMC-Series control panel, at least one GEMC-BSLC and one or more companion GEMC-BSLC Points (both input and output devices). The Points may be space-protection devices, window/door sensors, or other devices that report zone status and supervision information to the GEMC-BSLC.

The GEMC-BSLC supports up to 126 SLC Points. A maximum of two (2) may be used on a GEMC-Series control panel for a maximum total of 252 SLC Points. The maximum number of available receivers (4) and GEMC-FW-SLC devices (2) is reduced by each GEMC-BSLC device used. The GEMC-BSLC module is mounted inside the control panel enclosure and connects to the control panel via a plug-in connector. The GEMC-BSLC module continuously monitors each burglary point, updating status as changes in status are detected, and conveys this information to the control panel. **Note:** The maximum number of devices supported includes output devices;

## **GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)**

therefore, for every output device used in the system, the total number of devices supported will be reduced by one. See WI1648.

### **GEMC-RECV**

The GEMC-RECV-Series receivers with back cover mounting tampers are the hardwired interface to NAPCO's Wireless-Ready™ GEMC-Series control panels. The wireless system is comprised of a compatible GEMC-Series control panel, at least one GEMC-RECV-Series receiver, and one or more companion GEMC-Series (Commercial Fire & Burglary) or GEM-Series (Residential Fire or Burglary only) transmitters. The transmitters may be wireless smoke detectors, space-protection devices, window/door sensors, or other listed devices that report zone status and supervision information to the receiver without the use of wires.

One receiver is available: The GEMC-RECV can accommodate up to 200 wireless devices (125 total on a Fire/Burg or Fire-Only system). The number of transmitters is additionally limited by the associated GEMC-Series control panel selected, because only the number of zones supported by the panel can be mapped to transmitters. The receiver is connected to the GEMC-Series control panel's 4-wire Fire or Burglary bus. The receiver monitors each transmitter, updating transmitter status as reports are received, and conveys this information to the control panel. Also monitored is the elapsed time since the last report from each transmitter. If no report of sufficient signal strength is received within a programmed time, a Supervision Failure (4 hours for Commercial installations) will result.

If any Commercial Fire transmitters are used, the receivers must be wired to the Fire bus of the motherboard. If only Burglary devices are used, receivers must be placed on the Burglary bus.

With the addition of at least one GEMC-RECV receiver, the GEMINI C-Series control panels will support up to 200 wireless transmitters (125 total on a Fire/Burg or Fire-Only system). The panel can accommodate one to four receivers within the premises, responding to the one with the stronger transmitter signal. If any transmitters are selected for the default program, a GEMC-RECV receiver will automatically be programmed.

The keypad can display the status of any transmitter, indicating the condition of the zone (normal or open) and transmitter troubles (low battery, tamper or supervision failure), and signal strength of the last transmission. A receiver failure will be indicated by "E06-NN" ("no response", with NN representing the receiver number).

**Note:** A maximum number of four (4) GEMC-RECV's may be used in the system; this maximum is reduced by one for each GEMC-FW-SLC (Fire SLC device) or GEMC-BSLC (Burg SLC device) used in the system. See WI1682.

## **20. ADD EXPANSION OUTPUTS**

In addition to the integral outputs of the motherboard, up to 86 event-driven external outputs can be added to the system. The same way we have expansion zones, we have a large list. These outputs may be added using

### **For Fire:**

**GEMC-FW-SLC:** Fire SLC Module (see WI1647)

- **FWC-FSLC-RM2:** Dual Relay Module (see WI1715)
- **FWC-FSLC-SOM1:** Supervised Output Module (see WI1717)
- **GEMC-NACXX:** NAC Expander with four programmable NAC circuits and 3 programmable unsupervised Form-C relay outputs

### **For Burg**

**GEMC-BSLC:** Burg SLC Module (see WI1648)

- **GEMC-BSLC-RLY:** Single Point Relay Module (see WI1723)

### **For Fire or Burg:**

- **GEMC-RM3008:** 8 Output relay module for Fire or Burg - outputs unsupervised (see WI1706)
- **GEMC-OUT8:** 8 Output OC module for Fire or Burg - outputs unsupervised (see WI1707)

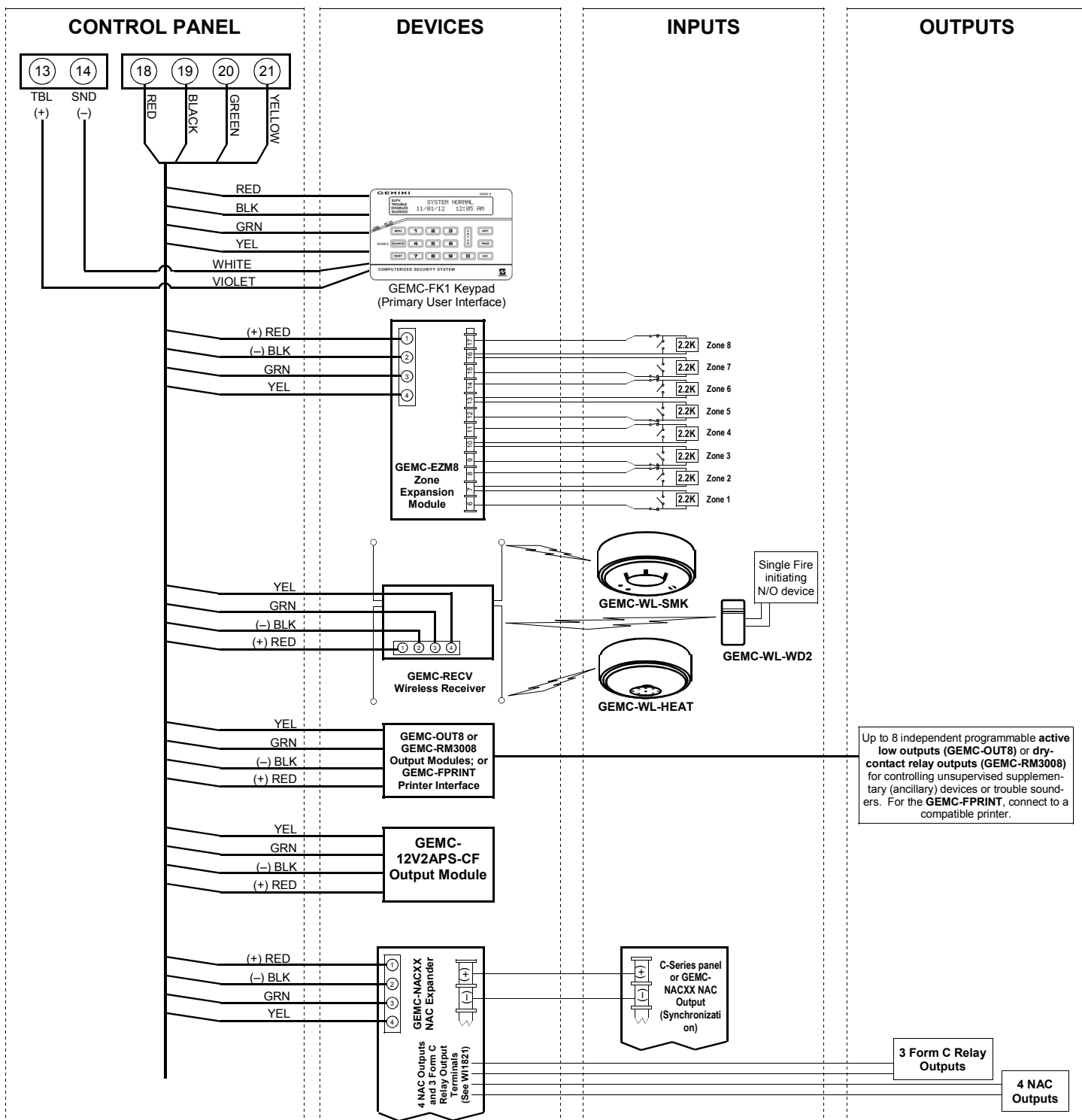
For programming, use PCD-Windows Quickloader Download software. **Note:** Outputs of the GEMC-RM3008 and GEMC-OUT8 may NOT be programmed as SILENCE-ABLE.

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 21. INSTALL THE REMOTE FIRE BUS

There are two remote buses on the system; one is the Fire bus located on the motherboard, and the other is the Burg bus located on the GEMC-BM/PS and the GEMC-BM. Only Fire devices should be placed on the Fire bus, and no Fire devices should be placed on the Burg bus. The following devices can be placed on the Fire bus: GEMC-FK1, GEMC-EZM8, GEMC-RECV, GEMC-RM3008, GEMC-FPRINT, GEMC-NACXX and the GEMC-OUT8. Connect the Fire devices as shown to the

Fire bus terminals (18, 19, 20 & 21) of the motherboard. Observe the correct color wire connections. When connecting a keypad(s), first configure them accordingly (refer to the Keypad Configuration Mode at the back of this manual). **NOTE:** When running the remote bus wire, avoid wiring parallel to other types of wiring that can cause electrical interference. **NOTE:** Refer to the EZM Installation Instructions for specific wiring information.

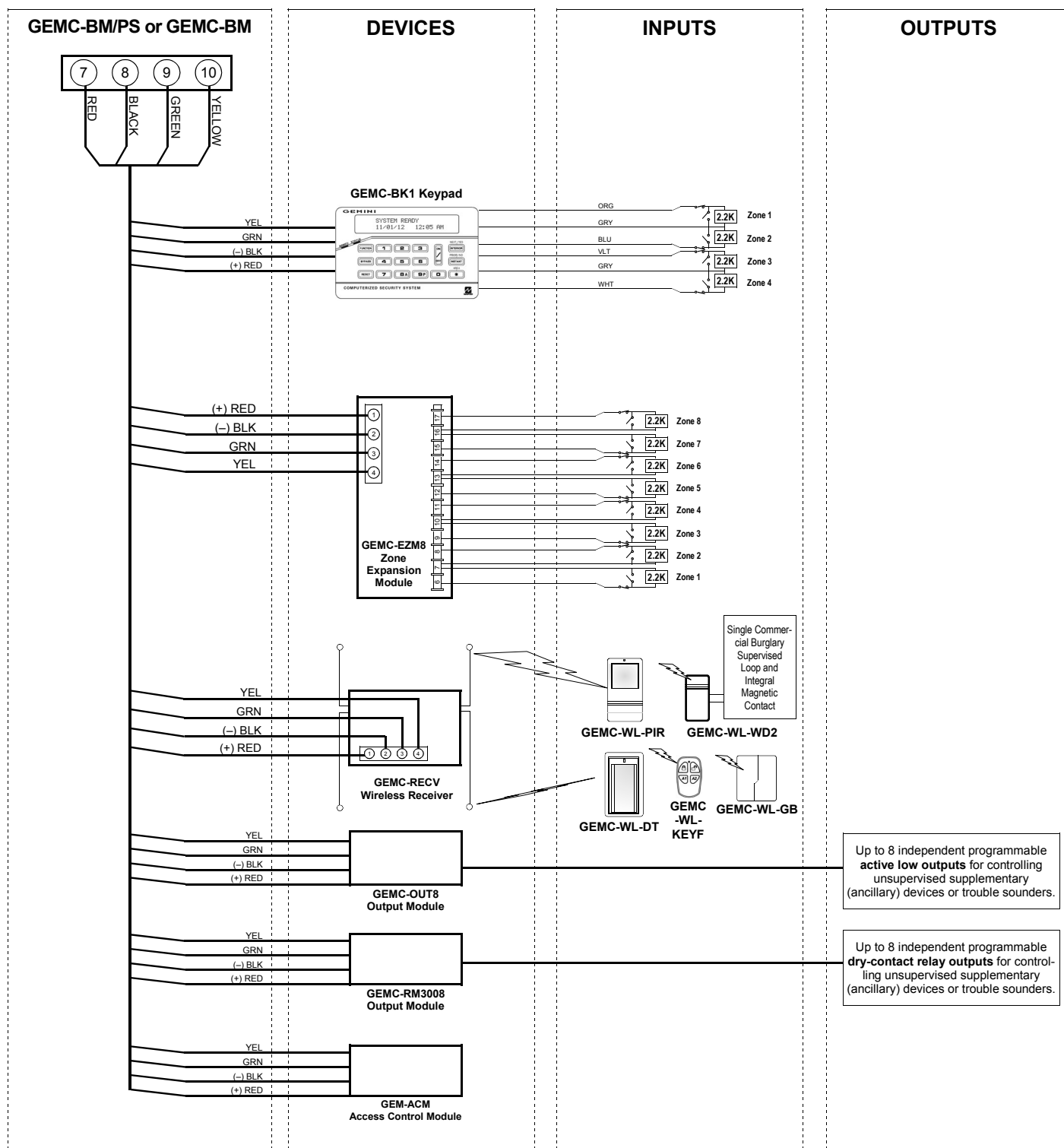


## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 22. INSTALL THE REMOTE BURG BUS

The Burg bus is located on the GEMC-BM/PS and the GEMC-BM. Only Burg devices should be placed on the Burg bus; do not connect Burg devices to the Fire bus. The following devices can be placed on the Burg bus: GEMC-BK1, GEMC-EZM8, GEMC-RECV, GEMC-RM3008 and the GEMC-OUT8. Connect the Burg devices as shown to the Burg bus terminals (7, 8, 9 & 10) of the GEMC-BM/PS or the GEMC-BM. Ob-

serve the correct color wire connections. When connecting a keypad(s), first configure them accordingly (refer to the Keypad Configuration Mode at the back of this manual). **NOTE:** When running the remote bus wire, avoid wiring parallel to other types of wiring that can cause electrical interference. **NOTE:** Refer to the EZM Installation Instructions for specific wiring information.

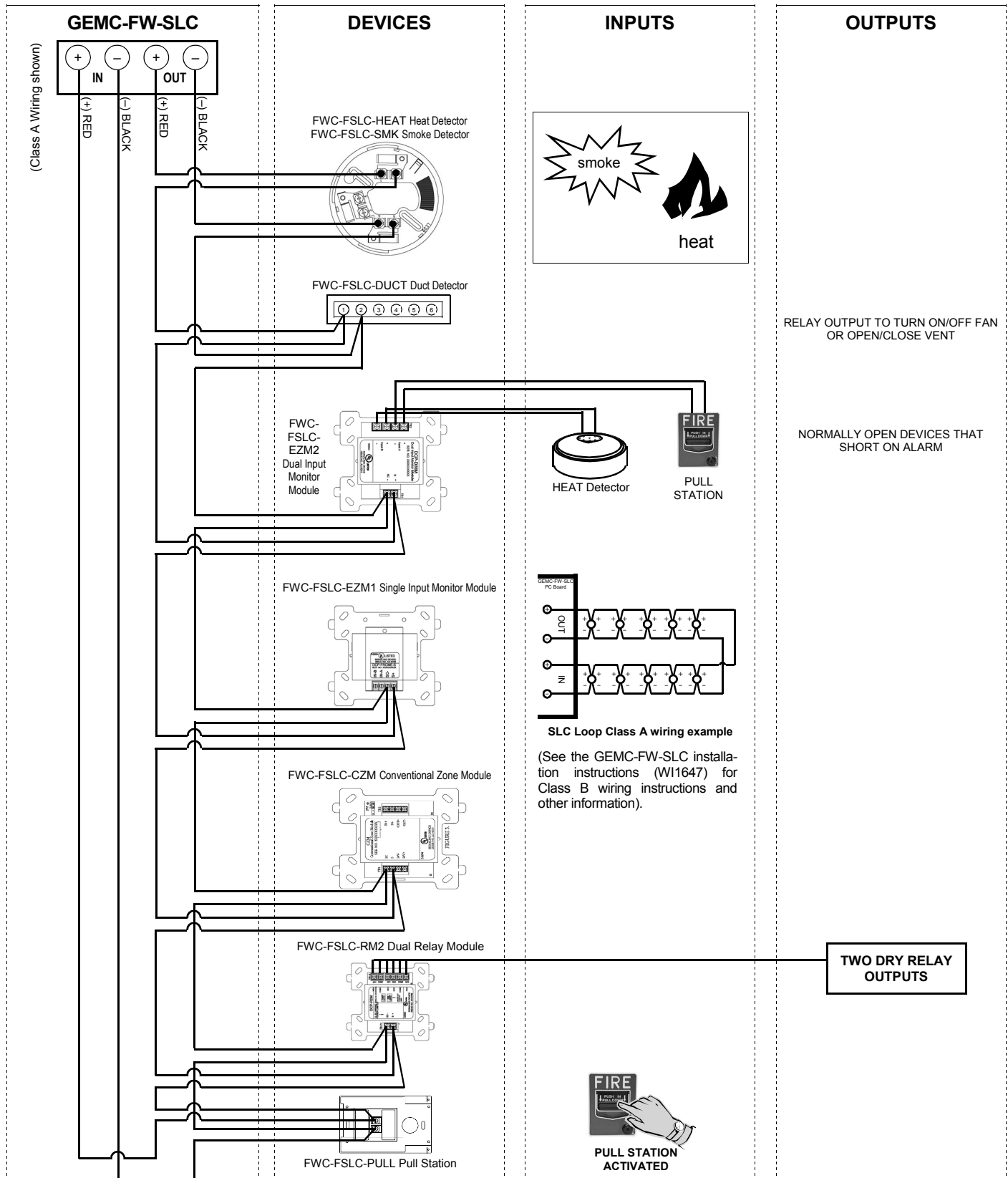


## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 23. WIRING OF DEVICES TO THE FIRE SLC BUS (OPTIONAL)

