

# UltraGard

## and Custom Versions

## Installation Instructions

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This document describes the basic procedures necessary for an experienced installer to install, set up, and program an UltraGard™ Security System.

*[Check with your central station to verify they have updated their CS-4000 with version 6.0 or later software, for full UltraGard support.]*

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# Notices

This manual may refer to products that are announced but are not yet available.

## FCC Notices

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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:

- Install a quality radio or television outdoor antenna if the indoor antenna is not adequate.
- Reorient or relocate the panel.
- Move the panel away from the affected equipment.
- Move the panel away from any wire runs to the affected equipment.
- Connect the affected equipment and the panel to separate outlets, on different branch circuits.
- Consult the dealer or an experienced radio/TV technician for help.
- Send for the FCC booklet *How to Identify and Resolve Radio-TV Interference Problems*, available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock Number: 004-000-00345-4.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with part 68 of the FCC rules. On the FCC label affixed to this equipment is the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. If requested, provide this information to your telephone company.

The REN is used to calculate the maximum number of devices your telephone line will support with ringing service. In most areas the sum of all device RENs should not exceed 5.0. Contact your local telephone company to determine the maximum REN for your calling area.

If your telephone equipment causes harm to the telephone network, your telephone company may temporarily disconnect your service. If possible, you will be notified in advance. When advance notice is not practical, you will be notified as soon as possible. You will also be advised of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. You will be given advanced notice in order to maintain uninterrupted service.

If you experience trouble with this equipment, please contact

**Interactive Technologies, Inc.**  
**2266 Second Street North**  
**North Saint Paul, MN 55109**  
**1-800-777-1415**

for service and repair information. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

## Canada Notice

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

For your protection, make sure that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together.

## Caution

**Do not attempt to make connections yourself. Contact the appropriate electrician or electric inspections authority.**

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop that is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the LNs of all the devices does not exceed 100. Load Number: 0.4B

“AVIS: - L' étiquette du ministère des Communications du Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme a certaines normes de protection, d' exploitation et de sécurité des réseaux de télécommunications. Le ministère n' assure toutefois pas que le matériel fonctionnera a la satisfaction de l' utilisateur.

Avant d' installer ce matériel, l' utilisateur doit s' assurer qu' il est permis de le raccorder aux installations de l' entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l' entreprise utilisés pour un service individuel a ligne unique peuvent être prolongés au moyen d' un dispositif homologué de raccordement (cordon prolongateur téléphonique interne). L' abonné ne doit pas oublier qu' il est possible que la conformité aux conditions énoncées ci-dessus n' empêchent pas le dégradation du service dans certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l' on raccorde leur matériel a des jacks d' abonné, sauf dans les cas précis prévus pas les tarifs particuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées pas un centre d' entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander a l' utilisateur de débrancher un appareil a la suite de réparations ou de modifications effectuées par l' utilisateur ou a cause de mauvais fonctionnement.

Pour sa propre protection, l' utilisateur doit s' assurer que tous les fils de mise a la terre de la source d' énergie électrique, des lignes téléphoniques et des canalisations d' eau métalliques, s' il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

**Avertissement. - L' utilisateur ne doit pas tenter de faire ces raccordements lui-meme; il doit avoir recours a un service d' inspection des installations électriques, ou a un electricien, selon le cas”.**

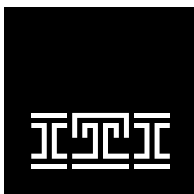
Une note explicative sur les indices de charge (voir 1.6) et leur emploi, a l' intention des utilisateurs du matériel terminal, doit être incluse dans l' information qui accompagne le matériel homologué. La note pourrait être rédigée selon le modèle suivant:

“L' indice de charge (IC) assigné a chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut être raccordée a un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n' import somme des indices de charge de l' ensemble des dispositifs ne dépasse pas 100.”

L' Indice de charge de cet produit est \_\_\_\_\_.

## Trademarks

ITI is a registered trademark of Interactive Technologies, Inc. UltraGard is a trademark of Interactive Technologies, Inc. X-10 is a registered trademark of X-10 (USA), Inc.



**INTERACTIVE TECHNOLOGIES, INC.**

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W I R E L E S S

Security

Automation

Access Control

## Special Installation Requirements

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This security system can be used as a fire warning system, an intrusion alarm system, an emergency notification system, or any combination of the three.

Some installations may require certain configurations dictated by city codes, state codes, or insurance requirements. The following information indicates the components of various listings.

## Requirements for UL-Listed Installations

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If the system is to comply with UL household requirements, there are specific guidelines you must follow. Refer to appendix F for a list of compatible accessories, programming and wiring requirements in UL-listed systems.

## Canada Listings

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The ULC (UL Canada) listing is pending.

### CSA Certified Accessories

#### Residential Fire Warning System Control Unit (ULC-S545-M89)

Basic system as described in appendix F for UL-listed systems plus:

- Wireless Smoke Sensor (60-506), Wireless Smoke Sensor (60-645-95), or Hardwire Smoke Detector (13-360) (ESL 449AT) with Power Supervision Module (60-391)
- Option F21 (Immediate Trouble Beeps) set ON
- SUPSYNC (Supervisory Synchronization) set to 2 (hours)

#### Note

SUPSYNC cannot be programmed from the panel. Refer to the "Requesting CS-4000/Downloader Programming" sec-

tion for more information.

For 24-hour backup, external power drain is limited to 150 mA continuous using the heavy duty 6.5AH battery.

#### Residential Burglary Alarm System Unit (ULC-S309)

Basic system as described in appendix F for UL-listed installations plus:

- Learn Mode Door/Window Sensors (60-362)

## California State Fire Marshall Listing

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The California State Fire Marshall listing is pending.

## Installing the System

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This section describes how to install the system control panel. Plan your system layout using the worksheets provided in appendix D before starting the installation.

Installing the system consists of the following:

- Determining the Panel Location
- Running Wires to the Panel Location
- Mounting the panel
- Installing the panel antennas
- Wiring the panel
- Setting the optional Energy Saver and Hardwire Input Module unit number dip switches
- Installing the backup battery
- Powering up the panel
- Adjusting status sound volume

## Determining the Panel Location

Before permanently mounting the panel, determine panel location using the following guidelines:

- Centrally locate the panel with relation to wireless sensor locations, whenever possible.
- Avoid locations with excessive metal such as HVAC ducts, foil wallpaper, gas/water pipes, and electrical wiring.
- Mount the panel at a comfortable working height (about 45 to 55 inches from the floor to the bottom of the panel, as shown in figure 1).
- Allow a minimum of 10.5 inches above the panel for the antennas, as shown in figure 1.
- Allow 6.5 inches to the right or left of the panel for wiring, phone jack, and optional module mounting.
- Allow at least 24 inches in front of the panel for access to panel components.

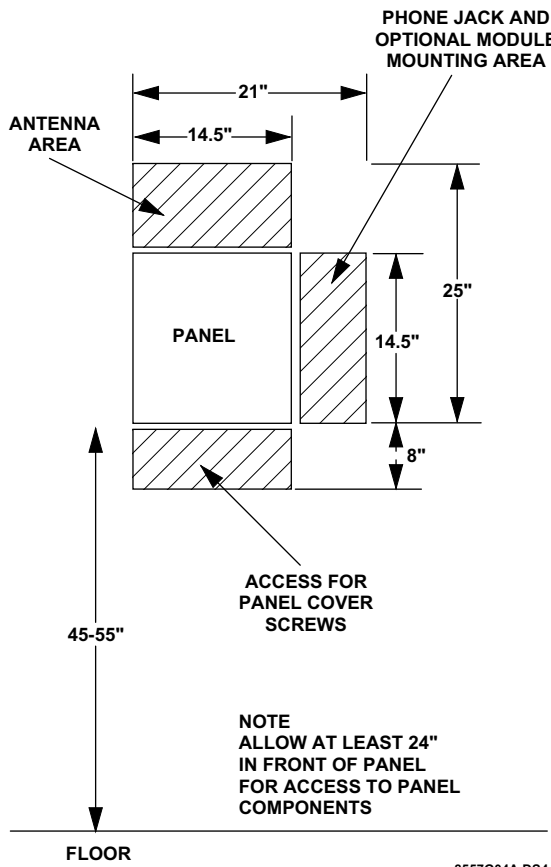


Figure 1 Determining Panel Location

## Running Wires to the Panel Location

Once you have determined the ideal panel location, run any necessary wires to that location, including:

- Power transformer
- Phone line
- Sirens/speakers
- SuperBus\* Alphanumeric Touchpads
- Hardwire zones
- Optional SuperBus\* modules (such as Energy Saver Module [ESM], Hardwire Input Module [HIM], Hardwire Output Module [HOM], etc.)

\* SuperBus is an improved technology bus configuration and is not compatible with older bus modules.

Refer to table E.3 in appendix E for wire size and type recommendations. If you are using the same cable type for several wire runs, use labels to mark the wires at the panel location to help identify these wires.

## Mounting the Panel

Use the procedure below to mount the panel to the wall or wall studs, using the supplied mounting hardware and the panel mounting holes shown in figure 2.

### Caution

Make sure you are free of static electricity whenever you work on the panel with the cover removed. To discharge any static, first touch the metal panel chassis, and then stay in contact with the chassis when touching the circuit board.

An approved grounding strap is recommended.

### To mount the panel:

1. Unlock the panel cover (if cover has a key lock installed) or remove the panel cover retaining screws at the bottom of the panel and remove the panel cover.
2. Swing the panel cover out and up to remove it from the enclosure.
3. Remove the necessary wiring knockouts. Be careful not to damage the circuit board.
4. Place the enclosure in position against the wall.

Make sure enclosure is level and mark the locations of the two mounting holes and two keyhole mounting holes. Remember to leave room for the panel antennas, which extend 9 inches above the top of the enclosure.

5. Use the appropriate anchors and screws. Partially insert screws into the two anchors at the two top keyhole locations, and then hang the panel chassis on the two screws.
6. Recheck for level, insert the two lower screws, and then tighten all four mounting screws.

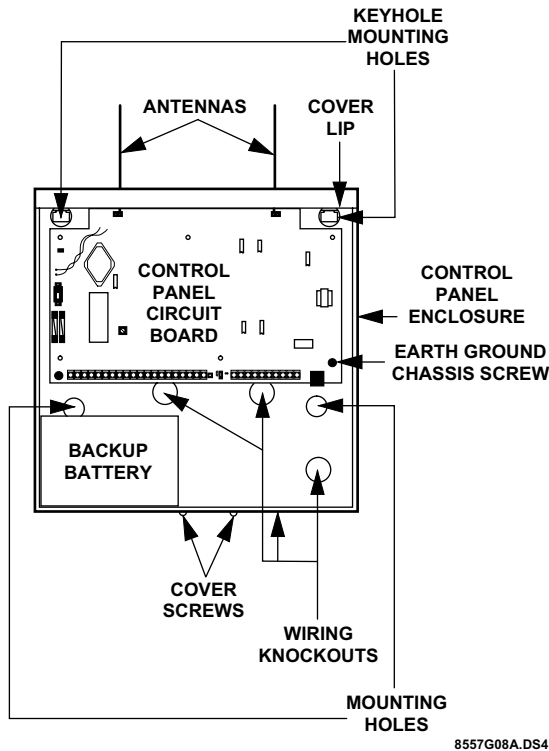


Figure 2 Mounting the Panel

## Installing the Panel Antennas

### Caution

You must be free of static electricity before handling electronic circuit boards. Touch a grounded, bare metal surface before handling circuit boards to discharge yourself of static electricity or wear a static grounding strap.

Insert one antenna into the inside screw terminal of each terminal block and gently tighten the screws using a small pocket-size screwdriver (figure 3).

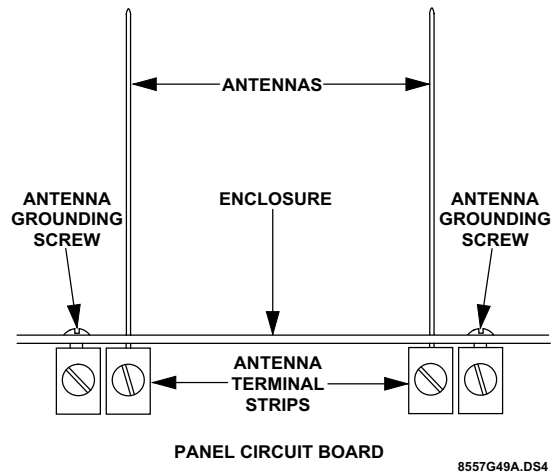


Figure 3 Installing the Panel Antennas

### Caution

Do not overtighten the terminal block screws; if you do, permanent damage may result.

## Wiring the Panel

Refer to appendix E for panel terminal descriptions, wire recommendations, and typical system wiring diagram.

Refer to appendix F for panel programming and typical system wiring diagram for UL-listed installations.

Refer to appendix D, table D.2 to calculate the hardware device power consumption for the system.

For more detailed information on installing hardware devices, refer to the installation instructions that accompany each device.

## Setting the Optional Energy Saver Module (ESM), Hardware Input Module (HIM) and Hardware Output Module (HOM) Unit Number DIP Switches

All devices connected to the panel’s SuperBus hardware bus have individual unit numbers assigned. Alphanumeric touchpad unit numbers are changed in software during programming. The Energy Saver Module (ESM), Hardware Input Module (HIM), and Hardware Output Module (HOM) are set with DIP switches inside the modules. For unit number setting details, refer to the installation instructions provided with the bus device.

Duplicated unit numbers will prevent those bus devices from operating. Refer to table D.3 in appendix D for recommended SuperBus device unit number settings.

### To set your ESM, HIM, or HOM unit number:

1. Set the module unit number DIP switches to the desired unit number as shown the figure 4 per the recommendations in table D.3 in appendix D. The unit number is set to 0 (zero) at the factory and is OK for most single touchpad and single ESM, HIM, *or* HOM module applications. Make sure that no bus devices (including hardware touchpads) share the same unit number (device address).

### Caution

The alphanumeric touchpad unit number defaults to 1 (one). Do not set the ESM, HIM, or HOM unit number to 1. Doing so will prevent the touchpad from functioning.

2. Turn the control panel power switch off and then back on so the bus module can read the unit number switch settings into its memory.
3. Enter and exit *PROGRAM MODE* by switching the panel PROGRAM/RUN switch to PROGRAM and back to RUN so the panel can “learn” the new bus device unit numbers.

If the alphanumeric touchpad (or other SuperBus device) no longer seems to function, check if the same

unit number assigned is to more than one device. SuperBus devices cannot share the same unit number.

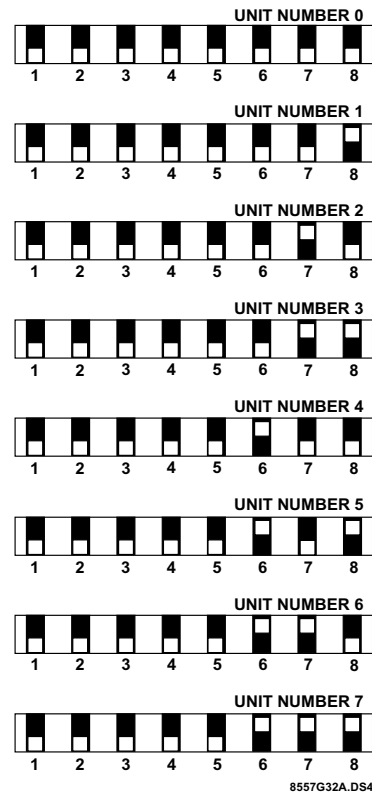


Figure 4 Setting the ESM, HIM, or HOM Unit Number Dip Switches

### Note

All SuperBus devices such as Energy Saver, Hardwire Input, and Hardwire Output Modules and alphanumeric touchpads must have unique unit number (address) settings. Devices with the same (conflicting) address will not function properly. Module address switches 1–5 must remain down (off).

## Installing the Backup Battery

The panel uses one rechargeable, sealed 12V lead-acid backup battery.

### Note

Both standard (60-681) 12V, 4AH and heavy duty (60-680) 12V, 6.5AH backup batteries are available. Always replace with the same battery type and size.



**To install (or replace) the backup battery:**

1. Make sure the panel power switch is OFF and that the transformer is unplugged from the outlet.

While AC power is applied to the panel, the charging voltage is present at the battery leads even with the power switch off.

2. Verify all wiring at the panel and devices for correct terminations.
3. Place the battery in the lower left or right portion of the panel enclosure, with the terminals facing up.
4. Connect the supplied black battery wire from the panel circuit board negative (-) battery spade lug (located near the power switch) to the negative (-) battery terminal.
5. Connect the red battery wire from the panel circuit board positive (+) battery spade lug to the positive (+) battery terminal.

**WARNING!**

**Never short-circuit or reverse the battery wires. Possible injury to you and/or permanent damage to the panel could result.**

## Powering Up the Panel

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After wiring all devices to the panel and installing the backup battery, you are ready to power up the panel.

**Note**

If the installation includes more than one alphanumeric touchpad, disconnect all but one from their wiring harnesses to reduce the possibility of a unit number (address) conflict. When powering up and programming are completed, connect the remaining touchpads to their wiring harnesses. For complete details on adding additional alphanumeric touchpads to a working system, refer to the *SuperBus Alphanumeric Touchpad Installation Instructions* included with each touchpad.

**To power up the panel:**

1. Plug the transformer into an outlet that is not controlled by a switch.
2. Make sure the panel PROGRAM/RUN switch located between the two panel terminal strips is set to RUN (up).
3. Turn ON the panel power switch located on the left edge of the panel and note the following:

The green power LED on the panel turns on.

Interior sirens and piezos sound one beep and interior speakers announce the message *Alarm system is off*.

Alphanumeric touchpad displays *1 - OFF*.

**Note**

If the power LED is off or flashing and no beeps or voice messages sound, turn off the panel power switch, disconnect the backup battery, and unplug the transformer. Refer to appendix B, "Troubleshooting."

4. Turn the panel power switch OFF, unplug the transformer, and remove the existing screw securing the AC outlet cover.

**WARNING!**

**Use extreme caution when securing the transformer to a metal outlet cover. You could receive a serious shock if a metal outlet cover drops down onto the prongs of the plug while you are securing the transformer and cover to the outlet box.**

5. Hold the outlet cover in place and plug the transformer into the lower receptacle.
6. Use the screw supplied with the transformer to secure the transformer to the outlet cover.
7. Turn the panel power switch ON.

## Adjusting Status Sound Volume

---

The panel allows you to set the volume level for status sounds and status messages from speakers connected to panel terminals 8 and 9 (VOICE). Alarm sounds and messages are preset to full volume.

**To adjust the status sound volume:**

1. Locate the speaker volume adjustment potentiometer on the panel (above terminal 8).

**Caution**

Never adjust the potentiometer labeled "Do Not Adjust" located near the power switch. Permanent damage to the panel could result.

## Programming the Panel

- Press **STATUS** + **STATUS** on the alphanumeric touchpad for a long system status display and voice message.

