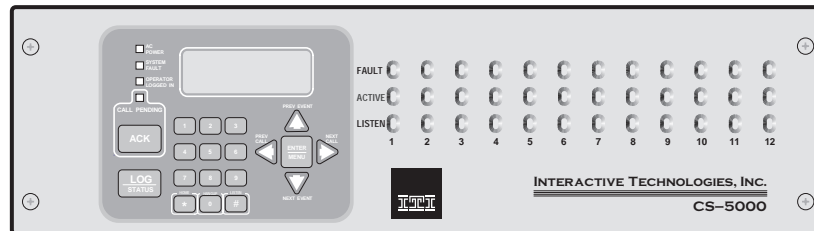




WIRELESS

Security
Automation
Access Control

CS-5000 Central Station Receiver Installation/Operation Manual



CS-5000

Central Station Receiver

Installation and User's Manual

Interactive Technologies, Inc.
2266 North Second Street
North Saint Paul, MN 55109

1-800-777-1415

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Section 1

System Overview

This manual describes installation, operation, and programming of the Model CS-5000 Central Station Receiver.

This section lists features, optional accessories, compatible formats, and SIA options supported. This section also contains conventions held throughout the manual, terminology relevant to this product, and other information.

Note

Although the CS-5000 can be used as a desk-top receiver, it must be rack-mounted for UL-listed installations.

Features

Hardware Features

- Supports both 120 and 240 VAC, 60 Hz installations
- External annunciation with auxiliary Form C dry contact relay (programmable)
- On-board PZT alert (programmable)
- 1 parallel port
- 2 serial ports
- 2 SBUS future expansion connectors
- Modular configuration for easy replacement and repair
- 4 line, back-lit LCD Display with 20 characters for each line
- On-board touchpad for manual operation and programming
- LEDs to indicate system operations
- Rack mountable design
- One line card will communicate with all supported formats
- Supports up to 12 line cards which operate independent of each other
- Line card parameters are stored on the MCPU for faster removal and replacement
- Line cards support Caller ID and Caller Name Delivery
- Line cards are individually programmable for format priority and ring parameters
- Line cards support direct connect phone line monitoring

Software Features

- Programmable display options for time and date information
- View or print the history information by priority, call, or event
- Two user profiles to control user access to the receiver
- Supports up to 40 users
- Listen-in and trap accounts support wild card variables. Up to 20 accounts available per line card (20 for listen-in and 20 for trap accounts)
- Listen-in selectable for direct, hook flash, or PBX phone system
- Programmable port configuration for automation, printer, and backup support
- 500 event history buffer

Optional Accessories

Unless otherwise indicated, the following accessories for the Model CS-5000 receiver are available from the ITI Order Processing Department. You can contact ITI Order Processing by phone or by mail. The toll free number is 1-800-777-4841. Our mailing address is 2266 North Second Street, North Saint Paul, MN 55109.

Table 1-1: Optional Accessories for the CS-5000 Receiver

Item	ITI Model Number (if applicable)	Description/Comments
Line card	ITI 13-417	The line card monitors the phone line, detects ring and processes the message from the communicating panel.
Backup battery	ITI 60-680	A 12VDC 7ah battery which will provide a minimum 4 hours of backup power during an AC power loss. (See <i>Agency Requirements</i> section for UL backup power requirements. See <i>Installation</i> section for installation instructions.)
Printer cable	Not available from ITI	A standard 25-pin cable used to connect the CS-5000 receiver to an external parallel printer.
Rack-mounting cabinet	Not available from ITI	Used to rack mount the CS-5000 receiver as required by UL. (See <i>Agency Requirements</i> section for specifications and vendor information.)
Blank filler panels	Not available from ITI	Used to fill up any unused cabinet spaces as required by UL.
Parallel printer	Not available from ITI (Okidata Microline 320 Turbo, 9-pin)	ITI Model CS-5000 receiver requires the parallel printer to generate report history hardcopy.

Formats Compatible with the CS-5000

Table 1-2 shows the formats that the CS-5000 receiver can decode and the handshake frequency groups which accommodate that format (see “Line Card Menu” in Section 5 for line card programming). Each line card can decode every format listed below. Setting the handshake order only prioritizes the type of communication done by each line card. Section 6 of this manual describes the formats in greater detail.

Table 1-2: Formats Compatible with the CS-5000

Format Name	Handshake
BFSK	1400 or 2300 Hz
4+2	1400 Hz
3+1/3+1 Extended	1400 or 2300 Hz
Sescoa 3+1/Franklin 3+1	2300 Hz
Radionics 3+1 Checksum	1400 or 2300 Hz
4+1 Extended	1400 or 2300 Hz
SX-III, SX-IVA	2225 Hz
SX-IVB	2225 Hz
ITI SX-V	2225 Hz
ITI SX-V Special	2225 Hz
ITI Commander	2225 Hz
ITI RF Commander, Harbor Gard	2225 Hz
ITI Commander 2000, LifeGard	2225 Hz
ITI CareTaker+, SecurityPro 4000, MeterMinder	2225 Hz
ITI UltraGard	2225 Hz
ITI SIMON	2225 Hz
ITI FONSAFE, PhoneWatch	2225 Hz
SIA DCS	2225 Hz
SIA 2000 (pending approval)	2225 Hz
Ademco Contact ID	1400 and 2300 Hz
Ademco Super Fast	1400 and 2300 Hz
Acron Touch Tone	1400 and 2300 Hz
Ademco Express	1400 and 2300 Hz
DTMF 4+2	1400 and 2300 Hz

CS-5000 Supported SIA Digital I-III Levels

Table 1-3 compares the CS-5000 receiver to SIA Digital Compatibility Levels I, II, and III and indicates compliance.

Table 1-3: CS-5000 and SIA Levels I-III Comparison

		CS-5000	Function/Capability	Transmitter	Receiver
Level I	Level II	✓	Support Tonal Acknowledgments	required	required
		✓	Support N Blocks with Zone Numbers Only	required	required
		✓	Support Single Account Block per Call	required	required
		✓	Support O Blocks	(optional)	required
		✓	Support X Blocks	(optional)	required
		✓	Support 300 Baud (Fast)	(optional)	required
Level III			Support Configuration Block	required	required
			Support Data Acknowledgments	required	required
	✓		Support Modifier Codes <i>id</i> , <i>da</i> and <i>ti</i> .	(optional)	required
	✓		Support Multiple Account Blocks per Call	(optional)	required
	✓		Support E Blocks	(optional)	required
	✓		Support Data Codes with Units Numbers	(optional)	required
			Support RECEIVER Call Out and Access Passcode	required	required
			Support Reverse Channel C Blocks	required	required
			Support Reverse Channel P Blocks	required	(optional)
			Support Reverse Channel A Blocks	(optional)	required
			Support Dynamic Block and Group Sizes	(optional)	required
	✓		Support Listen-in	(optional)	required
	✓		Support A Blocks to RECEIVER	(optional)	required
			Support V-Channel communication	(optional)	(optional)

Using this Manual

This manual contains information on how to install, program, and operate the CS-5000 receiver. ITI strongly suggests you review this manual in its entirety to become familiar with product procedures and parameters. Once you are familiar with the product, you can use this manual as a reference document.

This manual uses the following conventions:

- **5, ENTER, ▲, ▼** These bold typefaces and symbols represent touchpad buttons.
- *LCD display* This typeface represents LCD display messages.
- Manual pages are numbered by section. For example, “5-1” is page 1 of section 5.
- When this manual refers to **default settings**, it means programmable options set at the factory. Any programming after the receiver is powered up will change these settings.

Basic Terms Used in this Manual

This section lists some basic terms specific to this product and their meaning. (Refer to the Glossary for a complete list of terms.)

Term	Meaning
Communication Group	ITI has separated the different types of communication by handshake type. These handshake types can be assigned in a numbered order (see “Formats Compatible with the CS-5000” in Section 1).
Listen-in	Listen-in is the ability to listen in to what is happening in real-time from the central station to a remote location. This can help the central station operator determine if he or she should dispatch for a particular alarm situation.
PZT	PZT is an abbreviation for a piezo alert sounder.
PIN	An abbreviation for Personal Identification Number. PINs are used to log in and out of the receiver.
SBUS	Serial Bus interface for future expansion.
MCPUC	Master Central Processing Unit.
Main Menu	The main menu will be displayed as either <Installer Menu> or <Operator Menu> . However, this manual will refer to them as the main menu.
ACK	Stands for acknowledgment.
NACK	Stands for no acknowledgment.

What's in the Box

This section contains a list of the parts that are shipped with the CS-5000 receiver and a brief description of their intended use.

Item	Quantity	Description
Battery/alert relay wiring harness	1	Wiring harness used to connect the CS-5000 receiver to a backup battery. It also provides a normally open or normally closed output for an alert sounder.
CS-5000 Installation/Operation Manual	1	A manual covering installation and operation information related to the CS-5000 receiver.
Central station receiver	1	The central station receiver assembly.
Line card	1	Line card for phone lines.
Strain relief tie wrap	1	Tie wrap used as a strain relief on the phone cord. See Figure 3-3 for location of strain relief tabs.
Receiver mounting screws	4	#10-32 x 3/8 flat head screws used to mount the receiver to a UL listed rack. (See Section 3, "Installation," for rack mounting instructions.)
Telephone cord	1	A 7 foot long telephone cable with RJ-11 connectors.
Power cable	1	AC power cable used to connect the CS-5000 receiver to an AC wall plug.

Contacting ITI

If you have a question or encounter a problem not covered in this manual, contact ITI Technical Support by telephone at 1-800-777-2624. To order parts, contact ITI Order Processing at 1-800-777-4841 or fax in your question to 1-800-777-4842.

Section 2

Agency Requirements

Telephone Requirements

If requested by the telephone company, the following information must be provided before connecting this device to the phone lines:

- | | | |
|----|--|--------------------------------------|
| A. | Manufacturer: | Interactive Technologies, Inc. (ITI) |
| B. | Model Number: | CS-5000 |
| C. | FCC Registration Number: | AC6USA-31519-AL-E |
| D. | Type of jack (to be installed by the telephone company): | RJ31X |
| E. | Ringer Equivalence Number (REN): | 0.1B |

This device may not be connected directly to coin telephones or party line services.

This device cannot be adjusted or repaired in the field. In case of trouble with the device, notify the installing company or ITI for an RMA and then return it to:

Interactive Technologies, Inc.
2266 North Second Street
North Saint Paul, MN 55109

Telephone: 1-800-777-2624

The telephone company may make changes in its facilities, equipment, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice to allow you to make the necessary modifications to maintain uninterrupted service.

FCC Notice

This device complies with FCC Rules Part 68.

This device has been verified to comply with FCC Rules Part 15. Operation is subject to the two following conditions: (1) This device may not cause radio interference, and (2) This device must accept any interference received including interference that may cause undesired operation.

UL Requirements

Follow the procedures outlined in the sections below for listing as an NFPA 72 Central Station Service installation. The CS-5000 is also suitable for household and commercial burglary service. Note that installation regulations are subject to the jurisdiction of a local authority.

Hardware Requirements

See Figure 3-4 and Figure 3-5 for diagrams of a suggested installation.

1. A second CS-5000 must be installed as a back-up in case the primary CS-5000 fails. The back-up system must be able to take over within 30 seconds.
(Note: This requirement does not apply to burglary-only installations.)
2. The CS-5000 must be housed in a UL listed for fire protective signaling use, metal rack-mounting cabinet. A recommended enclosure is a listed control unit accessories system cabinet manufactured by Atlas/Soundelier. (The WA200 series, intended for 19-inch rack mount panels, can be used.) A taller cabinet could be used to house additional units.
3. Back-up battery does not provide standby time required for UL and NFPA standards. A UPS (uninterruptable power supply), listed for Fire Protection Signaling Use, must be utilized when standby power is required.
4. Any unused front panel rack space must be filled with blank panels so that all wiring remains enclosed.
5. The external conduit must exit through the knockouts in the cabinet or go directly through the floor.

Operational Requirements

1. The transmitters reporting to the CS-5000 must be UL Listed DACTs (digital alarm communicator transmitters).
2. The central station must provide a minimum of 24 hours of back-up power within 30 seconds of an AC power loss. The back-up must either be in the form of a UL listed UPS or electrical generator.
3. If the CS-5000 is not automated, the central station operator must check for the 24 hour test signals from the communicators.
(Note: This requirement does not apply to burglary-only installations.)
4. The connection between the CS-5000 and the UL listed computer should be according to the pin configuration for Com port 1 as shown in the Installation section of this manual.
5. If a computer is used, the computer and its accessories must be installed in the same room as the receiver.
6. If the listen-in feature is used the receiver must meet the loading requirements specified in NFPA 72 paragraph A-4-5.3.2.2.2.3. Additional line cards can be installed to meet this requirement; however, the additional line cards can not be programmed for listen-in.

Programming Requirements

In a UL listed installation, the Model CS-5000 receiver must be programmed according to the following procedure:

- Do NOT use the alarm output relay in UL installations.
- Each log-on code must have at least four digits.

Section 3

Installation

This section contains information necessary to install a CS-5000 Central Station Receiver.

Important!

Do not connect power to the system until you have read these instructions carefully.

Environmental Specifications

- Operating temperature range is 32° to 120° F.
- Indoor use only.
- Maximum 85 percent non-condensing relative humidity.
- Non-corrosive environment.

For detailed specifications, see Appendix D.

Electrical Specifications

Line voltage		120VAC ± 10%	60Hz, 100VA
		240VAC ± 10%	60Hz, 100VA
Fuse		3A Slow Blow	
Back-up battery connection (Back-up battery does not provide standby time required for UL and NFPA standards. A UPS (uninterruptable power supply), listed for Fire Protection Signaling Use, must be utilized when standby power is required.	Input	10.2 to 14.0 VDC	3 Amp Max.
	Output	13.65 VDC	1 Amp charging current
Auxiliary relay contacts		2.5 Amp @ 48VDC	Resistive Power Limited
		2.5 Amp @ 48VAC	Resistive Power Limited

Overview

The CS-5000 is assembled at the factory. One line card is shipped with the CS-5000 receiver. Follow the procedures described in “Installing Line Cards” in Section 3 to install additional line cards.