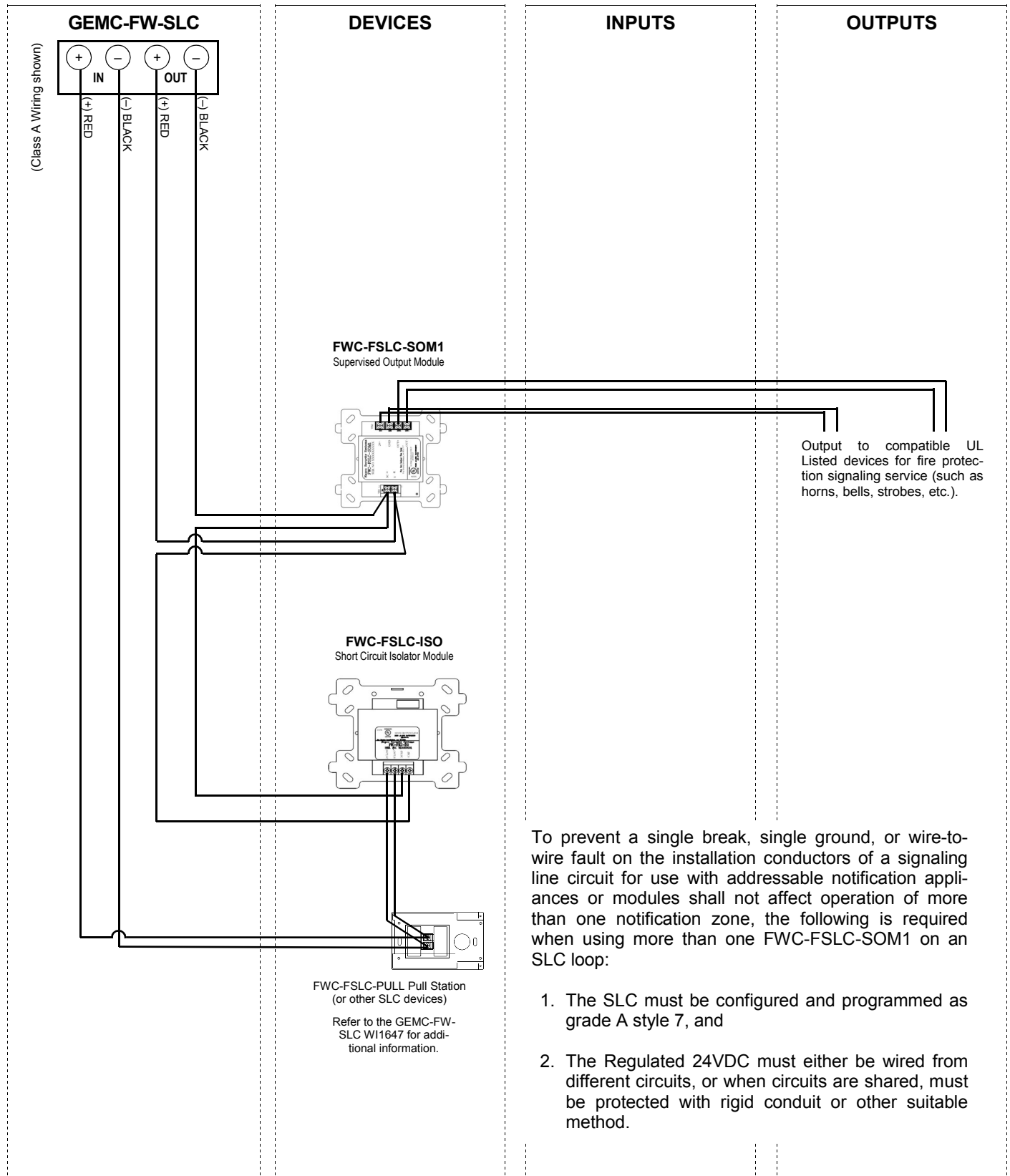
With the optional GEMC-FW-SLC Fire Signaling Line Circuit module installed, and the external output DIP switches and address DIP switch correctly addressed, the following devices can be

wired to the GEMC-FW-SLC. See the GEMC-FW-SLC installation instructions (WI1647) for Class B wiring instructions and other information.





## WIRING OF DEVICES TO THE FIRE SLC BUS (CONT'D)

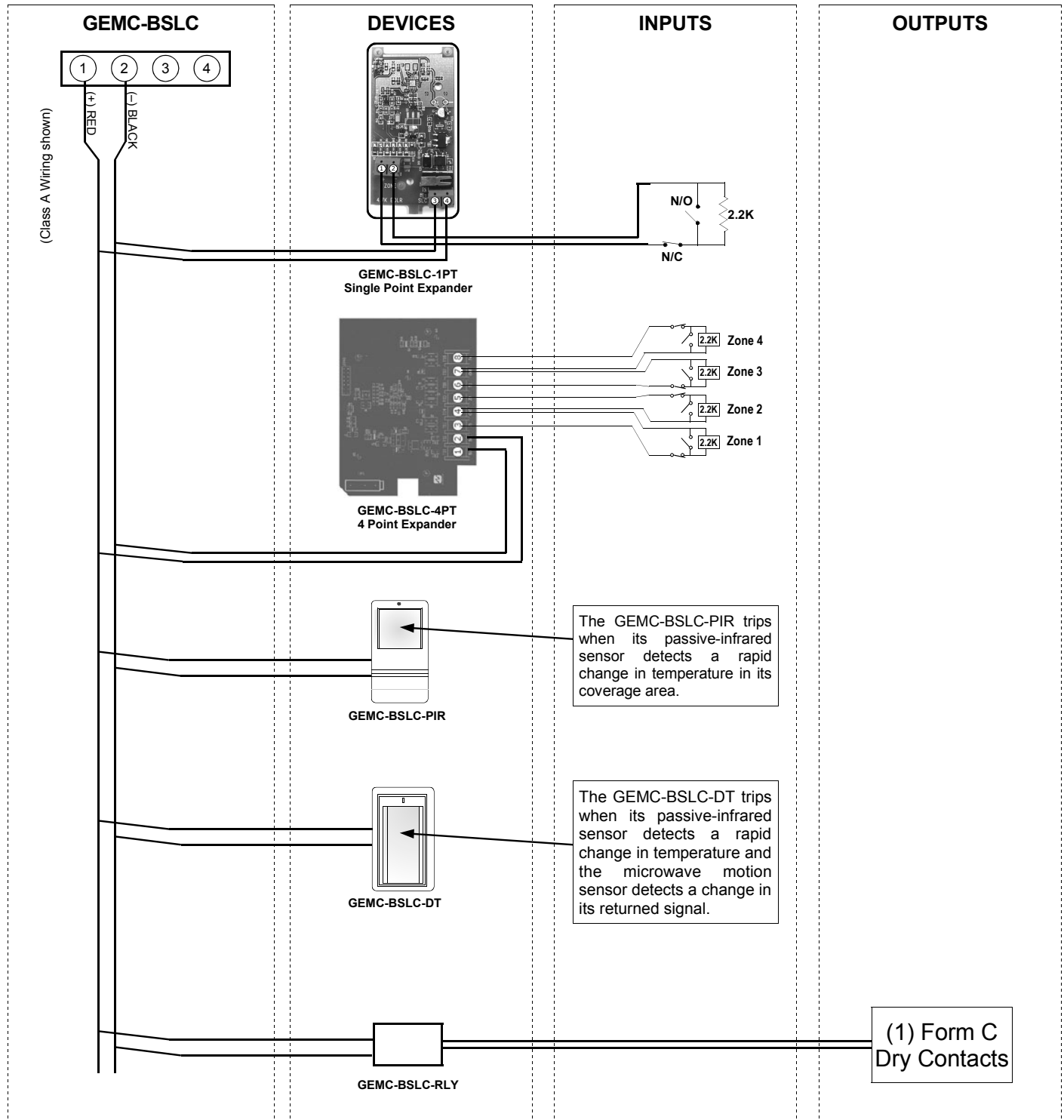


## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 24. WIRE DEVICES TO THE BURG SLC BUS (OPTIONAL)

With the optional GEMC-BSLC module installed, and the external output DIP switches and address DIP switch correctly addressed, the following devices can be

wired to the GEMC-BSLC module. See the GEMC-BSLC installation instructions (WI1648) for Class A wiring instructions and other information.



**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)****25. MOTHERBOARD EARTH GROUND (OPTIONAL)**

**NOTE:** Do not use a gas pipe, plastic pipe or AC ground connections.

This terminal is not required to be connected to earth ground. The panel earth ground connection is provided via the 110V ground connection to the enclosure through the mounting brackets. This terminal can be used to connect optional peripheral devices mounted inside the enclosure that require an earth ground connection.

This terminal can also be used to confirm the operation of the ground fault circuit; a short from this terminal to any circuit terminal should generate a ground fault, causing the fire keypad to sound trouble and annunciate the associated trouble. In addition the terminal may be used to help diagnose which circuit may be shorted to earth ground by reading the voltage between the earth ground terminal and system ground (AUX PWR (-) terminal).

**Note:** Isolated integral ground-fault detection circuit (detects 1.25K $\Omega$  to ground or less).

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

## 26. WIRE INTEGRAL MOTHERBOARD NAC'S

### Notification Appliance Circuit (NAC) Overview

A Notification Appliance Circuit is a circuit or path directly connected to a *notification appliance*, i.e. any audible, tactile or visual signal—or any combination thereof—employed to indicate a Fire alarm, supervisory alarm, trouble condition or supplementary function. Examples of a *notification appliance* include bells, strobes and similar appliances or parts.

The GEMC-255MB and GEMC-128MB control panel motherboards support four NAC circuits: Three 24V (2A) NAC circuits and one 24V or 12V (selectable) 2A NAC circuit.

The GEMC-96MB and GEMC-32MB provide two NAC circuits (one 24V / 2A NAC circuit and one 12V or 24V selectable 2A NAC circuit).

### Gemini C-Series Panel NAC Circuit Description

The maximum current rating for each NAC circuit is 2A. All four NAC circuits are protected from damage and over-current.

The NAC circuit design advantages include constant protection from damage caused by shorts or very low resistance when active, while still allowing for very high instantaneous current caused by anticipated capacitive loads of multiple synchronized signaling devices on the same circuit.

The NAC circuits on the control panel motherboard may be used to generate synchronized temporal cadence patterns on standard sounding appliances on multiple circuits.

Additionally, each NAC can be used to drive the UL864 9<sup>th</sup> edition compliant synchronous strobes and temporal audible alarm sounders using the appropriate **System Sensor** or **Cooper Wheelock** devices directly, without the synchronizing module. (**Note:** Devices of different manufactures cannot be mixed on the system).

**Note:** Maximum combined output must be calculated and depends on the standby current, selection of NAC 4 voltage output and battery standby capacity. *Calculations must be performed for each system to verify compliance.*

### Notification Appliance Circuit Supervision

Install a 2.2K EOL resistor across the last notification appliance on each Notification Appliance Circuit to be supervised for opens or shorts across the circuit. The Notification Appliance Circuits will not respond unless zones or events are assigned to them. When supervision is not disabled, the Gemini C-Series control panels monitor the Notification Appliance Circuits wiring for open and short circuit faults while the output is inactive. If these troubles occur, a specific indi-

cation at the GEMC-FK1 keypad identifies the NAC number, and in addition, the control panel will send a report to the central station if programmed to do so (keypad displays "TBLF1g/NcX\*" followed by the NAC description when an open occurs or when a short occurs between the NAC (+) and NAC (-) terminal wiring). The zone NAC trouble displays on the keypads, reports to the event log, and transmits to the central station (if programmed) on Area 1. Before the trouble can be cleared from the display, the fault must be corrected.

These NAC circuits also have the ability to be disabled, and have their disabled status reported to the central station.

NAC's A-C can also be used as constant 24V auxiliary power with battery back-up; use the GEMC-24VR output module for regulated voltage.

### NAC Outputs for AUX Power or RESETable Power

24V NAC outputs may be used for Regulated 24V constant auxiliary power or RESETable Power when a GEMC-24VR is wired to the associated NAC output; the GEMC-24VR is the ONLY listed device that may be used in this configuration.

NAC D can also be used for Regulated 12VDC constant auxiliary power or RESETable Power (remove motherboard jumper J600 for 12VDC).

When using the NAC outputs for constant AUX PWR (auxiliary power), program the outputs using the PCD-Windows Quickloader **NAC/Output Assignment** screen; enable **Reverse Polarity** (output "normally on").

When using the NAC outputs for constant RESETable outputs (for devices such as duct detectors and 4-wire smoke detectors), program the outputs using the PCD-Windows Quickloader **NAC/Output Assignment** screen; enable **Reverse Polarity** (output "normally on") and **Fire Reset**. With **Fire Reset** programmed, when the GEMC-FK1 keypad is unlocked and **RESET** is pressed, power will be momentarily removed from that output, allowing the latching devices to reset.

### Wiring

When a NAC is used for AUX PWR or RESETable PWR, the circuit must be wired [+] to the [+] terminal of the NAC selected, and the [-] terminal must be wired to terminal 23 ([-] AUX PWR). In addition, the NAC must be programmed to disable supervision.

**Warning:** If the negative of the circuit is connected to the negative terminal of the NAC, *the circuit will*

\* X = Relay # A-D or 01-40 if an external output.

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

receive a negative voltage when the panel is placed in Config Mode that may adversely affect devices placed on the circuit. In addition, if the NAC is used for RESETable Power, when the Fire keypad is unlocked and **RESET** is pressed, the circuit will receive a negative voltage for approximately 15 seconds during the reset cycle.

When selected, the associated NAC's (1 & 2 or 3 & 4) must be programmed to activate for identical events. Each NAC circuit has a programmable 32-character description that can be associated with the circuit (displays on the Fire keypad when the Menu option "Output Directory" or "Outputs Disabled" is selected).

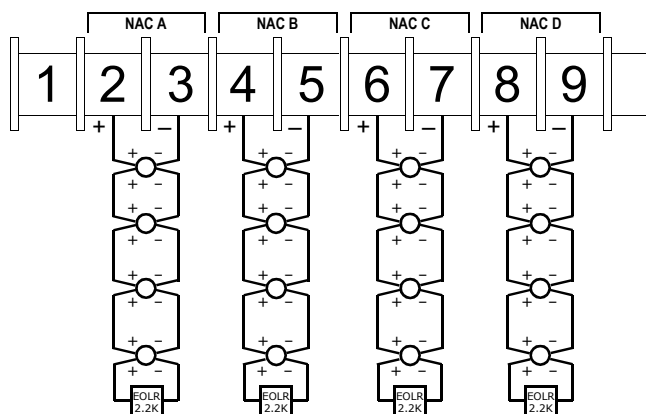
### PROGRAMMING FOR CLASS A

The **External Output Assignment** screen provides the ability to select Class A operation for NAC A / NAC B and/or Class A operation for NAC C / NAC D.