### Note

User-programmable system setting 77 (Quiet Exit) must be off for voice sounds to be announced. (See Viewing or Programming the User-Programmable System Settings.)

- While listening to the message, increase the volume level by turning the volume potentiometer clockwise.
- Repeat steps 2 and 3 until the desired volume level is reached.

## Programming the Panel

The alphanumeric touchpad is the main programming device for the system on-site. This touchpad is used to enter values into panel memory, such as sensors, sensor text, and system-specific configuration information. During programming, the alphanumeric touchpad prompts you for information in a certain order. You can cycle through this order of prompts to get to the desired programming area. For example, you can cycle past the prompts for sensor text to enter the system configuration information and later return to programming sensor text.

Figure 5 shows the order of the prompts, and the area of programming related to these prompts. Once you know this order of prompts, you will be able to move forward and backward in the prompt sequence to locate the programming item you need.

Examine the flowchart shown in figure 5 to familiarize yourself with the sequence in which the programming procedures appear. The programming software is like a menu of choices displayed in a scroll. The direction of the chart arrows represents pressing the **BYPASS** button to scroll forward. To scroll backward, press the **STATUS** button. You can also go directly to the menu choice by entering the two-digit number shown.

When you use the alphanumeric touchpad to program the system, the touchpad buttons have special programming meanings and functions. Table 1 describes the programming buttons.

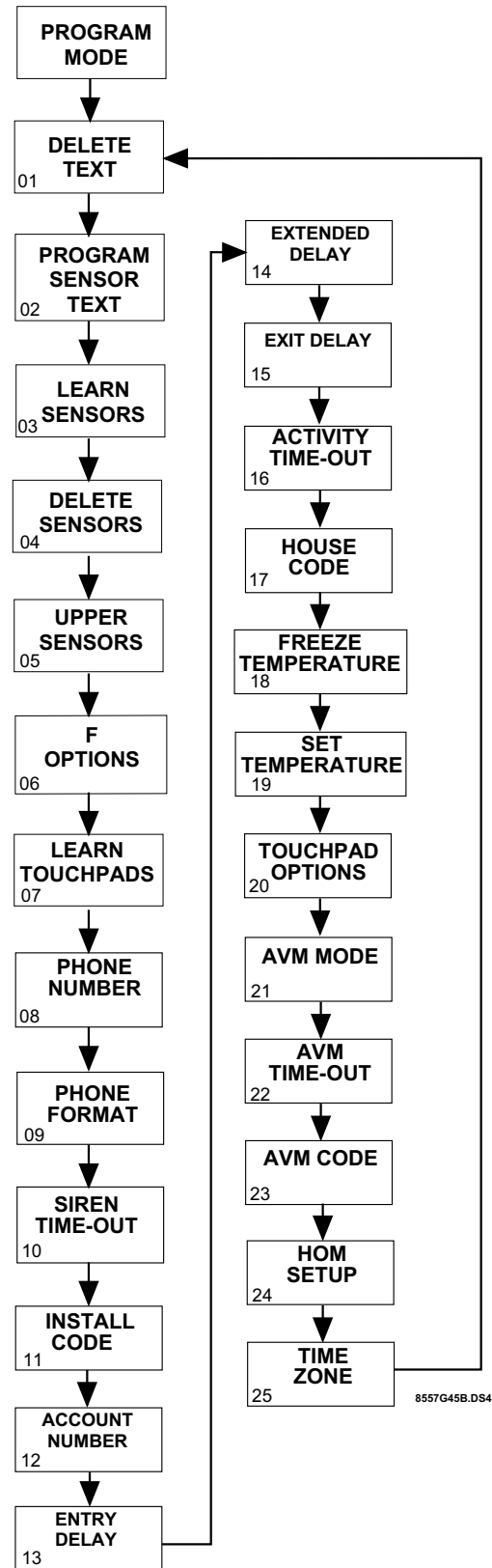


Figure 5 Programming Flow Chart

**Table 1 Alphanumeric Touchpad Programming Button Functions**

Button	Programming Function
Numeric Buttons	Used to enter numeric values such as delays and sensor numbers. Also used to enter text characters or word codes during sensor text programming.
STATUS	Scrolls backward to previous programming function. Displays previous sensor text library character during sensor text programming. Also used to “lock in” new alphanumeric touchpad unit numbers.
BYPASS	Scrolls forward to next programming function. Displays next sensor text library character during sensor text programming.
COMMAND	Used to proceed or confirm displayed entry. Displays next character/word position in sensor text programming. Also used to toggle between values, such as yes/no or on/off.
FIRE	Cancels and exits displayed programming command (if pressed before COMMAND). Backs out to previous menu level.
AUXILIARY	Scrolls long display messages.
POLICE	Used to clear (blank) an access code. Used to program a pause in central station phone number. Used to clear HOM points.

Programming the panel includes the following procedures:

- Clearing memory
- Entering and exiting program mode
- Deleting and programming sensor text
- Adding and deleting wireless sensors and hardware zones
- Programming upper sensor numbers
- Programming optional feature numbers
- Adding wireless touchpads
- Programming panel configuration options
- Programming the phone number and format
- Programming the siren time-out
- Programming the install code
- Programming the account number
- Programming the entry, extended, and exit delays
- Programming the activity time-out

- Programming the house code
- Programming the freeze and set temperatures
- Programming the touchpad options
- Programming the Audio Verification Module mode, time-out, and access code
- Programming HOM Setup
- Programming the Time Zone
- Viewing or programming the user-programmable system settings
- The duress code
- Adjusting the alphanumeric touchpad display brightness
- Requesting CS-4000/Downloader programming

**Note**

All on-site programming must be done using a SuperBus Alphanumeric Touchpad. The Alphanumeric Touchpad can be removed once the system has been programmed.

## Clearing Memory

---

Clear memory on all newly installed panels before programming.

**Note**

Since all programming information is contained in memory, clearing memory deletes all existing programming information except sensor text (if any). Sensor text can be deleted separately.

**To clear panel memory:**

1. Open and remove the panel door.
2. Turn the panel power switch OFF and then ON.
3. Immediately (within 1 minute after turning panel power ON), press and hold the memory clear button located on the upper left edge of the panel until a relay click is heard at the panel or until interior speakers announce *Memory good-bye*.

## Entering and Exiting Program Mode

---

The panel must be in program mode to perform any of the on-site programming operations.

## Programming the Panel

### To enter program mode:

1. Open and remove the panel door.
2. Set the panel PROGRAM/RUN switch to PROGRAM (down).

Alphanumeric touchpads display *PROGRAM MODE* and interior speakers, sirens, and piezos sound six beeps every minute as a reminder that the panel is in the program mode.

### Note

If touchpad(s) do not display *PROGRAM MODE* after switching the PROGRAM/RUN switch to PROGRAM (down), a special install code has been programmed into the panel and now must be entered into the touchpad using the number buttons. The touchpad will display *PROGRAM MODE* once the correct install code is entered.

The program mode of operation must be exited for the system to operate normally (RUN). You can exit from program mode at any time.

### To exit program mode:

1. Switch the panel PROGRAM/RUN switch to RUN (up).
2. The alphanumeric touchpad will display *1 - OFF* to signal that the system is in the normal mode of operation.
3. When you are finished programming or working in the control panel, replace and secure the panel door with either the panel door screws or key lock.

## Deleting Sensor Text

---

You can delete all sensor text (if any)—before programming or reprogramming, for example—by doing the following procedure.

### To delete *all* existing sensor text:

1. In *PROGRAM MODE*, press **BYPASS** or **STATUS** until *DELETE TEXT* is displayed.
2. Press **COMMAND**. Flashing *RDY* is displayed.

### Caution

Deleted text cannot be retrieved and must be reprogrammed.

3. Press **POLICE** to delete all sensor text. *DELETE*

*TEXT DONE* is displayed.

4. Press **FIRE** to exit.

## Programming Sensor Text

---

This section describes how to program sensor names. Use the word and character numbers you recorded in appendix D (using table C.2 in appendix C) to program sensor text.

Before programming sensor text the first time, delete all existing text (if any) as detailed above.

### To program sensor text:

1. In *PROGRAM MODE*, press **BYPASS** or **STATUS** until the display reads *PROG SENSOR TEXT*.
2. Press **COMMAND** and the display reads *S01 [Group number assigned, if any] [“-” if normally closed, “\*” if normally open] [existing sensor text, if any]*.
3. Enter the desired sensor number from 01 to 76 and the display reads *S## [existing sensor text, if any]*.
4. Press **COMMAND** and the display reads *A 00*.
5. Enter the appropriate word number or character number from table C.2 in appendix C.
6. Press **COMMAND** and the display reads *B 00*.
7. Repeat steps 5 and 6 until the whole sensor name is entered.

### Note

Because the touchpad can only display a limited number of characters, in some cases—such as alarms—all text may not be displayed.

8. Press **FIRE**. The display shows the sensor number and name. Lines longer than the display will scroll horizontally. If desired, press **AUXILIARY** to scroll the long-line display again.
9. Press **BYPASS** to cycle to the next sensor number and repeat steps 4 through 8 until all sensor names are programmed.
10. Press **FIRE** to exit.

## Adding (Learning) Wireless Sensors

Programming wireless and hardwire sensors involves switching the panel to the program mode of operation and setting sensor identification numbers and group numbers for each wireless sensor and hardwire sensor loop. Once sensors IDs and group assignments are added (learned) into panel memory, the panel can respond appropriately for each sensor detection. Sensors can be added (learned) into or deleted from panel memory.

Use table C.1 in appendix C for selecting sensor groups and complete the group assignment for each wireless sensor in the system planning worksheets in appendix D.

Use the following procedure to add (learn) all Learn Mode wireless sensors.

### To add Learn Mode wireless sensors into panel memory:

1. In *PROGRAM MODE*, press the touchpad **BYPASS** or **STATUS** button repeatedly until *LEARN SENSOR* is displayed.
2. Press the **COMMAND** button to display *GROUP* \_\_ \_\_.
3. Enter the desired group number (00 to 29, 32).
4. Press the **COMMAND** button to display *SENSOR ##*.
5. Press the **COMMAND** button if the sensor number displayed is OK or enter another number from 01 to 76, and then press **COMMAND** again.
6. The display reads *TRIP - ##*. Trip the wireless sensor tamper switch as shown in table 2 or as described in the sensor's installation instructions. When the sensor has been added (learned) the display reads *TRIP - ## [next #]* and interior speakers announce *Sensor # okay. Sensor [next # to be learned]*.

#### Note

To trip a wireless sensor with an external hard-wire contact connected to its screw terminals, check that the external contact is in its alarm state, and then trip the sensor.

The alarm state is either open or closed, depending on the

normal condition of the sensor. Multiple normally closed switches are wired in series and tripped while the loop is open. Multiple normally open switches are wired in parallel and tripped while the loop is closed.

For high-security installations, always remove both internal reed switches when connecting an external contact to the wireless sensor terminals.

Only the normally closed configuration can be used in UL-listed installations.

Do not attempt to use the built-in reed switch *and* an external contact on the same wireless sensor.

**Table 2 Tripping Learn Mode Wireless Sensors**

Sensor *	Action
Door/Window †	Open sensor cover.
Fire Pull Station	Open the sensor cover located inside the Fire Pull Station.
Freeze	Open sensor cover.
Glass Guard	Open sensor cover.
Portable Emergency Buttons	Press the appropriate emergency button(s).
PIR Motion	Open PIR case.
Keychain Touchpad	Simultaneously press arm and disarm until the LED flashes.
Rate-of-Rise Heat	Open sensor cover and press learn switch on circuit board.
Recessed Door/Window	Open sensor cover and remove transmitter circuit board.
Shock †	Open sensor cover.
Slim Line Door/Window	Remove sensor from mounting base.
Sound	Open sound sensor cover, after spring is installed.
System Sensor Smoke	Press test button and hold for 30 seconds, until test alarm begins sounding.
System Sensor 2300RF ITI	With sensor removed from base, press the test button for at least 1 second.

\* Refer to the particular sensor's installation instructions for more details on tripping Learn Mode wireless sensors.

† When using an external contact with this sensor, the contact must be in the alarm state while tripping the sensor to properly learn it into memory.

7. Continue adding sensors into the current group number by repeating step 6 for each sensor. Press **BYPASS**, **STATUS**, or number buttons to select new sensor numbers (other than what is automatically displayed).
8. To add sensors into other groups, press **FIRE** and follow steps 3 through 7.

## Programming the Panel

9. Press **FIRE** to exit. Proceed to your next programming task.
10. If you are finished programming, switch the panel PROGRAM/RUN switch to RUN (up). The touchpad will display *I - OFF* to signal that the system is in the normal (RUN) mode of operation.

## Adding (Learning) Hardwire Sensors

---

After planning the installation, use table C.1 in appendix C to select sensor groups and complete the group assignment for each wireless sensor in the system planning worksheets in appendix D.

Use the following procedure to add (learn) all hardwire sensors and zones into panel memory.

### To add (learn) hardwire sensors:

1. Place all hardwire sensors in their normal (non-alarm) state.
2. In *PROGRAM MODE*, press the touchpad **BYPASS** or **STATUS** button repeatedly until *LEARN SENSOR* is displayed.
3. Press the **COMMAND** button to display *GROUP \_\_\_*.
4. Enter the desired group number (00 to 29, 32).
5. Press the **COMMAND** button to display *SENSOR ##*.
6. Press the **COMMAND** button if the sensor number displayed is correct or enter another number from 01 to 76, and then press **COMMAND** again.
7. The display reads *TRIP - ##*. Trip the sensor by placing it into the alarm state (open the door or window) or as described in the sensor's installation instructions. The display reads *TRIP - ## [next #]* and interior speakers announce *Sensor # okay. Sensor [next # to be learned]*.

### Note

The alarm state is either open or closed, depending on the normal condition of the sensor. Multiple normally closed switches are wired in series and tripped while the loop is open. Multiple normally open switches are wired in parallel and tripped while the loop is closed.

On hardwire zones containing multiple sensors, only one sensor per zone needs to be added (learned) into panel memory.

If the system uses hardwire sensors only, turn off upper sensor 94 (Receiver Failure) in the panel.

Only the normally closed configuration can be used in UL-listed installations.

8. Continue adding sensors into the current group number by repeating step 7. Press **BYPASS**, **STATUS**, or number buttons to select new sensor numbers.
9. To add sensors into other groups, press **FIRE** and follow steps 4 through 8.
10. Press **FIRE** to exit. Proceed to your next programming task.
11. If you are finished programming, switch the panel PROGRAM/RUN switch to RUN (up). The touchpad will display *I - OFF* to signal that the system is in the normal (RUN) mode of operation.

## Deleting Sensors and Hardwire Zones

---

If you want to reassign a sensor or hardwire zone to another group, you must first delete that sensor or zone.

### To delete a sensor from the panel:

1. In *PROGRAM MODE*, press **STATUS** or **BYPASS** until the display reads *DELETE SENSOR*.
2. Press **COMMAND** and the display reads *DELETE ## [sensor text, if any]*.

### Note

After pressing **COMMAND** in step 2, the display shows the lowest programmed sensor number.

3. If the sensor number displayed is not correct, enter the desired number (01 to 76).
4. Press **COMMAND** and the display reads *DEL ## OK*.
5. Continue deleting sensors by repeating steps 3 and 4.

6. Press **FIRE** to exit.

**Note**

Sensor text is not deleted when its sensor is deleted.

## Programming Upper Sensors

---

Upper sensors are optional values (see appendix D, table D.7) you turn on or off depending on your customer's equipment and needs.

**Note**

We recommend that you do not change upper sensors that default ON. Factory default settings will work for most applications.

Use the settings recorded in appendix D, table D.7 when programming upper sensors.

**To program upper sensor numbers:**

1. In *PROGRAM MODE*, press **BYPASS** or **STATUS** until *UPPER SENSOR* is displayed.
2. Press **COMMAND** and the display reads *77 - OFF TOUCHPAD TAMPER*. (Press **AUXILIARY** to scroll any long messages sideways.)
3. Press **COMMAND** to toggle upper sensor *77* ON, if desired, or press **BYPASS** to cycle to the next upper sensor.

**Note**

To jump directly to a particular upper sensor, enter its two-digit number instead of pressing **BYPASS**.

4. Repeat step 3 until all upper sensors are programmed to suit the installation.
5. Press **FIRE** to exit.

## Programming Optional Feature Numbers

---

Optional feature numbers are system features (see appendix D, table D.8) you turn on or off depending on your customer's needs.

**Note**

We recommend that you do not change feature numbers that default ON. Factory default settings will work for most applications.

Use the settings recorded in table D.8 when programming optional feature numbers.

**To program feature numbers:**

1. In *PROGRAM MODE*, press **BYPASS** or **STATUS** until *F OPTIONS* is displayed.
2. Press **COMMAND** to display *00 - ON REMOTE ACCESS*. (Press **AUXILIARY** to scroll long messages in the display.)
3. Press **COMMAND** again to toggle the feature number ON or OFF as desired.
4. Press **BYPASS** to display the next feature number.

**Note**

To jump directly to a particular feature number, enter its number instead of pressing **BYPASS**.

5. Repeat steps 3 and 4 for all of the remaining feature numbers.
6. Press **FIRE** to exit.

## Adding (Learning) Wireless Touchpads

---

You can add up to four wireless touchpads to the system (including keychain touchpads).

**To add (learn) wireless touchpads:**

1. In *PROGRAM MODE*, press **BYPASS** or **STATUS** until *LEARN TOUCHPAD* is displayed.
2. Press **COMMAND** to display *PRESS BYP TP - 1*.
3. Press **BYPASS** on the wireless touchpad (press and hold both lock and unlock buttons on the wireless keychain touchpad) until the display reads *PRESS BYP TP 2* and *One OK, Two* is heard.
4. Repeat step 3 for each wireless touchpad until they are all added.
5. Press **FIRE** to exit.

## Programming the Panel

### Caution

After exiting from learning touchpads, reentering the learn touchpads menu by pressing **COMMAND** automatically deletes all learned touchpads. When adding wireless touchpads to the system, you must also relearn existing touchpads.

## Programming Panel Configuration Options

---

This section describes how to program the following:

- Primary phone number and phone format
- Siren time-out
- Install code
- Account number
- Entry, extended, and exit delays
- Activity time-out
- House code
- Energy Saver Module (ESM) freeze and set temperatures
- Touchpad unit number, quiet, and key beeps options
- Audio Verification Module (AVM) mode, time-out, and code
- HOM setup
- Time zone
- User-programming system settings
- Duress code

Use the panel configuration settings you recorded in table D.5 to program the system.

## Programming the Primary Phone Number

---

The panel can report alarms and all other reports to a central monitoring station by programming the primary phone number (or central station's phone number) into panel memory. The default phone number is blank (none).

### To program the central monitoring station telephone number:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *PHONE NUMBER*.
2. Press **COMMAND**. The display shows *[existing phone number, if any]*.
3. Enter the central station receiver phone number (up to 18 digits). If you need a pause between digits, press **POLICE** for each 1-second pause desired.
4. Press **COMMAND**. The display reads *[new phone number]*.
5. Press **FIRE** to exit.