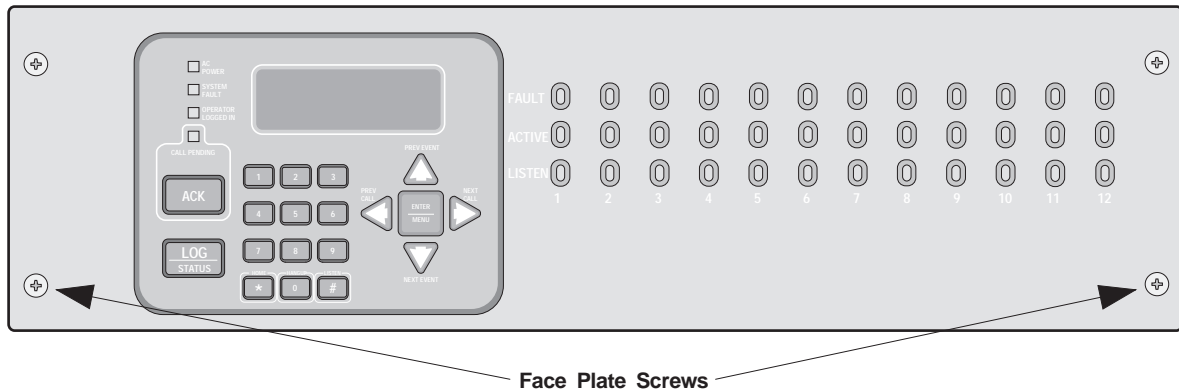


Figure 3-1 Model CS-5000 Front View

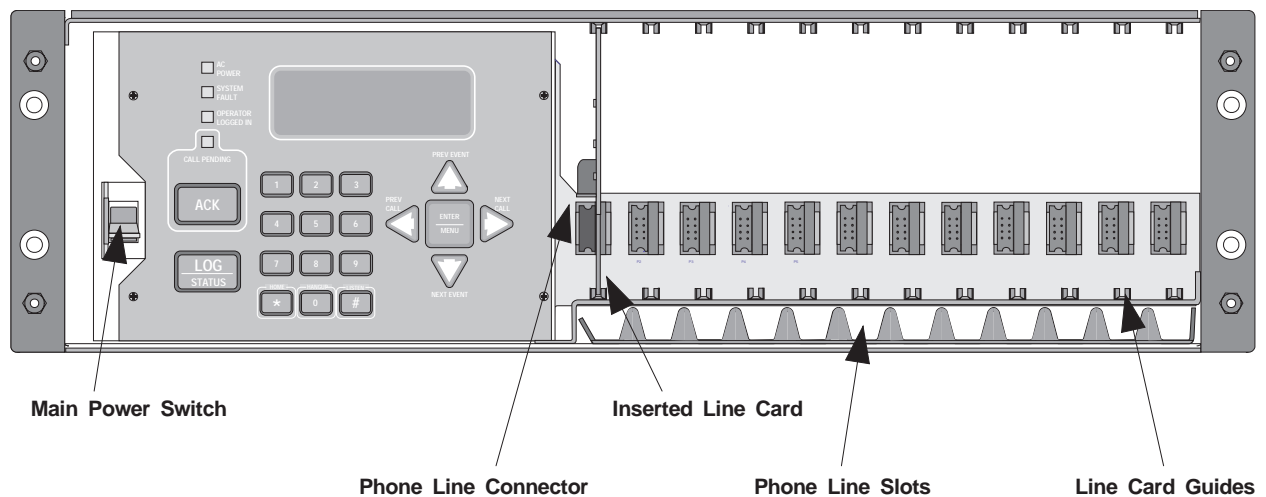


Figure 3-2 Model CS-5000 Front View (Front Plate Removed)

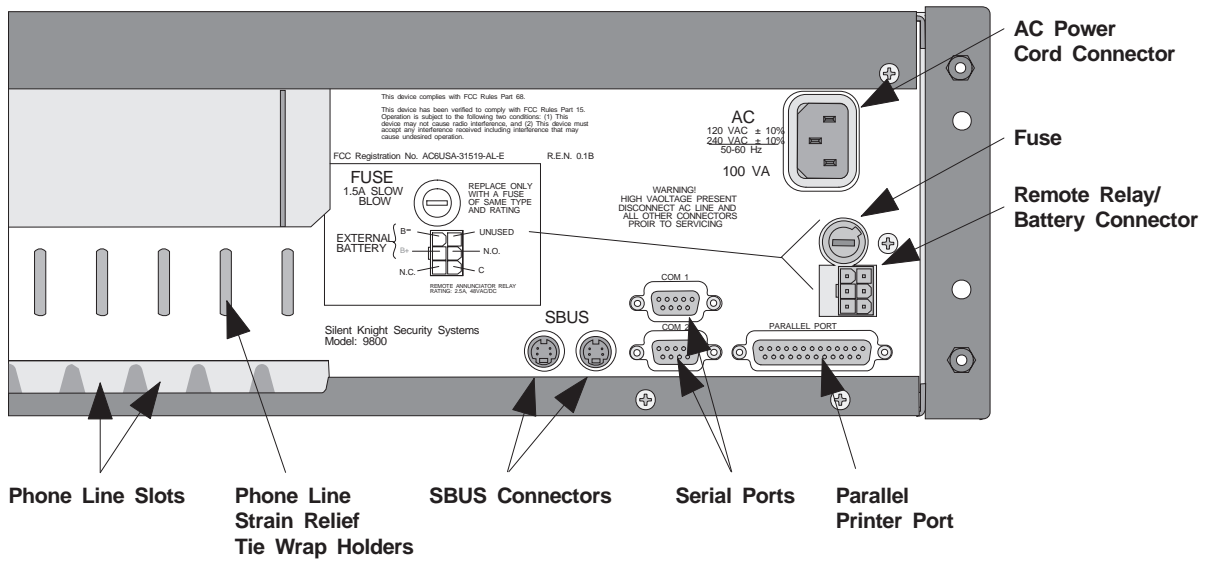


Figure 3-3 Model CS-5000 Rear View

Rack Mounting

This diagram shows how to mount the model CS-5000 in a UL-listed rack enclosure.

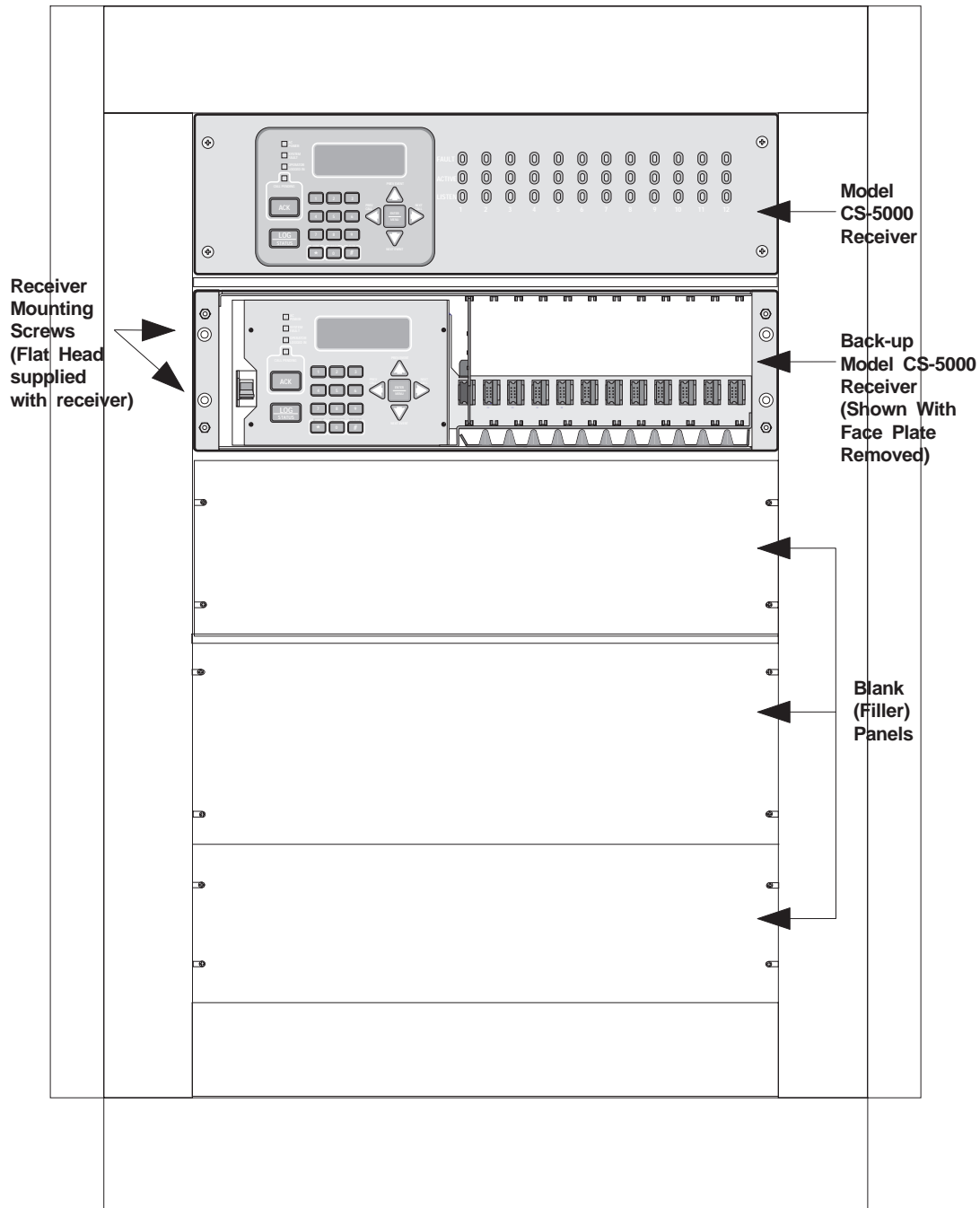


Figure 3-4 Rack Mount Enclosure (Front View)

Note: All wiring that exits cabinet must be in a electrical conduit.

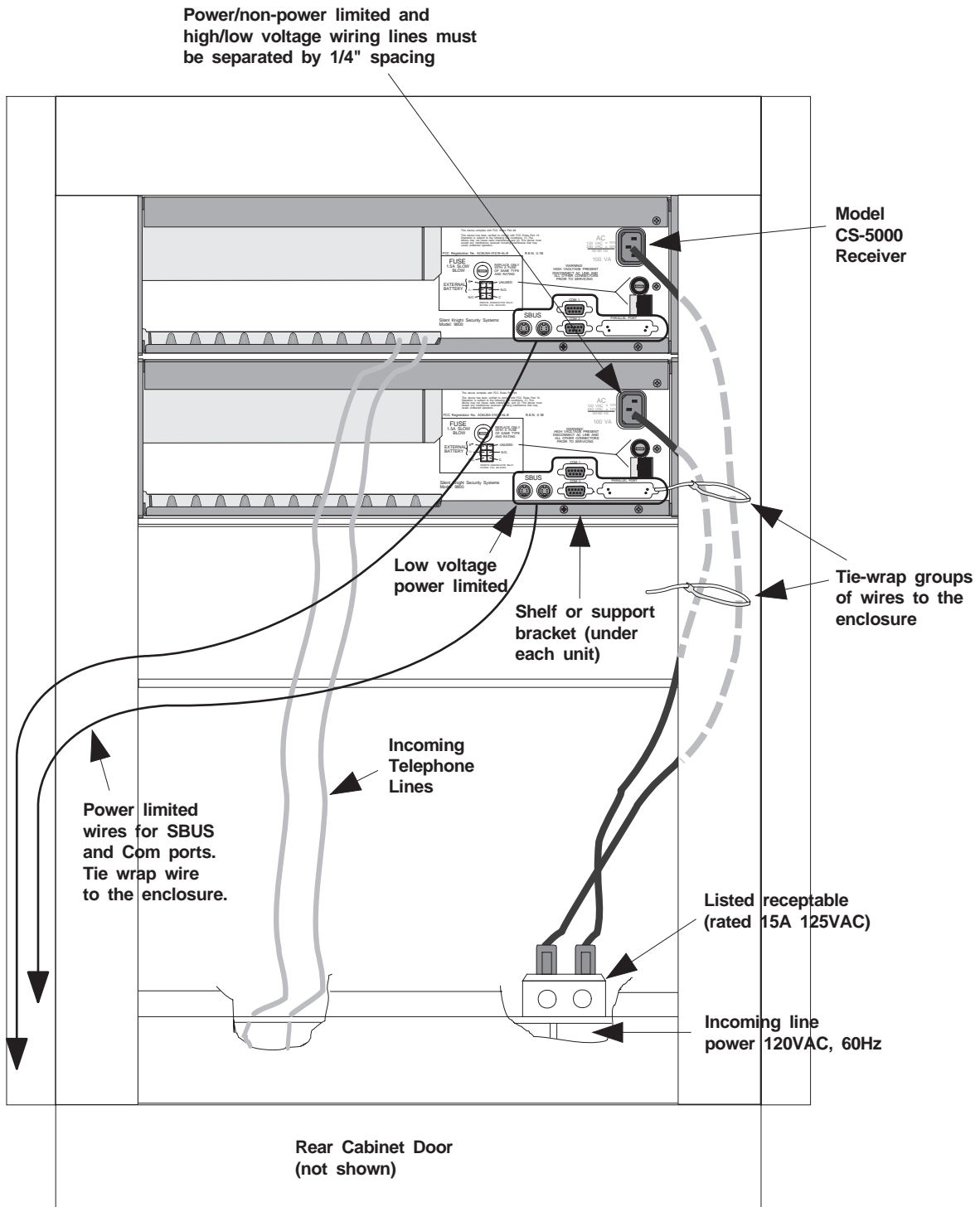


Figure 3-5 Rack Mount Enclosure (Rear View)

Note: All wiring that exits cabinet must be in a electrical conduit.

Installing Line Cards

Caution

To reduce the risk of electrical shock and/or damage to the receiver, follow these steps in order.

1. Open the CS-5000's front panel by unscrewing the four front plate retaining screws located on the front of the panel (Figure 3-1).
2. Turn off the CS-5000's AC power switch (Figure 3-2).
3. When the front panel is removed, you can see that there are 12 slots for line cards. The receiver recognizes each slot by number 1 through 12 (slot one is closest to the keypad and display). It is not necessary to put line cards in numbered order because the receiver continually polls each slot to see if existing line cards are functioning and if it is still in its slot. The receiver also looks to see if a new line card has been added. Figure 3-6 shows line card placement.

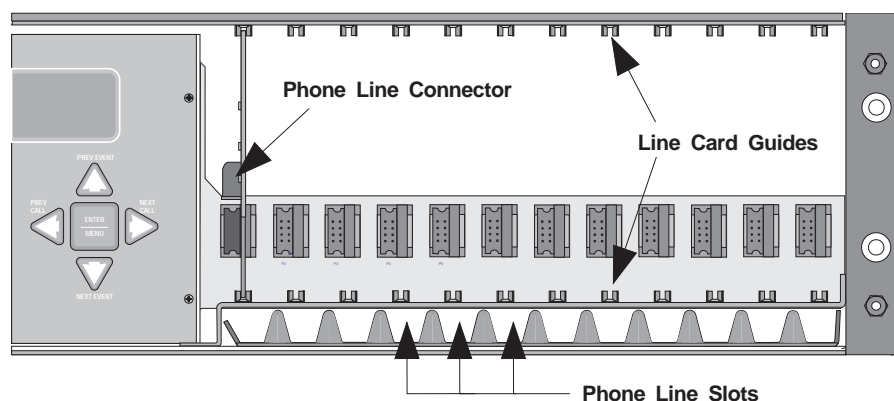


Figure 3-6 Line Card Locations

4. Position the line card as shown in Figure 3-7.

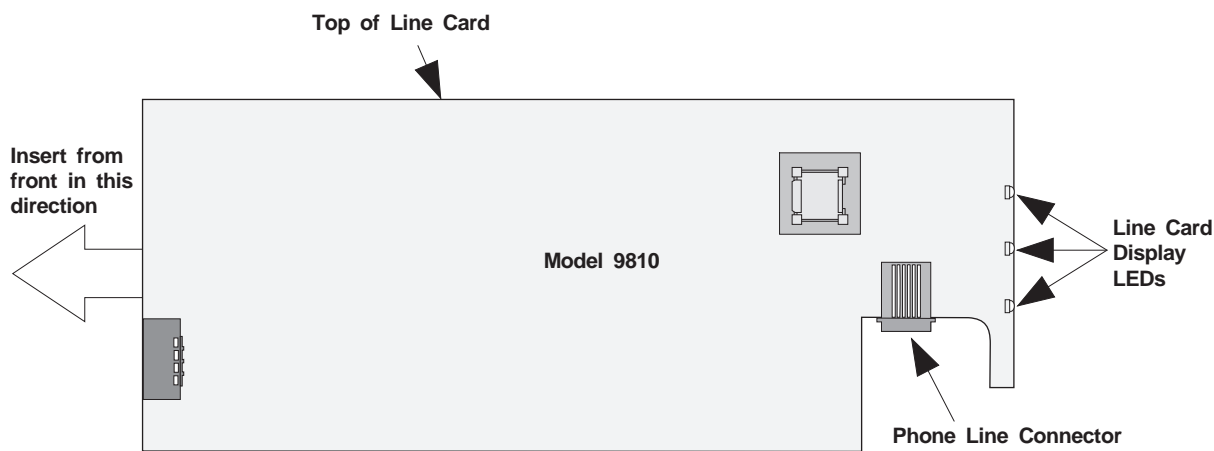


Figure 3-7 Line Card Position and Components

5. Carefully slide the card into its guides (both top and bottom) until it fits into its connector at the back of the receiver. Gently push the card completely into the connector. The card is now in place.
6. Connect telephone line. (See “Telephone Line Connection” in Section 3.)

Note: Use the tie wrap (provided with each line card) on the tie wrap holder to add strain relief to the telephone lines. (See Figure 3-3.)