All NAC Output circuits  
Class B (Style Y)  
Class A (Style Z)

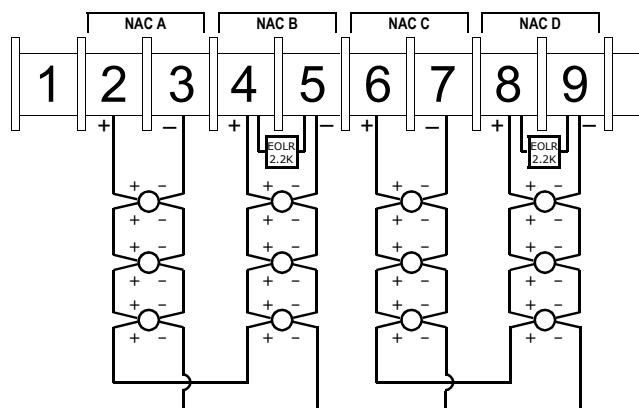
#### NAC Wiring--4 Class B Circuits

Notification Appliance Circuits, supervised and power-limited



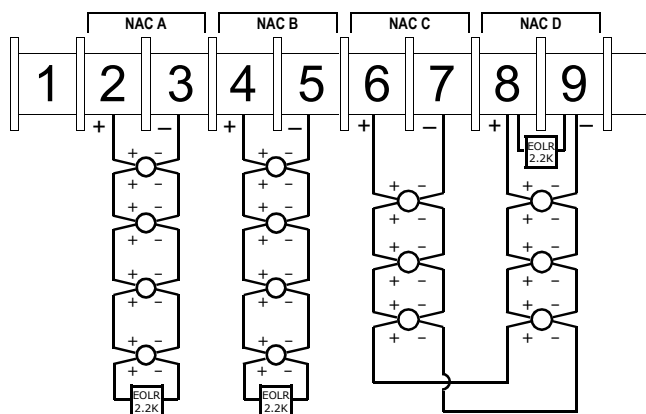
#### NAC Wiring--2 Class A Circuits

Notification Appliance Circuits, supervised and power-limited



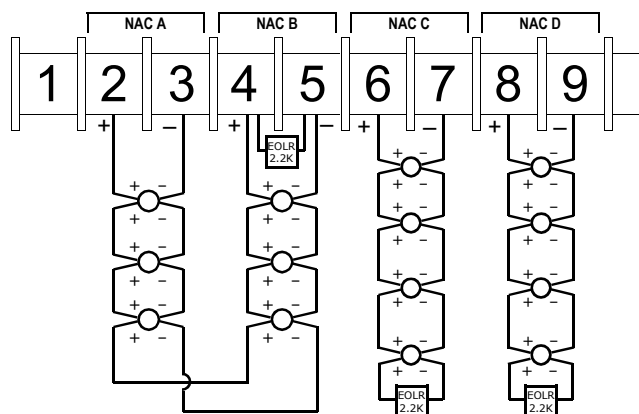
#### NAC Wiring--2 Class B & 1 Class A

Notification Appliance Circuits, supervised and power-limited



#### NAC Wiring--1 Class A & 2 Class B

Notification Appliance Circuits, supervised and power-limited



**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)****27. WIRE INTEGRAL MOTHERBOARD AUX FIRE RELAY (OPTIONAL)**

The C-Series control panels provide an integral dry contact Form C relay rated 30VAC / VDC, 2.5A (resistive) maximum. This relay is designed to provide a normally energized trouble relay ("Panel Relay Fire Trouble Relay" must be programmed for this function). If this feature is not selected, the relay can be energized on any combination of relay events, just like any other integral output or external output.

Connect only to power limited circuits.

The output is not supervised and should not be used as a NAC (Notification Appliance Circuit). Use only for trouble output or supplementary functions.

The C-Series control panel PC board silkscreen indicates outputs when the relay is de-energized. If "Panel Relay Fire Trouble Relay" or the relay assigned "Reverse Polarity", the N/C (normally closed) and N/O (normally open) terminals are reversed from what is indicated on the silkscreen.

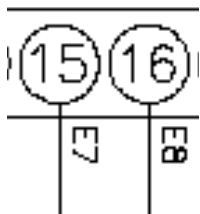
**28. WIRE INTEGRAL MOTHERBOARD TROUBLE SOUNDER**

The integral Trouble Sounder terminals are intended to be used to protect against the shorting and cutting of the wires connected to the primary GEMC-FK1 Fire keypad. If the wires connected to the primary GEMC-FK1 Fire keypad are cut or shorted, the trouble sounder activates.

**Wiring**

The primary user interface (GEMC-FK1 Fire keypad) requires the following wiring: In addition to the four standard wires at the rear of the GEMC-FK1 keypad (wired to terminals 18-21), wire the white and violet wires to the **TBL SND** terminals (white to terminal 14 [-] and violet to terminal 13[+]) as shown in the wiring diagram.

**Note:** The connections to terminals 14 [-] and 13[+] are unsupervised; if needed, an additional sounder may be mounted inside the control panel enclosure.

**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)****29. WIRE INTEGRAL ACTIVE LOW OPEN COLLECTOR OUTPUTS (OPTIONAL)**

Terminals 15 (E7) and 16 (E8) are active low device-driven unsupervised outputs (up to 2A active low). When wired to a device, be sure to apply the power from either the Auxiliary Power from the motherboard (terminals 22 and 23) or a power-limited external power supply.

These outputs can be programmed to activate upon any event. In addition, these outputs can be programmed for "Reverse Polarity" and can turn off upon any event.

**30. WIRE INTEGRAL KEYSWITCH INPUT (OPTIONAL)****Installing a Remote Keyswitch**

A UL-Listed remote momentary keyswitch can be used for unlocking the GEMC-FK1 Fire keypad #1.

**Operation**

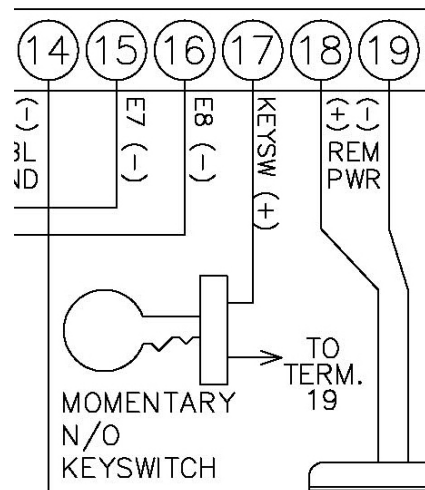
In UL Commercial Fire installations, mount the keyswitch next to the GEMC-FK1 Fire keypad #1 and install the keyswitch wiring within 20 feet and rigid conduit from the control panel; the keyswitch switch must be mounted securely to a secured metal box. **Note:** The keyswitch reports as user 0, if "Open/Close Reporting" is enabled (see Zone Options in the panel programming instructions).

The keypad will flash "Keypad Unlocked" and allow all Fire code options to be accessed.

**Motherboard Wiring for the Remote Keyswitch**

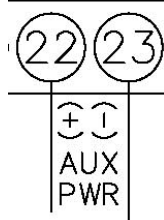
Install the keyswitch as follows:

1. Connect one side of the keyswitch to the control panel terminal #17 (marked "KEYSW") and connect the other side of the switch to terminal 19 (marked "REM PWR [-]").
2. If you are using the tamper, make sure it is connected to a zone programmed as a Fire "Monitor" zone.



## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 31. WIRE INTEGRAL MOTHERBOARD AUX POWER (OPTIONAL)

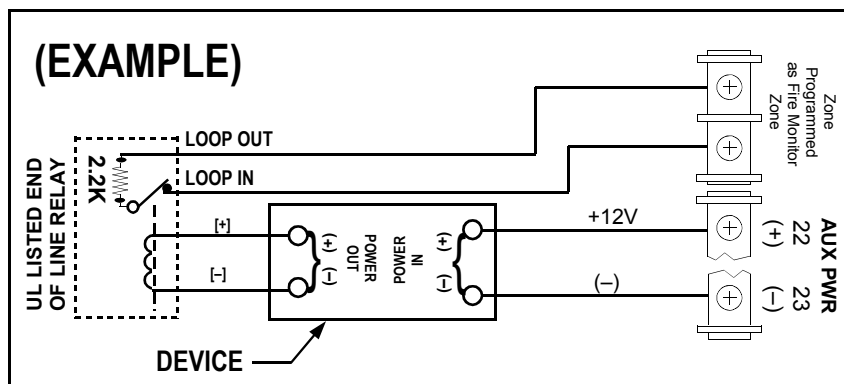


The Gemini C-Series control panels provide Auxiliary Power at terminals 22 (+) and 23 (-).

Voltage: 12V Regulated

Output: 750mA Maximum

**Note:** Combined maximum Remote power + Auxiliary power is 1.4A.



### 32. WIRE TAMPERS (OPTIONAL)

The front and back tamper switches must be wired in series to the motherboard Tamper Input (terminal 24) and the motherboard earth ground terminal of Aux. Power (terminal 23). **Note:** The feature Enable Enclosure Tamper must be programmed (see Programming Instructions WI1673).

### 33. CONNECT TELCO JACKS 1 AND 2 (FOR REPORTING SYSTEMS)

#### Telephone Line Connections

The Gemini C-Series control panels provide one main built-in dialer for communication to the central station and one optional backup dialer, both of the 6-pin RJ-45 receptacles are supervised for voltage and current on the telephone lines. **Note:** Do not connect the system to telephone lines that require ground start service. **Note:** Telco wiring to the panel shall be a minimum of 26 AWG.

For Listed Fire remote station (UL864/NFPA 72) applications, use the main dialer with the backup dialer. Telephone line supervision is required for UL Commercial Fire Alarm systems when dual line dialer is used for Fire signal transmission. **IMPORTANT:** Do not connect the main dialer and the backup dialer to the same telephone company line.



## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

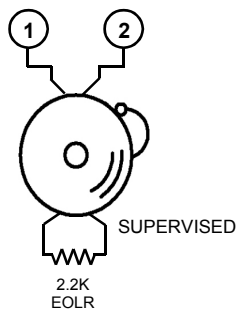
### 34. WIRE RJ-25 JACKS 1 & 2 (OPTIONAL)

For use with local downloading, home automation (not permitted in UL installations) and the GEMC-NL-MOD. The NAPCO GEMC-NL-MOD is a device that allows the reporting of alarms over a TCP/IP based (Intranet or Internet) network. See WI1754 for more information.

### 35. WIRE THE BURG MODULE (OPTIONAL)

See the installation instructions for either the GEMC-BM Burglary Module (WI1701) or the GEMC-BM/PS Burglary Module with power supply (WI1700) for detailed wiring diagrams.

### 36. WIRE THE SIREN / BELL BURG ALARM OUTPUT (OPTIONAL)



Connect the alarm sounding devices (self-contained sirens, speakers or a mechanical bells) to terminals 1 (+) and 2 (-). Any self-contained siren requiring a 12 VDC input can be connected. When connecting a mechanical bell, it must be supervised using a 2.2k Ohm resistor. To connect 8 Ohm Speakers use a Siren Driver with the proper polarity observed. **NOTE:** Refer to the Wiring Diagram for alarm current specification and bell supervision. Refer to chart "EXAMPLES OF DEVICES COMPATIBLE WITH BURG BELL OUTPUT" earlier in this manual.

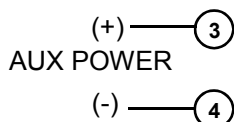
#### GEMC-BM BURGLARY MODULE

**Burg Bell Power:** 12V Regulated, 2A maximum.

#### GEMC-BM / PS Burglary Module with Power Supply

**Burg Bell Power:** 12.5 - 9.8VDC, 2A maximum.

### 37. WIRE AUXILIARY POWER (OPTIONAL)



Connect the auxiliary devices (motion detectors, glass breaks, etc.) to Terminals 3 and 4. Auxiliary Power provides a filtered 12 VDC nominal output which is used for powering auxiliary devices. **NOTE:** To calculate the available standby time refer to the Standby-Battery Calculation Worksheet at the back of this manual.

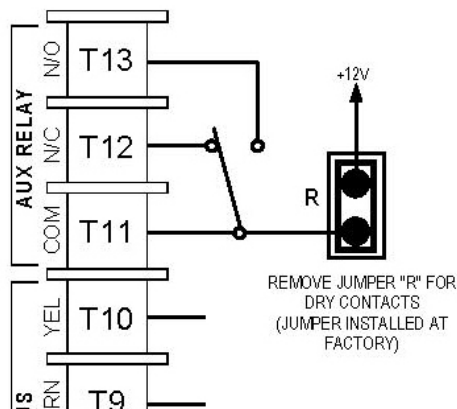
#### GEMC-BM BURGLARY MODULE

**AUX Power:** 12V Regulated, 750mA maximum.

#### GEMC-BM / PS Burglary Module with Power Supply

**AUX Power:** 12.5 - 10.2VDC, 750mA maximum.

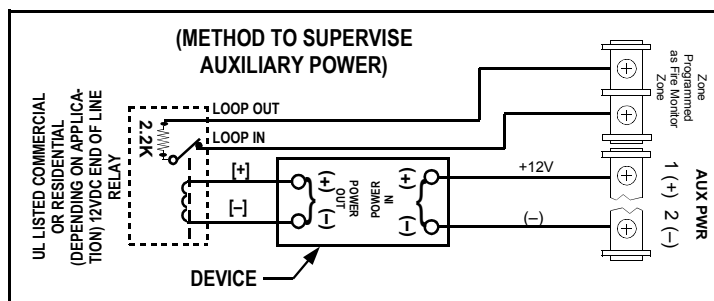
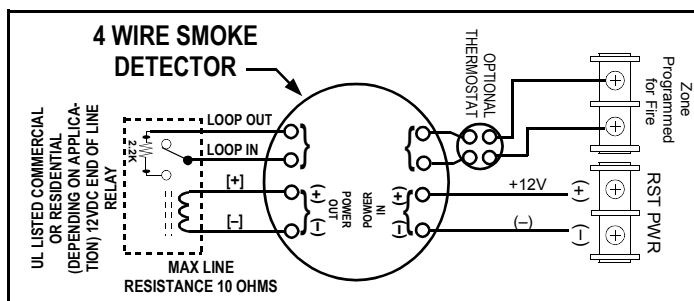
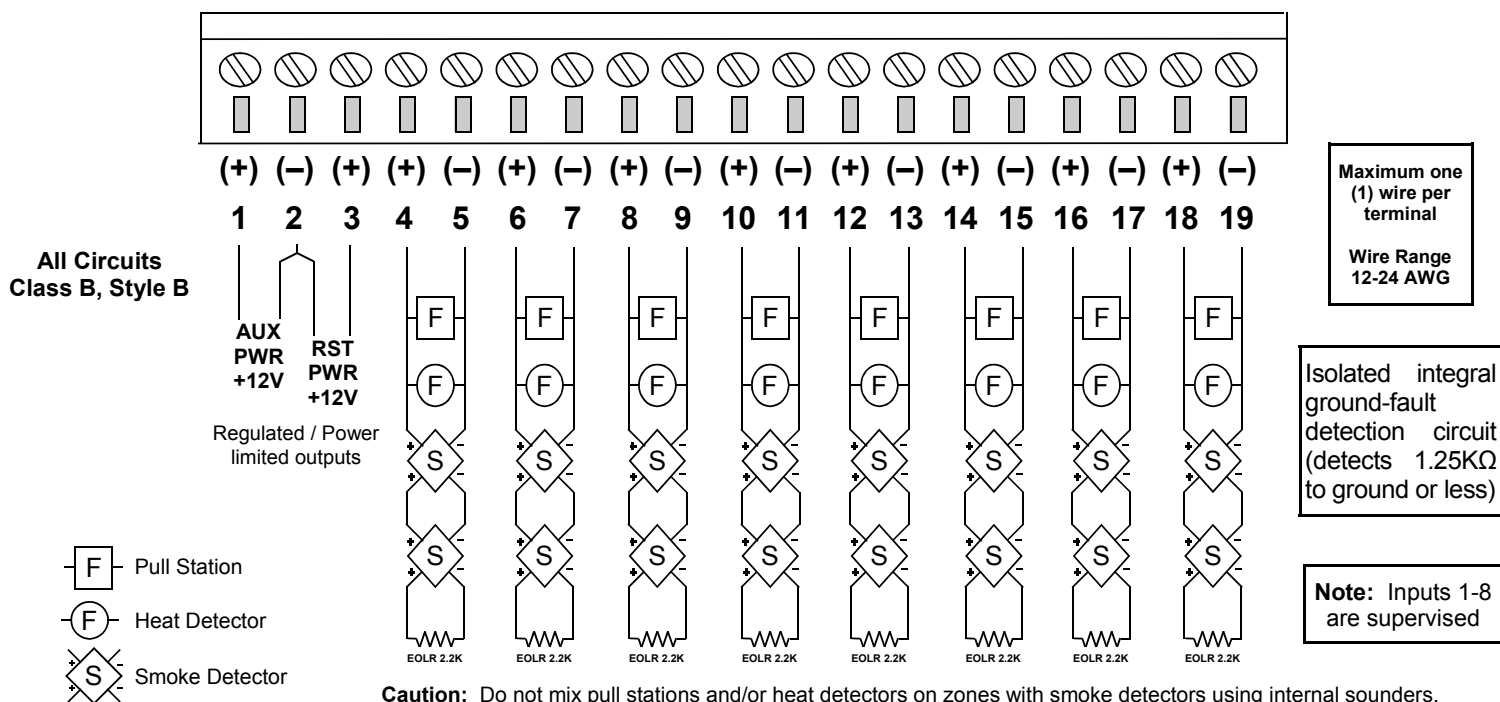
### 38. WIRE THE BURG AUX RELAY (OPTIONAL)



Auxiliary Relay can be activated depending on the programming options selected (see Gemini C-Series control panel Programming Instructions).

## GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)

### 39. WIRE THE GEMC-F8ZCPIM 8 FIRE ZONE EXPANDER (OPTIONAL)



#### INSTALLING THE GEMC-F8ZCPIM

Before attempting to install the GEMC-F8ZCPIM, *remove the AC power and battery harness from the GEMC-Series motherboard*. Insert GEMC-F8ZCPIM into the polarized J1 and J1A connectors on the motherboard above terminals 11-17, making sure all 9 pins are inserted into the two connectors correctly, and with the GEMC-F8ZCPIM terminals facing front. Wire initiating circuits, then re-power and test the system. **Note:** *Use only 12V listed devices and only 2 wire smoke detectors listed with this system (see W11653 for compatible detectors and maximum devices per zone).* **Important:** Only smoke detectors are permitted on zones programmed with Fire Alarm Verification. Never install Pull Stations, Heat Detectors etc. on zones programmed with Fire Alarm Verification.

#### ELECTRICAL RATINGS

**Input Power:** 12V Regulated, 120mA standby + total combined standby & alarm current.

**Output Power:**

**AUX PWR:** 12V Regulated, 700mA maximum.

**RST PWR:** 12V Regulated, 700mA maximum.

**Maximum Total Combined Standby and Alarm Current:** 120MA + total combined standby current. Must reduce GEMC-Series motherboard total combined 12V standby power by GEMC-F8ZCPIM total combined standby current.

**Zone Ratings:**

**Voltage:** 12VDC nominal.

**Current:** 2mA maximum detector current per zone loop.

**Alarm:** 42mA maximum alarm current per zone.

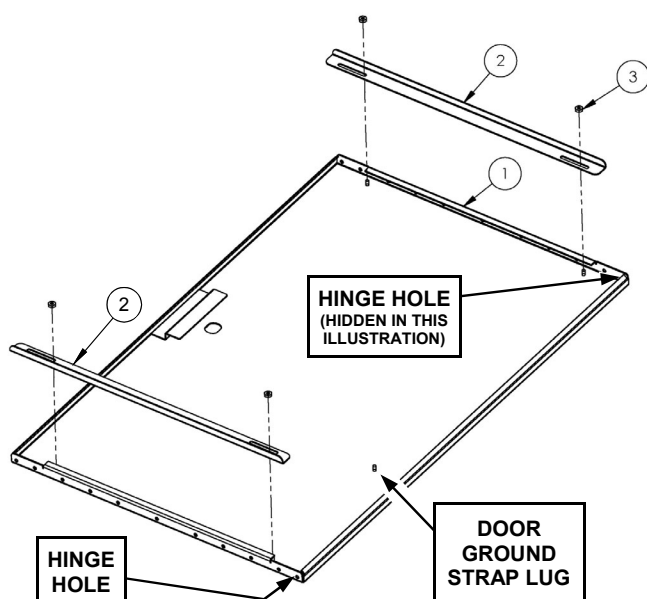
**Maximum Loop Resistance:** 10 ohms.

**Note:** Zones not programmed into Area 1 and not wired with an EOLR will not pull any current in standby or in alarm. All initiating circuits are Class B.

**Compatibility Identifier:** GEMC.

**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)****40. INSTALL THE ENCLOSURE DOOR****Install the Enclosure Door**

When the enclosure door is placed over the enclosure base, the two exposed hinge holes located along the top and bottom edge of the door (see illustrations below) align with the two hinge holes in the enclosure base (the enclosure base hinge holes may be located on the left or right, depending on the door swing). Into each hinge hole, insert a 10-24 x 1.5" thread cutting screw; install both screws fully.



**ENCLOSURE DOOR WITH SHIELDS**  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

**Connect Door Ground Strap**

A short (3") ground strap wire with ring connectors at each end is designed to ensure the control panel door is always connected to earth ground. Inside the control panel enclosure, connect one of the ring connectors to the enclosure ground stud. Use the ground stud located on the left or right side of the enclosure, as determined by the door swing (see the illustration for location of the two studs). Secure the ring connector to the stud with a 6-32 nut with star washer (N101). Connect the other end of the ground strap to the enclosure door ground stud. Secure with a 6-32 nut with star washer (N101).

**Door Cover Shields**

The enclosure door includes two pre-installed shields (HW1804) designed to cover the multiple holes located along the top and bottom edge of the door and enclosure (see illustrations). These two shields should remain installed unless you wish to secure the door closed

with the anti-tamper screws that are included in the GEMC-KOTAMPERKIT. Before removing shields, we recommend all wiring, programming, and checkout procedures be completed, then proceed as follows:

1. Remove the 6-32 nuts (item 3 in the illustrations) and remove the Cover Shields (item 2).
2. With the door closed, insert each of the 20 anti-tamper 10-24 x 1.5" thread cutting screws (SC637) into each hole.

**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

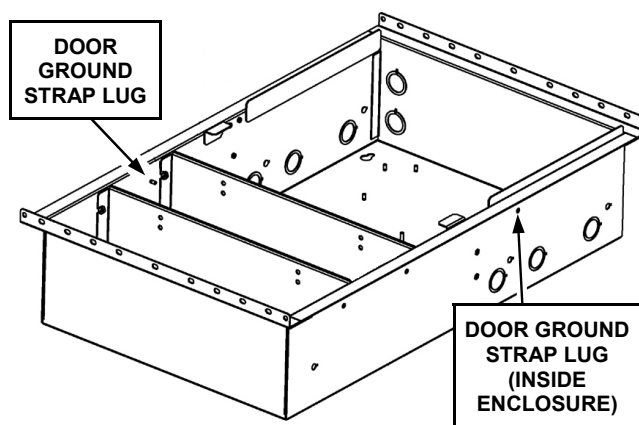
**Enclosure Door Label**

Apply the label to the door, just above the bottom ventilation holes, as shown in the image at right.

**Note:** The label shown in the image may differ from the label provided, depending on the control panel model.



**Door Label Location**



**ENCLOSURE BASE**

Item No.	Part No.	Description	QTY
1	HW1687	Enclosure Cover	1
2	HW1804	Cover Shield	2
3	N101	6-32 nut	4

**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)**

## 41. CONNECT THE BATTERIES

**Top Battery Shelf:**

The minimum requirement is one pair of 12V 7AH batteries placed in the upper HW1489 Shelf and situated to the right side.

Place two batteries into the upper compartment as shown, being careful not to short the battery terminals to the enclosure. The terminals are, from left to right: positive, negative, positive, negative.

- Connect the two blue wire female lugs to the left battery negative terminal and the right battery positive terminal.
- Connect the red wire to the left battery positive left terminal.
- Connect the black wire to the right battery right negative terminal.
- Turn the batteries to be positioned in the "normal operating position) as shown, with the terminals facing right.

**Bottom Battery Shelf:**

(Two red and two black)--these batteries are optional)

If two additional pairs of 12V 7AH batteries are used, these four batteries must be placed on the lower HW1489 Shelf as follows:

Place batteries as shown with terminals facing forward. Take one of the supplied **9GEMCBHM2ASSY** small blue single-wire harness and short the left battery negative terminal and the right battery positive terminal. Take the shorter pair of red and black wires and connect the red to the left battery left terminal, then connect the black to the right battery negative right terminal. Reposition the batteries to the right side of the bottom shelf in the normal operating position. Now take two more batteries and put them on the left side of the bottom shelf and repeat same wiring connections.

AC is wired, but not on, and the DC is wired but plugged in (the **9GEMCBHM1LE** harness plug is still not connected).

**NOTE:** To calculate the available standby time refer to the Standby-Battery Calculation Worksheet at the back of this manual.

## 42. POWERING UP THE SYSTEM

Re-check all battery connections to ensure terminals are properly polarized.

Turn on (close) the dedicated circuit breaker of the 120VAC. Confirm keypads are powered up with backlighting. Next insert the polarized **9GEMCBHM1LE** harness connector plug. Remember to power on any auxiliary power supplies.

**GEMC-HSKIT1425 (LARGER) ENCLOSURE INSTALLATION (CONT'D)**

## 43. TESTING THE SYSTEM

After installation is completed and after any re-programming, test the system as follows.

1. Call the central station to inform them of the test.
2. Initiate an alarm, preferably on a zone that activates a steady siren, and verify proper signaling.
3. Wait 5 minutes.
4. Call the central station to confirm their receipt of a good transmission.

**Note:** Be sure to test all enabled keypad panics.

### CHECKING TRANSMITTERS

The status of each transmitter may be checked at the keypad. Referring to the control panel installation instructions and the user's guide for the keypad in use, display transmitter status to show (a) the zone to which transmitter point is mapped; (b) the transmitter's 6-digit RF ID number (c) the point number; (d) transmitter status (normal, open, low battery, etc.); and (e) the signal strength of its last transmission. Also see the GEMC-RECV Wireless RF Receiver installation instructions (WI1682) for additional information, such as wireless system trouble codes.

#### SIGNAL STRENGTH

Relative signal strength is displayed on a scale of 1-10, with 10 being the strongest. A reading of "No Data S —" denotes that a report from that not yet been received. Readings less than "4" indicate reception is poor and may be unreliable. If this is the case, the use of a second receiver located closer to the transmitter is advisable and required in mercantile installations. For installations that include several transmitters, multiple receivers may be connected to the panel. (Only the highest signal strength will be displayed).

In Mercantile installations, a reading of at least 5 is required. Additionally, if the mercantile receiver does not receive a transmission signal strength of at least 5 within 4 hours, a transmitter supervision fail trouble for that transmitter will be generated on the system.

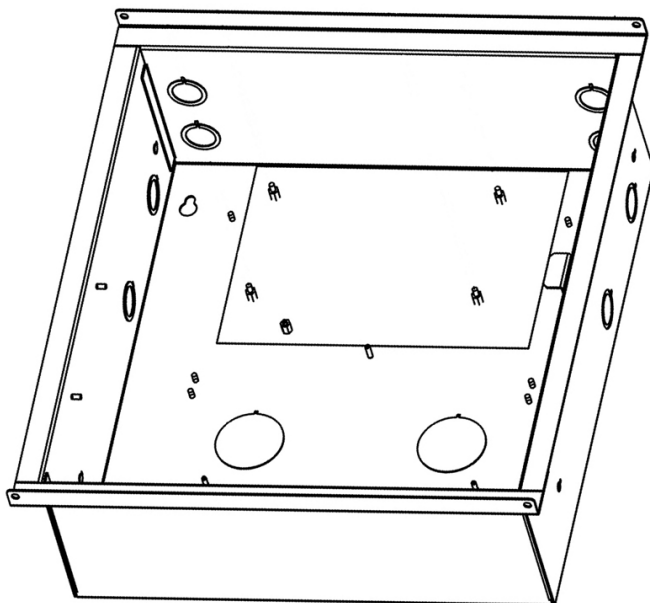
It should be noted that UL has determined a signal strength of 4 (3dB lower than the required signal strength of 5) would be sufficient in residential systems. However, the 3dB higher signal strength is required in mercantile installations to ensure that the level is sufficient for alarm conditions to be received when initiated.

#### DETERMINING TRANSMITTER SIGNAL STRENGTH

For Fire transmitters, unlock the Fire keypad and press **MENU**; then press **NEXT** or **PRIOR** to scroll to the menu option "**DISPLY RF XMITTER STAT**". Press **YES** to select. For Burg transmitters, enter your keypad dealer program code at the Burg keypad and scroll to menu option "**DISPLY RF XMITTER STAT**" and press **ENTER**. When in this mode, either keypad beeps when the zone is opened or closed only if the signal strength of the transmitter is 4 or greater.

# GEMC-HSKIT1416 (SMALLER) ENCLOSURE

## 1. DETERMINE INSTALLATION TYPE



Before installing anything, determine if this installation is a commercial or residential installation type. Listed below are the 8 types.

- **UL Commercial Fire (Local)**
- **UL Commercial Fire (Reporting)**
- **UL Commercial Burglary (Local)**
- **UL Commercial Burglary (Reporting)**
- **UL Combination Commercial Fire and Burglary (Local)**
- **UL Combination Commercial Fire and Burglary (Reporting)**
- **UL Combination Residential Fire and Burglary (Local)**
- **UL Combination Residential Fire and Burglary (Reporting)**

See the UL requirements previously in this manual. In addition, see section "GEMC-HSKIT1425 INSTALLATION AND MOUNTING" to determine the optimum installation type. Also see the following sub-headings:

- **Planned System Layout**
- **Pre-Wiring and Pre-Programming**
- **Final Mounting Location**

### Determine Enclosure Type

Two C-Series enclosures are available:

- The larger enclosure, **GEMC-HSKIT1425**, can hold up to four pairs of 7AH batteries, and one 7AH Burglary battery.
- The smaller enclosure, **GEMC-HSKIT1416**, can hold

up to two pairs of 7AH batteries. Use the **GEMC-HSKIT1416** with the following accessory combinations, each with their own special mounting hardware provided:

1. one or two SLC boards;
2. one GEMC-NL-MOD only;
3. one GEMC-NL-MOD and one SLC board;

Use the larger enclosure (**GEMC-HSKIT1425**) for all Combination systems.

For **Commercial Fire** applications, the larger enclosure permits the use of more batteries, thus allowing for more constant battery standby power (permitting the motherboard and all devices to be powered for a full 24 hours without AC present).

For **Residential** applications, if the need for constant battery standby power is less (such as with the use of SLC devices that use much less current as compared with EZM's), fewer batteries are required, and the smaller enclosure can be used.

To obtain a general idea as to which type of enclosure will be needed for your system, use the detailed diagram of the Fire alarm system and calculate the number of devices to be used, and the current required for each device. Multiply the combined standby current (in amperes) by the standby time (in hours) to obtain the battery capacity (in ampere-hours), then divide this total by 7AH (for each battery) to determine approximately how many 7AH batteries are required.

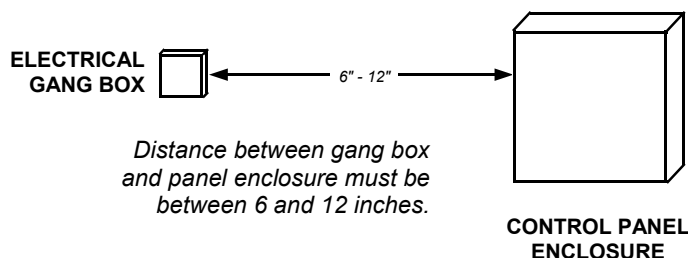
**Note:** Be aware that it is not completely accurate to merely multiply the combined standby current (in amperes) by the standby time (in hours) to obtain the battery capacity (in ampere-hours). Other factors (control-panel charging capabilities, temperature, battery condition, etc.) can affect battery operation. To compute a more accurate ampere-hours, see the "STANDBY-BATTERY CALCULATION WORKSHEETS", or proceed as follows:

1. Create the account in the PCD-Windows Quick-loader.
2. Program all peripherals used on the system.
3. Open the "System Current Calculator" utility.
4. Complete all fields within each tab of the utility.
5. Use the resultant "**24V Standby Current**", "**12V Standby Current**", "**24V Standby + Alarm Current**", and "**12V Standby + Alarm Current**" and the associated standby battery charts provided below to determine the required battery configuration.

**GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)****2. ROUTING CONTINUOUSLY POWERED 120VAC**

If not already installed, mount a separate electrical gang box (single or double gang) located no closer than 6 inches and no further than 12 inches from the upper left side of the eventual mounting location of the control panel enclosure.