## Programming the Phone Format

---

The phone format determines the type of communication the panel uses to report to the central monitoring station's receiver. The default phone format is "ITI."

### To program the panel telephone format:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *PHONE FORMAT*.
2. Press **COMMAND** to display the currently selected format. For example, *ITI FMT*.
3. Press **BYPASS** or **STATUS** to cycle to the desired setting: *SET ITI, -1400, or -2300*.

### Note

Phone format must be set to "ITI" for the panel to correctly communicate with the ITI ToolBox Downloader.

4. Press **COMMAND** and the display reads *SET [selected format] OK*.
5. Press **FIRE** to exit.



## Programming the Siren Time-out

---

The siren time-out determines how long sirens sound an alarm condition, if no one is present to disarm the system. The default siren time-out is 4 minutes.

### To program a different siren time-out:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *SIREN TIMEOUT*.
2. Press **COMMAND** and the display reads *SIREN - ## MIN*.
3. Enter the desired two-digit time (01 to 30 minutes).
4. Press **COMMAND** and the display reads *SIREN - ## MIN*.
5. Press **FIRE** to exit.

## Programming the Install Code

---

The install code is a special access code used to prevent accidental or unauthorized changes to system programming. The default install code is blank (\*\*\*\*).

### Caution

Always install and test all wired touchpads before entering an install code. Programming an install code before all touchpads are installed and tested is risky. It can lead to a situation where memory must be cleared to get into program mode. This can happen if a bus conflict renders the alphanumeric touchpad useless (and there are no wireless touchpads and phone control is turned off). In this situation, there is no way to enter an install code—there is no way to get back into the program mode except to erase the install code (and all other programming) by clearing memory.

If an install code is desired, program it after installation is complete and just before you leave the site.

### Note

Once an install code is entered, it will start a 1-hour timer. For the next hour, the install code will not be required. This timer is cleared by entering dealer sensor test.

### To program an install code:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *INSTALL CODE*.
2. Press **COMMAND** to display *INSTALL - \*\*\*\**.
3. Enter any four digits from 0001 to 9998.

### Note

See table D.6 in appendix D for code number defaults and restrictions.

To return the install code to blank (\*\*\*\*) press the POLICE button instead of a four-digit code.

4. Press **COMMAND**. *INSTALL - #####* is displayed.
5. Press **FIRE** to exit.

## Programming the Account Number

---

The account number is a five-character panel identification for central monitoring stations. Used when the panel sends reports. The default account number is 00-000.

### To program an account number:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *ACCOUNT NUMBER*.
2. Press **COMMAND** to display *ACCOUNT - #####*.
3. Enter any five digits.
4. Press **COMMAND**. *ACCOUNT - #####* is displayed.
5. Press **FIRE** to exit.

### Note

Only numbers can be programmed locally though the alphanumeric touchpad. Letters can be programmed though the CS-4000 or Downloader and will display correctly with the panel in program mode.

## Programming the Entry Delay

---

The entry delay determines the time a user has to enter the premises and disarm the system, before it goes into alarm. The default entry delay is 32 seconds.

### To program a different entry delay:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *ENTRY DELAY*.
2. Press **COMMAND** and the display reads *ENTRY - ### SEC*.
3. Enter the desired three-digit time (008 to 120 seconds).

#### Note

The system automatically rounds off the entry to the nearest multiple of eight.

4. Press **COMMAND** and the display reads *ENTRY - ### SEC*.
5. Press **FIRE** to exit.

## Programming the Extended Delay

---

The extended delay affects both entry and exit delay times for sensors in groups 11 (extended delay) and 12 (twice extended delay). The extended delay setting determines how much time system users have to leave the premises after arming and how much time users have to disarm after entering, without causing an accidental alarm. The default extended delay is 4 minutes.

### To program a different extended delay:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *EXTENDED DELAY*.
2. Press **COMMAND**. The display reads *DELAY - ## MIN*.
3. Enter the desired two-digit time (01 to 08 minutes).
4. Press **COMMAND** and the display reads *DELAY - ## MIN*.
5. Press **FIRE** to exit.

## Programming the Exit Delay

---

The exit delay determines how much time system users have to leave the premises through a designated delay door without causing an alarm, after arming the system. The default exit delay is 32 seconds.

### To program the exit delay:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *EXIT DELAY*.
2. Press **COMMAND** and the display reads *EXIT - ### SEC*.
3. Enter the desired three-digit time (008 to 184 seconds).

#### Note

The system automatically rounds off the entry to the nearest multiple of eight.

4. Press **COMMAND** and the display reads *EXIT - ### SEC*.
5. Press **FIRE** to exit.

## Programming the Activity Time-out

---

The activity time-out determines how many hours of system non-use are sensed, before sending a report to the central monitoring station. The default activity time-out is 24 hours.

### To program a different activity time-out:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *ACTIVITY TIMEOUT*.
2. Press **COMMAND** to display *ACTIVITY - ## H*.
3. Enter the desired two-digit time (01 to 24 hours).
4. Press **COMMAND**. *ACTIVITY - ## H* is displayed.
5. Press **FIRE** to exit.

#### Note

Upper sensor S79 (No Activity) must be on for the activity timer to function. S79 default is off.

## Programming the House Code

---

The house code is a three digit number used to communicate panel signals to line carrier devices such as Wireless Interior Sirens (WIS) and X-10 Lamp and Appliance Modules. The default house code is 001(X-10 module house code “B”).

### To program a different house code:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *HOUSE CODE*.
2. Press **COMMAND** to display *HOUSE CODE - ### [X-10 module unit code A-P]*.
3. Enter the desired three digit house code number (001 to 254).
4. Press **COMMAND**. *HOUSE CODE - ### [X-10 module unit code A-P]* is displayed.
5. Press **FIRE** to exit.

## Programming the Energy Saver Module Freeze and Set Temperatures

---

The freeze temperature setting determines when the Energy Saver Module’s freeze sensor activates, sounding interior sirens and reporting to the central monitoring station. The default freeze temperature is 42° F.

### Note

Upper sensor 78 (Freeze Sensor) must be ON to enable the freeze alarm. Upper sensor 78 defaults to OFF.

### To program the Energy Saver Module freeze temperature:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *FREEZE TEMP*.
2. Press **COMMAND** and the display reads *FREEZE TEMP - ##*.
3. Enter the desired two-digit temperature (40 to 90).
4. Press **COMMAND** and the display reads *FREEZE TEMP - ##*.

5. Press **FIRE** to exit.

The Energy Saver Module set (readout) temperature setting lets you adjust the module to match the on-premises thermostat. The default set temperature is the unadjusted ESM temperature.

### To adjust the Energy Saver Module temperature readout, make sure that the module is wired and working, then:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *SET TEMP*.
2. Press **COMMAND** to display *TEMPERATURE - ##*.
3. Enter present two-digit room temperature (32 to 99).
4. Press **COMMAND** and the display reads *TEMPERATURE - ##*.
5. Press **FIRE** to exit.

## Programming the Touchpad Options

---

The touchpad options setting lets you set the touchpad unit number, touchpad quiet, and touchpad key beeps options.

### To program the alphanumeric touchpad options:

1. In *PROGRAM MODE*, press **BYPASS** until *TOUCHPAD OPTIONS* is displayed.
2. Press **COMMAND** to display *UNIT NUMBER*.
3. Press **BYPASS** to display the various touchpad options.
4. Continue with the following touchpad option procedures.

## Programming the Touchpad Unit Number

---

The touchpad unit number lets the panel identify specific touchpads connected to the bus. Each alphanumeric touchpad must be assigned a unit number, different than any other bus device. Use the following guidelines when changing touchpad unit numbers:

- Always start with one touchpad connected to the panel and get it operational with the panel, before connecting additional touchpads.
- Whenever possible, such as in new installations, assign alphanumeric touchpad unit numbers before all other panel programming.
- Always work from one touchpad location when assigning unit numbers for installations with multiple touchpads.

For complete details on installing additional alphanumeric touchpads to a working system, refer to the *SuperBus Alphanumeric Touchpad Installation Instructions* included with each touchpad.

The default touchpad unit number is 001.

### Note

On systems with multiple alphanumeric touchpads, the following procedure puts all touchpads into the address set mode.

### Caution

Always delete (blank) the install code before adding wired touchpads or changing wired touchpad unit (address) numbers. The default install code is blank (\*\*\*\*).

Programming an install code before all touchpads are installed and tested may prevent correct touchpad installation and may require clearing memory and reprogramming. If an install code is desired, program it after installation is complete and just before you leave the site.

### To delete (blank) the install code prior to changing the touchpad unit number:

1. In *PROGRAM MODE*, press **BYPASS** until the display reads *INSTALL CODE*.
2. Press **COMMAND** to display *INSTALL - #####*.
3. Press the **POLICE** button. *INSTALL - \*\*\*\** (blank) is displayed.
4. Press **FIRE** to exit.

### To change the alphanumeric touchpad unit number:

1. In *PROGRAM MODE*, press **BYPASS** until *TOUCHPAD OPTIONS* is displayed.
2. Press **COMMAND**. Display reads *UNIT NUMBER*.
3. Press **COMMAND** to display the present unit number *DA ###*.
4. Press **COMMAND** to display *ENTER \_*.
5. Enter the desired three digit touchpad unit number (000 to 007).
6. Press **STATUS** to lock in the new unit number.

### Note

The touchpad will be nonfunctional after its unit number is changed until it is reactivated as follows.

7. Switch the panel PROGRAM/RUN switch to RUN (up) and back to PROGRAM (down) to reactivate the touchpad with its new unit number. Touchpad will display *PROGRAM MODE*.

## Programming the Touchpad Quiet

---

The touchpad quiet option determines whether status sounds are heard from a specific touchpad. If there is more than one touchpad, the following procedure must be done at each touchpad you want changed. The touchpad quiet default is N (no—not quiet).

### To changed the alphanumeric touchpad quiet option:

1. In *PROGRAM MODE*, press **BYPASS** until *TOUCHPAD OPTIONS* is displayed.
2. Press **COMMAND**. Display reads *UNIT NUMBER*.
3. Press **BYPASS** or **STATUS** until the display reads *TOUCHPAD QUIET N* (no) or *Y* (yes).
4. Press **COMMAND** to toggle from *Y* or *N*.
5. Press **FIRE** to exit.

## Programming Touchpad Key Beeps

---

The touchpad key beeps option determines whether key-press sounds are heard from a specific touchpad. The following procedure must be done at the specific touchpad you want changed.

The touchpad key beeps default is Y (yes—keys beep when pressed).

### To change alphanumeric touchpad key beeps:

1. In *PROGRAM MODE*, press **BYPASS** until *TOUCHPAD OPTIONS* is displayed.
2. Press **COMMAND**. Display reads *UNIT NUMBER*.
3. Press **BYPASS** or **STATUS** until the display reads *KEYBEEPS N* (no) or *Y* (yes).
4. Press **COMMAND** to toggle *Y* or *N*.
5. Press **FIRE** to exit.

#### Note

The key beeps option does not actually change until the panel RUN/PROGRAM switch is changed from PROGRAM to RUN.

## Programming the Interrogator 200 Audio Verification Module Mode, Time-out, and Access Code

---

The optional Interrogator 200 Audio Verification Module\* (AVM) allows for two-way voice communication with the monitoring station in the event of an alarm. The AVM mode, time-out, and access code need to be programmed. The default AVM mode is 03 (instant).

\* Not intended for use with UL-listed systems.

### To change the Audio Verification Module mode of operation:

1. In *PROGRAM MODE*, press **BYPASS** until *AVM MODE* is displayed.

2. Press **COMMAND** to display *AVM MODE - [present AVM mode number]*.
3. Enter the desired two-digit AVM mode number:
  - 01 - One-ring
  - 02 - One-ring Silent
  - 03 - Instant
  - 09 - One-ring Fire Siren Shutdown
  - 10 - One-ring Silent Fire Siren Shutdown
  - 11 - Instant Fire Siren Shutdown
4. Press **COMMAND**. *AVM MODE - [new mode number]* is displayed.
5. Press **FIRE** to exit.

The AVM time-out determines how long the AVM will wait without hearing a command before hanging up. The default AVM time-out is 90 seconds.

### To change the Audio Verification Module time-out:

1. In *PROGRAM MODE*, press **BYPASS** until *AVM TIME-OUT* is displayed.
2. Press **COMMAND** to display *AVM TIME-OUT - [present time-out in seconds]*.
3. Enter the desired three digit AVM time-out (030 to 300 seconds in 2-second increments).
4. Press **COMMAND**. *AVM TIME-OUT - [new time-out]* is displayed.
5. Press **FIRE** to exit.

The AVM access code helps prevent unauthorized listen-in/talk-back audio sessions. The default AVM access code is blank (\*\*\*\*).

### To program the Audio Verification Module access code:

1. In *PROGRAM MODE*, press **BYPASS** until *AVM CODE* is displayed.
2. Press **COMMAND** to display *AVM CODE - [present access code]*.
3. Enter the desired four-digit AVM access code (0001 to 9998) or press **POLICE** to clear the displayed code.

#### Note

See table D.6 in appendix D for code number defaults and restrictions.

4. Press **COMMAND**. *AVM CODE - [new access code]* is displayed.
5. Press **FIRE** to exit.

## Programming HOM Points

---

The optional HOM (Hardwire Output Module) has 4 programmable output points that can be used to activate other devices, based on the system event (alarm, trouble, etc.). For example, a HOM output can be configured to activate CCTV during an intrusion alarm, turn on lights during a fire alarm, or activate cellular phones or long-range radios if primary phone communications are out of service.

The following describes the basic HOM output point configuration steps. For complete HOM setup and programming, see the *SuperBus Hardwire Output Module Installation Instructions* (466-1127) included with each HOM.

### To program HOM output point configurations:

1. In *PROGRAM MODE*, press **BYPASS** until *HOM SETUP* is displayed.
2. Press **COMMAND** to display *POINT 01-#####* (the first point and it's previously programmed configuration code [if any]). Blank or unprogrammed points are displayed as *POINT #- \* \* \* \* \**.
3. To display other points, press **STATUS**, **BYPASS** or enter the desired two-digit point number.
4. Press **COMMAND** to change the displayed point's configuration code. The display will show *POINT #- \_ \_ \_ \_ \_*. Or press **POLICE** to enter a blank number for this point.
5. Enter the point's new 5 digit configuration number. The display will blink as you start entering numbers. To escape this sequence without changing the previously programmed number, press **FIRE**.
6. Press **COMMAND** to enter the new point configuration into panel memory. The display will stop blinking.  
**Note:** If the entered number is invalid, the display reverts to the points previously programmed configuration number.
7. To display and/or change other points, press **STATUS** or **BYPASS**.
8. When finished, press **FIRE** once to return to the Main menu.

## Programming the Time Zone

---

The TIME ZONE menu option is used to set the time zone where the panel is installed.

### To program the panel's time zone:

1. In program mode, press **BYPASS** until *TIME ZONE* is displayed.
2. Press **COMMAND** to display the current time zone setting (default = 05).
3. Enter the 2-digit number (see Table 3) that corresponds to the time zone where the panel is located.

**Table 3 Time Zone Settings**

Time Zone	Touchpad Entry
Eastern	05
Central	06
Mountain	07
Pacific	08
Hawaii	10

4. Press **COMMAND** to display the new programmed time zone.
5. Press **FIRE** to exit.

## Viewing or Programming the User-Programmable System Settings

---

Certain system settings can be user programmed while the system is in the normal (RUN) operating mode. These are:

- Primary access code
- Secondary access codes
- Arm-disarm access codes
- High and low Energy Saver Module temperatures
- Quiet exit
- Downloader enable

Use the settings recorded in appendix D, table D.6, when programming user-programmable system settings.

**To view or program the user-programmable system settings:**

1. Press **ACCESS CODE + STATUS + 8**. *SYS-TEM SETTINGS* is displayed and *System memory open* is announced.

**Note**

User programming is automatically exited after 1 minute if no buttons are pressed.

2. Press **BYPASS** to display *00 - ARM CODE 1234* (default primary access code).

**Note**

You don't have to program these settings in order. Press **BYPASS** repeatedly to display the desired setting. To jump directly to a system setting, enter its two-digit number (table D.6 in appendix D) instead of pressing **BYPASS**.

3. Press **COMMAND** to display  *\_ \_ \_ \_*.
4. Enter the desired new four-digit primary access code (0001 to 9998).

**Note**

See table D.6 in appendix D for access code number defaults and restrictions.

5. Wait 5 seconds or press **COMMAND** to set the new code. *OK* is displayed.
6. Press **BYPASS** to display *01 - ARM CODE \*\*\*\** (the first blank default secondary access code).
7. Press **COMMAND** to display  *\_ \_ \_ \_*.
8. Enter the desired new four-digit secondary access code (0001 to 9998).

**Note**

See table D.6 in appendix D for access code number defaults and restrictions.

To delete a secondary or arm/disarm code, enter the same number as the primary code.

9. Wait 5 seconds or press **COMMAND** to set the new code. *OK* is displayed.
10. Press **BYPASS** to display *02 - ARM CODE \*\*\*\** (the second blank default secondary access code).
11. Press **COMMAND** to display  *\_ \_ \_ \_*.
12. Enter the desired new four-digit secondary access code (0001 to 9998).

**Note**

See table D.6 in appendix D for access code number defaults and restrictions.

To delete a secondary or arm/disarm code, enter the same number as the primary code.

13. Wait 5 seconds or press **COMMAND** to set the new code. *OK* is displayed.
14. Repeat steps 10–13 for the remaining secondary and arm-disarm access codes 03 through 23.
15. Press **BYPASS** to display *53 - ES LOW 50* (default Energy Saver Module low temperature setting).
16. Press **COMMAND** to display  *\_ \_*.
17. Enter the desired two-digit ESM low temperature setting (45–89° F).
18. Wait 5 seconds or press **COMMAND** to set the new temperature. *OK* is displayed.
19. Press **BYPASS** to display *54 - ES HIGH 90* (default Energy Saver Module high temperature setting).
20. Press **COMMAND** to display  *\_ \_*.
21. Enter the desired two-digit ESM high temperature setting (46–90° F).
22. Wait 5 seconds or press **COMMAND** to set the new temperature. *OK* is displayed.
23. Press **BYPASS** to display *77 - QUIET OFF* (default Quiet setting).
24. Press **COMMAND** to change the current quiet setting to *OFF* or *ON*. *OK* is displayed.
25. Press **BYPASS** to display *88 - DOWNLOAD OFF* (default downloader setting).
26. Press **COMMAND** to change the current download setting to *OFF* or *ON*. *OK* is displayed.
27. Press **BYPASS** to display *99 - EXIT*.
28. Press **COMMAND** to exit user-programmable system settings. *Good bye* is announced and *1-OFF* is displayed.

## The Duress Code

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The optional duress code (if enabled) lets a system user send a silent alarm report to the central monitoring station by entering any programmed access code, with the last two digits reversed. You don't have to enter a specific duress code. For example, if the pri-

## Programming the Panel

mary access code is 1234, the duress code is automatically 1243.