7. Power up the CS-5000.
8. Close the CS-5000's front panel and tighten the front plate retaining screws to hold the front plate in place. If you are simply replacing a line card with another card of the same type and are using the same format settings, your installation is now complete. If not continue to the next step.
9. Enter programming mode to select the appropriate handshake configuration. (See “Entering Program Mode” in Section 5 for programming procedures.)

Removing Line Cards

If you need to remove a line card:

1. Open the CS-5000's front panel by unscrewing the four front plate retaining screws located on the front of the panel (Figure 3-1).
2. Turn off the CS-5000's AC power switch (Figure 3-2).
3. With the front panel removed, you can see that there are 12 slots for line cards.
4. Locate the line card to be removed.
5. Unplug the telephone line (Figure 3-6, Figure 3-7).
6. From the front side of the receiver pull the line card straight forward. This will pull the card free from the connector.
7. When the card is free, slide it carefully out of the receiver.

Note: If replacing a line card with a new one, see “Installing Line Cards” in Section 3.

8. Power up the CS-5000.
9. Close the CS-5000's front panel and tighten the front plate retaining screws to hold the front plate in place.
10. Enter programming mode to clear the line card from the system. (See “Entering Program Mode” in Section 5 for programming procedures.)

Telephone Line Connection

See Figure 3-6 for the location of the phone line inputs. Connections to the CS-5000 phone jacks are made with a standard 7-foot phone cord (provided with each line card).

Use the following procedure to connect phone lines to the line cards:

1. Remove the front panel of the CS-5000 receiver by loosening the front plate retaining screws (Figure 3-1).
2. From the back side of the receiver insert the telephone line through the corresponding slot for the desired line card (Figure 3-6, Figure 3-7).
3. Gently push it all the way through to the front side of the receiver.
4. Plug the RJ-11 phone connector into the connector on the line card (Figure 3-6, Figure 3-7).

Note: Use the tie wrap (provided with each line card) on the tie wrap holder to add strain relief to the telephone lines (Figure 3-3.)

5. Replace the front panel of the CS-5000 receiver by tightening the front plate retaining screws (Figure 3-1).

Parallel Printer Connection

The CS-5000 Receiver connects to a parallel printer for UL applications. To connect the printer to the CS-5000 receiver follow these steps:

1. Connect the standard parallel printer cable to the parallel printer port on the back of the CS-5000 receiver (Figure 3-8).
2. Connect the other end to the printer's parallel printer port connector.

Note: Make sure that printer power is turned off.

3. Turn on printer power.

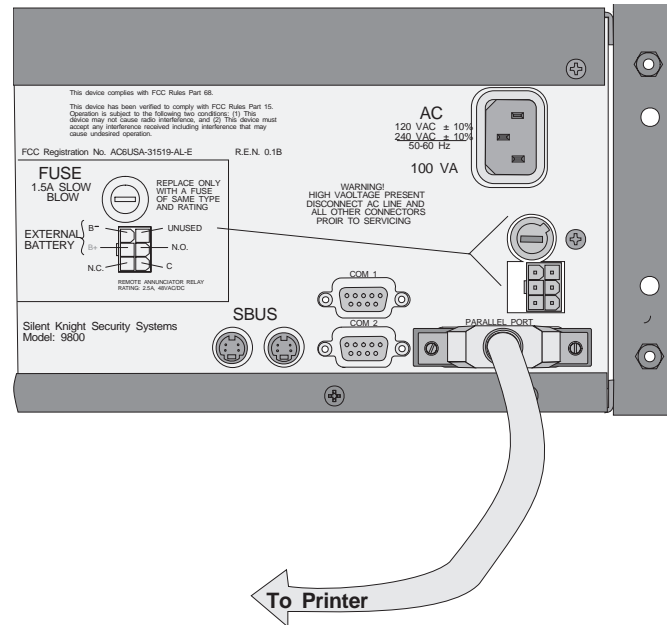


Figure 3-8 Parallel Printer Cable Connection to CS-5000

Printer Cable Pin-Outs

25 pin (Centronics type) printer cables are a standard items at most electronic stores. However, if you create your own cable, use the pin description in Table 3-1.

Table 3-1: External Printer Cable Pin Description

CS-5000 Pin #	Signal	Direction	Description
1	Data Strobe (Low)	Out	A low strobe pulse to read data in the pulse width is greater than 0.5 microseconds.
2	Data Bit 1	Out	These signals represent information of the first to eighth bits of parallel data. Each signal is at high level when the data is logic 1 and low when it is logic 0.
3	Data Bit 2	Out	
4	Data Bit 3	Out	
5	Data Bit 4	Out	
6	Data Bit 5	Out	
7	Data Bit 6	Out	
8	Data Bit 7	Out	
9	Data Bit 8	Out	
10	AckNlg	In	A low pulse from the printer signals the control that the printer is ready for additional data.
11	Busy	In	A high level indicates that the printer is busy.

Table 3-1: External Printer Cable Pin Description

12	Paper Empty	In	A high level indicates that the printer is out of paper.
13	Select	In	A low level indicates the printer is off-line or in an error condition.
14	Not used	-	-
15	Not used	-	-
16	Logic ground	-	Logic ground for printer
17	Not used	-	-
18 to 25	Logic Ground	-	Ground return for data lines.

Figure 3-9 shows the connector pin numbering.

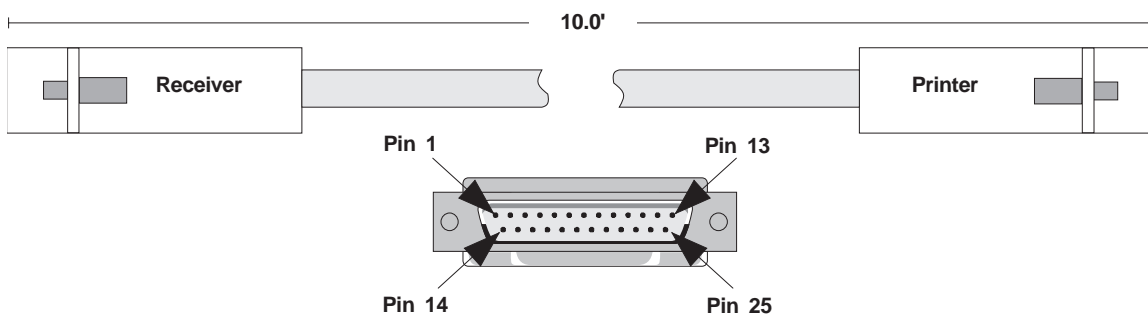


Figure 3-9 Parallel Printer Port Connector Pins

Remote Alert Output

1. Plug the battery/relay wiring harness onto the connector on the back of the CS-5000 receiver (Figure 3-10).

Note: The remote alert output is a "form C" relay with normally open or normally closed contacts.

2. Connect the white wire to circuit common.
3. Use the yellow wire for a normally closed circuit, or
Use the brown wire for a normally open circuit.

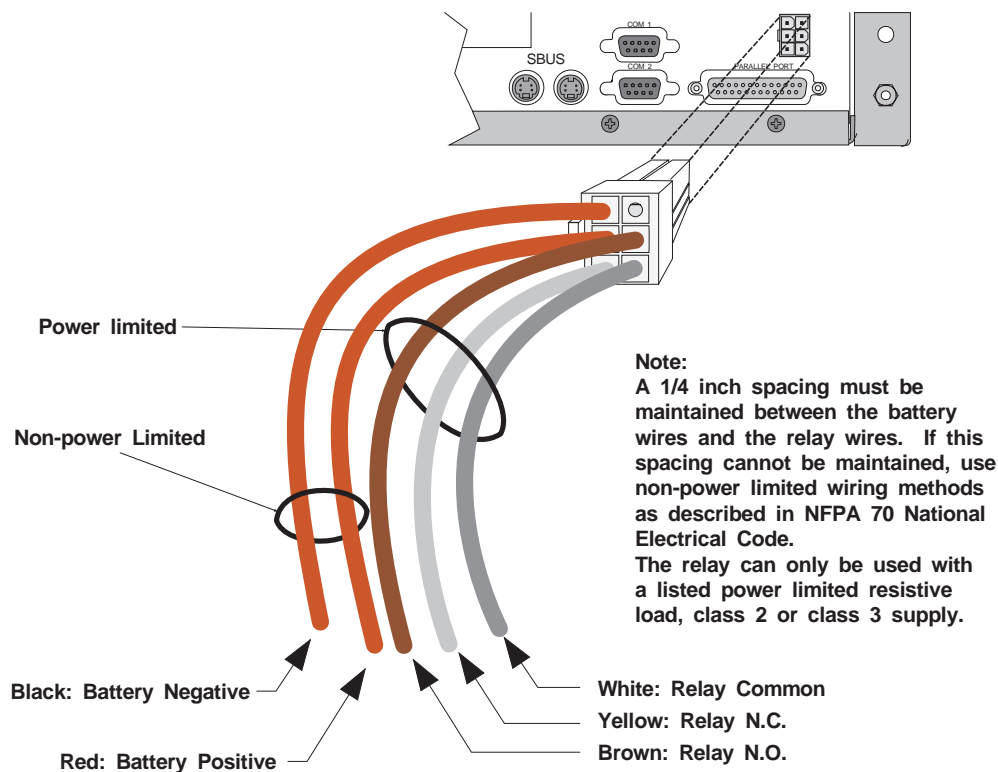


Figure 3-10 CS-5000 Remote Alert Output/Backup Battery Connection

AC Power Cord Connection

1. Before the AC power cord is connected, make sure that the power switch is off (down).
2. Connect the power cord into the receptacle on the back of the CS-5000.
3. Plug the power cord into a 120 VAC 60 Hz outlet (three-prong type only). The outlet should be unswitched, so that power remains on 24 hours a day. The outlet must also be earth grounded. See “How to Verify Earth Ground” in Section 3 if you need to measure for proper earth grounding.

Switching to 240 VAC Power

1. Remove the front plate by unscrewing the front plate retaining screws (Figure 3-1).
2. Turn the main power switch off (Figure 3-12).
3. Disconnect AC power cable.
4. Disconnect the back-up battery (Figure 3-14).
5. On the back of the receiver remove the four screws that hold the mother board/power supply assembly to the chassis (Figure 3-11).

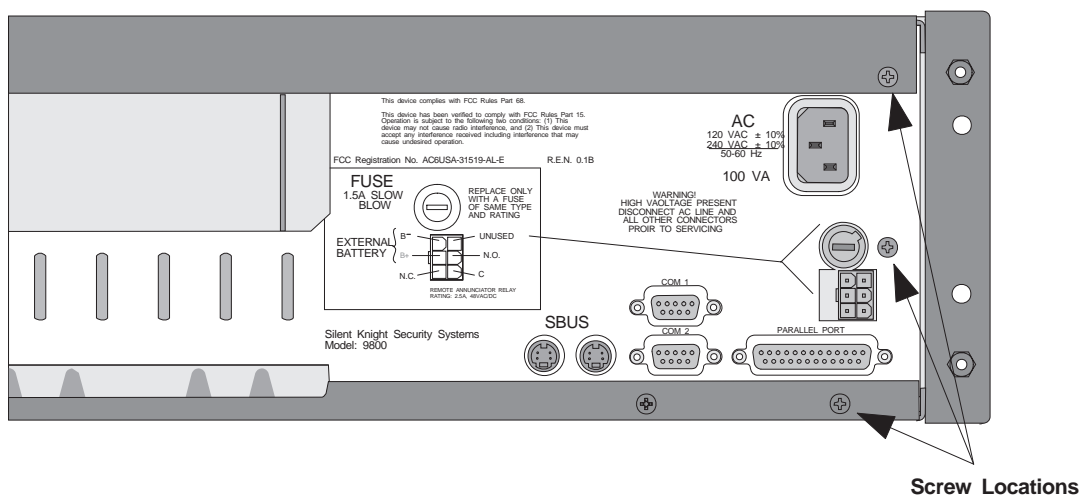


Figure 3-11 Mother Board/Power Supply Assembly Retaining Screw Locations

6. From the front of the receiver pull the mother board/power supply assembly out.
7. Switch the power supply select switch to the up position. The switch will show 240VAC (Figure 3-12).
8. Slide the mother board/power supply assembly back into the receiver chassis.
9. On the back of the receiver replace the four screws that hold the mother board/power supply assembly in place (Figure 3-11).
10. Reconnect the AC power cable.

Note: Make sure to plug the AC power cable into a grounded 240VAC outlet.

11. Reconnect the back-up battery (Figure 3-14).
12. Turn the main power switch to the “on” position (Figure 3-12).
13. Replace the front plate by screwing in the front plate retaining screws (Figure 3-1).

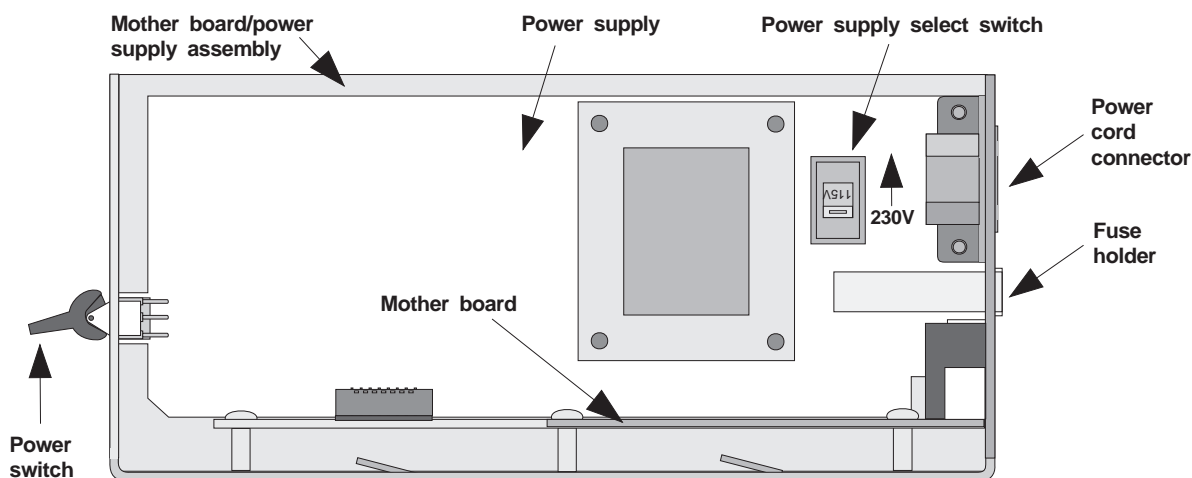


Figure 3-12 Side View of Mother Board/Power Supply Assembly

How to Verify Earth Ground

To verify earth ground at the AC outlet from which the CS-5000 receiver is powered, use the following steps:

1. Measure the AC voltage between the center ground post and each side of the outlet.

On a 120 VAC outlet:

- Ground post to larger hole (A) should give a nominal reading.
- Ground post to smaller hole (B) should give a reading of 110 to 120 VAC.

If the voltage on A is not nominal, the outlet does not have proper ground.

If the voltage on B is not 110 to 120 VAC, the outlet is incorrectly connected.

On a 220 VAC outlet:

- Ground post to left hole (A) should give a reading of 110 to 120 VAC.
- Ground post to right hole (B) should give a reading of 110 to 120 VAC.

If A and B voltage measurements are not equal, the outlet does not have a proper earth ground or one of the wires is incorrectly connected.