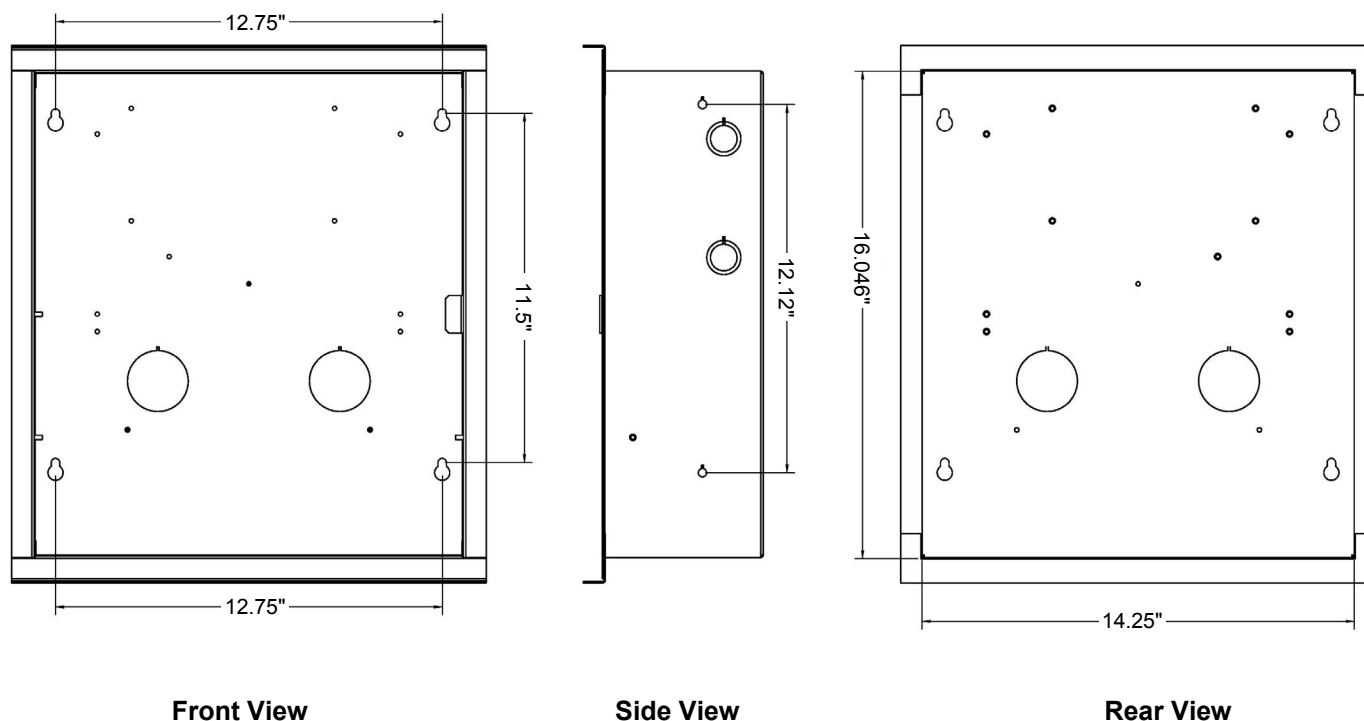
A continuously-powered (un-switched) 120VAC source with a maximum 15A dedicated branch circuit with grounding conductor must be wired into this gang box by a licensed electrician in accordance with all national and local electrical codes. In addition, ensure the electrician leaves at least 6 inches of additional white and black wiring inside the enclosure to allow these connections to be made easily.

**3. MOUNTING THE CONTROL PANEL ENCLOSURE**

Choose a mounting location accessible to the electrical gang box (described above) and telephone lines (keep telephone wiring away from keypad wires) and/or a computer server for connection to the Internet.

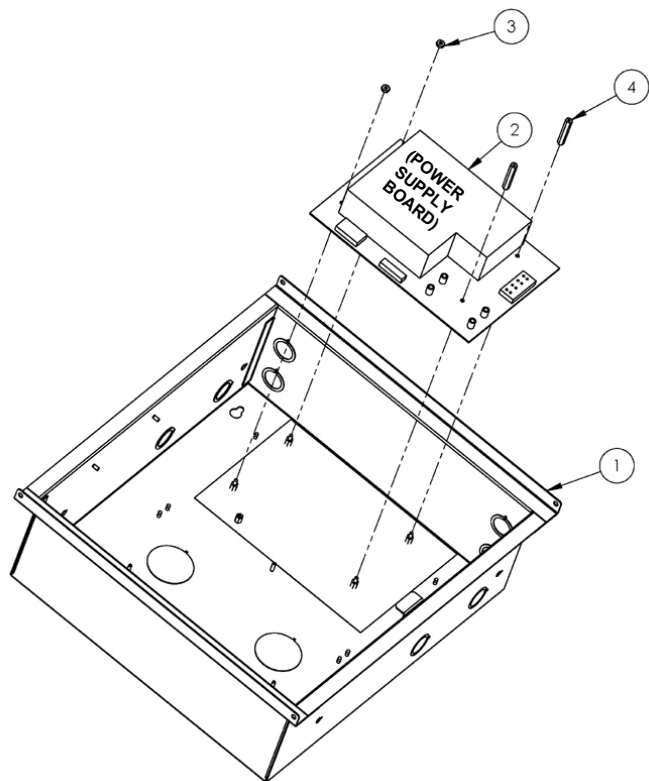
DO NOT mount the control panel outdoors or in a damp location or where the environmental conditions exceed 0-49°C at any time. Remove appropriate knockouts for cables (in Commercial Burglary surface mount applications remove all unused side and top knockouts, as they must be protected with a washer nut and bolt as provided by the GEMC-KOTAMPERKIT Commercial Bur-

glary Tamper kit). Place the control panel at a convenient viewing height and mark the mounting holes. Attach the enclosure using screws suitable for the mounting surface. The enclosure is to be fastened to structural members, and the installation is to be made in a restricted access location. In Commercial Burglary recessed mounted applications, the GEMC-KOTAMPERKIT to protect unused knockouts is not required. In recessed mounted applications, holes shown in the "Side View" below are available for securing the housing to wall studs, if necessary.



## GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)

### 4. INSTALL THE POWER SUPPLY BOARD



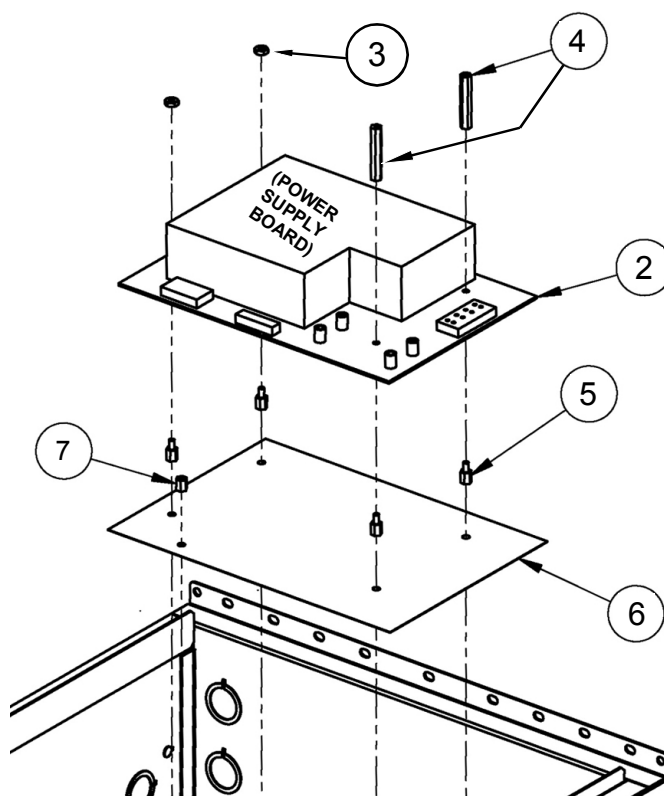
EXPLODED VIEW OF POWER SUPPLY BOARD.  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

The GEMC-PS24V7A or GEMC-PS24V4A power supply boards are mounted inside the enclosure under the control panel motherboard, and therefore must be the first board installed in the enclosure. *Ensure the continuously-powered 120VAC source circuit breaker is turned off before proceeding.*

**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed. Also note that the physical power supply used in your installation may differ slightly in appearance from the illustration of the power supply shown in this manual.

1. **Ensure the power supply fishpaper barrier** (item 6 in the illustration below) is situated below the four pre-installed male standoffs inside the Enclosure Base. This fishpaper provides an electrical barrier for the power supply board and **MUST** be installed.
2. **Install the four male/female standoffs** (item 5 in the illustrations), securing the fishpaper. Also install the spacer (item 7) as shown.

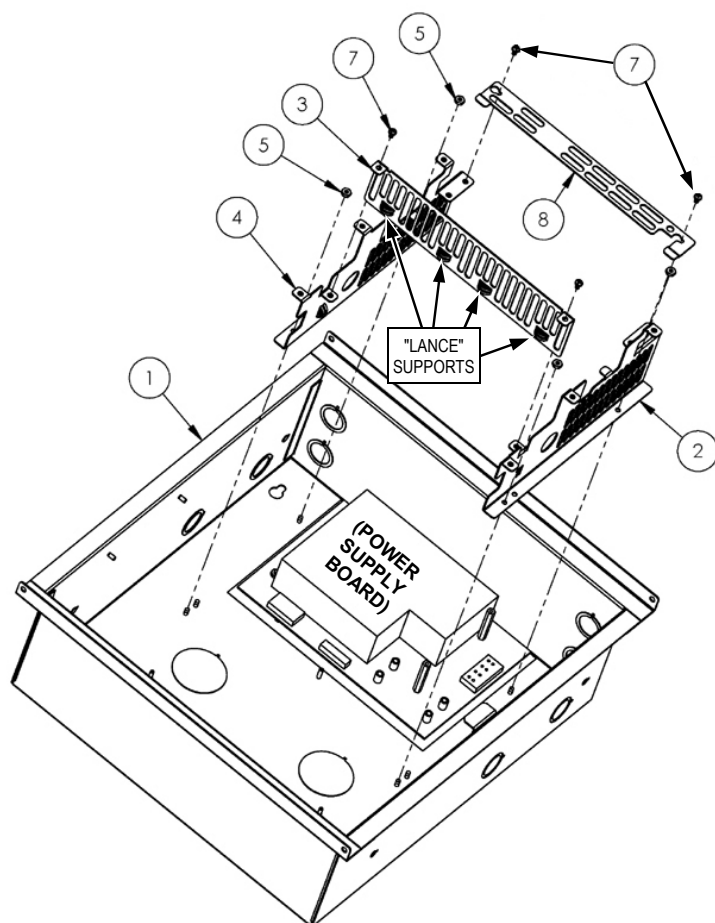
3. **Place the power supply board** over the four stand-offs (item 5) and the spacer (item 7) and secure the board with two locking nuts (item 3) provided.
4. **Install the two long brass standoffs** (item 4) into the upper right and lower right standoffs (item 5) as shown.



CLOSE-UP VIEW OF POWER SUPPLY BOARD

Item	Part No.	Description	QTY
1	H448	Enclosure base	1
2	PCB	Power Supply	1
3	N101	6-32 kep nut	2
4	SO133	Female / Female Standoff	2
5	SO211	Male / Female Standoff	4
6	SI175	Fishpaper	1
7	SO216	Spacer 6-32 (1/4" x .313)	1



**GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)****5. INSTALL POWER SUPPLY SHIELDS**

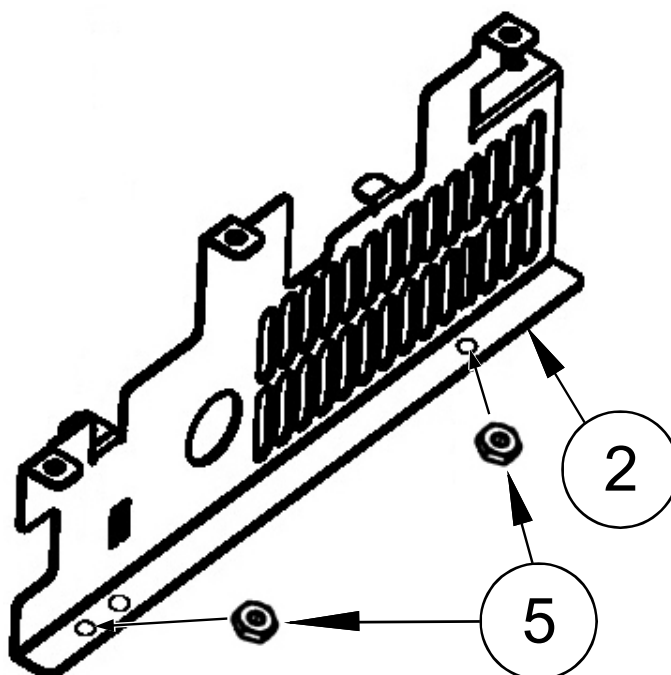
PRE-INSTALLED POWER SUPPLY SHIELDS  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS



Item No.	Part Number	Description	QTY
1	HW1688	Enclosure base	1
2	HW1492	Right Side Plate	1
3	HW1493	Power Supply Shield	1
4	HW1491	Left Side Plate	1
5	N101	6-32 kep nut	4
6	SO211	Male/female standoff (not shown)	4
7	SC270	Screw 6-32 x .25 with washer	4
8	HW1764	Power Supply Shield	1

**Four Power Supply Shields**

1. Place the **Right Side Plate** (item 2) and the **Left Side Plate** (item 4) over the threaded studs that are embedded in the enclosure base; secure with four nuts (item 5) as shown.
2. Place the **Power Supply Shield** (item 3) oriented with the "lance supports" facing towards the bottom of the enclosure; secure with two 6-32 screws (item 7) inserted into the threaded holes located in both the Right Side Plate (item 2) and the Left Side Plate (item 4). Tighten all screws and nuts to ensure adequate grounding.
3. Install the **Power Supply Shield** (item 8). The keyed holes in this shield (see image below) allow the shield to be placed over two loosely-installed 6-32 screws (item 7). These screws are pre-installed into the Right Side Plate (item 2) and the Left Side Plate (item 4). Be sure "Notch" is installed to the right as shown. Loosen and re-tighten to secure.



(NOTE: THREE STUDS WILL PROTRUDE THROUGH THE THREE "RIGHT SIDE PLATE" (ITEM 2) HOLES; BUT ONLY TWO NUTS (ITEM 5) ARE NEEDED TO SECURE THE RIGHT SIDE PLATE.

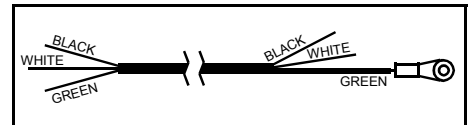
## GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)

### 6. ROUTING THE GEMC-120VAC HARNESS

At this point, both the control panel and electrical gang box are mounted, and the electrical gang box contains 3 wires that provide a continuously-powered (un-switched) voltage source and a grounding conductor. **IMPORTANT:** Turn off the 120VAC branch circuit breaker before proceeding.

#### GEMC-120VAC Harness

The GEMC-120VAC harness must run from the electrical gang box to the control panel enclosure inside either plastic or metal conduit. Mount this conduit between the electrical gang box and the control panel enclosure using fasteners appropriate for the installation. Note that one end of the GEMC-120VAC harness contains three protruding wires (green, white and black); the other end contains a ring connector connected to the green (ground) wire. *Route the GEMC-120VAC into the conduit such that the end of the harness with the ring connector is located within the enclosure, and the other end (with the protruding wires) remain inside the electrical gang box. The portion of the harness between the enclosure wall and Left Side Plate (HW1491) is protected by the harness tubing to ensure separation between power limited wires connected to the panel and the and non-power limited 120VAC wires of the harness.*

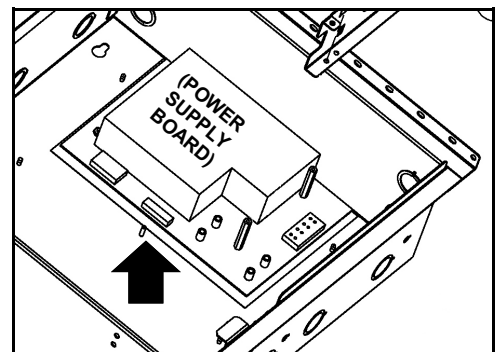


GEMC-120VAC HARNESS

Inside the electrical gang box are the three branch circuit 120VAC wires: Hot (black), neutral (white) and earth ground (green or bare copper). As with the previous electrical connections, all of the following electrical connections must be performed by a licensed electrician in accordance with all national and local electrical codes.

#### Connect Earth Ground

Inside the gang box, connect the branch circuit ground wire to the GEMC-120VAC harness protruding green ground wire using a suitable connector (such as a wire nut). Place the harness green ground ring connector (located inside the control panel enclosure) on the enclosure ground stud as shown in the illustration at right (this "branch circuit ground" *must always be first on and last off the enclosure ground stud*). Secure the ring connector to the stud with the 6-32 nut with star washer (part # N101) and tighten securely. Note that the ground stud is long enough for a second ring connector and nut, as described in the next step.