### Caution

Since the use of duress access codes often result in false alarms due to keystroke errors, it is strongly recommended that the duress access code remain disabled (off). Enable only if absolutely necessary. If duress access codes are needed, their use in conjunction with the Interrogator 200 Audio Verification Module is highly recommended to reduce false alarms and accidental dispatches.

### Note

Upper Sensor number 86 (Duress Alarm) must be on to enable the duress alarm. Upper sensor 86 defaults to off.

Although the panel will not allow access codes with the same last two digits to be programmed through the touchpad, they are allowed using the CS-4000 or Downloader. Access codes with the same last two digits will *not* send a duress alarm report.

## Adjusting the Alphanumeric Touchpad Display Brightness

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The alphanumeric touchpad vacuum fluorescent (blue/green) display brightness and LCD (silver/black) display background brightness is adjustable. (Display brightness on touchpads having LED (red) type displays is not adjustable.)

### To change display brightness:

Press and hold the 1, 2, 3, or 4 touchpad button for the desired brightness level.

Once a dimmed level is set, pressing any button momentarily returns the display to full brightness.

## Requesting CS-4000/Downloader Programming

---

Although most information can be programmed from the panel, some optional information must be programmed remotely from the central station CS-4000 or Downloader. Use the information you recorded in appendix D, table D.9 to inform the central station of

your installation's special programming requirements.

### To set up for remote CS-4000 Central Station programming:

1. Contact your central station and ask the operator to program the panel for the values you recorded in appendix D, table D.9.
2. Give the operator the panel's account number and the phone number of the premises, and ask them to call back immediately.
3. Hang up the phone.
4. When the phone rings, enter **ACCESS CODE + 8** at the alphanumeric touchpad. The display reads *8 - PHONE TEST* and communication will start.
5. When the central station releases the panel, *I - OFF* is displayed. The operator may call you to discuss the programming.

### Note

Feature number F33 (Downloader Access Enable) or user-programmable system setting 88 (Download Enable) must be set to on in order for remote downloader programming to be enabled. These are two different ways to change the same value, which defaults to off.

### To initiate an ITI ToolBox download session:

1. Contact your download station and ask the operator to prepare to download to the panel.
2. In *PROGRAM MODE*, enter the phone number of the downloader as the panel primary phone number.
3. Program the desired panel account number.
4. Make sure feature number F33 (Download Access Enable) is on. F33 defaults to off.
5. Exit *PROGRAM MODE*.
6. Enter **ACCESS CODE + 8** at an alphanumeric touchpad.
7. The display reads *8 - PHONE TEST*, the panel speaker and all interior sirens sound one long beep, and the speaker announces *Phone test is on*.
8. When the panel completes the test, the system returns to level 1 and the speaker announces *System phone test is OK. Alarm system is OFF*.
9. If the panel announces *Phone test failure*, or *System phone test is invalid*, call the downloader station to verify the Downloader phone number and that the Downloader is set up properly.



## Installing Line Carrier Devices

This section describes how to install the following line carrier wireless devices:

- Wireless Interior Siren (WIS)
- X-10 Lamp Module

### Notes

The Class II Line Carrier Power Transformer (60-678) is required for line carrier device operation.

The operation of the lamp module is for supplementary purposes only.

## Installing and Programming the Wireless Interior Siren (WIS)

Installing and programming the Wireless Interior Siren (WIS) includes the following:

- Setting the WIS DIP switches and installing the battery
- Connecting an external siren to the WIS
- Programming the WIS house code

## Setting the WIS DIP Switches and Installing the Battery

A 9V backup battery (not included) powers the WIS during an AC power failure. The battery type can be alkaline, lithium, or NiCd. When backup battery voltage gets low, the WIS sounds a single beep every 60 seconds until the battery is replaced.

**To set DIP switches and install the backup batteries:**

1. Remove the battery cover on the back of the WIS as shown in figure 61.

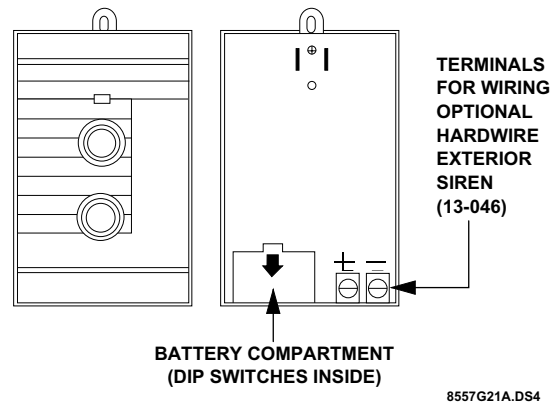


Figure 6 WIS Battery Cover Location

2. Set DIP switches as appropriate (see below).

### DIP Switch 1—Battery Type

- OFF—Install an alkaline or lithium type battery.
- ON—Activates a trickle charge circuit for use with a NiCd battery.

### WARNING!

**Never turn on DIP switch 1 when using an alkaline or lithium battery. Personal injury and equipment damage may result if these batteries are recharged, short-circuited, punctured, or discharged at higher than acceptable rates.**

### DIP Switch 2—External Siren Delay

- OFF—External siren terminals activate immediately during an alarm condition. Use this setting when the siren connected to the external siren terminals is located inside the premises.
- ON—External siren terminals activate 15 seconds after an alarm condition occurs. Use this setting when the siren connected to the external siren terminals is located outside. This helps prevent disturbing neighbors in cases of accidental alarms that last fewer than 15 seconds.

### DIP Switches 3 and 4—Status Tones

- 3 and 4 OFF—The WIS internal piezos and external siren do not produce any status tones. Use this setting when the WIS is installed in or near sleeping areas.
- 3 ON, 4 OFF—The WIS internal piezos produce normal-volume status tones. Use this setting when the WIS is installed in areas where status tones need to be heard.

## Installing Line Carrier Devices

- 3 OFF, 4 ON—The WIS internal piezos and external siren produce high-volume status tones. Use this setting when status tones need to be heard in remote areas, inside and outside of the premises.

### Caution

Never turn on both DIP switches 3 and 4; doing so may permanently damage the WIS.

3. Connect the battery to the battery clip and insert the battery into the compartment.
4. Replace the battery cover.

## Connecting an External Siren to the WIS

Figure 7 shows how to connect the Hardwire Exterior Siren (13-046) to the WIS terminals. These terminals activate for alarms only and provide 100 mA maximum current at 6 VDC.

### Caution

Only the Hardwire Exterior Siren (13-046) can be connected to the WIS terminals. Other sirens may draw more current than the WIS can provide and can cause permanent damage to the WIS.

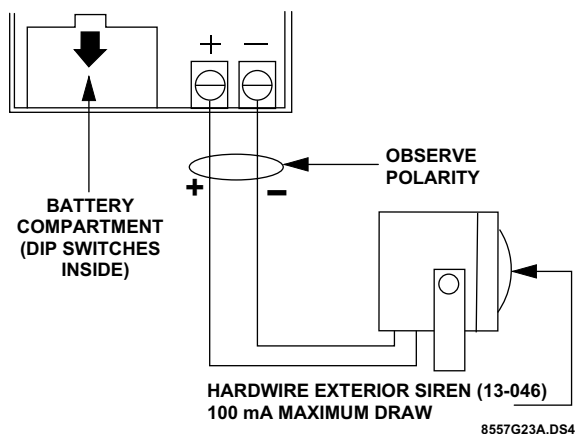


Figure 7 Wiring the Hardwire Exterior Siren to the WIS

## Programming the WIS House Code

1. Plug the WIS into an outlet that is not controlled by a switch.
2. Press **CODE + 1** on the alphanumeric touchpad.
3. The WIS sounds one beep and the WIS LED flashes, indicating the WIS received the signal from the panel.

### Note

If WIS DIP switches 3 and 4 are set to OFF, no beep will be heard. You must cause an alarm for the WIS to sound.

4. If the WIS does not respond, unplug it and disconnect the battery. Wait at least 30 seconds, and then reconnect the battery and repeat steps 1 and 2. If the WIS still does not respond, proceed to appendix B, "Troubleshooting."
5. To permanently mount the WIS, unplug it and remove the outlet cover screw.
6. Plug the WIS into the outlet and secure it with the outlet screw.

### WARNING!

Use extreme caution when securing the WIS to a metal outlet cover. You could receive a serious shock if the metal outlet cover drops down onto the prongs of the plug while you are securing the WIS and cover to the outlet box.

## Installing X-10 Lamp Modules

When installing X-10 Lamp Modules:

- Use only incandescent lamps.
- Do not plug X-10 Lamp Modules into outlets controlled by a switch.
- Do not use extension cords to connect several lamps to one module.

### Caution

Use X-10 *Lamp* Modules to control light fixtures. Do not use X-10 *Appliance* Modules. Appliance Modules are not controlled during an alarm.

**To install X-10 Lamp Modules:**

1. Plug the lamp cord into the bottom of the lamp module.
2. Plug the module into a lower AC outlet.
3. Refer to table D.5 in appendix D for the house code you programmed into the panel, and then find the letter that corresponds to that house code from table C.3 in appendix C. Each letter setting represents 16 possible panel house codes. For example, house code 113 corresponds with “B” on the X-10 Lamp Module’s house dial.
4. Set the house dial on the module to the appropriate letter.
5. Set the unit number dial from 1 to 9 as shown in table C.4 in appendix C.

**Note**

X-10 Lamp Module unit numbers 1 and 2 have special system functions: unit 1 provides entry and exit lighting, and unit 2 provides visual indication of arming level. X-10 Appliance Modules assigned to units 3–9 can be individually controlled from the touchpad and are automatically turned off during police alarms.

## Testing the System

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This section describes how to perform the following test procedures:

- Testing sensors
- Testing the Energy Saver Module
- Testing the Hardwire Input Module
- Testing the X-10 Lamp Modules
- Testing phone communication
- Testing central station communications

You should test the system after installing, after servicing, and after adding or removing devices from the system. Refer to the troubleshooting chart in appendix B for troubleshooting help.

## Testing Sensors

---

We recommend that you test the sensors after all programming is completed and whenever a sensor-related problem occurs.

**Note**

While the sensor test is a valuable installation and service tool, it only tests sensor operation for the current conditions. You should perform a sensor test after any change in environment, equipment, or programming.

1. Set the panel PROGRAM/RUN switch to RUN (up) and attach, close, and secure the panel cover.
2. Place all sensors in their secured (nonalarm) state.
3. Enter **ACCESS CODE + STATUS + 9** (dealer sensor test) at an alphanumeric touchpad.
4. The speaker announces “*Sensor test is on,*” interior sirens and speakers sound one long beep, and the display reads *9 - SENSOR TEST*.
5. Trip each sensor one at a time.
6. Interior sirens and speakers sound transmission beeps as each sensor is tripped. Each beep represents one data round.
7. Count the number of transmission beeps and refer to table 3 for minimum requirements.
8. After the beeps, *[sensor #] OK* is displayed confirming the sensor number tested. If the system does not respond, or if the sensor does not meet the minimum transmission beep requirements, refer to the “If a Sensor Fails the Sensor Test” section.
9. Press the **STATUS** button when you think all sensors are tested. The system announces any untested sensor numbers.  
If all sensors have been tested, the alphanumeric touchpad displays *ALL SENSOR OKAY* and the speaker announces “*Sensor test is on. All sensor test okay.*”
10. Test all untested sensors. The system stays in sensor test for 15 minutes, preserving the list of untested sensors. After 15 minutes the panel disarms to level 1, automatically.
11. Enter **ACCESS CODE + STATUS + 9** while the system is still in sensor test if you need more time to complete the sensor test.
12. Enter **ACCESS CODE + 1** to exit sensor test.
13. The system disarms to level 1, and the speaker announces “*Alarm system is off.*”

**Note**

While in dealer sensor test, a sensor will not beep unless there is at least 10 dB of wireless signal margin.

**Table 4 Minimum Transmission Beeps**

Type of Sensor	Number of Beeps
Wireless Intrusion Sensors	7–8 beeps
Wireless Smoke & Heat Sensors	7–8 beeps
Wireless Environmental/Panic Buttons	7–8 beeps
Hardwire Loops	1
Panel Emergency Buttons	1

## If a Sensor Fails the Sensor Test

---

If sirens do not beep when a sensor is tripped, use an ITI RF Sniffer (60-401) test tool to verify that the sensor is transmitting. Constant beeps from the RF Sniffer indicate a runaway (faulty) sensor. Remove the sensor's battery and replace the sensor.

If possible, locate sensors within 100 feet of the panel. While a transmitter may have a range of 1,000 feet or more out in the open, the environment at the installation site can have a significant effect on transmitter range. Sometimes a change in sensor location can help overcome adverse wireless conditions.

### To improve sensor communication, you can

- reposition the sensor,
- relocate the sensor,
- if necessary, replace the sensor.

### To reposition a sensor:

1. Rotate the sensor and test for improved sensor communication at 90 and 180 degrees from the original position.
2. If poor communication persists, relocate the sensor as described as follows.

### To relocate a sensor:

1. Test the sensor a few inches from the original position.
2. Increase the distance from the original position and retest until an acceptable location is found.
3. Mount the sensor in the new location.
4. If no location is acceptable, replace the sensor.

### To replace a sensor:

1. Test a known good sensor at the same location.
2. If the transmission beeps remain below the minimum level, avoid mounting a sensor at that location.
3. If the replacement sensor functions, contact ITI for repair or replacement of the problem sensor.

## Testing the Energy Saver Module (ESM)

---

### Note

Upper sensor number 88 must be on to enable the Energy Saver Module.

### To test the Energy Saver Module:

1. Press **STATUS + STATUS** to display the system status, *ENERGY SAVER OFF*, and the present *TEMPERATURE ##*. The temperature displayed (and/or announced) should match the house thermostat. If the temperatures do not match, refer to “Programming the Energy Saver Module Freeze and Set Temperatures” section or the “Troubleshooting” table in appendix B.
2. Press **COMMAND + 5** to turn the energy saver function on. The display will indicate *ENERGY SAVER ON* and the ESM relay will click once.
3. Press **COMMAND + 5** again to turn the energy saver function off. The display will indicate *ENERGY SAVER OFF*.

### Note

There is a 5-minute delay after the Energy Saver Module returns control to the furnace/AC before it will override the furnace/AC again.

If the red ESM LED is not flashing continuously, set the panel PROGRAM/RUN switch to RUN and turn off the panel power switch. Verify that all wiring is correct and that all bus devices (including hardwire touchpads) are set with different unit numbers.

Whenever the ESM unit number is changed, you must turn off the panel power switch, turn it back on, and then enter the program mode for the panel and ESM to communicate successfully.

## Testing the Hardwire Input Module (HIM)

---

### To test the optional Hardwire Input Module:

1. Verify that all wiring at the panel and the HIM are correct.
2. Turn on the panel power switch.

#### Note

If the red HIM LED is not flashing continuously, set the panel PROGRAM/RUN switch to RUN and turn off the panel power switch. Verify that all wiring is correct and that all bus devices (including hardwire touchpads) are set with different unit ID numbers.

Whenever the HIM unit ID number is changed, you must turn off the panel power switch, turn it back on, and then enter the program mode for the panel and HIM to communicate successfully.

If the system uses hardwire sensors only, turn off upper sensor 94 (Receiver Failure) in the panel.

3. Set the panel's PROGRAM/RUN switch to PROGRAM.  
If the alphanumeric display continues to read *I-OFF* and the *I* is flashing, you must enter the install code (four digit install access code) to get the panel into the program mode.  
The alphanumeric display should read *PROGRAM MODE* and the red HIM LED should be flashing continuously, indicating successful bus communication with the panel.
4. Set the panel's PROGRAM/RUN switch to RUN and refer to the "Testing Sensors" section for testing hardwired sensors connected to the HIM.

## Testing the Hardwire Output Module (HOM)

---

### To test the optional Hardwire Output Module:

1. Verify that all wiring at the panel and the HOM is correct.
2. Turn on the panel power switch.
3. Set the panel's PROGRAM/RUN switch to PROGRAM.

If the alphanumeric display continues to read *I-OFF* and the *I* is flashing, you must enter the install code (four digit install access code) to get the panel into the program mode.

The alphanumeric display should read *PROGRAM MODE* and the red HOM LED should be flashing continuously, indicating successful bus communication with the panel.

4. Set the panel's PROGRAM/RUN switch to RUN.
5. Activate each of the programmed system triggering events to verify correct HOM output response.

#### Note

If the red HOM LED is not flashing continuously, set the panel PROGRAM/RUN switch to RUN and turn off the panel power switch. Verify that all wiring is correct and that all bus devices (including hardwire touchpads) are set with different unit ID numbers.

Whenever the HOM unit ID number is changed, you must turn off the panel power switch, turn it back on, and then enter the program mode for the panel and HOM to communicate successfully.

## Testing the X-10 Lamp Modules

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Refer to table C.4 in appendix C for X-10 lamp and appliance module control operation.

### To test the X-10 Lamp Modules:

1. Press **COMMAND + 0** repeatedly to turn all lights on and off together. Appliance modules, if any, are all turned off by pressing **COMMAND + 0** but are not all turned on this way.
2. Press **BYPASS + 1** repeatedly to turn light 1 on and off.
3. Repeat step 2 for remaining assigned lamp and appliance module unit numbers.
4. Press **ACCESS CODE + 3** to arm the system to Level 3-Away. Unit 1 light should turn on and stay on for 5 minutes. Unit 2 light should blink three times to indicate the arming level. All remaining lights should be unaffected.
5. Press **ACCESS CODE + 1** to disarm the system. If Unit 1 light was on for an entry or alarm, it

## Testing the System

will turn off in 5 minutes. Unit 2 light should blink once to indicate arming Level 1-Off. All remaining lights should be unaffected.

6. Lights should turn on and remain on during fire and auxiliary/medical alarms and flash during a police or an intrusion alarm.

## Testing Phone Communication

---

Perform a phone test to check the phone communication between the panel and the central station.

### To perform a phone test:

1. Enter **ACCESS CODE + 8** at an alphanumeric touchpad.
2. The display reads *8 - PHONE TEST*, the panel speaker and all interior sirens sound one long beep, and the speaker announces *Phone test is on*.
3. When the panel completes the test, the system returns to level 1 and the speaker announces *Phone Test is OK. Alarm system is OFF*.
4. If the panel announces *Phone test failure*, proceed to the following instructions.

### If the phone test fails:

1. Check that the panel is plugged into the RJ-31X/CA-38A phone jack.
2. Enter **ACCESS CODE + 8** again.
3. If the phone test fails again, check the phone number programmed into the panel.
4. If the phone test fails again, check the phone connection wiring.

## Testing Central Station Communication

---

After performing sensor and phone tests, check that the system is reporting alarms successfully to the central station.

### To test communication with the central station:

1. Call the central station and tell the operator that you will be testing the system.
2. Arm the system.
3. Test each of the touchpad and wireless panic buttons and trip at least one sensor of each type—fire, intrusion, etc.—to verify that the appropriate alarms are working correctly.
4. If an Audio Verification Module is installed, verify that it is operating correctly and that the central station can both listen-in and talk-back through it.
5. When you finish testing the system, call the central station to verify that the alarms were received.