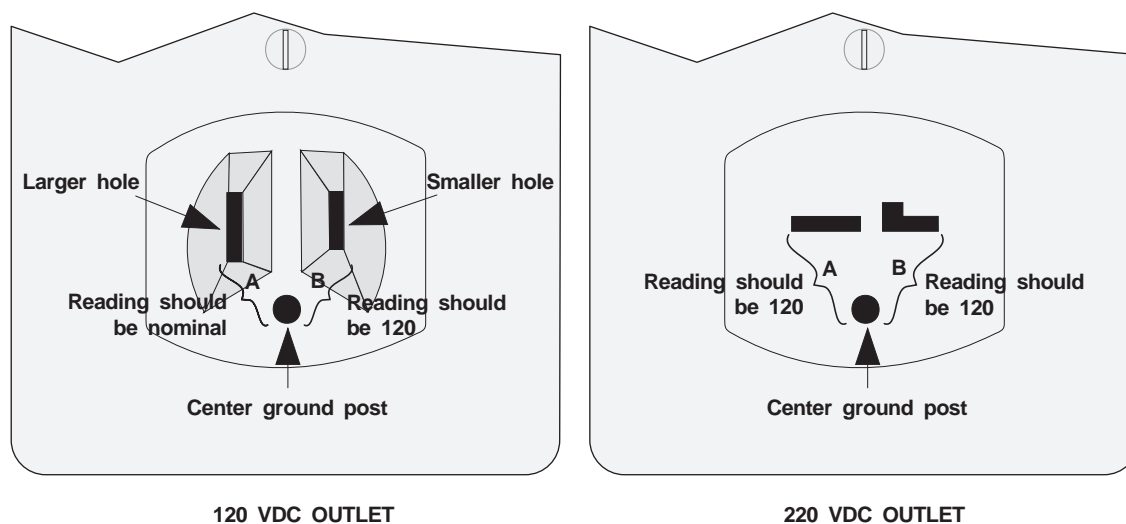


Figure 3-13 Outlet Voltage Measurement Points

2. Ground the outlet by running a solid wire (14 gauge or larger) to a good earth ground such as a metal water pipe or ground rod.

The wire should be of equal or greater diameter to the wires used to feed the outlet. It may be necessary to have a licensed electrician ground the outlet.

Battery Connection

To install the back-up battery, follow these steps:

Note: The 12VDC 7ah battery will provide a minimum of 4 hours of battery back-up power. (See “UL Requirements” in Section 2.)

1. Plug the battery/relay wiring harness onto the connector on the back of the CS-5000 receiver (Figure 3-14).

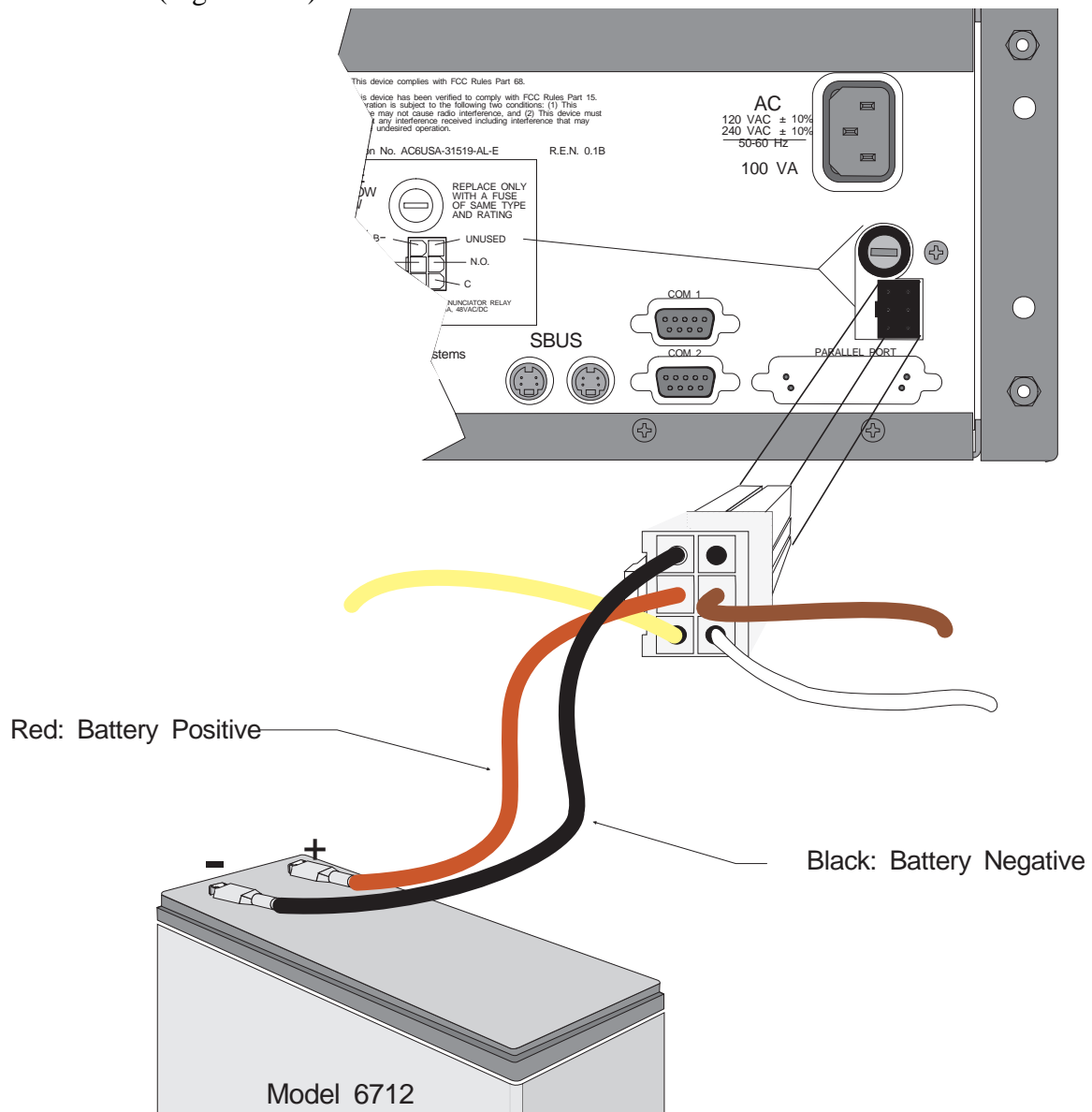


Figure 3-14 Battery Connections

2. Connect the red wire to the positive (+) side of the battery.
3. Connect the black wire to the negative (-) side of the battery.

Note: Shorting or reversing battery connections can damage the battery and/or the CS-5000.

Automation Computer Connection

An automation computer can be connected to Com port 1 on the CS-5000 receiver. Com port 1 is a 9-pin DTE port. Refer to the Section 8, "Automation Communication Formats" for details on automation communication protocols. The diagrams below describe some of the cable options.

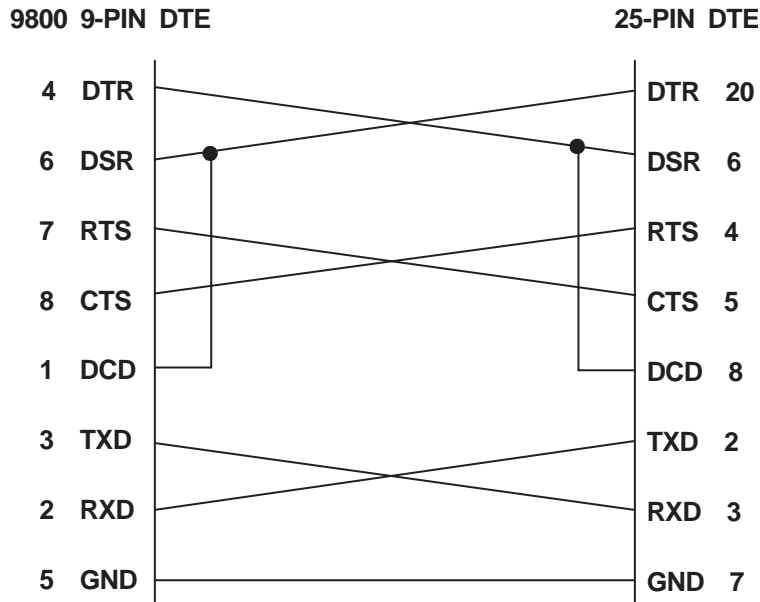


Figure 3-15 25-Pin Null Modem Cable Connection

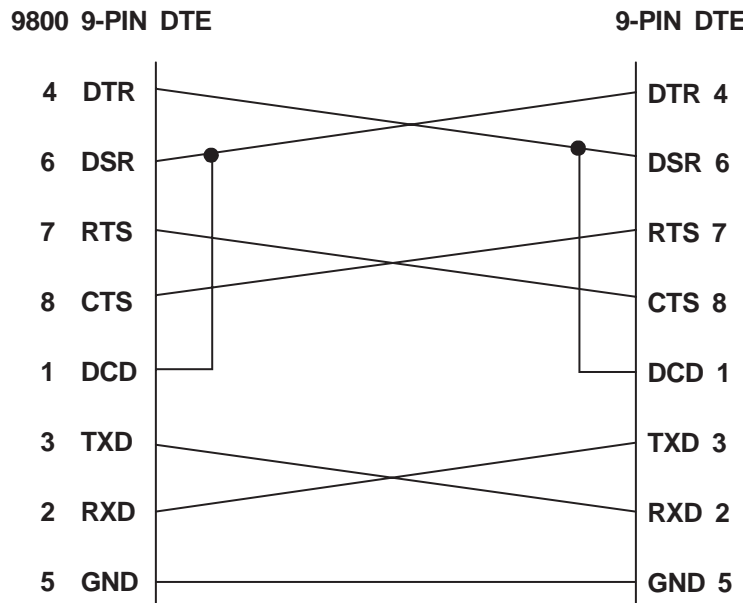


Figure 3-16 9-Pin Null Modem Cable Connection

Com “Serial Communication” Ports 1 & 2

A standard null modem cable can be used to connect com port 1 or 2 to another serial device such as a printer or a PC. Com port one is the only serial communications port that can be used with the automation computer (see Section 8, “Automation Communication Formats”). Figure 3-15 and Figure 3-16 shown the pin-outs for a null modem cable. See “Communications” in Section 5 to configure the ports.

Computer Port Baud Rate Selection

The computer (Com) port baud rate is selectable from 110 to 19200 (see Table 5-6).

Direct Panel Connection

Any panel can be connected directly to a CS-5000 line card when wired as shown in Figure 3-17. The line card monitors the loop voltage and goes off-hook when the voltage across the loop drops below four volts. The card will then output 440 Hz for three seconds to simulate a dial tone for the panel. This is done because some panels have dial-tone detection and will not start the dialing sequence until a dial tone is detected. The panel doesn’t need to dial any digits—it can simply wait for the receiver to output the proper handshake and then start sending data.

Loop supervision is accomplished by sampling the loop current at programmed intervals. The sample interval and direct connection mode is programmed in the Line Option display menu (see “Line Card Menu” in Section 5).

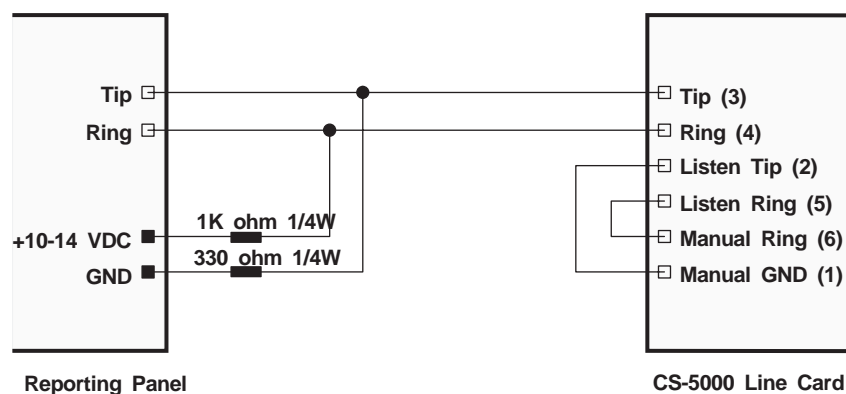


Figure 3-17 Direct Panel Connection

Section 4

Operation

This section covers information on how to operate the CS-5000 Receiver.

Touchpad Function Buttons

The front panel of the CS-5000 is made up of a touchpad containing numbers, arrows and buttons; an LCD display; and an array of LED indicators (Figure 4-1.)

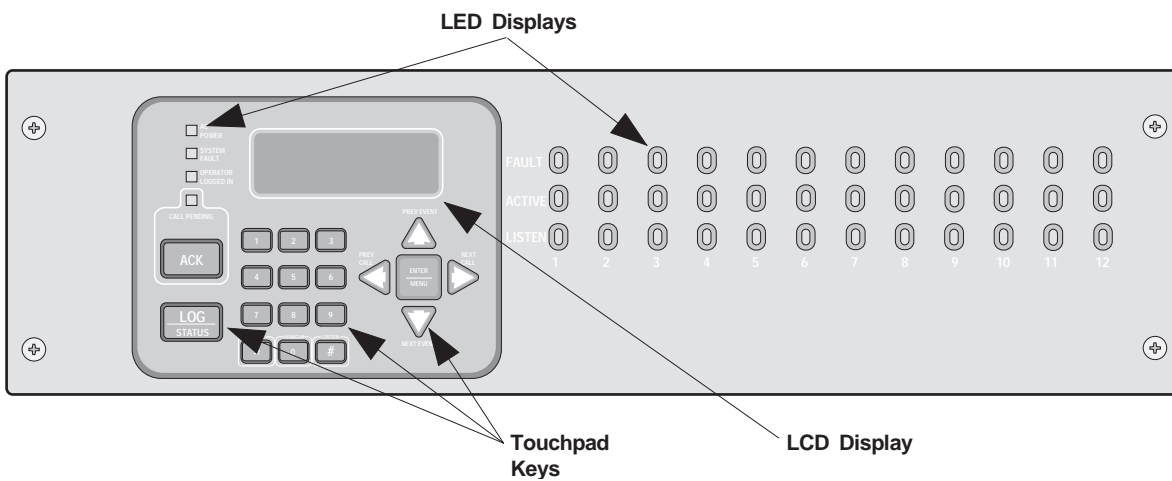


Figure 4-1 Model CS-5000 Front Panel

The touchpad on the CS-5000 Receiver is used in all operating modes (normal and programming mode).

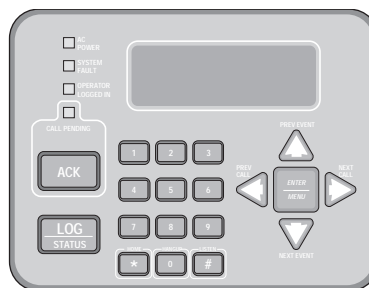







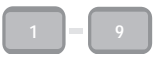





Figure 4-2 Touchpad Layout

Table 4-1 displays each individual touchpad key and describes its function in each operating mode.

Table 4-1: Touchpad Buttons Description

Key	Name	Operating Modes	
		Normal	Programming
	Up Arrow	Display previous event.	Go back to previous choice or character.
	Down Arrow	Display next event.	Move to next choice or character.
	Left Arrow	Display previous call.	Exit the current menu. Move to previous programming field.
	Right Arrow	Display next call.	Select menu item indicated by equal sign (Figure 4-6). Move to next programming field.
	Enter/Menu Button	Bring up Main Menu.	Select menu item indicated by equal sign (Figure 4-6). Enter chosen parameter.
	Acknowledge Button	Manually Acknowledge a call or event. (Used only if receiver is in manual mode.)	Used in log mode to acknowledge and silence system troubles.
	Log Button	Pressed to log on or off the system. Pressed to view system status messages.	N/A
	Digit Keys	Used to enter numeric inputs.	Numeric input, option selection.
	Star or Home Key	Will return display to the oldest unacknowledged event.	Enters a * Character when programming in an "Edit" field. See Table 5-2, "Types of Programming Fields."
	0 or Hangup key	In manual (common) mode, the 0/hangup key is used to hangup line card when the listen feature was activated, or to end a runaway call from a panel.	Used to enter numeric inputs.
	Pound Key or Listen Key	In manual (common) mode, this key is used to extend the listen- in feature.	Enters a # Character when programming in an "Edit" field. See Table 5-2, "Types of Programming Fields."

Displays

This section describes the CS-5000 receiver indicators and displays.