GROUND STUD LOCATION (ARROW)

Locate the power supply ground wire (a short 14 AWG green pigtail splice wire with a ring connector). Place this ground pigtail ring connector on the same enclosure ground stud used in the previous step, and secure this ring connector to the stud with another 6-32 nut with star washer (part # N101) and tighten securely. Lift the plastic terminal block cover and connect the other end of the pigtail to the center terminal (marked with a ground symbol) of the GEMC-PS24V7A or GEMC-PS24V4A power supply board.

#### Connect Hot and Neutral Wires

Inside the electrical gang box, connect the branch circuit white neutral and black hot wires to the white and black wires of the GEMC-120VAC harness using suitable connectors (such as wire nuts).

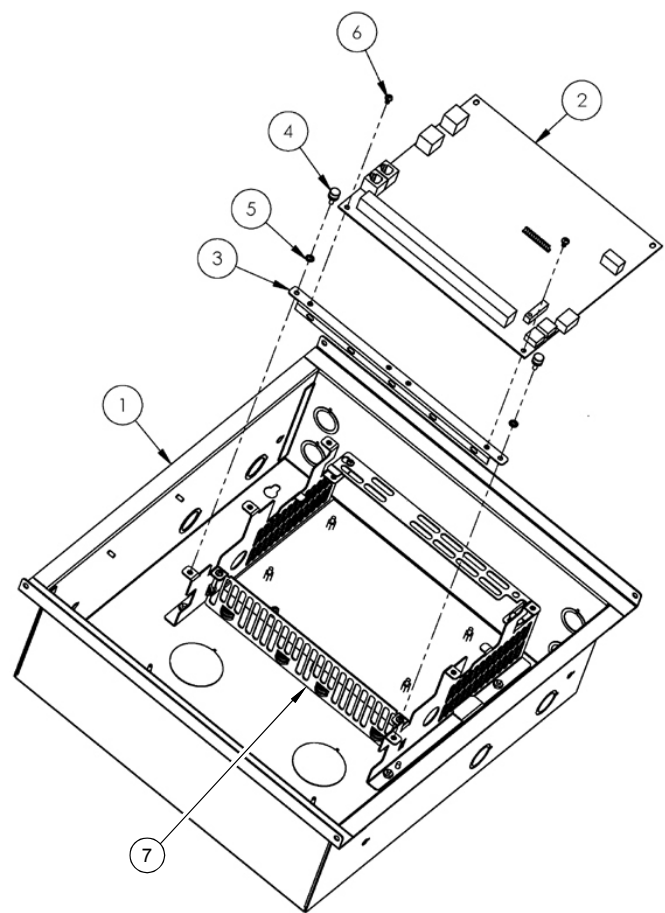
At the other end of the GEMC-120VAC harness (located inside the control panel enclosure), connect each wire to the terminal block of the power supply board as follows: White neutral wire to "N" right terminal, black hot wire to "L" left terminal. Tighten all terminal screws securely and press the terminal block cover back in place.

#### Enclosure Door Ground

The enclosure cover must also be connected to ground. On the inside of the enclosure is a pre-installed ground cable. Connect this ground cable to the earth ground stud located inside the enclosure on top of the other ground wires previously installed.

GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)

7. INSTALLING THE MOTHERBOARD

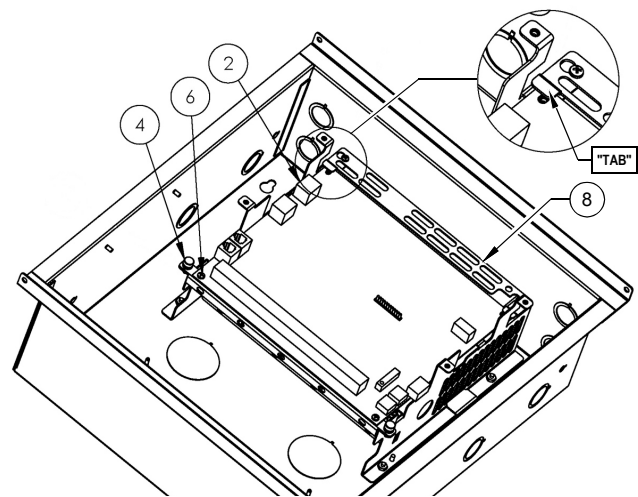


**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

1. **Install and secure the HW1490 Support bar** (item 3 in the illustration at left) to the motherboard with thumbscrews (item 4) as shown. **Note:** The HW1490 Support Bar may be pre-installed.
2. **Connect the power supply plug** into the socket located on the top side of the motherboard.
3. **Slide the top edge of the motherboard** under the tabs of the HW1764 Power Supply Shield (item 8). Secure the motherboard using two 6-32 screws (item 6) as shown.

Make note of the location of a second motherboard receptacle located on the top right side of the motherboard. In a future step, this receptacle will connect to the 9GEMCBHM1LE battery harness.

**Note:** Ensure all three wires connected to the power supply terminals are at least ¼" away from the HW1493 Power Supply Shield.



ASSEMBLED VIEW. THE EDGE OF THE MOTHERBOARD SLIDES UNDER THE TABS OF THE HW1764 POWER SUPPLY SHIELD (SHOWN IN CLOSE UP)

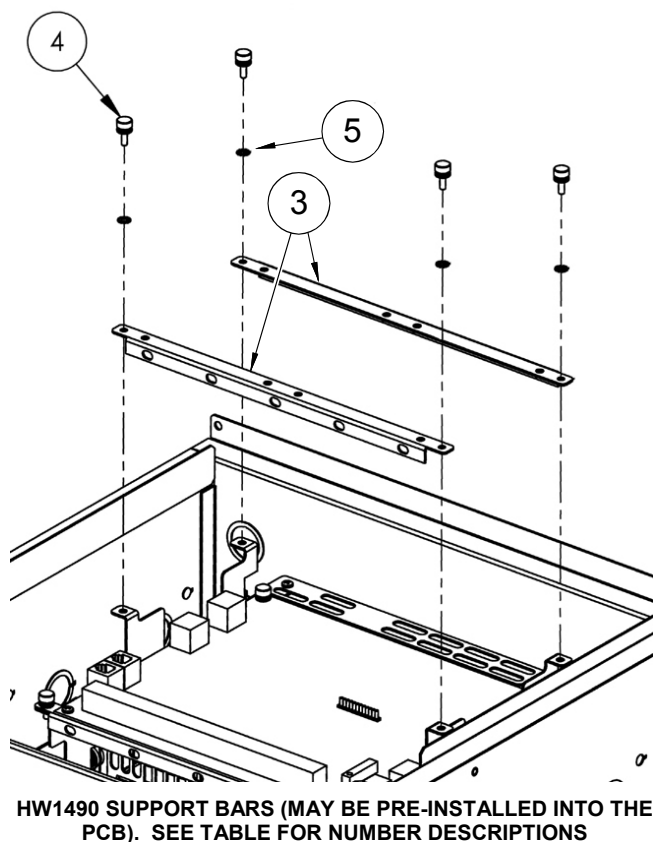
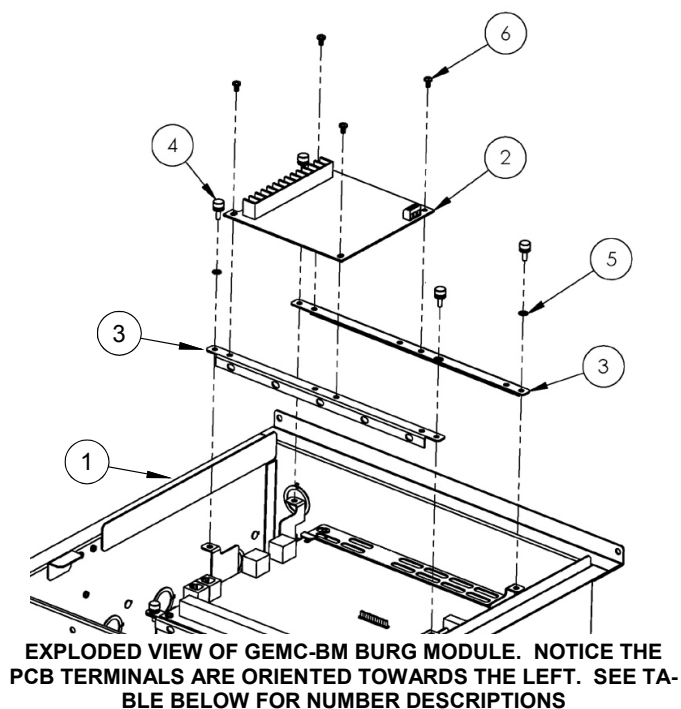


THE HW1764 POWER SUPPLY SHIELD (ITEM 8)  
"TABS" (ARROWS).

Item	Part No.	Description	QTY
1	H448	Enclosure base	1
2	PCB	Motherboard	1
3	HW1490	Support bar	1
4	SC628	Thumbscrew	2
5	WA107	#6 External Tooth Star Washer	2
6	SC270	Screw 6-32 x .25 with washer	2
7	HW1493	Front Power Supply Shield	1
8	HW1764	Top Power Supply Shield	1

## GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)

### 8. INSTALLING THE BURGLARY MODULE (OPTIONAL)



#### **GEMC-BM**

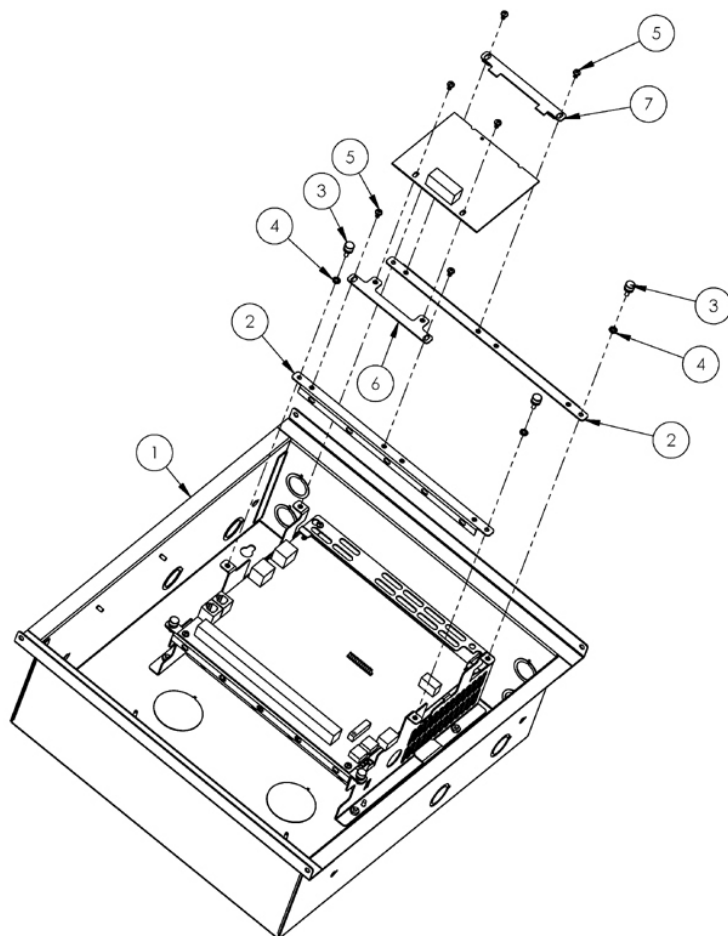
If installing a Burglary system, you must mount one of the two optional Burglary Modules. The GEMC-BM depends upon the motherboard battery standby power and supervision. **Note:** The GEMC-BM/PS cannot be used in this (smaller) housing.

**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed. For example, the Support Bars (item 3 in illustrations) are pre-installed at the factory, but can be removed if required. **If re-assembly is required**, proceed as follows:

1. **Place two interchangeable HW1490 Support Bars** (item 3) on the top and bottom of the motherboard with vertical edges facing out/down as shown. **Note:** The holes in the vertical edges of the support bars that are not used for mounting are tie wrap holes.
2. **Place the Burglary Module PCB** on top of the Support Bars and secure using the 6-32 screws (item 6).
3. **Align the combination HW1490 Support Bars** and Burglary Module PCB with the holes located in HW1492 Right Side Plate and the HW1491 Left Side Plate. Secure using four thumbscrews (item 4) and four external tooth star washers (item 5).
4. **Orient the Burglary Module** above the motherboard with its terminals towards the **left side**. On the right side of the Burglary Module is a polarized 12 pin female connector "J2"; insert J2 into the male 12 pin connector "J8" on the motherboard. Using the four 6-32 screws, mount the Burglary Module to the two HW1490 Support Bars.

When the GEMC-BM/PS is used, the red non-power limited battery flying lead must be secured at least 1/4" away from power-limited wires inside the enclosure using the provided tie wraps. Secure wires to the several tie wrap holes in the HW1490 Support Bar. **Note:** See installation instructions (referenced above) for terminal descriptions and correct jumper settings.

Item	Part No.	Description	QTY
1	HW1688	Enclosure base	1
2	PCB	Burg PCB	1
3	HW1490	Support Bar	2
4	SC628	Thumbscrew	4
5	WA107	#6 External Tooth Star Washer	4
6	SC270	Screw 6-32 x .25 with washer	4

**GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)****9. INSTALLING THE SLC BOARD(S) (OPTIONAL)**

**GEMC-FW-SLC SIGNALING LINE CIRCUIT MODULE**  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

**Install the optional GEMC-FW-SLC and /or the GEMC-BSLC modules.** Any combination of two modules can be mounted as needed. Prior to mounting, correctly address the external output DIP switches and the address DIP switch. (For example, to address a board as number 1, the left switch marked "1" is up, and the right switch marked "2" is down).

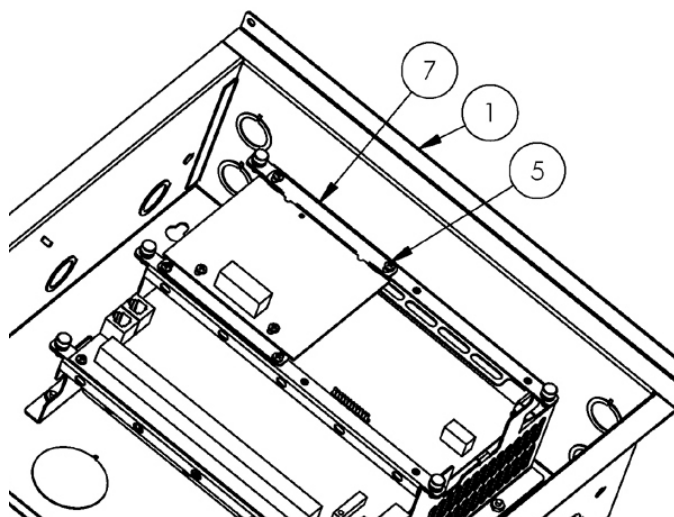
First connect the 9SLCCBLASSY four wire harness into the upper right connector of the SLC board. The other end of the 9SLCCBLASSY four wire harness must be inserted into the appropriate SLC jack number (1 or 2) that corresponds to the address DIP switch selected on the SLC board.

If needed, install a second SLC board in the same manner as the first.

**Note:** A maximum number of four (4) GEMC-RECV's may be used in the system; this maximum is reduced by one for each GEMC-FW-SLC (Fire SLC device) or GEMC-BSLC (Burg SLC device) used in the system.