### Note

If you experience trouble communicating with the central station (or Downloader), verify the panel's primary phone number and also that panel feature number F33 (Downloader Access Enable) is turned on. Also verify panel feature number F43 (Demo Kit Mode) is turned off (default setting). If F43 is on, the account number defaults to "UD-EMO" to let the central station know that the panel is in the demo kit mode of operation and that special demo defaults and special alarm handling is in force.

## Displaying the Panel Version Code

---

After testing and troubleshooting the system (as outlined in this section and in appendix B) you may require Technical Support assistance. To precisely identify the panel hardware and software to support personnel, you can display the panel hardware/software version code.

### To display/announce the panel version code:

1. Set the panel RUN/PROGRAM switch to RUN.
2. Enter primary **ACCESS CODE + STATUS + 7**. The alphanumeric touchpad will display *YYY\*XXX* and *System YYY Level XXXX* will be announced. *YYY* represents the panel family (hardware) product code and *XXXX* represents the EEPROM (software) version code.

## Appendix A: Command Summary

---

This appendix contains a summary of all system user commands and what each command does. For operating command details refer to the *Security and Home Automation Owner's Manual*.

### User Operating Command Summary

---

Table A.1 provides a description of all commands for operating the system. For commands that require an access code, use either the primary or secondary access code unless otherwise indicated. While these are called *user operating commands*, you may need to use some or all of these commands during the installation and programming process. In the table, CODE represents the four-digit access code (default is 1234).

**Table A.1 Summary of User Operating Commands**

Action	Command	Short Command	Voice Message Confirmation
Disarm to level 1-Off	CODE + 1		<i>Alarm system is off.</i>
Arm to level 2-Stay	CODE + 2	COMMAND + 2 *	<i>Alarm system is on, level 2.</i>
Arm to level 2, no delay	CODE + 2 + 4	COMMAND + 2 + 4 *	<i>Alarm system is on, level 2, no delay.</i>
Arm to level 2, indirect bypass	CODE + 2 + BYPASS		<i>Alarm system is on, level 2. Sensor [sensor #] bypassed.</i>
Arm to level 3-Away	CODE + 3	COMMAND + 3 *	<i>Alarm system is on, level 3.</i>
Arm to level 3, no delay	CODE + 3 + 4	COMMAND + 3 + 4 *	<i>Alarm system is on, level 3, no delay.</i>
Arm to level 3, indirect bypass	CODE + 3 + BYPASS		<i>Alarm system is on, level 3. Sensor [sensor #] bypassed.</i>
Direct bypass †	CODE + BYPASS + [sensor #]		<i>Sensor [sensor #] bypassed.</i>
Unbypass ‡	CODE + BYPASS + [sensor #]		<i>Sensor [sensor #] okay.</i>
Energy Saver Module on/off	CODE + 5	COMMAND + 5	<i>Energy Saver is on/off.</i>
Chime on/off	CODE + 7	COMMAND + 7	<i>On, off.</i>
Phone test on	CODE + 8		<i>Phone test is on.</i>
Sensor test on	CODE + 9		<i>Sensor test is on.</i>
All lights on/off	CODE + 0	COMMAND + 0	<i>On, off.</i>
Individual lights on/off	BYPASS + n (n= 1-9)		<i>[Unit #] on/off.</i>
Review alarm memory	CODE + STATUS + 5	COMMAND + STATUS	<i>Alarm memory is okay, or Sensor [sensor #] [alarm name] alarm memory.</i>
Review short panel status	STATUS		<i>Alarm system is [status message].</i>

(continued)

**Table A.1 Summary of User Operating Commands (Continued)**

Action	Command	Short Command	Voice Message Confirmation
Review long panel status	CODE + STATUS + 1	STATUS + STATUS	<i>Hello alarm system is... (see Owner's Manual for possible messages)... Good-bye.</i>
Panel Version	CODE + STATUS + 7		<i>System yyy (product code) Level xxxx (EEPROM code)</i>
Adjust alphanumeric display brightness	Press and hold buttons 1–4 (1–full dim, 4–full bright)		

\* Feature number F37 (Quick Arming) must be on to enable short arming commands. This short command only works when arming to a higher level.

† This command only works if the sensor you are bypassing is active in the current security level.

‡ This command only works when upper sensor 87 is off and you are unbypassing a sensor that is already bypassed.

## System Settings (User-Programming) Command Summary

Table A.1 provides a description of all user-programming commands. For commands that require an access code (CODE), use the primary access code (default is 1234).

To enter the user-programming mode, press **CODE + STATUS + 8**. The system will announce *System memory open*. Press **BYPASS** or **STATUS** buttons to scroll through the list of system settings. Proceed to any of the desired actions listed in table D.6.

To exit user-programming mode at any time, press **BYPASS + 99 + COMMAND + COMMAND**. Or, wait 1 minute—system will automatically announce *Good-bye* and return to the normal mode of operation..

**Table A.2 Summary of System Settings (User-Programming) Commands**

Action	Command	Display/Voice Message Confirmation
Enter new primary access code 00	00 + COMMAND + COMMAND + [new CODE] + COMMAND	<i>[new primary access code], okay.</i>
Enter new secondary access code (01-04)	[01–04] + COMMAND + COMMAND + [new CODE] + COMMAND	<i>[new secondary access code], okay.</i>
Enter new arm/disarm code 05–23	[05–23] + COMMAND + COMMAND + [new CODE] + COMMAND	<i>[new arm/disarm access code], okay.</i>
Enter new Energy Saver Module low temperature setting	53 + COMMAND + COMMAND + [new low temp.] + COMMAND	<i>[new ESM low temperature], okay.</i>
Enter new Energy Saver Module high temperature setting	54 + COMMAND + COMMAND + [new high temp.] + COMMAND	<i>[new ESM high temperature], okay.</i>
Turn quiet exit on or off	77 + COMMAND + COMMAND	<i>[On or off]</i>
Turn download enable on or off	88 + COMMAND + COMMAND	<i>[On or off]</i>



## Appendix B: Troubleshooting

This appendix contains a summary of system troubleshooting suggestions.

**Table B.1 Troubleshooting System Problems**

Feature	Problem	Solution
<b>Access Code</b>		
	Customer cannot remember access code(s).	<ol style="list-style-type: none"> <li>1. Check your records to see if you have the customer's access code(s) on file.</li> <li>2. If panel is monitored, trap the panel and read the access code(s) from the CS-4000 or read the access code(s) from the Downloader.</li> <li>3. If panel is not monitored, clear memory and reprogram the panel locally.</li> </ol>
	Installer cannot remember install code.	<ol style="list-style-type: none"> <li>1. Check your records to see if you have the install code on file.</li> <li>2. If panel is monitored, trap the panel and read the access code(s) from the CS-4000 or read the access code(s) from the downloader.</li> <li>3. If the panel is not monitored and has no access to downloading, clear memory and reprogram the panel locally.</li> </ol>
	Some access codes do "strange things."	<ol style="list-style-type: none"> <li>1. Codes containing the number 6 are reserved. 6 is used for phone sensor bypassing.</li> <li>2. Codes 7777, 8888, and 9999 are reserved for phone panic alarms.</li> <li>3. Access code's last two digits must not be the same for correct duress code operation. (See duress code feature in this table.)</li> </ol>
<b>Arming/Disarming</b>		
	System won't arm.	<ol style="list-style-type: none"> <li>1. If arming to level 2, make sure all monitored perimeter doors and windows are closed.</li> <li>2. If arming to level 3, make sure all perimeter and interior sensors are closed.</li> <li>3. Press <b>STATUS</b> for an indication of the problem.</li> </ol>
<b>Batteries</b>		
	Touchpad indicates <i>CPU low battery</i> and/or <i>System battery failure</i> is heard.	Check the panel backup battery and connections and replace if necessary. Also, refer to the panel power LED section in this table.
	Touchpad indicates <i>[sensor #] trouble</i> and/or <i>Sensor [sensor #] low battery</i> is heard.	Replace the indicated sensor's battery.

**Table B.1 Troubleshooting System Problems (Continued)**

Feature	Problem	Solution
<b>Bypass</b>		
	Touchpad indicates <i>Fail</i> and/or <i>Invalid</i> is heard when you attempt to bypass a sensor.	Sensor may already be bypassed or you are trying to bypass a 24-hour sensor that cannot be bypassed or a sensor that is not active in the current security level.
	System cancels sensor bypass when you try to arm to level 2 or 3.	Arm to the desired level before bypassing a sensor.
<b>Central Station Reporting</b>		
	Central station is not receiving reports from panel.	<ol style="list-style-type: none"> <li>1. Check that the DB-8 Cord is plugged into the panel phone jack and into the RJ-31X/CA-38A Jack.</li> <li>2. Check for proper RJ-31X/CA-38A Jack to phone line wiring.</li> <li>3. Verify with the central station operator that the correct receiver line phone number is programmed into the panel. Reprogram the phone number and retest, if necessary.</li> <li>4. Verify that the correct phone format (ITI or 4/2) is being used.</li> <li>5. Replace faulty RJ-31X/CA-38A Jack.</li> <li>6. Replace faulty DB-8 Cord.</li> <li>7. Check that the premises phone line is working.</li> <li>8. Perform a phone test.</li> </ol>
<b>Duress Code</b>		
	Optional duress code is not working.	<ol style="list-style-type: none"> <li>1. Make sure last two digits of access code are not the same. (See access code feature in this table.)</li> <li>2. Check that upper sensor 86 (duress alarm) is on.</li> </ol>
<b>False Alarm</b>		
	Alarm is being sent by mistake.	<p>Enter <b>ACCESS CODE + 1</b> immediately to cancel the alarm. This command bypasses the alarm if done within 15 seconds after activation (feature number F06 [Dialer Abort] must be on). The system will announce alarm bypassed and report will not be sent to the monitoring station.</p> <p><b>Note</b> Fire alarms and duress detections cannot be bypassed.</p>
<b>Hardwire Alphanumeric Touchpad</b>		
	Touchpad display seems “stuck” in the program mode.	Check that panel PROGRAM/RUN switch is set to RUN (up).
	Touchpad displays incorrectly or displays <i>DA ###</i> and does not respond to buttons.	<ol style="list-style-type: none"> <li>1. If panel has been preprogrammed with an install code, enter the four-digit install code at a working touchpad or from a telephone .</li> <li>2. Check for hardwire bus address conflict (two devices having the same device address).</li> <li>3. Check for out-of-range device address number. Should be 000–007.</li> </ol>

**Table B.1 Troubleshooting System Problems (Continued)**

Feature	Problem	Solution
<b>Hardwire Alphanumeric Touchpad (Continued)</b>		
	Touchpad displays ***** and does not respond to buttons.	<ol style="list-style-type: none"> <li>1. Reset the touchpad by switching into and out of program mode. Switch the panel PROGRAM/RUN switch from RUN to PROGRAM. Enter the four-digit install code if panel has been preprogrammed with one using a working touchpad or telephone. Switch the panel PROGRAM/RUN switch back to RUN again.</li> <li>2. Check for hardwire bus miswiring.</li> </ol>
	Touchpad appears “dead” (no display or response to buttons).	<ol style="list-style-type: none"> <li>1. Check that the wiring connector is plugged into the back of the touchpad.</li> <li>2. Check for hardwire bus miswiring, opens, or shorts.</li> <li>3. Check panel fuse F2.</li> </ol>
<b>Hardwire Output Module</b>		
	LED is off (not blinking).	<ol style="list-style-type: none"> <li>1. Check HOM and panel fuses.</li> <li>2. Check wiring at HOM and panel.</li> <li>3. Check that HOM unit number setting is different from all other connected bus devices.</li> <li>4. Check for proper panel/HOM initialization after changing unit numbers.</li> </ol>
	LED stays on.	<ol style="list-style-type: none"> <li>1. Reinitialize panel and HOM by turning panel power off and on.</li> <li>2. HOM circuit failure. Replace HOM.</li> </ol>
	LED blinks but outputs don’t activate.	<ol style="list-style-type: none"> <li>1. Check panel/HOM programming.</li> </ol>
	One output never activates.	<ol style="list-style-type: none"> <li>1. Check panel/HOM programming.</li> <li>2. Check that the point (HOM output) programmed trigger event actually occurs.</li> <li>3. Check wiring at HOM terminals and connected device.</li> </ol>
	Output(s) activates only momentarily.	<ol style="list-style-type: none"> <li>1. Check that the panel/HOM point programming (HOM output) uses the correct response configuration.</li> </ol>
	Output(s) activates randomly.	<ol style="list-style-type: none"> <li>1. Check HOM and panel fuses.</li> <li>2. Check wiring routing and length between panel and HOM.</li> <li>3. Check that HOM unit number setting is different from all other connected bus devices.</li> </ol>
<b>Hardwire Output Module (Continued)</b>		
	HOM tamper input is inoperable.	

**Table B.1 Troubleshooting System Problems (Continued)**

Feature	Problem	Solution
		1. Some panels and panel versions do not “read” the HOM’s built-in tamper input status. Connect the HOM tamper switch to a panel or HIM zone input.
	One output stays activated.	1. Check to see if the point is programmed for a 3-minute “on” time and if the triggering event for the point is repeatedly resetting the 3-minute timer. 2. Output may have failed or been overloaded. Reprogram to use a different (unused) output.
<b>Hardwire Siren</b>		
	Exterior sirens are not producing alarm sounds.	1. Check for 12 to 22 VDC between panel terminals 3 and 4 and for 12 VDC between terminals 4 and 12. 2. Check panel fuses F1 and F2. 3. Check for correct wiring at the siren and panel terminals. 4. Check for required jumper wire between panel terminals 5 and 12.
	Exterior sirens produce status sounds.	Check for correct wiring at the siren and panel terminals.
	Interior sirens are not producing sounds.	1. Check for 12 VDC between panel terminals 17 and 18 with siren on. 2. Check panel fuses F1 and F2. 3. Check for correct wiring at the siren and panel terminals. 4. Make sure that F11 (Interior Siren Sounds Disable) feature is off.
<b>Hardwire Zones</b>		
	Panel does not respond to hardwire zone input.	1. Check that zones are programmed into panel and add if missing. 2. Make sure that zone is in a restoral-required group or make sure that system is armed to active level before tripping sensor. 3. If optional HIM zone, check that the HIM LED is blinking to show communication with panel. <b>Note</b> Panel hardwire zones are ignored for 1 minute following power-on (HIM zones are not ignored for this period).
	Touchpad indicates [sensor #], trouble and/or Sensor [sensor #], trouble is heard.	1. Check that the 4.7K ohm end-of-line resistor is correctly installed in the zone loop circuit. 2. Check normally open (N/O) circuit for a break in the wires. 3. Check normally closed (N/C) circuit for a short in the wires.
<b>Lights</b>		
	Light fixture using X-10 Lamp Module does not work.	

**Table B.1 Troubleshooting System Problems (Continued)**

Feature	Problem	Solution
		See X-10 Lamp Modules feature in this table.
<b>Panel</b>		
	Panel does not power up. Panel LED is off and alphanumeric touchpad display is dark.	<ol style="list-style-type: none"> <li>1. Check that panel power switch is on.</li> <li>2. Check the AC circuit breaker to be sure the circuit is live.</li> <li>3. Check that the backup battery is installed correctly, the battery wires are connected, and the AC power transformer is plugged in.</li> <li>4. Check for proper panel and transformer wiring.</li> <li>5. Measure the incoming AC voltage at the panel terminals. Should read from 16 to 18.5 VAC at panel terminals 1 and 2.</li> </ol>
	No incoming AC voltage at panel terminals 1 and 2.	<ol style="list-style-type: none"> <li>1. Unplug the AC power transformer and disconnect the wires from the transformer and the panel.</li> <li>2. Check transformer to panel wire for short or open circuits.</li> <li>3. Plug in the transformer and check for 16.5 VAC at the transformer unconnected terminals. If zero (0) volts, replace the transformer.</li> </ol>
	Panel power LED is on constantly, display indicates <i>CPU Low Battery</i> or voice sounds <i>Battery failure</i> .	<ol style="list-style-type: none"> <li>1. Check that the backup battery is installed correctly, the battery wires are connected, and the AC power transformer is plugged in.</li> <li>2. Measure the incoming AC voltage at the panel terminals. It should read from 16 to 18.5 VAC at panel terminals 1 and 2.</li> <li>3. Remove the backup battery power by disconnecting the battery's red (positive) wire.</li> <li>4. Check for 13.5 to 13.9 VDC battery charging voltage between panel terminal 4 (GND) and the disconnected battery red wire. If the charging voltage is <b>not</b> within range, call Technical Services.</li> <li>5. Check for 11.5 to 13.9 VDC battery voltage between the backup battery's spade lugs. If the battery voltage is <b>not</b> within the recommended range, replace the battery.</li> </ol> <p><b>Note</b> When the panel is running a backup battery test, the reading at the connected battery can range from 11.4 to 13.7 VDC. The panel automatically runs a backup battery test under the following conditions: (1) on initial power-up. (2) during sensor test (not dealer sensor test), (3) once every minute when backup battery has failed, (4) once every 24 hours, at the programmed STIME.</p> <ol style="list-style-type: none"> <li>6. Restore the backup battery power by reconnecting the battery's red wire.</li> </ol> <p><b>Note</b> While the AC power transformer is plugged in, the panel automatically charges the battery. While the battery is charging for the first time it is normal for the system to indicate <i>System battery failure</i>. This can take a number of hours depending on the battery's initial charge. Once the battery reaches 12.5 VDC (full charge as measured while in battery test), the arming level stops flashing. If the trouble condition persists after 24 hours, replace the backup battery.</p>

**Panel (Continued)**

**Table B.1 Troubleshooting System Problems (Continued)**

Feature	Problem	Solution
	Panel power LED is flashing, and after pressing <b>STATUS</b> the touchpad indicates <i>AC power failure</i> . (Panel continues to operate from backup battery.)	<ol style="list-style-type: none"> <li>1. Check the AC circuit breaker to be sure the circuit is live.</li> <li>2. Check for proper panel and transformer wiring.</li> <li>3. Check that the transformer is plugged into a nonswitched outlet and secured with the provided screw.</li> <li>4. Check that the transformer is supplying AC to the panel. (Transformer internal fuse may be blown.)</li> </ol> <p><b>WARNING!</b> Be careful when securing the transformer to an outlet with a metal cover. Hold the cover tightly in place. You could receive a serious shock if the metal outlet cover drops down onto the prongs of the plug while you are securing the transformer and cover to the outlet box.</p>
<b>Phones</b>	Loss of dial tone on premises phones after wiring the RJ-31X Jack or connecting the DB-8 Cord.	<ol style="list-style-type: none"> <li>1. Wait 2 minutes and try again. The panel may be busy trying to report to the CS-4000.</li> <li>2. Check the RJ-31X Jack's wiring.</li> <li>3. Check the panel connection to the DB-8 Cord.</li> <li>4. Replace the RJ-31X Jack.</li> <li>5. Replace the DB-8 Cord.</li> <li>6. Perform a phone test after troubleshooting the phone line.</li> </ol>
	Constant dial tone, preventing dial out on premises phones.	Polarity-sensitive phones exist on the premises. Reverse the phone wires connected to the brown and gray wire terminals on the RJ-31X Jack.
	Phone does not work.	Disconnect the panel DB-8 Cord from the RJ-31 Jack. If the phone still doesn't work, the system is okay and the problem is in the wiring.
<b>Sensor</b>	Touchpad indicates <i>[sensor #] trouble</i> and/or <i>Sensor [sensor #] trouble</i> is heard.	Replace the sensor's cover, if it is off. Trip the sensor.
	Touchpad indicates <i>[sensor #] supervisory</i> and/or <i>Sensor [sensor #] failure</i> is heard.	The sensor is not communicating with the panel.
	Touchpad indicates <i>Sensor [sensor #] trouble</i> and/or <i>Sensor [sensor #] low battery</i> is heard.	Replace the indicated sensor's battery.
<b>Smoke Sensor</b>	Beeps once every minute.	Batteries are low. Replace all of the smoke sensor batteries.