LED Indicators

Table 4-2: LED Description

LED Indicator		Meaning		
		On	Off	Flashing
Touchpad LEDs	AC Power	AC power is on.	No AC or DC power to the receiver	No AC power and the system is operating on the back-up battery.
	System Fault	A fault condition exists that has been acknowledged but not cleared.	The system is operating normally.	A fault condition exists that has not been acknowledged.
	Operator Logged In	An operator is logged on.	No operator is logged on.	
	Call Pending	The acknowledge key was pressed at least once, but not all the events in a call were acknowledged.	No calls pending or all calls have been acknowledged.	Calls pending.
Line Card LEDs	Fault	N/A	The line card is operating normally.	Trouble or fault condition exists.
	Active	The line card is in active communication.	No Activity.	Indicates the line is ringing.
	Listen	Comes on when operator acknowledges the listen-in call.	No listen-in occurring.	N/A

LCD Status Display

The status display is a 20-character by 4-line, back-lit LCD that shows the various alarm and function messages. It functions in all modes of operation (normal and programming mode). As the CS-5000 acknowledges calls and messages, it updates the calls on the LCD and silences the alert tone.

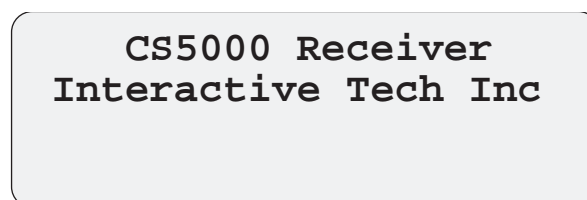


Figure 4-3 LCD Display

Adjusting LCD Contrast

The LCD display is factory set at the highest contrast level and for most installations will not need to be adjusted. Use these steps to change the LCD contrast if the brightness of the room or the location in which the receiver is located should require a contrast change:

1. Press and hold both the up arrow and the left arrow keys at the same time (Figure 4-4).



Figure 4-4 Contrast Adjustment

2. Release the up and left arrow keys when you reach the desired contrast level.

LCD Display Abbreviations

Many of the words used on the LCD are abbreviated to accommodate 20 characters per line. Table 4-3 compares the event that is reported to how it is output to the LCD and printer.

Table 4-3: LCD and Printer Abbreviations

Event	LCD	Printer
Alarm	Alrm	Alarm
Trouble	Trbl	Trouble
Restore	Rstr	Restore
Supervisory	Sprv	Superv
Opening	Open	Opening
Closing	Clos	Close
Remote	Rmot	Remote
Disable	Dsbl	Disable
Bypass	Byps	Bypass
Unbypass	Ubyp	Unbypass
Test	Test	Test
Listen-in	Lstn	Listen
System	Sytm	System
Access	Accs	Access
Report	Rprt	Report
Cancel	Cncl	Cancel
Zone Number	Z#	Zone
Door Number	D#	Door
User Number	U#	User
Area Number	A#	Area

Initial System Power Up

Apply power to the CS-5000 by plugging in the AC power cable and then turning the main power switch “on” (Figure 3-2.) When the CS-5000 powers up, the display will go through the routine shown in Figure 4-5.

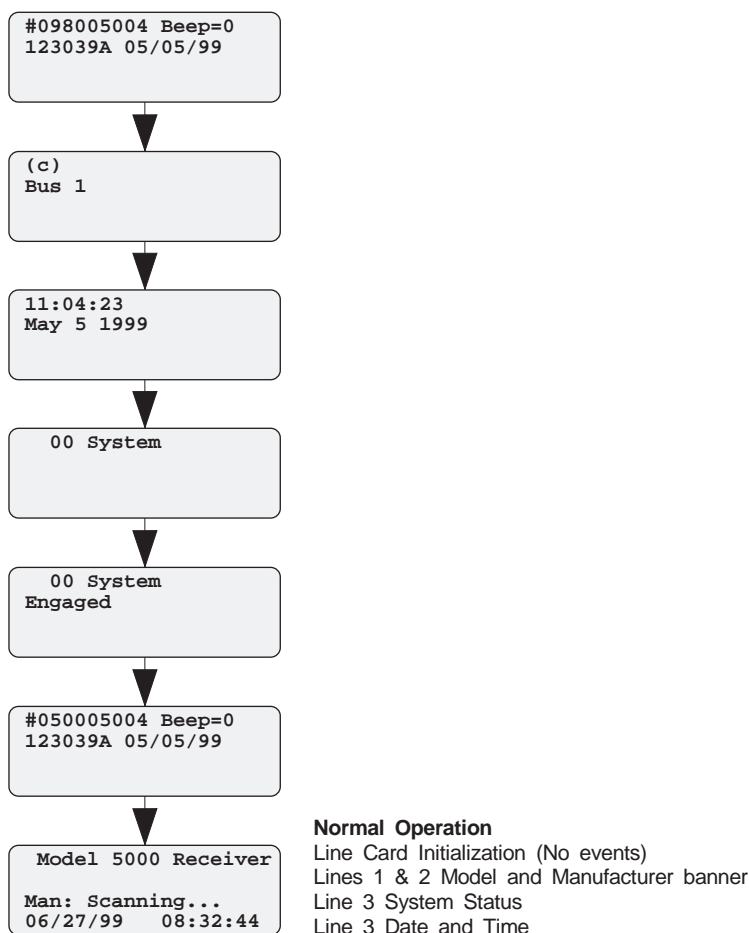


Figure 4-5 Power-up Routine

The system defaults in the manual operation. To select automatic operation, see “Changing the Operation Mode” in the Section 5.

Note: Any time the main power switch is turned off the time and date will have to be reprogrammed on power-up.

Logging On and Off

Persons operating the CS-5000 must log on and off the system. This is a way of keeping track of who is operating the system at any given time. You can program a total of 40 codes. Each code will be assigned to one of two user profiles—installer profile or operator profile. (See “Default User Codes” in Section 4.)

Installer Profile

The Installer profile will have access to all options on the main menu.

Operator Profile

The Operator profile has access to fewer main menu options than the Installer profile. These options allow the operator to perform basic operation of the CS-5000. Both profiles can acknowledge all calls and events.

Table 4-4: Main Menu Option Items by Profile

Installer Profile	Operator Profile	Menu Options
✓	✓	Call History
✓	✓	System History
✓	✓	System Info
✓	✓	Set Time & Date
✓	✓	System Restart
✓		Print Menu
✓		Program Menu
✓		Diagnostics

Note: See “Main Menu” in Section 4 for detailed information on the main menu options.

Note

You must have at least one Installer Profile Code programmed in the system at all times.

Default User Codes

At initial power up, the system provides two default user codes. User code 1 defaults with an Installer profile and user code 2 defaults with an Operator profile. Table 4-5 shows the default codes and their profiles.

Table 4-5: Default User Codes

User Number	Default Code (PIN)	Default Profile
*1	5000	Installer
2	1111	Operator

** Note: User code 1 can be changed but not deleted. User code 1’s profile will always remain as “installer”.*

Logging On the System

Follows these steps to properly log on to the system:

1. Press the **LOG/STATUS** button.

The LCD will display Enter Log In Code:
[]

2. Enter your PIN code. (See Table 4-5 for default codes.)

Note: This screen will time-out after 15 seconds.

3. Press the **ENTER/MENU** button.

If the correct PIN is entered, the LCD will display Installer # XX
User Name.

The “Operator Logged In” LED will also turn on.

If an invalid code is entered, the LCD will display Access code not verified.

*Note: If the previous user has not logged off, a new user can still log on by entering a PIN code.
This will automatically log off the previous user and log in the new user.*

Logging Off the System

Follows these steps to properly log off the system:

1. Press the **LOG/STATUS** button while in the <Main Menu>.

The LCD will display #nn User Name
Log Out
[]

Note: This screen will time out after 15 seconds.

2. Enter your PIN code. (See Table 4-5 for default codes.)

3. Press the **ENTER/MENU** button.

If the correct PIN is entered, the LCD will display User Name Logged out.

The “Operator Logged In” LED will also turn off.

If an invalid code is entered, the LCD will display Access code not verified.

Modes of Operation

This section describes the receiver's normal and programming modes of operation and the options available.

Normal Mode

Normal mode consists of three options; one if the receiver is intended to be used with an automation system, one for manual operation, and one to just log the events without manual acknowledgments or automation communication.

Manual Operation

Requires a manual acknowledgment of each call or event from an operator.

How to Manually Acknowledge Calls:

When the call pending LED is flashing and the on-board annunciator is beeping:

1. Press the **STAR/HOME** button to display the oldest event that has not been acknowledged.
2. Press the **ACK** button to acknowledge the call.
3. Repeat step 2 until all calls are acknowledged and the display shows **No More Data**.

Automatic Operation

Event information is sent directly to the automation computer.

Note: If the automation system fails, the receiver will automatically switch to manual mode in less than 30 seconds. The switching time is twice the value set in Ack Timeout (Table 5-6). The receiver will return to automatic mode after communication to the automation computer is restored.

Log Only

Log only mode will log event data without manual acknowledgments or communications with the automation computer. All event information is intended for printer output.

Note: On initial power-up the receiver will default in manual operation. The receiver can be set to automatic or log only operation in program mode.

Program Mode

In program mode all general, line card, and user profile options can be changed. See Section 5 for more detailed information on programming the receiver or refer to the Quick Chart in the appendix for programming overview.

Main Menu

This section gives detailed information about the items available in the installer/operator menu options, which this manual will refer to as the main menu. The menu items available to each logged on user is dependent on the profile assigned to that user. (See Table 4-4 for menu items for each profile.) The user profile is assigned to each user through programming. (See “User List” in Section 5 for programming user profiles.)

Displaying the Main Menu

Once a user has logged on to the system, follow these steps to view the main menu options. (See “Logging On and Off” in Section 4 for the logon procedure.)

1. Press the **ENTER/MENU** button.

The LCD display will show the main menu options.

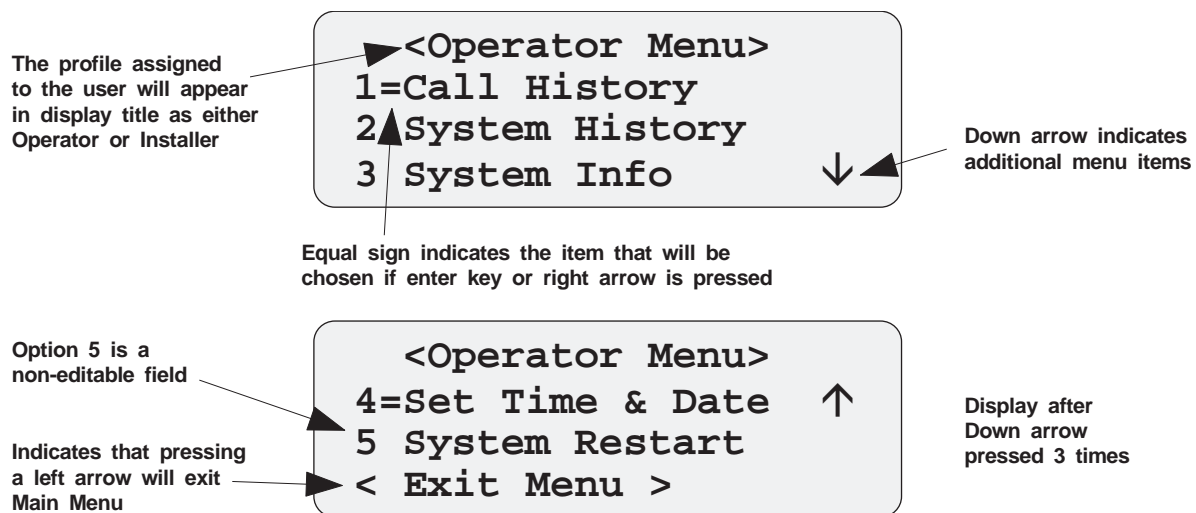


Figure 4-6 Main Menu Display







Note: The main menu display will remain visible for 15 minutes of idle time after which it will revert back to the manual or automatic display window (Figure 4-3).

2. Choose the desired menu item (Figure 4-6).

Moving Around in the Main Menu

Table 4-6 indicates the buttons used to move around in the <Main Menu>.

Table 4-6: Main Menu Controls

To accept a menu item press.		
Or press.		
Or press the number key corresponding to the desired menu option.		Number can also be used to enter numeric information where needed.
To Choose the next menu item press.		
Go back to previous choice.		
Exit current menu or menu item. Move back to previous entry.		

Call History

Call history displays the calls that are in the history buffer (memory).

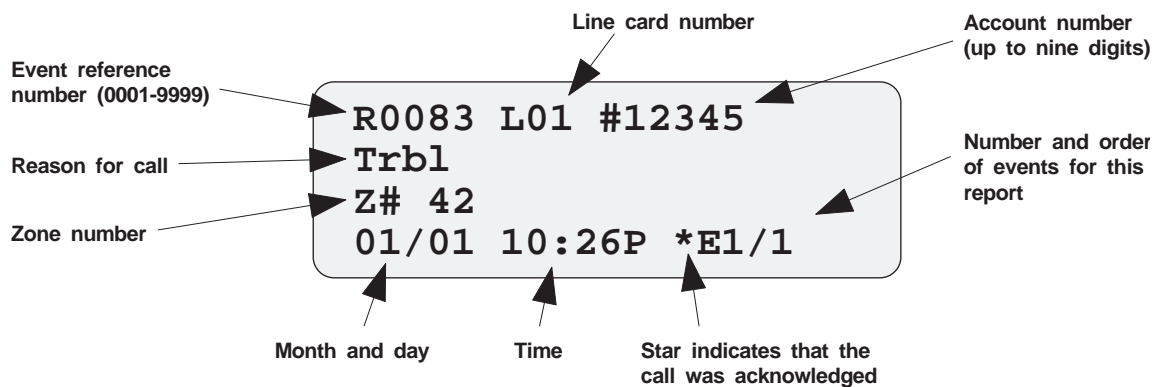


Figure 4-7 View of a Call History Screen

Note: The letter preceding the linecard number may appear as a "G" if the linecard that the call came in on is programmed for a hunt group. (See "Miscellaneous Line Options" in Section 5.)

To display a specific event enter the reference number then press the **ENTER/MENU** button. Press the **STAR/HOME** button to go to most recent call. (See Table 4-3 for display abbreviations.)

System History

System History displays any events that are stored in the history buffer. System events are any events related to the receiver operation such as line card faults, low backup battery, AC power loss, log in, log out, system program change, communication failure to a printer or automation system, etc.

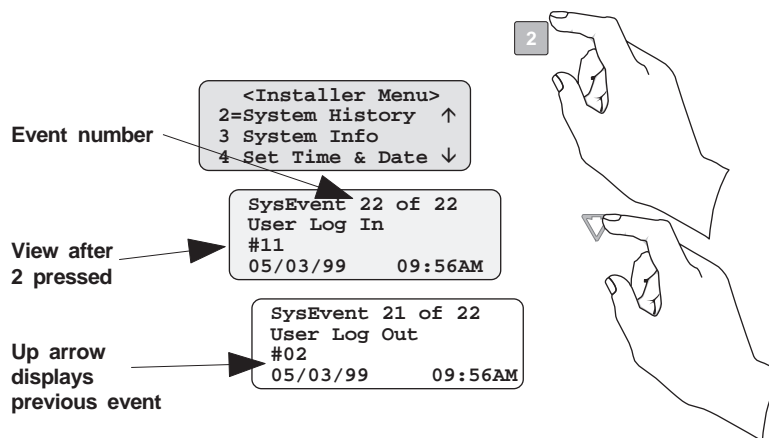


Figure 4-8 System History Display Sequence

Note: Up arrow moves back to the previous event that occurred.

To display a specific event enter the event number (Figure 4-8) then press the **ENTER/MENU** button. Press the **STAR/HOME** button to go to most recent call.

System Info

System Info is a non-editable screen that displays the model number, the software revision, software date code, receiver ID number. If a down arrow is pressed, the display will show the line card firmware information, which includes the model number, the software revision, the software date code, and letter revision.

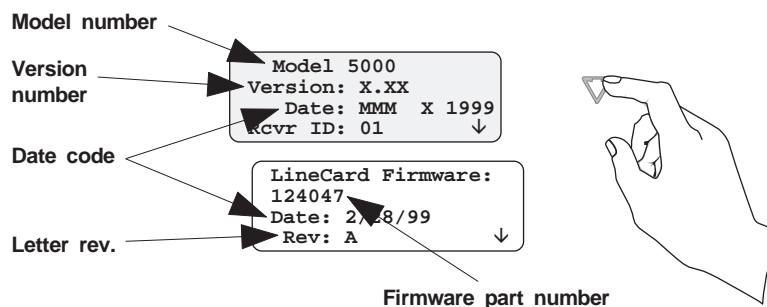


Figure 4-9 System Information Display

Set Time & Date

If Set Time & Date is selected, the operator can change the time and date currently displayed on the receiver. (See Figure 4-10 for setting time and date procedure.)