**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

**Important:** Do not map wireless or SLC devices to EZM zones to which conventional devices are wired.

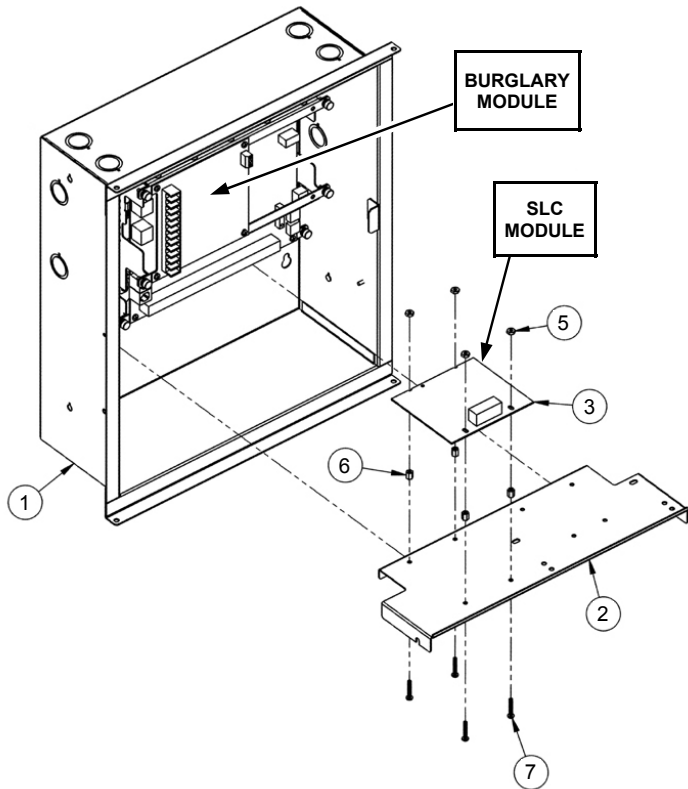


**GEMC-FW-SLC SIGNALING LINE CIRCUIT MODULE**  
(ASSEMBLED VIEW, CLOSE UP)

Item	Part No.	Description	QTY
1	H448	Enclosure base	1
2	HW1490	Support bar	2
3	SC628	Thumbscrew	4
4	WA107	#6 External Tooth Star Washer	4
5	SC270	Screw 6-32 x .25 with washer	6
6	HW1783	Mounting Bracket (SLC PCB)	1
7	HW1784	Mounting Plate (SLC PCB)	1

## GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)

### 10. INSTALLING AN SLC BOARD WITH A BURGLARY MODULE



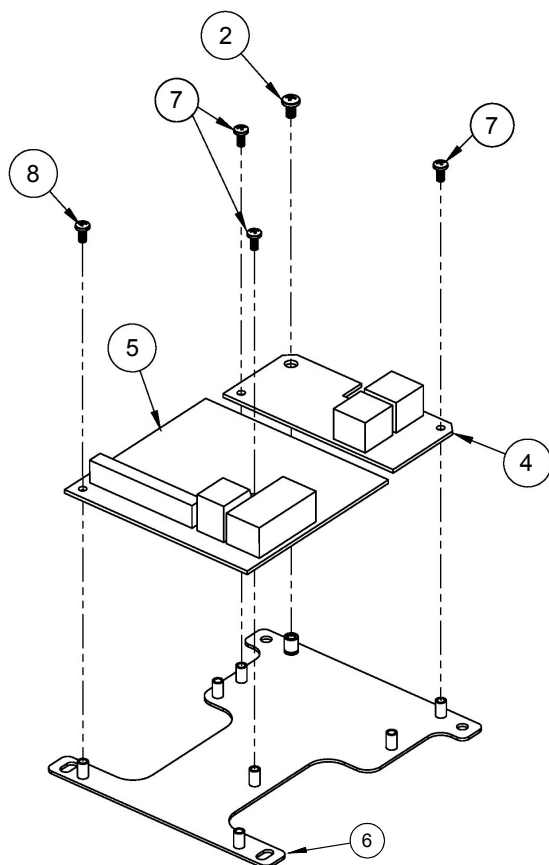
PREVIOUSLY INSTALLED BURGLARY MODULE AND NEW SIGNALING LINE CIRCUIT MODULE (EXPLODED VIEW)

If the optional GEMC-BM Burglary Module is installed, and you also wish to install an Fire or Burglary SLC module, secure the SLC module PC board to the HW1489 battery "Shelf" as shown. **Note:** If the GEMC-NL-MOD will be used, install the GEMC-NL-MOD to the right of the Burglary Module. Install the SLC Module as follows:

1. Insert four SC631 screws (item 7) such that the threads protrude from the bottom of the HW1489 battery Shelf as shown. Secure the screws into the SO216 Spacers (item 6) as shown.
2. Place the PC Board on top of the SO216 Spacers and secure with the 6-32 kep nuts (item 5) as shown. Do not over-tighten nuts.

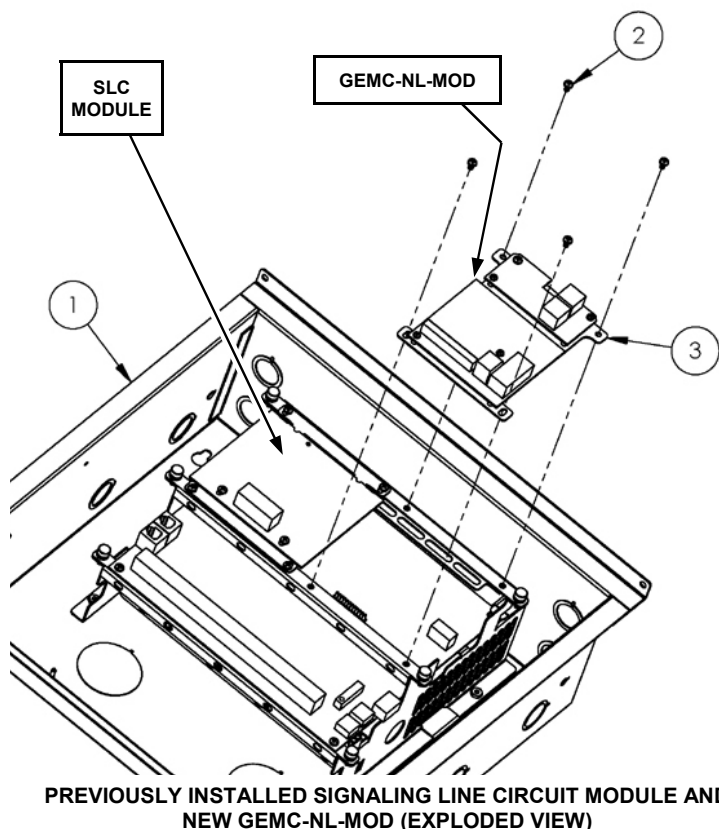
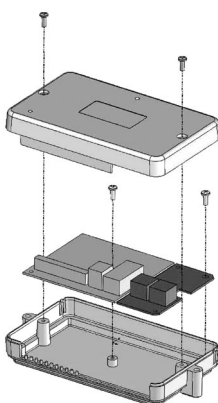
**Note:** The GEMC-BM/PS cannot be used in this (smaller) housing

Item	Part No.	Description	QTY
1	H448	Enclosure base	1
2	HW1489	Battery Shelf	1
3	PCB	SLC Module	1
4	HW1493	Power Supply Shield (not shown)	1
5	N101	6-32 nut	4
6	SO216	Spacer, 1/4" x .313 6-32 tapped	4
7	SC631	6-32 x 7/8 pph screw	4

**GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)****11. INSTALLING A GEMC-NL-MOD WITH AN SLC BOARD (OPTIONAL)****ASSEMBLE THE GEMC-NL-MOD**

If using the Internet for communications, and using the GEMC-HSKIT1416 (smaller) control panel enclosure, the optional GEMC-NL-MOD network communication module PC board must be removed from its plastic housing and mounted on a special metal mounting bracket as follows:

1. With a small screwdriver, open the top of the GEMC-NL-MOD plastic housing, then carefully unscrew the two PC boards from the plastic housing base (see image at right).
2. Place the two PC boards on top of the HW1785 housing plate as shown in the illustration above. Be sure the terminals and sockets are oriented correctly with respect to the mounting plate as shown.
3. Using screws SC270, SC554, SC632 (items 2, 7 & 8), carefully mount the PC boards into the metal mounting bracket, using the correct screw in each of the 8 threaded standoffs (not all standoffs are used with screws). Work slowly and use the correct screws as shown in the illustration above and in the table at right.



4. Prior to mounting the GEMC-NL-MOD, correctly address the external output DIP switches and the address DIP switch. (For example, to address a board as number 1, the left switch marked "1" is up, and the right switch marked "2" is down).
5. Mount the assembled board into the GEMC-HSKIT1416 panel enclosure with SC270 screws (item #2) as shown in the illustration above. Note the orientation of the installed GEMC-NL-MOD, with its terminals and jacks towards the right side.

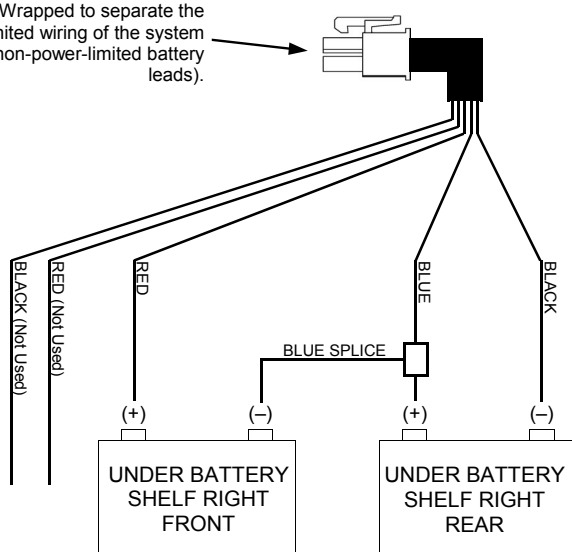
**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

Item	Part No.	Description	QTY
1	H448	Enclosure base	1
2	SC270	Screw, 6-32	4
3	GEMC-NL-MOD	Assembly	1
4	9NL-ULBDPCBD	PCB	1
5	9NL-MODPCBD	PCB	1
6	HW1785	Mounting Plate	1
7	SC554	4-40 x .250" L Sems Screw	3
8	SC632	4-40 x .250" L Nylon Screw	1

## GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)

### 12. ROUTE THE 9GEMCBHM1SE BATTERY HARNESS

(Shrink-Wrapped to separate the power limited wiring of the system from the non-power-limited battery leads).



THE 9GEMCBHM1SE BATTERY HARNESS WIRED FOR MINIMUM REQUIREMENTS: 1 PAIR OF 12V BATTERIES

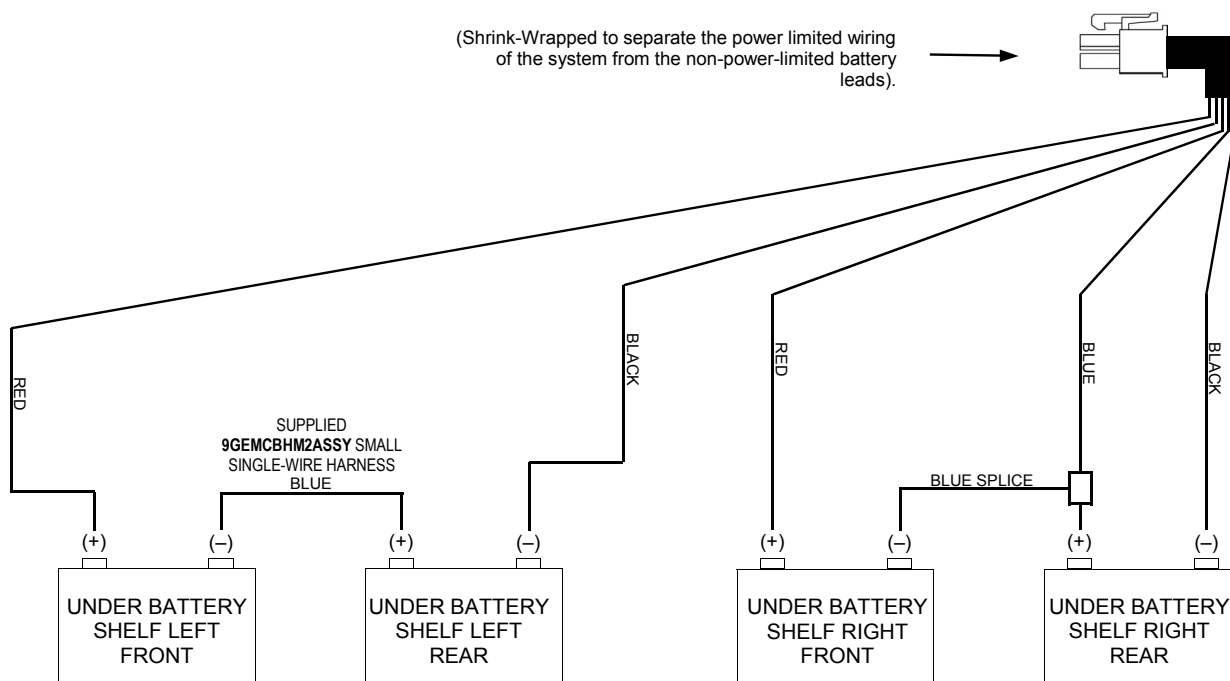
Before connecting the **9GEMCBHM1SE** battery harness to the Gemini C-Series GEMC-XXXMB motherboard or the GEMC-NACXX NAC Extender, be sure the connections made from the harness to the batteries are correct and polarized, as shown in the illustrations.

The polarized battery harness **9GEMCBHM1SE** supports up to 2 pairs of either 7AH, 7.5AH or 8AH 12V batteries (**Note:** All batteries must be of the same AH rating).

The minimum requirement is 2 pairs of 12V 7AH batteries that must be installed as shown in the illustration at left. The batteries will be placed in the upper HW1489 Shelf and situated to the right side (as detailed in the following section).

**Optional Configuration:** The illustration below displays the wiring for up to 3 pairs of 7AH, 7.5AH or 8AH 12V batteries (totaling 4 pairs maximum) used for additional standby current (See tables in sections "**GEMC-PS24V7A 7 AMP POWER SUPPLY**" and "**GEMC-PS24V4A 4 AMP POWER SUPPLY**" (data also located in W11646 and W11702).).

(Shrink-Wrapped to separate the power limited wiring of the system from the non-power-limited battery leads).



THE 9GEMCBHM1SE BATTERY HARNESS WIRED FOR MAXIMUM STANDBY CURRENT: TWO PAIRS OF 12V BATTERIES



GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)

Routing the Harness (cont'd)

Take hold of the **9GEMCBHM1SE** harness plug and insert the plug through the bottom rear right corner of the upper HW1489 Shelf (see location "C" in the image below). Pull the harness plug up toward the motherboard receptacle (located on the right side of the motherboard); do not insert the connector yet--simply place the plug in the vicinity of the motherboard receptacle, awaiting insertion.

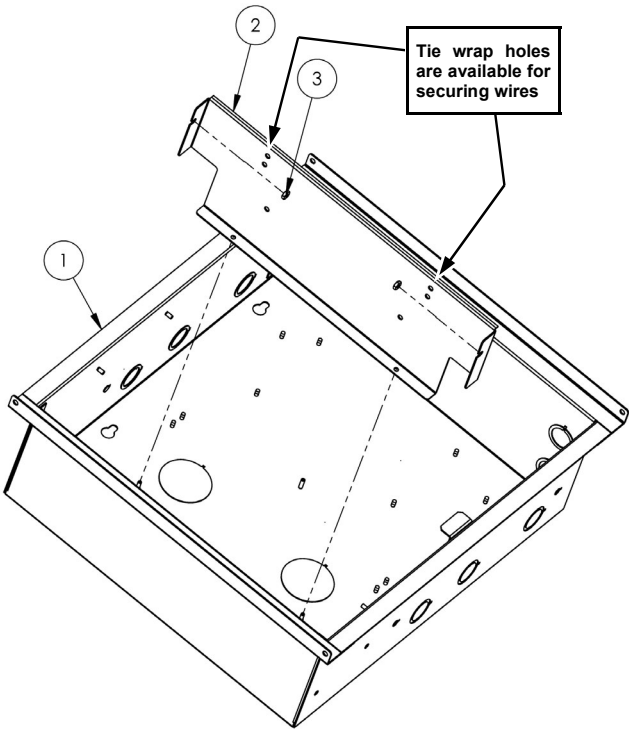
**Note:** Ensure **only** the shrink-wrapped part of the **9GEMCBHM1SE** harness is able to come in contact with the HW1489 Shelf.

With the harness plug situated next to the motherboard receptacle (awaiting insertion), seven (7) wires now protrude from the bottom rear right corner of the upper HW1489 Shelf. These seven wires can be organized (and should be physically separated into) the following three groups:

- Two long wires, Black and Red color
- Two medium-length wires, Black and Red color
- Three short wires, Black, Red and Blue (notice the Blue wire is spliced with a second lug)

Take hold of the two black and red long wires and two black and red medium-length wires and route these 4 wires through the bottom rear right corner of the **lower** HW1489 Shelf for access to the optional lower batteries.

The other three short wires (black, red and blue with its spliced lug) remain protruding from the bottom rear right corner of the **upper** HW1489 Shelf.