**Trouble Beeps** (see also *Panel*)

Table B.1 Troubleshooting System Problems (Continued)

Feature	Problem	Solution
	Press <b>STATUS</b> for an indication of the problem. Doing a status or disarm (level 1) disables the trouble beeps for 10 hours.	
<b>Wireless Interior Siren (WIS)</b>		
	No sound or LED activity from the siren.	
		<ol style="list-style-type: none"> <li>1. Check that the panel AC transformer is plugged into an outlet.</li> <li>2. Check that the WIS is not plugged into an outlet controlled by a switch. Relocate to a different outlet, if necessary.</li> <li>3. Program the house code into the panel and set the WIS DIP switches.</li> <li>4. Check that the panel is powered by the special two-wire Class II Line Carrier Power Transformer.</li> <li>5. Make sure that the WIS is on the same electrical phase wiring as the AC power transformer. Relocate the WIS to various outlets to identify compatible locations.</li> <li>6. Move the WIS to a circuit that is not used by any other appliances.</li> </ol>
	Intermittent siren operation.	
		<ol style="list-style-type: none"> <li>1. Check that the WIS is not plugged into an outlet controlled by a switch. Relocate to an unswitched outlet.</li> <li>2. Move the WIS to a circuit that is not used by any other appliances.</li> </ol>
	The WIS beeps once every minute.	
		The WIS may have a low battery. Replace with the appropriate battery based on the setting of DIP switch 1. (ON = NiCd, OFF = alkaline or lithium.)
<b>Wireless Sensors</b>		
	The panel does not respond to sensor activity. There are no alarm, chime, or sensor test sounds.	
		<ol style="list-style-type: none"> <li>1. Check that the wireless sensor battery is installed.</li> <li>2. Check the sensor battery for low voltage. Replace batteries, if necessary.</li> <li>3. Use an RF Sniffer (60-401) to verify that sensor is transmitting.</li> <li>4. Check that the sensor is programmed (learned) into panel memory. Learn the sensor, if necessary.</li> <li>5. Verify that both panel antennas are installed and connections tight.</li> </ol>
	The panel responds intermittently to wireless sensor signals.	
		<ol style="list-style-type: none"> <li>1. Rotate the sensor position from 90 to 180 degrees.</li> <li>2. Mount the sensor in a different location.</li> <li>3. Verify that both panel antennas are installed and connections tight.</li> </ol>
<b>Wireless Touchpads</b>		
	The panel does not respond to wireless touchpad commands.	
		<ol style="list-style-type: none"> <li>1. Operate touchpads from different locations to locate areas of intermittent operation.</li> <li>2. Check and/or replace wireless touchpad battery.</li> <li>3. Program or reprogram the touchpad(s) into the panel.</li> </ol>
<b>X-10 Lamp Modules</b>		

**Table B.1 Troubleshooting System Problems (Continued)**

Feature	Problem	Solution
	Light fixtures controlled by the X-10 Lamp Module are not working.	<ol style="list-style-type: none"> <li>1. Check that the lamp has a working bulb and that the lamps switch is on.</li> <li>2. Confirm the lamp's operation at a working outlet.</li> <li>3. Check that the lamps are plugged into X-10 Lamp Modules and the X-10 Lamp Modules are plugged into outlets that are not controlled by a switch. Relocate to nonswitched outlets, if necessary.</li> <li>4. Check that the panel is powered by the special two-wire Class II Line Carrier Power Transformer ((60-678).</li> <li>5. Check that the HOUSE dial on the X-10 Lamp Module matches the house code programmed into the panel.</li> </ol>



## Appendix C: Programming Tables

This appendix contains tables for selecting sensor group numbers and X-10 Lamp and Appliance Module house and unit codes. Table notes appear at the bottom of the table, on the next page.

**Table C.1 Sensor Group Characteristics**

No.	Name	Application	Alarm	Delay	Restoral	Supervisory	CS Report	Chime	Active Levels
00	Fixed Panic	24-hour audible fixed emergency buttons.	Police	Instant		√	√		1, 2, 3
01	Portable Panic	24-hour audible portable emergency buttons.	Police	Instant			√		1, 2, 3
02	Fixed Panic	24-hour silent fixed emergency buttons.	Silent	Instant		√	√		1, 2, 3
03	Portable Panic	24-hour silent portable emergency buttons.	Silent	Instant			√		1, 2, 3
04	Fixed Auxiliary	24-hour auxiliary sensor, such as Pendant Panic or holdup button.	Auxiliary	Instant		√	√		1, 2, 3
05	Fixed Auxiliary	24-hour auxiliary emergency button. Siren shutoff confirms CS report.	Auxiliary	Instant		√	√		1, 2, 3
06	Portable Auxiliary	24-hour portable auxiliary alert button.	Auxiliary	Instant			√		1, 2, 3
07	Portable Auxiliary	24-hour portable auxiliary button. Siren shutoff confirms CS report.	Auxiliary	Instant			√		1, 2, 3
08	Special Intrusion	Special belongings, such as gun cabinets and wall safes.	Police	Instant	√	√	√		1, 2, 3
09	Special Intrusion	Special belongings, such as gun cabinets and wall safes.	Police	Standard	√	√	√		1, 2, 3
10	Entry/Exit Delay	Entry and exit doors that require a standard delay time.	Police	Standard	√	√	√	√	2, 3
11	Entry/Exit Delay	Garage doors and entrances that require an extended delay time. *	Police	Extended	√	√	√	√	2, 3
12	Entry/Exit Delay	Driveway gates and entrances that require a twice extended delay time. *	Police	Twice Extended	√	√	√	√	2, 3
13	Instant Perimeter	Exterior doors and windows.	Police	Instant	√	√	√	√	2, 3
14	Instant Interior	Interior doors.	Police	Follower	√	√	√		2, 3
15	Instant Interior	Interior PIR motion sensors. *	Police	Follower		√	√		2, 3
16	Instant Interior	Interior doors.	Police	Follower	√	√	√		3
17	Instant Interior	PIR motion sensors. *	Police	Follower		√	√		3
18	Instant Interior	PIR motion sensors subject to false alarms. * †	Police	Follower		√	√		3

(continued)

19	Delayed Interior	Interior doors that initiate a delay before going into alarm. *	Police	Standard	√	√	√		3
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**Table C.1 Sensor Group Characteristics (Continued)**

No.	Name	Application	Alarm	Delay	Restoral	Supervisory	CS Report	Chime	Active Levels
20	Delayed Interior	PIR motion sensors that initiate a delay before going into alarm. *	Police	Standard		√	√		3
21	Local Instant Interior	24-hour local alarm zone protecting anything that opens and closes.	Police	Instant	√	√			1, 2, 3
22	Local Delayed Interior	Same as group 21, plus activation initiates a delay before going into alarm.	Police	Standard	√	√			1, 2, 3
23	Local Instant Auxiliary	24-hour local alarm zone protecting anything that opens and closes. ‡	Auxiliary	Instant	√	√			1, 2, 3
24	Local Instant Auxiliary	24-hour local alarm zone protecting anything that opens and closes. Sirens shut off at restoral. *	Auxiliary	Instant	√	√			1, 2, 3
25	Local Special Chime	Notify the user when a door is opened. Sounds emit from a local annunciator. *	Special Chime	Instant		√			1, 2, 3
26	Fire	24-hour fire, rate-of-rise heat, and smoke sensors. §	Fire	Instant	√	√	√		1, 2, 3
27	Output Module	Hardwire Output Module (HOM) lamp control or other customer feature. ‡	Silent	Instant	√	√			1, 2, 3
28	Output Module	HOM, PIR motion sensor, sound sensor, or pressure mat. ‡	Silent	Instant		√			1, 2, 3
29	Auxiliary	Freeze sensor.	Auxiliary	Instant	√		√		1, 2, 3
32	Output Module	HOM, PIR motion sensor, sound sensor, or pressure mat. ‡	Silent	Instant					1, 2, 3

**Note:** Check marks (√) represent characteristics present in a group.

\* This group is not certified as a primary protection circuit for UL-listed systems and is for supplementary use only.

† Sounds instant police siren if two or more sensors are tripped within 4 minutes. Otherwise sensors are followers to delayed sensors. If central station feature 15 (Alarm Verification) is on, group 18 functions like group 17.

‡ This group has not been investigated by UL.

§ This group is required for UL-listed residential fire alarm applications.

**Table C.2 Sensor Text Numbers**

Text	No.	Text	No.	Text	No.	Text	No.
Null	00	0	30	Floor	60	Shock	90
A	01	1	31	Freeze	61	Side	91
B	02	2	32	Front	62	Sliding	92
C	03	3	33	Gallery	63	Smoke	93
D	04	4	34	Garage	64	Sound	94
E	05	5	35	Hall	65	South	95
F	06	6	36	Heat	66	Stairs	96
G	07	7	37	Kitchen	67	Top	97
H	08	8	38	Laundry	68	West	98
I	09	9	39	Level	69	Window	99
J	10	Area	40	Library	70		
K	11	Attic	41	Living	71		
L	12	Basement	42	Main	72		
M	13	Bathroom	43	Master	73		
N	14	Bedroom	44	Mat	74		
O	15	Bottom	45	Medical	75		
P	16	Breezeway	46	Motion	76		
Q	17	Cabinet	47	North	77		
R	18	Carpet	48	Office	78		
S	19	Closet	49	Panic	79		
T	20	Den	50	Patio	80		
U	21	Desk	51	Police	81		
V	22	Dining	52	Pool	82		
W	23	Door	53	Porch	83		
X	24	Drawer	54	Rear	84		
Y	25	East	55	Room	85		
Z	26	Entry	56	Safe	86		
Space (blank)	27	Family	57	Screen	87		
Apostrophe (')	28	Fire	58	Second	88		
Dash (-)	29	First	59	Sensor	89		

**Table C.3 X-10 Lamp and Appliance Module House Code Settings**

<b>X-10 Codes</b>	<b>Corresponding Panel House Codes</b>															
<b>A</b>	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	
<b>B</b>	1*	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
<b>C</b>	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
<b>D</b>	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
<b>E</b>	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
<b>F</b>	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
<b>G</b>	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
<b>H</b>	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
<b>I</b>	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
<b>J</b>	9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249
<b>K</b>	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
<b>L</b>	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
<b>M</b>	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
<b>N</b>	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
<b>O</b>	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
<b>P</b>	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255 †

\* Default setting.

† This house code is reserved for demo panels only.

**Table C.4 X-10 Lamp and Appliance Module Operation**

Condition	Lamp Module Unit No. 1	Lamp Module Unit No. 2	Lamp Module Unit Nos. 3–9	Appliance Module Unit Nos. 3–9
On Arming to Level 1-Off (Not if disarming to level 1 after an alarm—see below)	Unchanged if initially off On for 5 more minutes if initially on	1 Blink	Unchanged	Unchanged
On Arming to Level 2-Stay	On for 5 minutes	2 Blinks	Unchanged	Unchanged
On Arming to Level 3-Away	On for 5 minutes	3 Blinks	Unchanged	Unchanged
On Disarming Any Alarm to Level 1	On for 5 minutes	1 Blink	On for 5 minutes	If on, off after 5 minutes
On Fire Alarm*	On†	On†	On†	Unchanged†
On Police Alarm*	Flashing†	Flashing†	Flashing†	Off
On Auxilliary Alarm*	On†	On†	On†	Unchanged†
After Fire or Auxiliary Alarm Time-out	On†	On†	On†	Unchanged
COMMAND + 0 (All Lights On)	On	On	On	Unchanged
COMMAND + 0 (All Lights Off)	Off	Off	Off	Off

\*Fire alarms have priority over both police and auxiliary alarms. Police alarms have priority over auxilliary alarms.

†Stays on until manually turned off or until 5 minutes after the system is disarmed to Level 1-Off.

# Appendix D: System Planning Worksheets

Fill in customer information about this installation:

Customer \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State/Zip \_\_\_\_\_

Country \_\_\_\_\_ Phone \_\_\_\_\_

**Table D.1 Wireless Sensors**

Part No.	Description	Qty.
60-362	Learn Mode Door/Window Sensor	
60-409	Learn Mode Recessed Door/Window Sensor	
60-499	Learn Mode Slim Line Door/Window Sensor	
60-461*	Learn Mode Shock Sensor	
60-459*	Learn Mode Sound Sensor (ITI)	
60-462*	Learn Mode Glass Guard Sensor	
60-506	Learn Mode System Smoke Sensor	
60-460	Rate-of-Rise Heat Sensor	
60-589*	Manual Fire Pull Sensor	
60-504*	Learn Mode Freeze Sensor	
60-452	Learn Mode Pendant Panic Sensor	
60-458	Single Button Panic Sensor	
60-457	Dual Button Panic Sensor	
60-578	Water-Resistant Panic Sensor	
60-348	Handheld Wireless Touchpad	
60-453	Wall-Mount Wireless Touchpad	
60-511	Learn Mode DS924i PIR Motion Sensor	
60-592	DS926 PIR Ceiling Mount Motion Sensor	
60-582	Learn Mode Sound Sensor (IntelliSense)	
60-645-95	Wireless Smoke Sensor (System Sensor 2300RFIT1)	

\* Not UL listed; not intended for use in UL listed systems.

**Table D.2 Hardwire Devices**

Part No.	Description	Qty.	mA	SubTot.
<b>Hardwire Sensors/Detectors</b>				
13-068*	Magnetic Contact 3/8" press fit		N/A	
13-070*	Magnetic Contact – surface mount		N/A	
13-360	ESL 449AT Smoke/Heat Detector		15 mA	
13-391	Power Supervision Module		20 mA	
79-004*	Fire Pull Station		N/A	
13-028*	PIR Motion Detector		10 mA	
<b>Hardwire Sirens</b>				
60-252	Hardwire Interior Speaker & Piezo		5 mA	
60-278	Hardwire Interior Siren & Piezo		75 mA	
60-483-01	Slim Line Hardwire Interior Siren & Piezo		85 mA	
13-046	Hardwire Exterior Siren		145 mA	
<b>Miscellaneous Components</b>				
60-584	Superbus Hardwire Input Module (HIM)		18 mA	
60-586	Superbus Alphanumeric Touchpad		75 mA	
60-620	Superbus Energy Saver Module (ESM)		10 mA	
60-661	Superbus 2-Line, LCD Alphanumeric TP		115 mA	
60-662	Superbus 2-Line, V/F Alphanumeric TP		120 mA	
60-677*	Interrogator 200 Audio Verification Module (AVM)		10 mA	
Total power consumption not to exceed:				750 mA

**Table D.3 Recommended Superbus Device Unit Numbers (addresses)**

Superbus Device	Factory Default	Recommended	Actual Setting
First Alpha. Touchpad	1	1	
Second Alpha. Touchpad	1	2	
Third Alpha. Touchpad	1	3	
Fourth Alpha. Touchpad	1	4	
Hardwire Output Module (HOM)	0	5	
Hardwire Input Module (HIM)	0	6	
Energy Saver Module (ESM)	0	7	

**Table D.4 Sensor Groups and Locations**

No.	Group	Type and Location
01		
02		
03		
04		
05		
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16		
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**Table D.4 Sensor Groups and Locations**

No.	Group	Type and Location
47		
48		
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**Table D.5 Panel Configuration Settings**

Feature	Choices	Default	Setting
Primary Phone Number	2 to 18 digits, incl. pauses	–	
Phone Format	- ITI - 4/2, 1400Hz† - 4/2, 2300Hz†	ITI	
Siren Time-out	01–30 min.	4 min.	
Install Code	0001–9998 or ****(blank)	****	
Account Number	00000–99999	00–000	
Entry Delay	008–120 sec.	32 sec.	
Extended Delay	01–08 min.	4 min.	
Exit Delay	008–184 sec.	32 sec.	
Activity Time-out	01–24 hr.	24 hr.	
House Code	001–254	001	
Freeze Temp (ESM)	40–90° F	42° F	
Set Temp (ESM)	32–99° F	–	
Touchpad Options:			
Unit Number	000–007	1	
Touchpad Quiet	Y or N	N	
Key Beeps	Y or N	Y	
AVM Mode	01–03, 09–11†	03	
AVM Time-out	030–300 sec.	90 sec.	
AVM Code	0001–9998* or ****(blank)	****	
HOM Setup	‡		
Time Zone	05 (Eastern) 06 (Central) 07 (Mountain) 08 (Pacific) 10 (Hawaii)	05	
<p>* Any four digit sequence different than primary, install, secondary, or arm-disarm access codes, 7777, 8888, 9999, or any number of 6s. Last two digits cannot be the same.</p> <p>† If the Phone Format is set to 4/2 1400 or 2300Hz format, upper sensor 98—Events Report must be off.</p> <p>If the AVM Mode is set to instant modes 3 or 11 and the Phone Format is set for 4/2 1400 or 2300Hz format, the central station must be set with the panel's account number in the ATRAP (audio trap) table. The panel will not hang up the phone when the report is complete, but will remain on the line for the AVM Time-out duration.</p> <p>‡ For HOM setup refer to the Hardwire Output Module (HOM) Installation Instructions document 466-1032, included with each HOM.</p>			

**Table D.6 HOM Configuration Settings**

Unit No.	Output	Point	Configuration Number
0	1	01	
	2	02	
	3	03	
	4	04	
1	1	05	
	2	06	
	3	07	
	4	08	
2	1	09	
	2	10	
	3	11	
	4	12	
3	1	13	
	2	14	
	3	15	
	4	16	
4	1	17	
	2	18	
	3	19	
	4	20	
5	1	21	
	2	22	
	3	23	
	4	24	
6	1	25	
	2	26	
	3	27	
	4	28	
7	1	29	
	2	30	
	3	31	
	4	32	