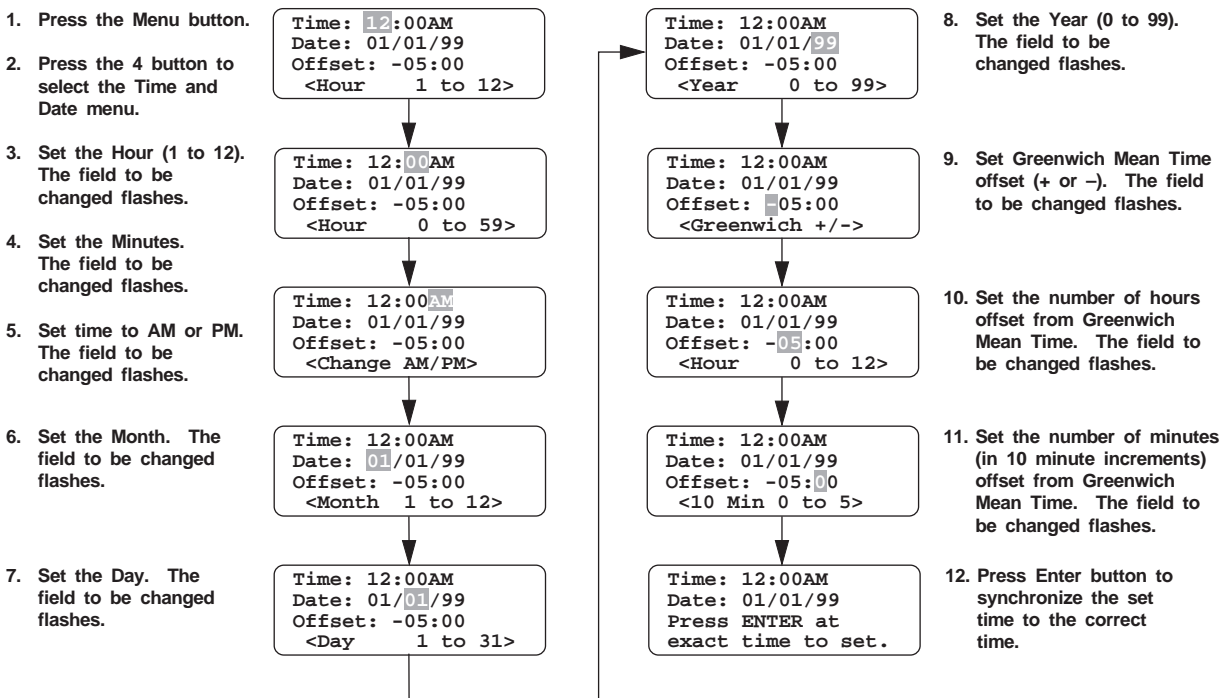


Figure 4-10 Setting Time and Date Program Sequence

System Restart

System Restart allows the operator or installer to restart the receiver. An installer has the option to set the receiver back to factory default settings, while an operator can only restart the receiver.

Note: The time and date set in the receiver will be saved. However, all of the call history will be lost.

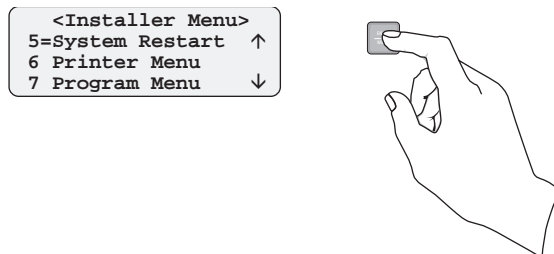


Figure 4-11 System Restart Display

Follow These Steps to restart the receiver:

Note: All messages must be acknowledged before a system restart procedure can be performed. If all messages are not acknowledged, cycle the receiver's power to restart the system. If the power is cycled all unacknowledged messages will be lost.

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press the **ENTER/MENU** button to view the Installer Menu.
3. Press **5** for System Restart.

The display reads

Do you wish to shutdown & restart system? No

4. Press **▲** or **▼** button to toggle **No** to **Yes**.
5. Press **ENTER/MENU** button. Users with an operator profile are done at this point.

The display reads

Do you wish to set to factory default settings? No

Note: This display will only appear if the logged on User has an Installer Profile.

6. Press the **▲** or **▼** button to toggle between **No** and **Yes**.

*Note: If you choose **Yes** all linecard and user custom programming will be lost.*

If the message “System Busy. Unresolved Messages. Restart Aborted.” is displayed, the system is indicating that there are messages that need to be acknowledged. (See “Operation Mode” in Section 5.)

Print Menu

In the print menu you can print customized reports by the type of alarm (as defined by UL 864, Section 72.15F), edit the desired print output, and configure output for your printer.

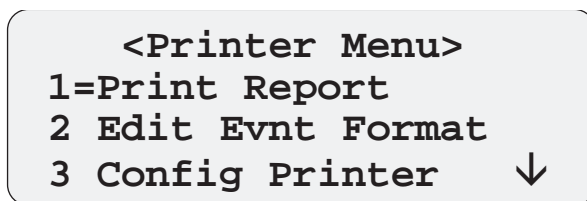


Figure 4-12 Print Menu Items

Table 4-7: Printer Menu Choices

Printer Menu	Choice 1	Choice 2	Comments	
Print Report	Call History	Priority 1 (Life safety signals-Fire, Duress)	Y Indicates that this item will print on this report.	
		Priority 2 (Property safety signals-Burg.)	N Indicates that this item will not print on this report.	
		Priority 3 (Supervisory signals)	The call History print will execute once you exit from "Choice 2". Note: Choice 2 settings are not retained in flash memory and have to be chosen for each call history printing.	
		Priority 4 (Trouble signals)		
		Priority 5 (All other signals)		
	System History		This option prints all the system events in the event history buffer.	
	System Config	Print All, Y or N		Print all of the receiver and line card data.
		Program Data, Y or N		Print just the systems programmed data.
		User List Y or N		Print user list.
		Line Card #, Y or N		Print line card configurations per line card.
Test Page			Print a test page.	
Edit Evnt Format	Datetime	Y or N	Y Indicates that this item will print on a report.	
	Format Type	Y or N	N Indicates that this item will not print on a report.	
	Ref Number	Y or N	Default setting is Y for all edit event format options.	
	Call Sep	Y or N		
	Device Num	Y or N	These settings are saved to flash memory.	

Table 4-7: Printer Menu Choices

Printer Menu	Choice 1	Choice 2	Comments
Config Printer	Line Terminator	CR or CRLF	CR = Carriage return. CRLF = Carriage return and Line feed.
	Off-line Time	0 - 60 seconds	Off-line time is how long the receiver will wait before giving a trouble indication after communication is lost with the printer. The default setting is 2 seconds. (30 second maximum for UL applications.)
	Switch Delay Time	0 - 60 seconds	Switch delay time is the duration the receiver will wait before switching to the backup printer after communication is lost with the primary printer. The default setting is 20 seconds.

Print Report

Through the print report option you can choose to print the call history, system history, system configuration information, or just print a test page.

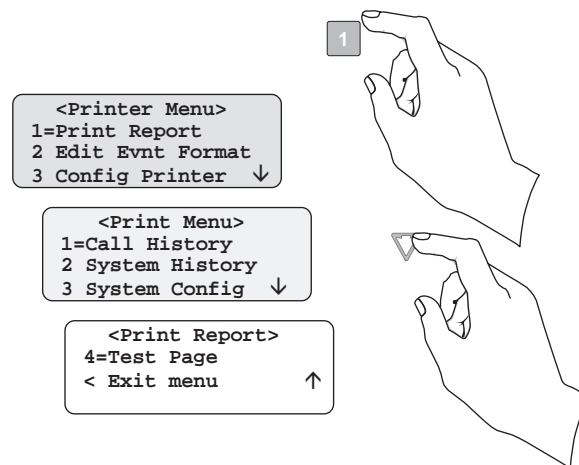


Figure 4-13 Print Report Menu Items

Printing the Call History

Follow these steps to print the call history:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press the **ENTER/MENU** button to view the Installer Menu.
3. Press **6** for the <Printer Menu> (Figure 4-12).
4. Press **1** for <Print Report Menu> (Figure 4-13).

- Press **1** for Call History options.

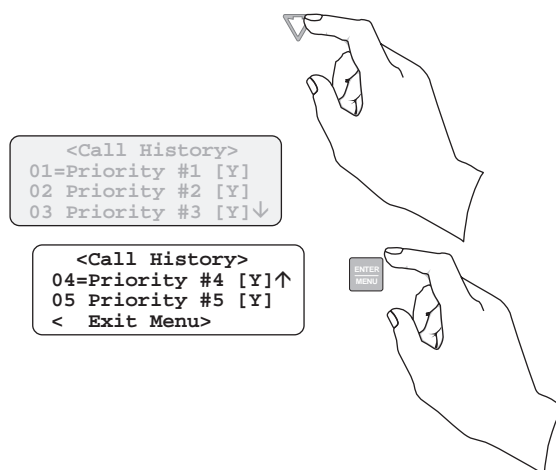


Figure 4-14 Call History Options

- Press the ▲ or ▼ button to move through the call history menu choices (Figure 4-14).
- When the equal sign highlights the call history items you desire to print for this report, press **ENTER/MENU** or → to toggle the setting between Y (print) or N (don't print).
- Press **left** arrow button to exit menu.

Printing the System History

Follow these steps to print the system history:

- Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
- Press the **ENTER/MENU** button to view the Installer Menu.
- Press **6** for the <Printer Menu> (Figure 4-12).
- Press **1** for <Print Report Menu> (Figure 4-13).
- Press **2** to print the System History.
- Press **left** arrow button to exit menu.

Printing System Configuration

Follow these steps to print the system configuration:

- Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
- Press the **ENTER/MENU** button to view the Installer Menu items.
- Press **6** for the <Printer Menu> (Figure 4-12).
- Press **1** for <Print Report Menu> (Figure 4-13).

5. Press **3** to view System Configuration options (Figure 4-15).

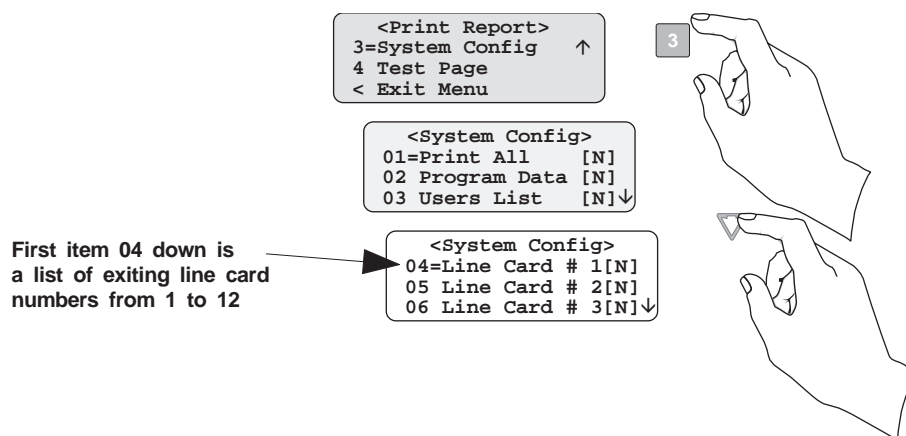


Figure 4-15 System Configuration Print Items

6. Press the ▲ or ▼ button to move through the system configuration print choices.
7. When the equal sign highlights an option, press **ENTER/MENU** or → to toggle the setting between Y (yes print) or N (don't print).
8. Press the **left** arrow button to print the data and exit menu.

Note: These choices are not saved to flash memory and will have to be chosen each time that print system configuration is entered.

Printing a Test Page

Follow these steps to print a test page:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press the **ENTER/MENU** button to view the Installer Menu items.
3. Press **6** for the <Print> menu (Figure 4-12).
4. Press **1** for <Print Report> menu (Figure 4-13).
5. Press **4** to print a test page.
6. Press the **left** arrow button to exit menu.

Editing the Event Format

Edit event format allows you to configure what information will print on reports to the receiver.

Follow these steps to configure the report format:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press the **ENTER/MENU** button to view the Installer Menu items.
3. Press **6** for the <Print> menu (Figure 4-12).
4. Press **2** for <Edit Format Menu:> items (Figure 4-16).

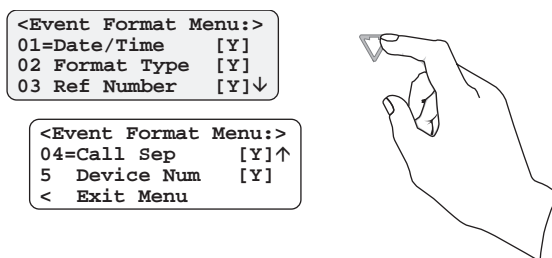


Figure 4-16 Event Format Menu Items

5. Press the ▲ or ▼ button to move through the event format choices. (See Table 4-8 for choice definitions.)

Table 4-8: Event Format Choices and Meaning

Menu	Options	Choices	Meaning
Edit Event Format	Date/Time	Y (Yes)	Y = date and time will print for each report message to the printer.
		N (No)	N = Date and time will not print for each report message to the printer.
	Format Type	Y (Yes)	Y = The reporting format type of the calling control panel will print for each report message to the printer.
		N (No)	N = The reporting format type of the calling control panel will not print for each report message to the printer. Note: The Format Type will be listed as a number, which represents the format used for that communication.
Edit Event Format (Continued)	Reference Number	Y (Yes)	Y = The reference number will print for each report message to the printer.
		N (No)	N = the reference number will not print for each report message to the printer (Figure 4-7).
	Call Separator	Y (Yes)	Y = Print a dashed-line between each message report to the printer.
		N (No)	N = Do not print a dashed-line between each message report to the printer.
	Device Number	Y (Yes)	Y = Print the device number of the reporting message to the printer.
		N (No)	N = Do not print the device number of the reporting message to the printer.

6. When the equal sign highlights each option press **ENTER/MENU** or → to toggle the setting between Y (yes print) or N (don't print).

Note: These settings are saved to flash memory.

7. Press the **left** arrow button to exit menu.

Configuring the Printer

Either a carriage return or carriage return with a line feed setting may be required depending on the printer you are using.

Follow these steps to configure the printer:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press the **ENTER/MENU** button to view the Installer Menu items.
3. Press **6** for the <Printer Menu> (Figure 4-12).
4. Press **3** for <Configure Printer Menu> items.

The display will be flashing on the line terminator field.

5. Press the **▲** or **▼** button to toggle between CR or CRLF (Table 4-7).
6. When the desired setting is flashing press **ENTER/MENU**.

The display will now flash on the off-line time field.

7. Enter the desired time (from 01-60 seconds), 30 second maximum in UL applications.
8. Press **ENTER/MENU**.

The display will now flash on the switch delay time field.

9. Enter the desired time (from 01-60 seconds).
10. Press **ENTER/MENU**.
11. Press the **left** arrow button to exit menu.

Program Menu

If Program is selected from the main menu the system will enter into “Program Mode.” (See Table 5-4 for information on modes of operation.) In program mode you can program all the general options, line card options, and user list. (See the “Quick Chart” in Appendix A.)

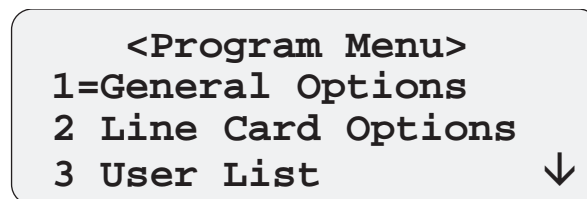


Figure 4-17 Program Menu Items

Diagnostics Menu

The Diagnostics Menu items can be used while testing and troubleshooting the system.