BATTERY SHELF (PART HW1489)  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS

**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

Item No.	Part Number	Description	Quantity
1	H448 base assembly	Enclosure base	1
2	HW1489	Battery Shelf	1
3	N101	6-32 kep nut	2

## GEMC-HSKIT1416 (SMALLER) ENCLOSURE INSTALLATION (CONT'D)

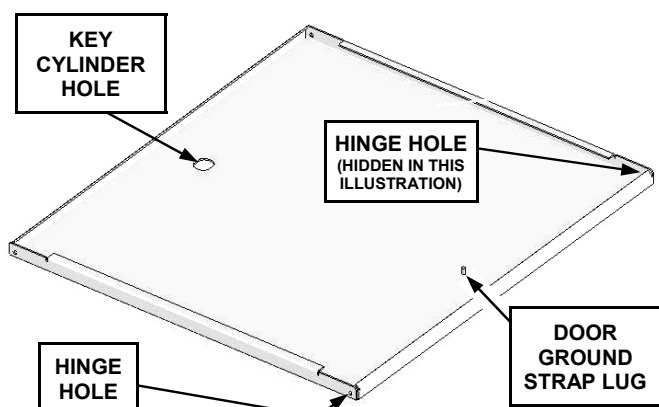
### 13. INSTALL THE ENCLOSURE DOOR

#### Install the Enclosure Door

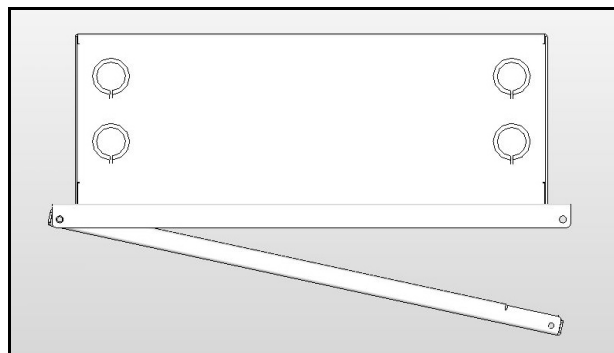
When the enclosure door (H467) is placed over the enclosure base, two hinge holes located along the top and bottom edge of the door (shown in illustration below) align with two hinge holes on the **left** side of the enclosure base.

**Note:** The base only contains one door ground strap lug, therefore the door must be installed with the door ground strap lug adjacent to the base ground strap lug (door opens with a "left hand reverse" door swing only, as shown in the "Top View Door Swing" illustration, below).

Into each hinge hole shown, insert a 10-24 x 1.5" thread cutting screw; install both screws fully.



ENCLOSURE DOOR WITH SHIELDS  
SEE TABLE BELOW FOR NUMBER DESCRIPTIONS



TOP VIEW DOOR SWING

#### Connect Door Ground Strap

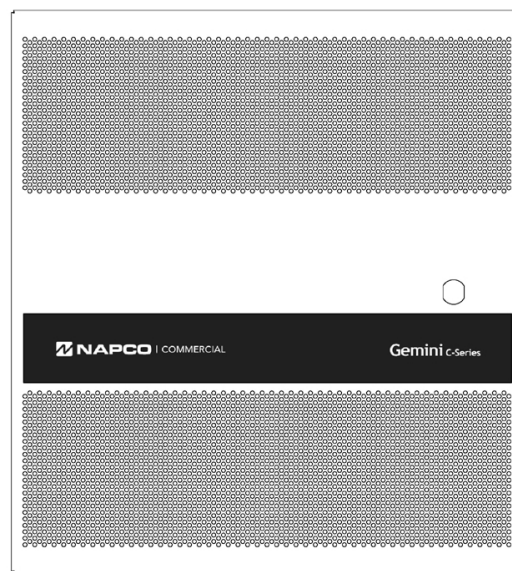
A short (3") ground strap wire with ring connectors at each end is designed to ensure the control panel door is always connected to earth ground. Inside the control panel enclosure, connect one of the ring connectors to the enclosure ground stud. Use the ground stud located on the left or right side of the enclosure, as determined by the door swing (see the illustration for location of the two studs). Secure the ring connector to the stud with a

6-32 nut with star washer (N101). Connect the other end of the ground strap to the enclosure door ground stud. Secure with a 6-32 nut with star washer (N101).

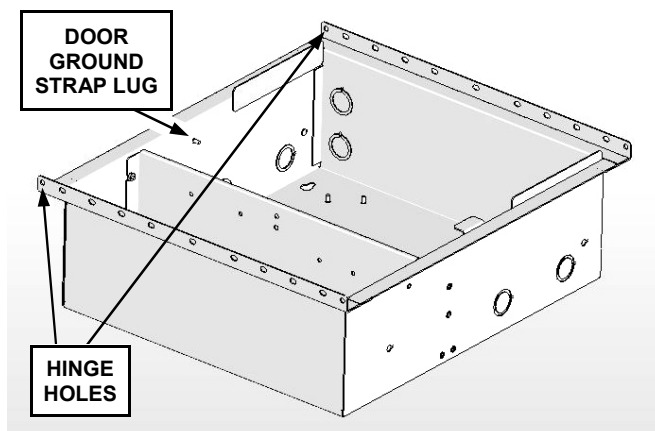
**Note:** Some items are pre-installed at the factory. To ensure all hardware and component mounting holes are suitably aligned, loosen and re-tighten all pre-installed screws as needed.

#### Enclosure Door Label

Apply the label to the door, just above the bottom ventilation holes, as shown in the image below. **Note:** The label shown in the image may differ from the label provided, depending on the control panel model.



Door Label Location



ENCLOSURE BASE

## GEMINI C-SERIES WIRING DIAGRAM

**WIRING DIAGRAM**  
**GEMC-255MB, GEMC-128MB,**  
**GEMC-96MB & GEMC-32MB**



**NAPCO SECURITY SYSTEMS, INC.**  
**AMITYVILLE, N.Y. 11701**

**NAPCO** WARNING

INCORRECT CONNECTION MAY RESULT  
IN IMPROPER OPERATION OR DAMAGE  
TO THE SYSTEM.

- NOTES:
- TO THE SYSTEM.
1. CONNECT ONLY TO POWER LIMITED CIRCUITS.
  2. NAC'S A, B & C: 2A MAXIMUM CURRENT REGULATED NOTIFICATION APPLIANCE CIRCUIT.
  3. NAC D: 2A MAX CURRENT, ADJUSTABLE TO 24V OR 12V NOTIFICATION APPLIANCE CIRCUIT.
  4. AUX PWR: 650mA MAXIMUM, 12V REGULATED OUTPUT. REM PWR: 750mA MAXIMUM, 12V REGULATED OUTPUT.
  5. FIRE AUX RELAY, 650mA MAXIMUM, 12V REGULATED OUTPUT, OR WHEN DRY; 2A, 30V MAXIMUM.
  6. REPLACE BATTERY FUSE F500 WITH UL LISTED 12.5A, 250V FUSE (NAPCO PART NO. FS126)
  7. ALL WIRING IS POWER LIMITED EXCEPT FOR BATTERY LEADS BELOW TOP SHELF.
  8. CAUTION: DISCONNECT POWER BEFORE SERVICING POWER SUPPLY.
  9. MAXIMUM 2A CHARGING CURRENT. USE ONLY 7AH 7.5AH, 8AH BATTERIES.
  10. GREEN "PWR ON" LED INDICATES UNIT IS POWERED BY AC AND/OR BATTERY.
  11. REPLACE BATTERIES EVERY 4 YEARS OR EARLIER IF REQUIRED.

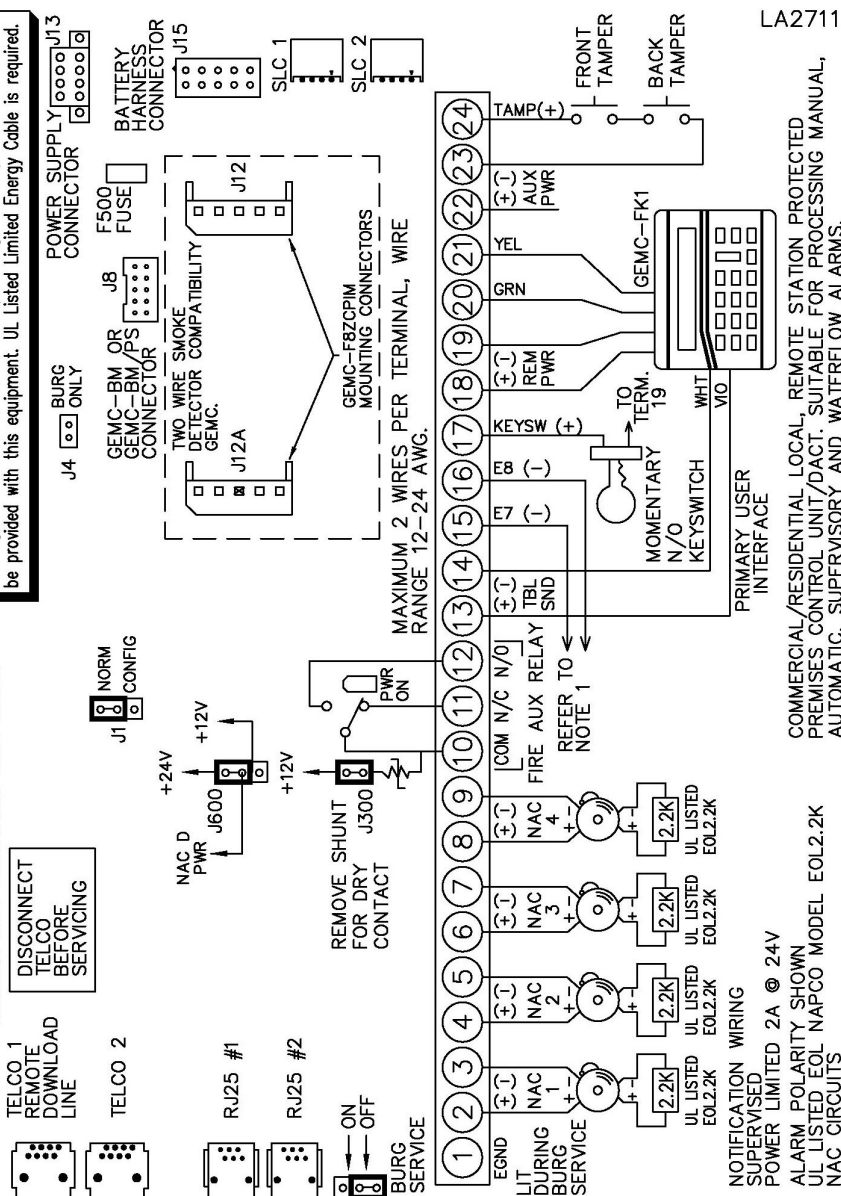
THIS UNIT INCLUDES AN ALARM VERIFICATION FEATURE THAT WILL RESULT IN A DELAY OF THE SYSTEM ALARM SIGNAL FROM THE INDICATED CIRCUITS. THE TOTAL DELAY (CONTROL UNIT PLUS SMOKE DETECTORS) SHALL NOT EXCEED 60 SECONDS. NO OTHER SMOKE DETECTORS SHALL BE CONNECTED TO THESE CIRCUITS UNLESS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

MODEL DELAY-SEC.

THE DELAY (POWER UP) (STARTUP) TIME MARKED ON THE INSTALLATION WIRING DIAGRAM OF THE SMOKE DETECTOR OR ON THE INSTALLED SMOKE DETECTOR(S) IS TO BE USED.

REFER TO INSTALLATION INSTRUCTIONS W1653

This equipment should be installed in accordance with Chapter 2 of the National Fire Alarm Code, ANSI/NFPA 72-1996 (National Fire Protection Association Batterymarch Park, Quincy, MA 02269).



LA2711

COMMERCIAL/RESIDENTIAL LOCAL, REMOTE STATION PROTECTED PREMISES CONTROL UNIT/DACT. SUITABLE FOR PROCESSING MANUAL, AUTOMATIC, SUPERVISORY AND WATERFLOW ALARMS.

SUPERVISED  
POWER LIMITED 2A @ 24V  
ALARM POLARITY SHOWN  
JUL LISTED EOL NAPCO MODEL EOL2.2K  
NAC CIRCUITS

Smoke Detector Compatibility Identifier GMC

# NAPCO LIMITED WARRANTY

NAPCO SECURITY SYSTEMS, INC. (NAPCO) warrants its products to be free from manufacturing defects in materials and workmanship for *thirty-six months* following the date of manufacture. NAPCO will, within said period, at its option, repair or replace any product failing to operate correctly without charge to the original purchaser or user.

This warranty shall not apply to any equipment, or any part thereof, which has been repaired by others, improperly installed, improperly used, abused, altered, damaged, subjected to acts of God, or on which any serial numbers have been altered, defaced or removed. Seller will not be responsible for any dismantling or reinstallation charges.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF NAPCO.

Any action for breach of warranty, including but not limited to any implied warranty of merchantability, must be brought within the six months following the end of the warranty period. IN NO CASE SHALL NAPCO BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT.

In case of defect, contact the security professional who installed and maintains your security system. In order to exercise the warranty, the product must be returned by the security professional, shipping costs prepaid and insured to NAPCO. After repair or replacement, NAPCO assumes the cost of returning products under warranty. NAPCO shall have no obligation under this warranty, or otherwise, if the product has been repaired by others, improperly installed, improperly used, abused, altered, damaged, subjected to accident, nuisance, flood, fire or acts of God, or on which any serial numbers have been altered, defaced or removed. NAPCO will not be responsible for any dismantling, reassembly or reinstallation charges.

This warranty contains the entire warranty. It is the sole warranty and any prior agreements or representations, whether oral or written, are either merged herein or are expressly cancelled. NAPCO neither assumes, nor authorizes any other person purporting to act on its

behalf to modify, to change, or to assume for it, any other warranty or liability concerning its products.

In no event shall NAPCO be liable for an amount in excess of NAPCO's original selling price of the product, for any loss or damage, whether direct, indirect, incidental, consequential, or otherwise arising out of any failure of the product. Seller's warranty, as hereinabove set forth, shall not be enlarged, diminished or affected by and no obligation or liability shall arise or grow out of Seller's rendering of technical advice or service in connection with Buyer's order of the goods furnished hereunder.

NAPCO RECOMMENDS THAT THE ENTIRE SYSTEM BE COMPLETELY TESTED WEEKLY.

**Warning:** Despite frequent testing, and due to, but not limited to, any or all of the following; criminal tampering, electrical or communications disruption, it is possible for the system to fail to perform as expected. NAPCO does not represent that the product/system may not be compromised or circumvented; or that the product or system will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; nor that the product or system will in all cases provide adequate warning or protection. A properly installed and maintained alarm may only reduce risk of burglary, robbery, fire or otherwise but it is not insurance or a guarantee that these events will not occur. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE, OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. Therefore, the installer should in turn advise the consumer to take any and all precautions for his or her safety including, but not limited to, fleeing the premises and calling police or fire department, in order to mitigate the possibilities of harm and/or damage.

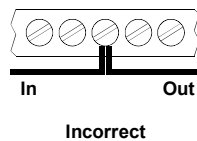
NAPCO is not an insurer of either the property or safety of the user's family or employees, and limits its liability for any loss or damage including incidental or consequential damages to NAPCO's original selling price of the product regardless of the cause of such loss or damage.

Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusion or limitation of incidental or consequential damages, or differentiate in their treatment of limitations of liability for ordinary or gross negligence, so the above limitations or exclusions may not apply to you. This Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

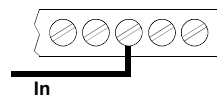
## IMPORTANT WIRING METHODS



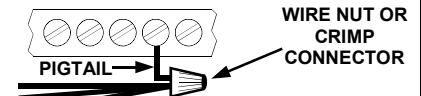
For single-conductor terminal blocks (like the type shown at left), to terminate more than one conductor to a terminal, use the wiring methods shown at right:



Incorrect



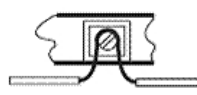
Correct -- Single incoming and/or pigtail with wire nut / crimp connectors



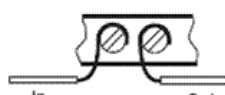
WIRE NUT OR CRIMP CONNECTOR



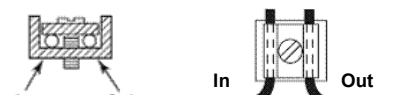
For "barrier" type terminal blocks (like the type shown at left), to terminate two conductors to a terminal, use the wiring methods shown at right:



Incorrect

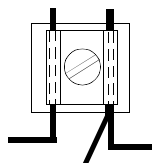


Correct -- Separate incoming and outgoing conductors

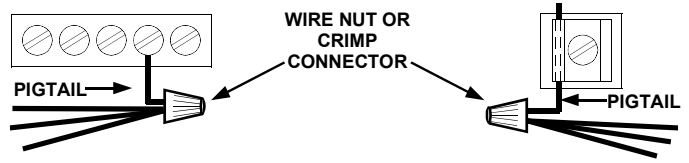


In Out

To terminate more than two conductors or conductors of different wire sizes to a terminal, use the "pigtail" type wiring method as shown at right. Use insulated wire for the pigtail, and firmly secure the conductors to the pigtail using an appropriate wire nut or crimp connector for the number and gauge of conductors used.



Incorrect



Correct -- Use pigtail and wire nut / crimp connector