**Table D.7 System Settings**

NO.	Feature	Choices	Setting
System Setting (default)			
00	Arm Code (Primary)	0001-9998 (Default: 1234)	
01	Arm Code (Secondary)	0001-9998 or ****(blank)	
02	Arm Code (Secondary)	0001-9998 or ****(blank)	
03	Arm Code (Secondary)	0001-9998 or ****(blank)	
04	Arm Code (Secondary)	0001-9998 or ****(blank)	
05	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
06	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
07	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
08	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
09	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
10	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
11	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
12	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
13	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
14	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
15	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
16	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
17	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
18	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
19	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
20	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
21	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
22	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	
23	Arm Code (Arm-Disarm)	0001-9998 or ****(blank)	

**Table D.7 System Settings (Continued)**

NO.	Feature	Choices	Setting
53	ES Low (ESM)	45-89° F (50°)	
54	ES High (ESM)	46-90° F (90°)	
77	Quiet Exit	ON or (OFF)	
88	Download Enable	ON or (OFF)	
<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>6s should not be used in any part of an access code, since such a code interferes with bypassing sensors from a touch-tone phone.</li> <li>Access codes cannot be programmed as 7777, 8888, or 9999 since these codes are reserved for fire, police, and auxiliary panics from a touch-tone phone.</li> <li>Each access code whether primary, secondary, arm-disarm, or AVM must be unique. No two codes can be the same.</li> <li>4s or 0s should not be programmed as the first digit in an access code, since this can interfere with system disarming.</li> <li>The last two digits of an access code cannot be the same.</li> </ol>			

Table D.8 Upper Sensor Numbers

No.	Sensor Name	Description	Default	Setting
77	Touchpad Tamper	Reports a touchpad tamper to the Central Station (CS) if 40 digits are entered without a valid access code.	OFF	
78	Freeze Sensor	On will activate and report a Freeze Alarm when the room temperature reaches the programmed freeze temperature. When on, and no temperature data is received from the Energy Saver Module (ESM), a 78 TROUBLE alarm is reported.	OFF	
79	No Activity	When on, if no activity is detected on the premises within the programmed Activity Time-out, the auxiliary siren will sound. The panel reports to the CS if the alarm is not canceled within 5 minutes.	OFF	
80	Touchpad Fire Panic	On enables the FIRE button on all touchpads (and telephones if F35 is on).	ON	
81	Touchpad Police Panic	ON enables the POLICE button on all touchpads (and telephones if F35 is on).	ON	
82	Touchpad Auxiliary Panic	On enables the AUXILIARY button on all touchpads (and telephones if F35 is on).	ON	
83	Manual Phone Test	Allows the user to instruct the system to dial CS and report a phone test.	ON	
84	Opening Report	Reports to the CS when the user disarms the system.	OFF	
85	Closing Report	Reports to the CS when the user arms the system.	OFF	
86	Duress Alarm	Reports a silent POLICE EMERGENCY to the CS.	OFF	
87	Force Armed	Reports a FORCE ARMED when user directly or indirectly bypasses any sensor. Security level and bypassed sensor are reported. (Auto Force Armed is always reported.)	OFF	
88	Energy Saver Enable	When on, the Energy Saver Module (ESM) is able to override the connected thermostat. When on and no temperature data is received from the ESM, an 88 TROUBLE alarm is reported.	OFF	
89	Wireless Touchpad Supervisory or Low Battery	When on, the panel checks for and reports supervisory conditions on Wall Mount Wireless touchpads. Reports a SUPERVISORY alarm to the alphanumeric touchpad if the panel doesn't hear from each touchpad within the set time (SUPSYNC). If on, the panel will report a touchpad low battery when any touchpad has a low battery condition.	OFF	
90	AC Power Failure	If on, reports an AC FAILURE to the CS if the panel has been without AC power for 15 minutes.	OFF	
91	Low Panel Battery	If on, reports LOW CPU BATTERY to the CS if the panel's back-up battery voltage drops below 11.4 VDC.	ON	
92	Panel Tamper	If on and armed to level 2 or 3, changing from run to program will activate and report a CPU TAMPER alarm.	ON	
93	Automatic Phone Test	If on, the panel reports to the CS at a programmed interval (from daily to every 255 days).	OFF	
94	Receiver Failure	If on, the panel reports to the CS if the panel does not hear from any wireless transmitter for 2 hours. Trouble beeps alert user of the problem.	ON	
95	Panel Back In Service	When on, the panel reports to the CS at power-up and if a panel reset occurs.	ON	
96	Phone Failure	If the panel is unsuccessful reporting to the CS after the third of eight attempts, the panel activates a FAIL TO COMMUNICATE alarm. It continues to dial the remaining five attempts.	ON	
98	Events Report	If on (and panel is set up for ITI phone format), the panel automatically reports to the CS when 28 events are accumulated in the event buffer. If off, the panel doesn't report but still accumulates events in the buffer. <b>Note:</b> Must be off if panel is set up for 4/2 Phone Format.	OFF	

Table D.9 Feature Numbers

No.	Feature Name	Description	Default	Setting
F00	Remote Phone Access	On enables, off disables remote phone access. Works in conjunction with feature F01 below. Off-premises accessing must be done with primary access code.	ON	
F01	Ring Twice—Hang-up—Ring—Answer	On = call premises and let phone ring twice, hang-up and wait 10 seconds, call back premises and panel answers after first ring. Off = call premises and wait for panel to answer (about 12 rings).	ON	
F02	Exterior Siren Delay	On = exterior siren activation is delayed 15 seconds. Off = exterior siren activation is immediate.	ON	
F03	Toll Saver	Determines on which ring the panel answers an alarm or trouble situation. On = 8 rings, Off = 12 rings.	ON	
F04	Low Battery Reports	On = sensor low-battery conditions are reported weekly. Off = sensor low-battery conditions are reported daily.	ON	
F05	Sensor Supervisory Reports	Determines uncorrected supervisory trouble conditions to re-report daily (off) or weekly (on).	ON	
F06	Dialer Abort	Determines if the phone dialer aborts calls canceled by the owner before panel dialing is completed.	ON	
F07	Access Key Type	On = * phone key accesses the panel. Off = # phone key accesses the panel.	OFF	
F11	Interior Siren Sounds Disable	On = Interior sirens sound alarms only. Off = Interior sirens sound alarms and status.	OFF	
F12	Alarm Restoral Reports	On = sensor/zone alarm restorals are reported to the CS. Off = sensor/zone alarm restorals are not reported to the CS.	OFF	
F13	Low Battery Restoral Reports	On = sensor battery restorals are reported to the CS. Off = sensor battery restorals are not reported to the CS.	OFF	
F14	Hourly Phone Test	On enables and off disables the hourly phone line voltage test.	OFF	
F15	Alarm Verification	On = panel reports alarm to CS only if two different sensors (in groups 10–20) are tripped within 4 minutes. Off = panel reports alarms to CS without second sensor trip.	OFF	
F16	Trouble Beeps Disable	On = no trouble beeps and panel protests open sensors only. Off = trouble beeps sound for sensor low-battery/supervisory conditions and panel protests upon arming when these conditions exist. Must be off for UL-investigated systems.	OFF	
F17	24-Hour Sensor Tamper Alarm	On = sensor tamper alarms are generated in any protection level. Off = sensor tamper alarms are generated only if the system is armed to a level where the sensor is active.	OFF	
F20	Audio Verification Module (AVM) Enable	On enables and off disables 2-way voice communication with the Central Station during an alarm.	OFF	
F21	Immediate Trouble Beeps	On = trouble beeps sound immediately when a supervisory condition is detected. Must be on for UL-investigated systems. Off = trouble beeps sound within 10 hours.	OFF	
F22	Touch-Tone Dialing	On = DTMF (tone). Off = pulse.	ON	
F23	Event Control	On = only arming level and time changes are logged in event buffer. Off = all event buffer flagged events are logged.	OFF	
F25	Keychain Touchpad Direct Arming	On = pressing Lock button once arms system to Level 3-Away with No Delay. Off = pressing Lock button once arms system to level Level 2-Stay; to Level 3-Away when pressed again.	OFF	
F32	Keychain Touchpad Energy Saver/No Delay	On = * button activates No Delay feature. Off = * button turns Energy Saver on and off.	OFF	
		(continued)		

**Table D.9 Feature Numbers (Continued)**

No.	Feature Name	Description	Default	Setting
F33	Downloader Access Enable	On enables, off disables remote downloader station programming. (Same as option 88 in User-Programming menu.)	OFF	
F35	Telephone Panics	On enables, off disables phone button panics and upper sensors 80, 81, and 82 are not generated from the telephone.	OFF	
F36	On-Premise Telephone Control	On enables, off disables on-premise phone control of panel.	ON	
F37	Quick Arming	On enables, off disables touchpad quick-arming commands.	ON	
F40	Smoke Verification	On = if a hardwire smoke sensor trips, the panel resets all hardwire smoke sensors and waits for a second trip (within 5 minutes) before alarm is generated. An alarm is also generated if the panel doesn't receive a restoral after the first trip. Off = panel only requires one trip.	OFF	
F41	Interior Siren Verification	On = panel monitors interior siren wiring for shorts/opens.	OFF	
F42	Source Reporting	On = panel reports source of alarm (which touchpad/device) to the central station when S77 and S80-87 reports are sent.	ON	
F43	Demo Kit Mode	On enables, off disables special demo kit mode of operation.	OFF	
F44	Constant Exterior Siren	On = exterior siren relay output latches and remains latched for intrusion alarms, for siren timeout duration or until alarm is canceled. OFF = exterior siren relay output modulates between open and closed states for normal intrusion alarm output.	OFF	
F45	Keyswitch Control (Arming/Disarming)	On = allows zone 1 to arm and disarm the system, using a keyswitch or dry relay contact output of an access system connected to a panel hardwire input, HIM, or door/window sensor terminals. Off = no keyswitch arming/disarming	OFF	
F46	Daylight Savings Time	On automatically adjusts the panel clock at 2:00am on the first Sunday in April for daylight-savings time and the last Sunday in October for standard time. These changes are logged in the event buffer.	ON	
F47	4-Hour Trouble Timer	On = group 26 (fire) sensors reporting a low battery, tamper, pre-alarm, or trouble condition cause the system to sound trouble beeps. Pressing STATUS or changing arming level stops trouble beeps for 4 hours. Trouble beeps sound again in 4 hours if problem is not fixed. Must be on for UL Listed installations. Off = group 26 sensors initiate trouble beeps immediately or within 10-hours (as per F21 setting).	ON	

**Table D.10 Central Station Programming**

Feature	Choices	Default	Setting
ACCOUNT	##-###. Numbers or Letters	00-000	
AVBEEPDLY (Audio Verification Beep Delay)	0-300 seconds in 2-second increments.	002 seconds	
PHONE2 (Secondary phone number)	Up to 14 digits, including *,#, and D.	(none)	
PMODE (Phone Dialer Mode)	<b>0 (ITI and 4/2 formats)</b> - All reports to phone 1. Phone 2 not used. <b>1 (ITI and 4/2 formats)</b> - All reports to phone 1. Phone 2 used if other attempts fail. <b>3 (ITI format only)</b> - All alarms, opening, and closing reports to phone 1. All reports to phone 2. <b>5 (ITI and 4/2 formats)</b> - All alarms, opening, and closing reports to phone 1 using 4/2 format. All reports to phone 2 using ITI format.	0	
PTFREQ (Automatic Phone Test Frequency)*	1-255 days in cycle, 1-255 days remaining.	7,7 days	
STIME (Supervisory Time)	00-23 hours:00-59 minutes	12 hours after any power-up.	
SUPSYNC (Supervisory Synchronization)	02-24 hours	12 hours	
XTENDELAY (X-10 Module Delay)	2 - OFF or ON	OFF	
	3 - OFF or ON	OFF	
	4 - OFF or ON	OFF	
	5 - OFF or ON	OFF	
	6 - OFF or ON	OFF	
	7 - OFF or ON	OFF	
	8 - OFF or ON	OFF	
	9 - OFF or ON	OFF	
TRIPTIME (HOM Momentary Response Trip Time)	01-12 seconds	04 seconds	

\* This feature only functions if upper sensor 93 is on.

## Appendix E: Panel Connections and Wiring

This appendix contains a description of the control panel terminal connections, wire recommendations, and a typical system wiring diagram (figure E.1, last page of document). Refer to appendix F for UL requirements.

**Table E.1 Panel Terminal Strip 1 Connections**

Terminal	Name	What It's Used for
1	16.5 VAC	16.5 VAC power transformer connection (or negative [-] DC connection if operating from an external DC source or battery). <b>Warning</b> Never connect both AC power transformer and an external DC source at the same time. Permanent damage to transformer, DC source, and panel could result.
2	16.5 VAC	16.5 VAC power transformer connection (or positive [+] DC connection if operating from external DC source or battery). See above warning.
3	+ DC (SIREN)	Hardwire device DC power supply. Unregulated 12-24 VDC@ 0.75 amp maximum. Fused (F1). <b>Note</b> For 24 VDC sirens and bells only.
4	GND	Common ground connection for hardwire and other devices
5	SIREN COM	Common (C) side of external siren dry relay N/C and N/O contacts (terminals 6 and 7)
6	SIREN N/C	Normally closed (N/C) (opens on alarm) external siren dry relay contact connection
7	SIREN N/O	Normally open (N/O) (closes on alarm) external siren dry relay contact connection
8	VOICE SIREN	One side of speaker and Interrogator 200 AVM talk-back speaker connection <b>Warning</b> The maximum number of speakers connected to terminals 8 and 9 is two. Connect multiple speakers in series only. Connecting more than two speakers or connecting multiple speakers in parallel could result in permanent damage to the panel.
9	VOICE SIREN	Other side of speaker and Interrogator 200 AVM talk-back speaker connection
10	TP VOICE	Reserved for future use.
11	TP VOICE	Reserved for future use.
12	+12V DC OUT	Superbus, Fail-to-Communicate, Interrogator 200 AVM and exterior siren DC power supply. Regulated 12 VDC@ 0.75 amp maximum. Fused (F2).
13	BUS A	Superbus communication connection
14	BUS B	Superbus communication connection
15	GND	Superbus, AVM, FTC, etc, common ground connection
16	FTC	One side of Failure-to-Communicate (FTC) device connection. 12 VDC@100 mA maximum. Other side to DC OUT terminal 12. (Other side to GND terminal 4 if wired to external contact of a wireless door/window sensor.)

(continued)

Table E.1 Panel Terminal Strip 1 Connections (Continued)

Terminal	Name	What It's Used for
17	+ INT SIREN	Positive (+) side of interior siren connection. 12 VDC@100 mA maximum. Other side to - INT SIREN terminal 18. Connect multiple piezos in parallel. A 1N4001 diode (in series) is required at each piezo location. A 4.7K ohm EOL resistor (in parallel) is required at the peizo or at the last peizo in a chain (see wiring diagram). This terminal normally measures zero volts (to GND).
18	- INT SIREN	Negative (-) side of interior siren connection. 12 VDC@100 mA maximum. Other side to + INT SIREN terminal 17. This terminal normally measures +12 volts (to GND) when siren is off. This is the normal monitoring (supervision) voltage.
19	GND	Interrogator 200 AVM microphone (listen-in) common ground connection
20	AVM MIC	Interrogator 200 AVM microphone (listen-in) connection <b>WARNING!</b> The maximum number of microphones to be connected to terminals 19 and 20 is two. Connect multiple microphones in parallel.

Table E.2 Panel Terminal Strip 2 Connections

Terminal	Name	What It's Used For
21	+12V DC SW	Smoke and Rate-of-Rise Heat sensor power supply. Switched 12 VDC @100 mA maximum.
22	GND	Common ground for hardwire zones 1 and 2, Smoke, and Rate-of-Rise Heat sensors
23	ZONE 1	Hardwire zone 1
24	ZONE 2	Hardwire zone 2
25	GND	Common ground for zones 3 and 4
26	ZONE 3	Hardwire zone 3
27	ZONE 4	Hardwire zone 4
28	GND	Common ground for zones 5 and 6
28	ZONE 5	Hardwire zone 5
30	ZONE 6	Hardwire zone 6

**Table E.3 Wire Recommendations**

Device	Minimum Gauge	Type	Maximum Length (feet)	Maximum Resistance
AC Power Transformer	18	Stranded	25	–
Earth Ground	14	Solid or stranded	25	–
Superbus Devices (Touchpads, ESM, HIM, etc.)	22 18	Stranded Stranded	500 1,000	–
Hardwire Zones and Devices	22	Stranded	(See resistance)	50 ohms per zone (including device resistance)
Sirens, Piezos, and Speakers	18	Stranded	500	–
Interrogator 200 AVM Microphone*	22	Stranded/shielded	500	–
Telephone	22	Phone grade solid or stranded	–	–

\* Run Interrogator 200 AVM speaker and microphone wires in separate cables to prevent cross talk. Some applications may require shielded cable for long or electrically noisy microphone wire runs.



## Appendix F: UL Requirements

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This appendix contains a description of the requirements for UL-listed systems and a UL-listed system wiring diagram. This section describes the minimum system configurations for UL-listed Grade A (supervised) systems. Also refer to the other appendices for proper programming and other compatible sensors.

### Basic System

All UL-listed systems require the following basic components. The basic system does not require sensors and can use the Handheld Wireless Touchpad (60-348) as a signaling device.

- Control Panel (60-650)
- Superbus Alphanumeric Touchpad (60-586)
- Class II Line Carrier Power Transformer (60-678)
- Heavy Duty 6.5AH Backup Battery (60-680)
- Wireless Interior Siren and Piezo (WIS) (60-353-235), Hardwire Exterior Siren and Piezo (13-046), or Slim Line Hardwire Interior Siren (60-483-01)

### Household Fire Warning System (UL 985)

Basic system as described above plus:

- Wireless Smoke Sensor (60-506), Wireless Smoke Sensor (60-645-95), or Hardwire Smoke/Heat Detector (13-360) (ESL 449AT) with Power Supervision Module (60-391). This shall be programmed as Sensor Group 26.
- When utilizing a hardwire zone for fire alarm (Group 26), the panel shall not be connected to earth ground.
- Option F21 (Immediate Trouble Beeps) set to ON
- Option F47 (4-Hour Trouble Timer) set to ON
- SUPSYNC (Supervisory Synchronization) set to 2 (hours)

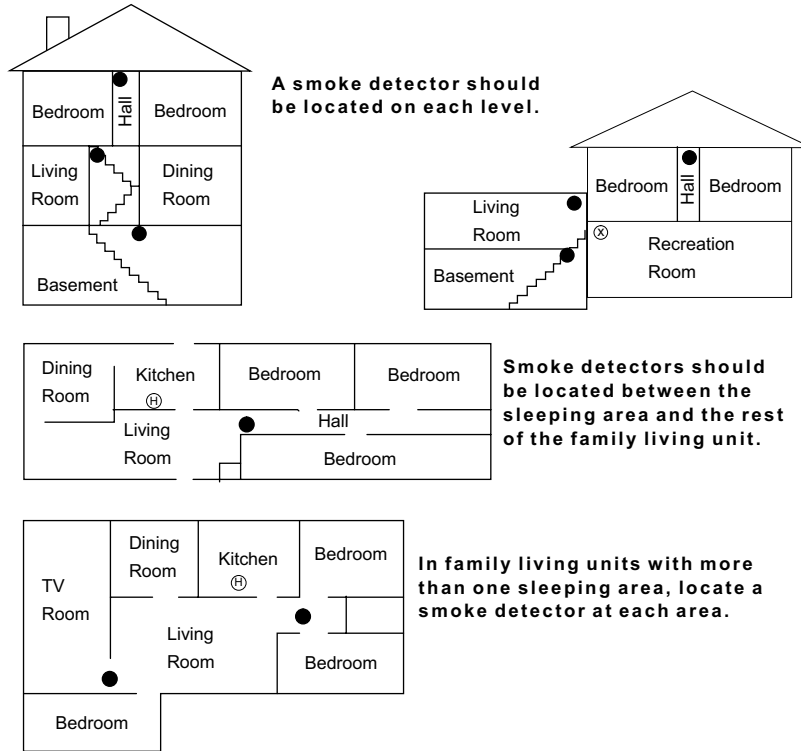
#### Note

SUPSYNC can not be programmed from the panel. Refer to the "Requesting CS-4000/Downloader Programming" section for more information.