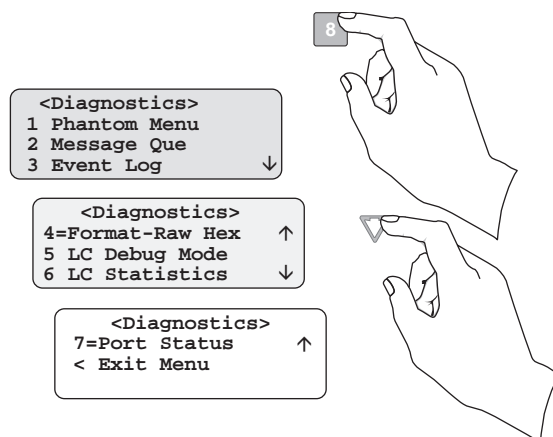


Figure 4-18 Diagnostics Menu Items

Phantom Menu

The phantom menu contains list of various communication format phantom signals that can be used to test the receiver or automation software configurations. For example, you set a line card's parameters for a particular communications format and would now like to verify that this new configuration will communicate with other communication formats. You can send phantom signals in the formats you wish to test with that linecard.

Table 4-9: Phantom Signals Formats List

Choice	Format
01 DCS	DCS
02 CID	Contact ID
03 ITI	ITI format
04 BFSK	BFSK
05 A31 Task 1	3/1 format
06 A31 Checksum	3/1 format w/checksum
07 A41	4/1 format
08 A42	4/2 format
09 FSK0	FSK 0
10 FSK1	FSK 1
11 FSK2	FSK 2
12 SIA D1	SIA D1
13 ADM42 Checksum	Ademco 4/2 format w/checksum
14 SIA D1 Checksum	SIA D1 w/checksum
15 ACRON TOUCH TONE	Acron Touch Tone
16 ADM41 Checksum	Ademco 4/1 format w/checksum

Table 4-9: Phantom Signals Formats List

Choice	Format
17 FBI 4+3+1	FBI 4+3+1
18 MeterMinder	ITI Custom format
19 MODEM IIE	Radionics format
20 SIA-2000 (pending)	
21 VEMS	Silent Knight format

Note: If printing any of these formats lists, please note that lists can be quite lengthy (50+ pages).

Message Queue

Message Que (Queue) gives a visual indication of how full the message que is. It does this with both a percentage indication and a bar graph (made of *'s). Each * is approximately 5%.



Figure 4-19 Message Que Level

Event Log

Event Log allows you to print out a certain range of reference numbers to the port designated to diagnostics. This can be used as a troubleshooting tool while correlating alarm messages from the receiver to the automation computer.

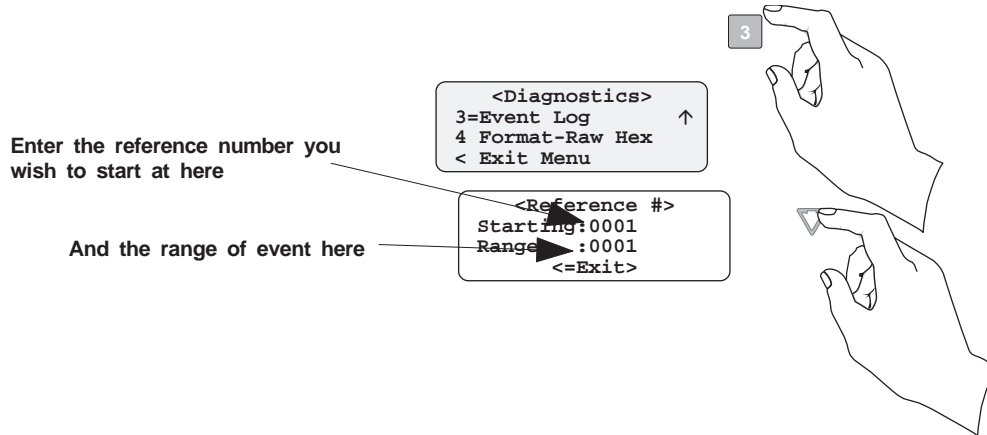


Figure 4-20 Event Log Display

For example, if the automation computer indicated a report that you are not familiar with, you would enter the reference number for that report in the event log and the raw data would be output to the diagnostic port. From the raw data you could determine what the signal was and make adjustment to the automation computer for similar signals in the future.

Format

Format designates the type of output you wish for the Event Log report. The output format can be in raw ASCII, a printer format, or one of the receivers automation communication formats. (See Table 5-6 for automation protocols.)

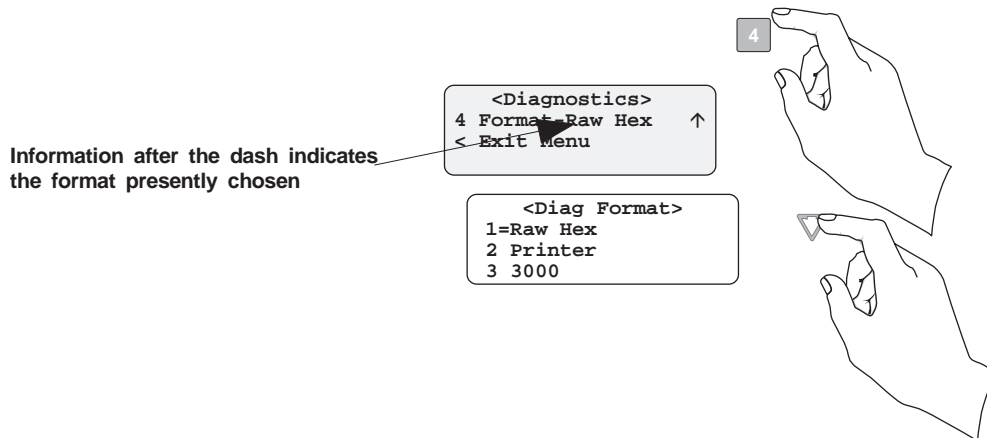


Figure 4-21 Formatting the Event Log Report

LC Debug Mode

LC Debug Lets you choose the line card to be debugged. (See Section 7, “Troubleshooting.”)

LC Statistics

The Line Card Statistics submenu allows you to view line card call statistics such as total calls (all cards), total line card calls, today’s calls, and bad calls.

To view the line card statistics:

1. Log on to the receiver by pressing the **LOG/STATUS** button and then entering your installer PIN code.
2. Press the **ENTER/MENU** button to view the Installer Menu items.
3. Press **8** for the <Diagnostics Menu>.
4. Press **6** for <LC Statistics>.
5. Press the **▲** or **▼** arrow buttons to move through the line card list.
6. When the equal sign highlights the line card you wish to view, press **ENTER/MENU**.
7. The display will indicate:
TOTAL CALLS: XX
LC#XX TOTAL: XX
TODAY: XX
BAD: XX
8. If you wish to exit, press **left** arrow button until you exit this menu.

Port Status

The Port Status submenu is a diagnostic tool to monitor port status (Com Port 1, Com Port 2, Para Port), therefore, it contains no changeable settings. The arrows indicate high and low voltage.

Listen-In and Hang Up

Note: See “UL Requirements” in Section 2 for UL requirements on listen-in.

This section explains how to operate the receiver for listen-in calls. Some panels that perform listen-in send a listen-in indicator included in the reported message to the receiver. Any panel that does not send this message must be added to the Listen-In Account List. (See “Listen-In” in Section 5.)

When a listen-in call is received by the CS-5000, the LCD display will indicate the account number and (depending on the panel) the listen-in timeout period. The listen-in LED on the line card will be illuminated to confirm the line card indication.

Manual (Common) Listen-In Operation

Follow these steps to manually handle the listen-in call:

1. Press **#/LISTEN** button.
2. Enter the line card number.
3. Pick up the telephone the listen-in call is on. See Figure 4-22 for a diagram of how the listen-in phone should be connected (in parallel) with the phone line of the line card.
4. Perform the listen-in procedures for that panel (refer to panel operation manual).

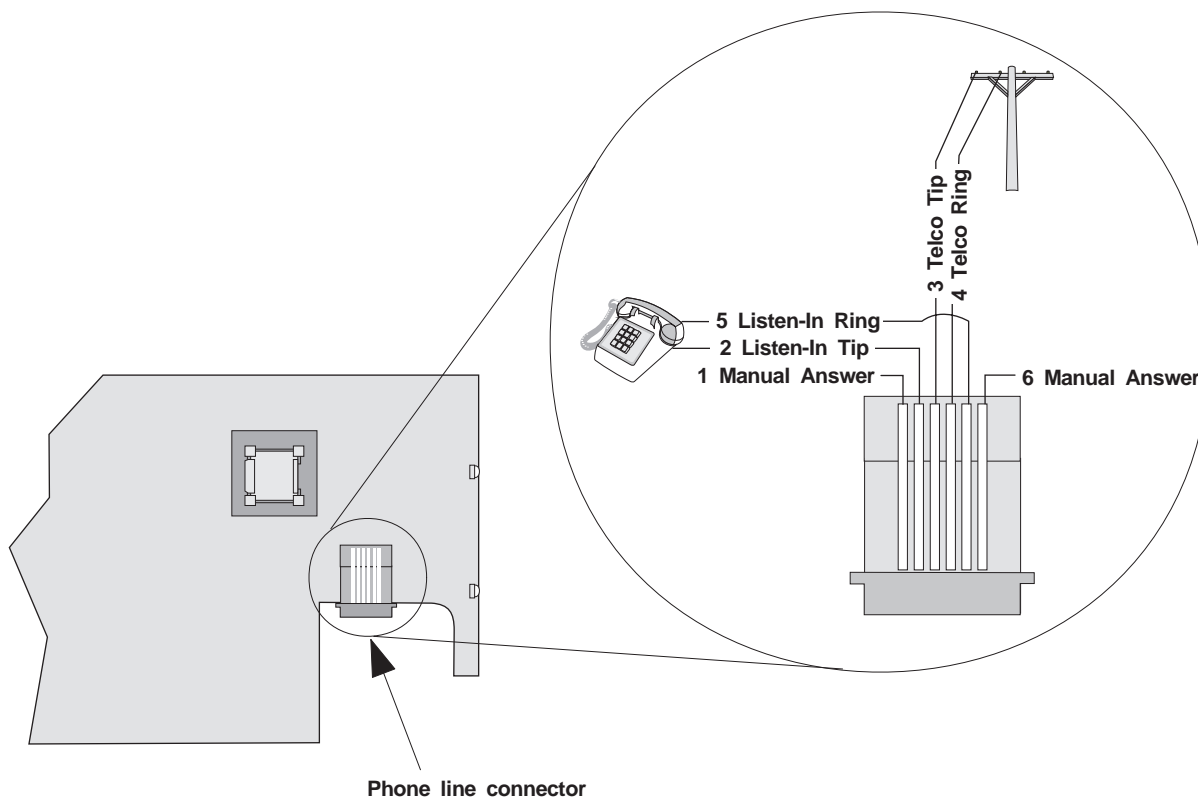


Figure 4-22 Phone Connector Pin-Out and Listen-in Wiring Diagram

PBX Listen-In Operation

Prior to performing listen-in functions on a PBX phone line system the receiver must be set up with the proper listen-in mode and PBX string. Refer to Section 5, “Operation Mode” and “Listen-In” to properly program the receiver to handle PBX listen-in calls.

Testing the System

Important!

The CS-5000 should be tested regularly to ensure complete and proper operation.

Because there are so many variations in dialer parameters and phone line conditions, the only way to be absolutely certain that all subscribers can communicate with the CS-5000 is to test every subscriber's dialer individually. Subscribers must test their communicators every 30 days to make sure the CS-5000 receives the information.

When you install a new CS-5000, test every manufacturers' panels for each format. This is necessary because different manufacturers' panels may operate differently even if all panels use the same format.

Section 5

Programming

This section lists the programmable features in programming mode and the procedures for each of them. The options available are general options, line card options, and user options.

Entering Program Mode

Follow these steps to enter into program mode:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press the **ENTER/MENU** button.
3. Press the **7** button.

The display will briefly display **Initializing**
Please wait . . .

4. Select the option you wish to program.
(See “Programming Choices” in this section for options.)

Moving Around in Program Mode

Table 5-1 shows the buttons used for moving around in program mode.

Table 5-1: Main Menu Controls







To accept a menu item press.		
Or press.		
Or press the number key corresponding to the desired menu option.		Number can also be used to enter numeric information where needed.
To Choose the next menu item press.		
Go back to previous choice.		











Table 5-1: Main Menu Controls

Exit current menu or menu item. Move back to previous entry.	
---	---

Programming Display Fields

In program mode there are three types of programming fields into which data can be entered. Table 5-2 list the three types of fields and the various associated parameters.

Table 5-2: Types of Programming Fields

Field Type	Control Buttons	Comments
Numeric	 through  or  	These fields require a numeric entry only.
List	  keys	Predefined choices are put in a list and can be selected by pressing the up or down arrow buttons.
Edit	 through  or  	Enter a number from the numeric keypad or enter any special characters by pressing the up or down arrow buttons.

Programming Choices

In programming mode, your first set of choices are general options, line card options, and user list. Figure 5-1 shows what the display will look like before and after the down arrow is pressed.

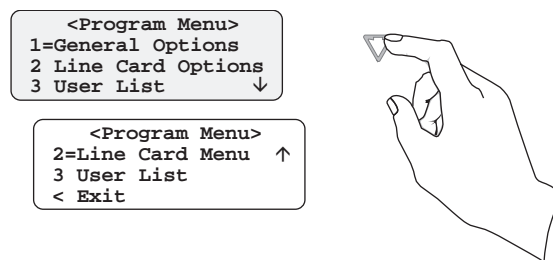


Figure 5-1 Program Menu Choices

General Options

The features available for programming under <General Options> are operation mode, display options, communications, system, and message queue options.

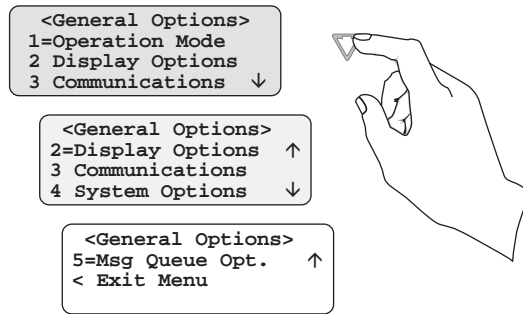


Figure 5-2 General Options Display

Table 5-3 list the available choices under General Options and gives a description of those choices.