For 24-hour backup, external power drain is limited to 150 mA continuous using the heavy duty 6.5AH battery.

## Appendix F: UL Requirements

The smoke detector installation shall adhere to the following:



**A smoke detector should be located on each level.**

**Smoke detectors should be located between the sleeping area and the rest of the family living unit.**

**In family living units with more than one sleeping area, locate a smoke detector at each area.**

**NOTE:** Ceiling-mounted smoke detectors should be located in the center of the room or hall, or not less than 4 inches from the wall. When the detector is mounted on the wall, the top of the detector should be 4 to 12 inches from the ceiling.

**NOTE:** Do not install smoke detectors where normal ambient temperatures are above 100°F or below 40°F. Also, do not locate detectors in front of AC/ Heat registers or other locations where normal air circulation will keep smoke from entering the detector.

**NOTE:** Additional information on household fire warning is available at nominal cost from: The National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. Request Standard No. NFPA74.

● Required smoke detector

⊕ Heat detector

⊗ Indicates smoke detector is optional if door is not provided between basement and recreation rooms.

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### Household Burglar Alarm System (UL 1023)

Basic system as described above plus:

- Learn Mode Door/Window Sensors (60-362)

## Home Health Care Signaling Equipment (UL 1637)

Basic system as described above plus:

- Water-Resistant Panic Sensor (60-578-10-95)

The following wireless sensors and hardwire devices may be used in a UL-listed system:

Part No.	Description
<b>Wireless Sensors</b>	
60-362	Learn Mode Door/Window Sensor
60-409	Learn Mode Recessed Door/Window Sensor
60-499	Learn Mode Slim Line Door/Window Sensor
60-506	Learn Mode System Smoke Sensor
60-460	Rate-of-Rise Heat Sensor
60-452	Learn Mode Pendant Panic Sensor
60-458	Single Button Panic Sensor
60-457	Dual Button Panic Sensor
60-578	Water-Resistant Panic Sensor
60-348	Handheld Wireless Touchpad
60-453	Wall-Mount Wireless Touchpad
60-511	Learn Mode DS924i PIR Motion Sensor
60-592	DS926 PIR Ceiling Mount Motion Sensor
60-582	Learn Mode Sound Sensor (IntelliSense)
60-645-95	Wireless Smoke Sensor (System Sensor 2300RFIT)
<b>Hardwire Sensors/Detectors</b>	
13-360	ESL 449AT Smoke/Heat Detector
13-391	Power Supervision Module
<b>Hardwire Sirens</b>	
60-252	Hardwire Interior Speaker & Piezo
60-278	Hardwire Interior Siren & Piezo
60-483	Slim Line Hardwire Interior Siren & Piezo
13-046	Hardwire Exterior Siren
<b>Miscellaneous Components</b>	
60-584	SuperBus Hardwire Input Module (HIM)
60-585	SuperBus Hardwire Output Module (HOM)
60-586	SuperBus Alphanumeric Touchpad
60-620	SuperBus Energy Saver Module (ESM)
60-661	SuperBus 2-Line, LCD Alphanumeric TP
60-662	SuperBus 2-Line, V/F Alphanumeric TP

## Appendix F: UL Requirements

The following Sensor Groups are not to be used as a primary protection circuit for UL-listed systems and are for supplementary use only:

No.	Name
11	Extended Entry/Exit Delay
12	Twice Extended Delay
15	Instant Interior
17	Instant Interior
18	Instant Interior
19	Delayed Interior
20	Delayed Interior
24	Local Instant Auxiliary
25	Local Special Chime

The following Sensor Groups shall not be used in UL-listed systems:

No.	Name
27	Output Module
28	Output Module
32	Output Module

The following panel configuration settings shall be followed:

Feature	Required Setting
Phone Format	ITI
Siren Time-Out	4 min., minimum
Entry Delay	40 sec., maximum
Exit Delay	56 sec., maximum

**Note:**

Common user access codes such as 1111 or 1234 should not be programmed.

The Upper Sensor Numbers shall be set as follows:

No.	Sensor Name	Required Setting
89	Wireless Touchpad Supervisory or Low Battery	ON*
90	AC Power Failure	ON
91	Low Panel Battery	ON
93	Automatic Phone Test	ON
96	Phone Failure	ON

\* If wall-mount touchpads are used.

The Feature Numbers shall be programmed as follows:

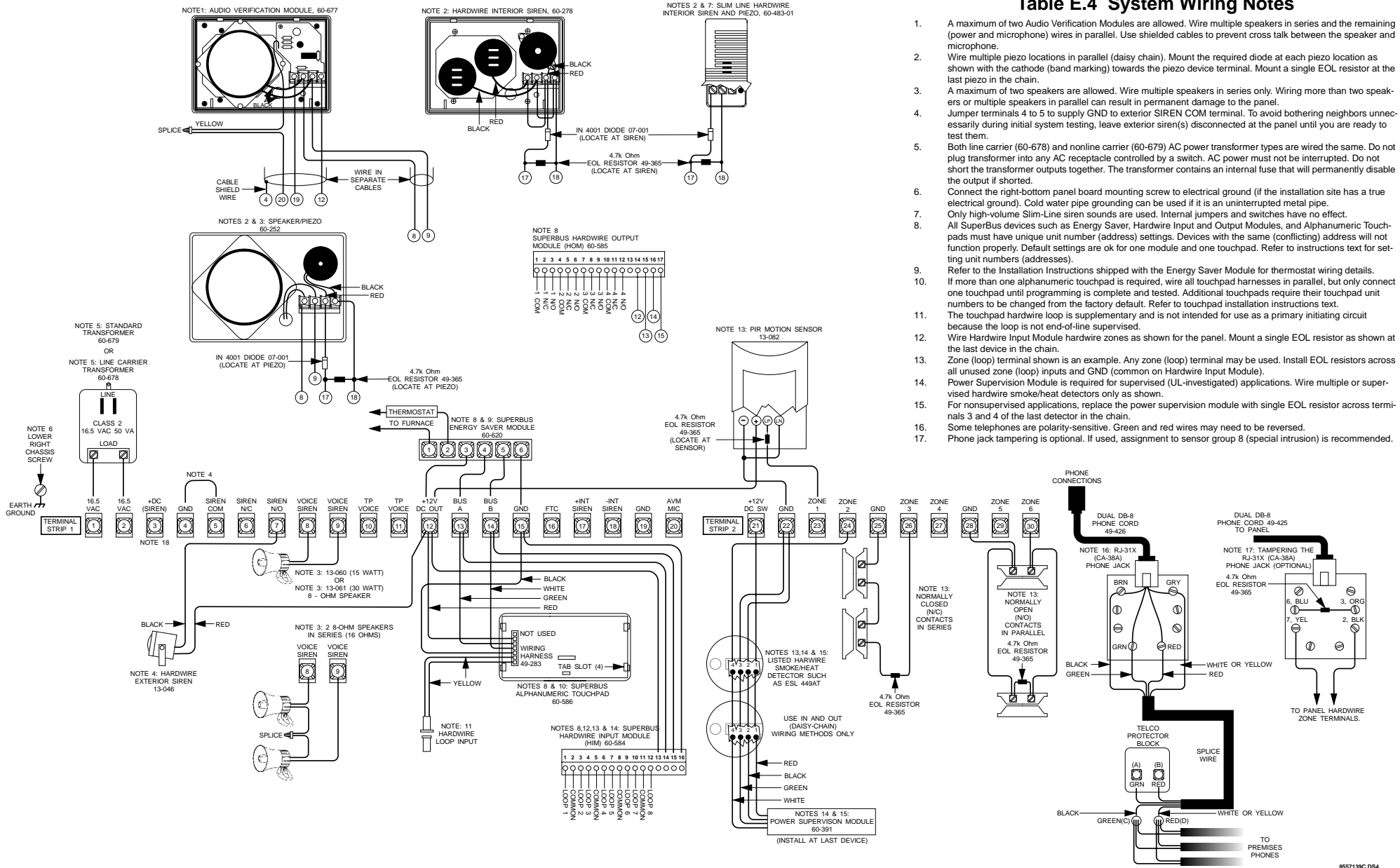
No.	Sensor Name	Required Setting
F04	Low Battery Reports	ON
F12	Alarm Restoral Reports	ON
F13	Low Battery Restoral Reports	ON
F15	Alarm Verification	OFF
F16	Trouble Beeps Disable	OFF
F20	Audio Verification Module (AVM) Enable	OFF
F21	Immediate Trouble Beeps	ON
F40	Smoke Verification	OFF
F41	Interior Siren Verification	ON
F43	Demo Kit Mode	OFF
F47	4-Hour Trouble Timer	ON

The following Central Station programming shall be made:

PTFREQ: 1,1 (Automatic Phone Test Frequency = 1 day in cycle, 1 day remaining.)



# Figure E.1 Typical System Wiring



# Table E.4 System Wiring Notes

1. A maximum of two Audio Verification Modules are allowed. Wire multiple speakers in series and the remaining (power and microphone) wires in parallel. Use shielded cables to prevent cross talk between the speaker and microphone.
2. Wire multiple piezo locations in parallel (daisy chain). Mount the required diode at each piezo location as shown with the cathode (band marking) towards the piezo device terminal. Mount a single EOL resistor at the last piezo in the chain.
3. A maximum of two speakers are allowed. Wire multiple speakers in series only. Wiring more than two speakers or multiple speakers in parallel can result in permanent damage to the panel.
4. Jumper terminals 4 to 5 to supply GND to exterior SIREN COM terminal. To avoid bothering neighbors unnecessarily during initial system testing, leave exterior siren(s) disconnected at the panel until you are ready to test them.
5. Both line carrier (60-678) and nonline carrier (60-679) AC power transformer types are wired the same. Do not plug transformer into any AC receptacle controlled by a switch. AC power must not be interrupted. Do not short the transformer outputs together. The transformer contains an internal fuse that will permanently disable the output if shorted.
6. Connect the right-bottom panel board mounting screw to electrical ground (if the installation site has a true electrical ground). Cold water pipe grounding can be used if it is an uninterrupted metal pipe.
7. Only high-volume Slim-Line siren sounds are used. Internal jumpers and switches have no effect.
8. All SuperBus devices such as Energy Saver, Hardwire Input and Output Modules, and Alphanumeric Touchpads must have unique unit number (address) settings. Devices with the same (conflicting) address will not function properly. Default settings are ok for one module and one touchpad. Refer to instructions text for setting unit numbers (addresses).  
Refer to the Installation Instructions shipped with the Energy Saver Module for thermostat wiring details.
9. If more than one alphanumeric touchpad is required, wire all touchpad harnesses in parallel, but only connect one touchpad until programming is complete and tested. Additional touchpads require their touchpad unit numbers to be changed from the factory default. Refer to touchpad installation instructions text.
10. The touchpad hardwire loop is supplementary and is not intended for use as a primary initiating circuit because the loop is not end-of-line supervised.
11. Wire Hardwire Input Module hardwire zones as shown for the panel. Mount a single EOL resistor as shown at the last device in the chain.
12. Zone (loop) terminal shown is an example. Any zone (loop) terminal may be used. Install EOL resistors across all unused zone (loop) inputs and GND (common on Hardwire Input Module).
13. Power Supervision Module is required for supervised (UL-investigated) applications. Wire multiple or supervised hardwire smoke/heat detectors only as shown.
14. For non-supervised applications, replace the power supervision module with single EOL resistor across terminals 3 and 4 of the last detector in the chain.
15. Some telephones are polarity-sensitive. Green and red wires may need to be reversed.
16. Phone jack tampering is optional. If used, assignment to sensor group 8 (special intrusion) is recommended.

Figure F.1 UL-Listed System Wiring

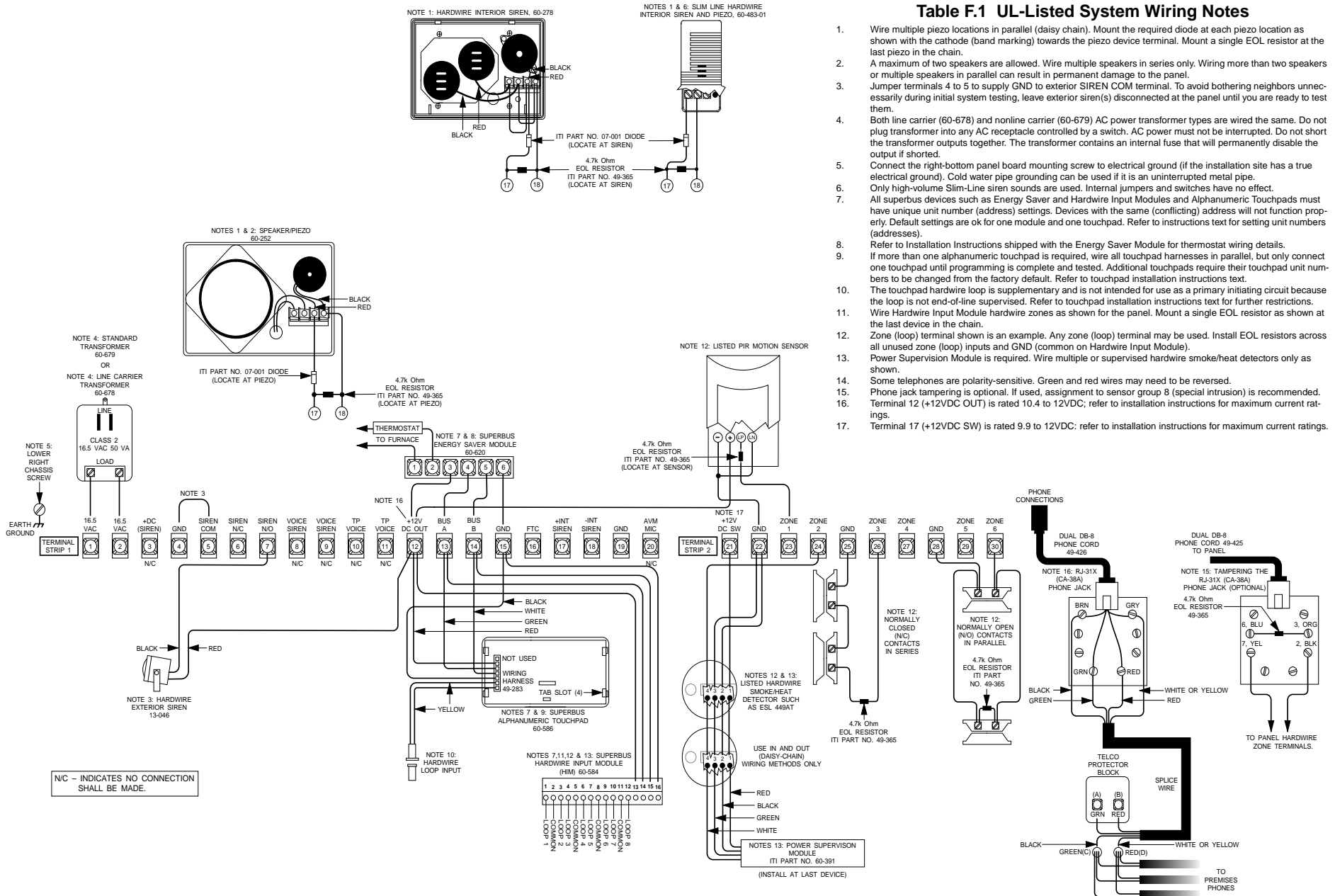


Table F.1 UL-Listed System Wiring Notes

- Wire multiple piezo locations in parallel (daisy chain). Mount the required diode at each piezo location as shown with the cathode (band marking) towards the piezo device terminal. Mount a single EOL resistor at the last piezo in the chain.
- A maximum of two speakers are allowed. Wire multiple speakers in series only. Wiring more than two speakers or multiple speakers in parallel can result in permanent damage to the panel.
- Jumper terminals 4 to 5 to supply GND to exterior SIREN COM terminal. To avoid bothering neighbors unnecessarily during initial system testing, leave exterior siren(s) disconnected at the panel until you are ready to test them.
- Both line carrier (60-678) and nonline carrier (60-679) AC power transformer types are wired the same. Do not plug transformer into any AC receptacle controlled by a switch. AC power must not be interrupted. Do not short the transformer outputs together. The transformer contains an internal fuse that will permanently disable the output if shorted.
- Connect the right-bottom panel board mounting screw to electrical ground (if the installation site has a true electrical ground). Cold water pipe grounding can be used if it is an uninterrupted metal pipe.
- Only high-volume Slim-Line siren sounds are used. Internal jumpers and switches have no effect.
- All superbuses devices such as Energy Saver and Hardwire Input Modules and Alphanumeric Touchpads must have unique unit number (address) settings. Devices with the same (conflicting) address will not function properly. Default settings are ok for one module and one touchpad. Refer to instructions text for setting unit numbers (addresses).
- Refer to Installation Instructions shipped with the Energy Saver Module for thermostat wiring details.
- If more than one alphanumeric touchpad is required, wire all touchpad harnesses in parallel, but only connect one touchpad until programming is complete and tested. Additional touchpads require their touchpad unit numbers to be changed from the factory default. Refer to touchpad installation instructions text.
- The touchpad hardware loop is supplementary and is not intended for use as a primary initiating circuit because the loop is not end-of-line supervised. Refer to touchpad installation instructions text for further restrictions.
- Wire Hardwire Input Module hardwire zones as shown for the panel. Mount a single EOL resistor as shown at the last device in the chain.
- Zone (loop) terminal shown is an example. Any zone (loop) terminal may be used. Install EOL resistors across all unused zone (loop) inputs and GND (common on Hardwire Input Module).
- Power Supervision Module is required. Wire multiple or supervised hardwire smoke/heat detectors only as shown.
- Some telephones are polarity-sensitive. Green and red wires may need to be reversed.
- Phone jack tampering is optional. If used, assignment to sensor group 8 (special intrusion) is recommended.
- Terminal 12 (+12VDC OUT) is rated 10.4 to 12VDC; refer to installation instructions for maximum current ratings.
- Terminal 17 (+12VDC SW) is rated 9.9 to 12VDC; refer to installation instructions for maximum current ratings.