Table 5-3: General Options Items and Description

General Options Items	Level 1 Choices	Level 2 Choices	Level 3 Choices	Comments
Operation Mode	Manual			See “Operation Mode” in Section 5.
	Automatic			
	Log Only			
Display Options	Language	English		See “Display Options” in Section 5.
		español		Not available at this time
	Time Display	AM/PM		AM/PM is used for 12 hour time clock displays. See “Display Options” in Section 5.
		24 Hour		
	Date Format	M/D/Y		M = month, D = day, and Y = year. See “Display Options” in Section 5.
		D-M-Y		
		Y-M-D		
	Daylight Savings	Y (Yes)		See “Display Options” in Section 5.
N (No)				

Table 5-3: General Options Items and Description (Continued)

General Options Items	Level 1 Choices	Level 2 Choices	Level 3 Choices	Comments
Display Options	ITI (Flags)	Attempts	Y (Yes)	Show number of dialing attempts made by the reporting panel before communication was successful.
			N (No) Default	
		CPU Time	Y (Yes)	Show the CPU time reporting.
			N (No) Default	
		CPU Type	Y (Yes)	Show the CPU type reporting.
			N (No) Default	
		Panel Rev	Y (Yes)	Show the software revision of the reporting panel.
			N (No) Default	
	Arming Level	Y (Yes)	Show the arming level of the reporting panel.	
		N (No) Default		
	Meter Account 5	Y (Yes)	Enables special 5-digit account no.	
		N (No) Default		
Meter Account 12	Y (Yes)	Enables special 12-digit account no.		
	N (No) Default			
Hold Last Event	Yes		LCD will display the last or oldest unacknowledged event instead of the date/time display. See “Display Options” in Section 5.	
	No			
Communication	Port Functions	Com1	Unused/ Automation/ Printer/	Rules for Port Configuration: 1. Functions in Brackets [] will not appear unless “Automation” is selected for Com1 function. 2. Functions in { } will not appear unless “Printer” is selected in Com1 or Par. 3. A function may be selected only once in the 3 ports (only one printer, only one Diag, and so on). 4. All ports may be configured “Unused”. See “Communications” in Section 5.
		Com2	Unused/[Auto Bkp]/[Auto Bkp Prn]/{Print Bkp}/Diag/ MeterMinder/ Printer	
		Par (parallel)	Unused/Diag/ Printer	

Table 5-3: General Options Items and Description (Continued)

General Options Items	Level 1 Choices	Level 2 Choices	Level 3 Choices	Comments	
Communication	Com Port 1	Baud Rate	19200/9600/ 7200/4800/2400/ 1200/600/300/ 110	See "Communications" in Section 5.	
		D (# Data Bits)	7, 8		
		S (# Stop Bits)	1, 2		
		P (Parity)	Even, Odd, Space, Mark, No		
		F (Flow Control)	Hdwr, None		None = no supervision
		Init String			See "Communications" in Section 5.
	Com Port 2	Same as Com Port 1		See "Communications" in Section 5.	
	Par Port	Init String		See "Communications" in Section 5.	
	Automation Config	Format	SIA CIS, SIA 2000 (pending), ITI Gen, ITIComp	See "Communications" in Section 5.	
		HeartBeat	Y = Enabled N = Disabled		
		Time (of HeartBeat)	10-600 Seconds*	* HeartBeat must be Y for Time to work.	
		AckTimeout	01-600 Seconds		
		ITI	Log Records	Displayed only if ITI Gen or ITI Comp automation formats are selected. See Table 5-8 for details.	
			XID		
	SupSync[] Char.				
No Datch[] Char.					
GenericRev					
Communication	Annunciator Configuration	Printer	Yes or No	See "Communications" in Section 5.	
		Bkp Printer	Yes or No		
		Auto Comp	Yes or No		
		Bkp Auto Comp	Yes or No		
		MeterMinder	Yes or No		
		Battery	Yes or No		
		Line Card	Yes or No		
		Line Fault	Yes or No		
		AC Power	Yes or No		
		Buffer Full	Yes or No		
		Listen-In	Yes or No		Must be set to No for UL installations.
		Call Pending	Yes or No		

Table 5-3: General Options Items and Description (Continued)

General Options Items	Level 1 Choices	Level 2 Choices	Level 3 Choices	Comments
Communication	Aux Relay Cfg	Printer	Yes or No	See "Communications" in Section 5. Must be set to No for UL installations.
		Bkp Printer	Yes or No	
		Auto Comp	Yes or No	
		Bkp Auto Comp	Yes or No	
		MeterMinder	Yes or No	
		Battery	Yes or No	
		Line Card	Yes or No	
		Line Fault	Yes or No	
		AC Power	Yes or No	
		Buffer Full	Yes or No	
		Listen-In	Yes or No	
Call Pending	Yes or No			
System Options	Battery Backup Cfg	No Battery Bkp		See "System Options" in Section 5.
		Battery Bkp		
		DC Bkp		
	Receiver ID No.	01-99		
	Strip/Send Bad	Strip Bad (default)		Strip bad data before sending.
		Send Bad		Send bad data along with good.
Auxiliary Relay Normal State	De-energized		See "System Options" in Section 5.	
	Energized			
Message Queue Options	% Warning Lvl	On: 10 to 99%	75%	The percentage of how full the message queue can get before a trouble indication occurs.
		Off: 01 to 90%	50%	What percentage the message queue must go back down to in order to clear a trouble indication.
	Max Buf Limit	500 to 5000	1000	Used to set the maximum number of bytes in a call. This number is used to determine if a call is a runaway call.

Operation Mode

Operation mode chooses how the receiver will operate in normal mode (manual, automatic or log only operation).

In normal operating mode the display indicates the current operation mode

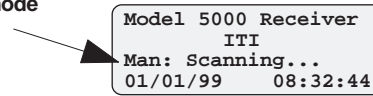


Figure 5-3 Normal Operating Mode Display Indicating Manual Operation

Table 5-4 breaks down the choices available under operation mode menu item.

Table 5-4: Operation Mode Choices and Descriptions

Choices	Description	Default
Manual	Requires manual acknowledgments of each call or event from an operator.	✓
Automatic	All event information is sent directly to the automation computer and must be acknowledged by the automation software.	
Log Only	All event information is internally acknowledged and put into event history buffer.	

Note: Defaults refer to settings from the factory. Once the receiver is programmed, the system will power up in the programmed operation mode.

Changing the Operation Mode

Follow these steps to change the operation mode of the receiver:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press **ENTER/MENU** button.
3. Press **7** for <Program Menu>.

The display will briefly display Initializing
Please wait . . .

4. Press **1** to choose General Options.
5. Press **1** to choose Operation Mode.

The current operation mode will flash in the display.

6. Press the **▲** or **▼** button to move through the operation mode choices.

Note: Each additional press of the up or down arrow key will toggle the operation mode setting to the next choice.

7. When the display flashes on the desired operation mode, press **ENTER/MENU**.

Display Options

Display options lets you customize the visual outputs of the receiver. These items include language formats, the time display, how events are sorted to the LCD display, and whether or not to hold unacknowledged events.

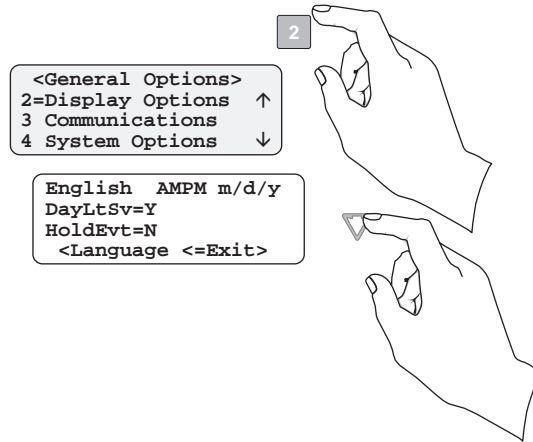


Figure 5-4 View of Display Options

Table 5-5 lists the available choices and gives a description of those choices.

Table 5-5: Display Options and Descriptions

Display Menu Items	Choices	Default	Comments	
Language	English	✓		
	español		Not available at this time.	
Time Display	AM/PM	✓	AM/PM is used for 12 hour time clock displays.	
	24 hour		Military time standard.	
Date Display	m/d/y	✓	m = month, d = day, and y = year.	
	d`m`y			
	y-m-d			
Daylight Savings	Yes	✓		
	No			
ITI Flags	Attempts	Y (Yes)	Show number of dialing attempts made by the reporting panel before communication was successful. See “ITI Flags (Set LCD and Printer Output Options)” for step-by-step instructions.	
		N (No) Def		
	CPU Time	Y (Yes)		Show the CPU time reporting.
		N (No) Def		
	CPU Type	Y (Yes)		Show the CPU type reporting.
		N (No) Def		
	Panel Rev	Y (Yes)		Show the software revision of the reporting panel.
		N (No) Def		

Table 5-5: Display Options and Descriptions (Continued)

Display Menu Items	Choices	Default	Comments	
ITI Flags	Arming Level	Y (Yes)	Show the arming level of the reporting panel.	
		N (No) Def		
	Meter Acct 5	Y (Yes)		Use special 5-digit MeterMinder account number.
		N (No) Def		
	Meter Acct 12	Y (Yes)		Use special 12-digit MeterMinder account number.
		N (No) Def		
Hold Last Event	Yes		LCD will display the last acknowledged event instead of the date/time display in the auto mode. In manual mode the display will show the oldest unacknowledged event.	
	No	✓		

Changing the Display Options

1. Enter program mode. (See “Entering Program Mode” for instructions.)
2. Press **1** for General Options.
3. Press **2** for Display Options.
4. Press **➔** until the display flashes on the desired display menu item:
 - Language Format
 - Time Format
 - Date Format
 - Daylight Savings
 - ITI Flags (see “ITI Flags (Set LCD and Printer Output Options)”)”)
 - Hold Last Event
5. Press the **▲** or **▼** button until the display flashes on the desired setting.
6. Press **ENTER/MENU**.

ITI Flags (Set LCD and Printer Output Options)

1. At the flashing <|TI> field press the **▲** or **▼** button until the display flashes on the desired setting.
 2. Press **ENTER/MENU**.
 3. Repeat steps 1 and 2 for each option. (See Table 5-5 for options definitions.)
- Note: Setting CPU Time option to “Y” will enable sending a test record to automation port whenever panel clock is updated.*
4. Press **left** arrow button until you exit this menu.

Communications

In the <Communications> options, the installer can configure the communication ports, automation configuration, annunciator configurations, and the auxiliary relay configurations.

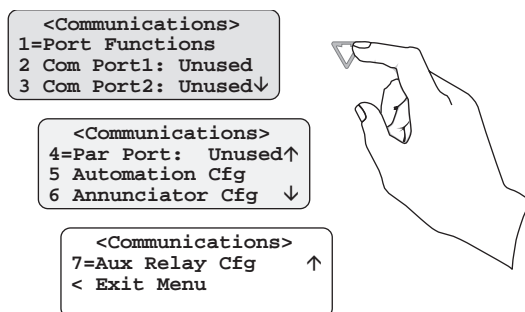


Figure 5-5 Communications Options Menu

Table 5-6 lists the available choices and gives a description of those choices.

Table 5-6: Communications Options and Descriptions

Communications Menu	Choices	Options	De- fault	Comments	
Port Functions	Com1	Unused	✓	Rules for Port Functions: 1. Functions in Brackets [] will not appear unless <i>Automation</i> is selected for Com1 function. 2. Functions in { } will not appear unless “Printer” is selected in Com1 or Par. 3. A function may be selected only once in the 3 ports (only one printer, only one Diag, and so on). 4. All ports may be configured “Unused.” 5. Only Com port 1 can be set as the primary automation port.	
		Automation			
		Printer			
	Com2	Unused	✓		
		Diagnostics			Would output raw Hex-ASCII code.
		Printer			English output to a printer.
		[Auto Bkp]			Would act as a backup automation port if a fault occurred with the primary automation port.
		[Auto Bkp Prn]			Would act as a backup print output port if a fault occurred with the automation port.
		{Print Bkp}			Would act as a backup printer port if a fault occurred with the primary printer port.
		MeterMinder			Custom MeterMinder output.
	Parallel (Par)	Unused	✓		
		Diagnostics			Would output raw Hex-ASCII code.
		Printer			English output to a printer.
[Auto Bkp Prn]			Would act as a backup print output port if a fault occurred with the automation port.		

Table 5-6: Communications Options and Descriptions (Continued)

Communications Menu	Choices	Options	Default	Comments	
Com Port 1	Baud	19200	✓		
		9600			
		7200			
		4800			
		2400			
		1200			
		600			
		300			
		110			
	D (# Data Bits)	7		✓	
		8			
	S (# Stop Bits)	1		✓	
		2			
	P (Parity)	Even			
		Odd			
Space					
Mark					
No			✓		
F (Flow)	Hdwr		✓	Unidirectional communication	
	None				
Init Str (Initialization String)				Two 20 character ESC command sequences. See “Setting Com Port 1 Parameters” section for step-by-step instructions.	
Com Port 2				Same as Com Port 1	
Par Port (Parallel Port)	Init Str (Initialization String)			Two 20 character ESC command sequences. See “Editing the Init String (Com 1, Com 2, and Parallel Port)” for step-by-step instructions.	
Automation Cfg	Format	SIA CIS		See “Setting the Format” for programming steps.	
		SIA 2000 (pending)		See Section 8 for more information on automation formats.	
		ITI Gen			
		ITIComp		✓	
	HeartBeat	Y = Enabled			See “Enabling or Disabling the HeartBeat” for programming steps.
		N = Disabled		✓	
	Time (of HeartBeat)	10-600 seconds	0 sec (N) 60 (Y)		How often a supervisory signal (a HeartBeat) is sent to the automation computer. HeartBeat must be Y for Time to work. See “Time (Period of HeartBeat)” for programming steps.
AckTimeout	01-600 seconds	10 sec		15 seconds or less in UL applications. See “Ack Time (Acknowledge Time)” for programming steps.	
ITI				Special ITI options. See Table 5-8. Displayed only if ITI Gen or ITI Comp automation formats are selected.	

Table 5-6: Communications Options and Descriptions (Continued)

Communications Menu	Choices	Options	De-fault	Comments
Annunciator Cfg	Printer	Yes	✓	Yes = will annunciate if an event, trouble or fault condition occurs.
		No		
	Bkp Printer	Yes	✓	No = no annunciation if an event, trouble or fault condition occurs.
		No		
	Auto Comp	Yes	✓	See "Configuring the On-board Annunciator Outputs" for programming steps.
		No		
	Bkp Auto Comp	Yes	✓	
		No		
	MeterMinder	Yes	✓	
		No		
	Battery	Yes	✓	
		No		
	Line Card	Yes	✓	
		No		
	Line Fault	Yes	✓	
		No		
	AC Power	Yes	✓	
		No		
	Buffer Full	Yes	✓	
		No		
Listen-In	Yes	✓	Must be set to No for UL installations.	
	No			
Call Pending	Yes	✓		
	No			

Table 5-6: Communications Options and Descriptions (Continued)

Communications Menu	Choices	Options	De-fault	Comments
Aux Relay Cfg	Printer	Yes	✓	Yes = will annunciate if an event, trouble or fault condition occurs.
		No		
	Bkp Printer	Yes	✓	No = no annunciation if an event, trouble or fault condition occurs.
		No		
	Auto Comp	Yes	✓	See "Configuring the Auxiliary Relay Outputs" for programming steps.
		No		
	Bkp Auto Comp	Yes	✓	
		No		
	MeterMinder	Yes	✓	
		No		
	Battery	Yes	✓	
		No		
	Line Card	Yes	✓	
		No		
	Line Fault	Yes	✓	
		No		
	AC Power	Yes	✓	
		No		
	Buffer Full	Yes	✓	
		No		
	Listen In	Yes	✓	Must be set to No for UL installations.
		No		
	Call Pending	Yes	✓	
		No		

Setting Up the Port Function

Port Functions set up how each of the communication ports will be used. Before you start to set up the port functions review the rules for port functions in Table 5-6.

1. Enter program mode. (See "Entering Program Mode" in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **1** to Set Port functions.
5. Press the **▲** or **▼** button until the display flashes on the desired port setting.
6. Press **ENTER/MENU**.
7. Repeat steps 5 through 6 until all port functions are set.
8. Press **left** arrow button to exit menu.

Setting Com Port 1 Parameters

Set the baud rate, the number of data bits, number of stop bits, the parity, and the flow control. (See Table 5-6 for choice details.)

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **2** to set Com Port 1 parameters.
5. Press the **▲** or **▼** button until the display flashes on the desired port setting.
6. Press **ENTER/MENU**.

Note: See “Editing the Init String (Com 1, Com 2, and Parallel Port)” section.

7. Repeat steps 5 through 6 until all parameters are set.
8. Press **left** arrow button to exit menu.

Setting Com Port 2 Parameters

Set the baud rate, the number of data bits, number of stop bits, the parity, and the flow control. (See Table 5-6 for choice details.)

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **3** to set Com Port 2 parameters.
5. Press the **▲** or **▼** button until the display flashes on the desired port setting.
6. Press **ENTER/MENU**.

Note: See “Editing the Init String (Com 1, Com 2, and Parallel Port)” section.

7. Repeat steps 5 through 6 until all parameters are set.
8. Press **left** arrow button to exit menu.

Editing the Init String (Com 1, Com 2, and Parallel Port)

An initialization string can be used to customize the output to the device connected to a port on the receiver.

For example, you can skip over perforations, set proportional spacing, or condense the print output to a printer.

Note: Refer to the user manual, of the device connected to the receiver, for special command sequences.

Follow these step to insert an initialization string:

1. Press **ENTER/MENU** at the flashing <Init Str> field.

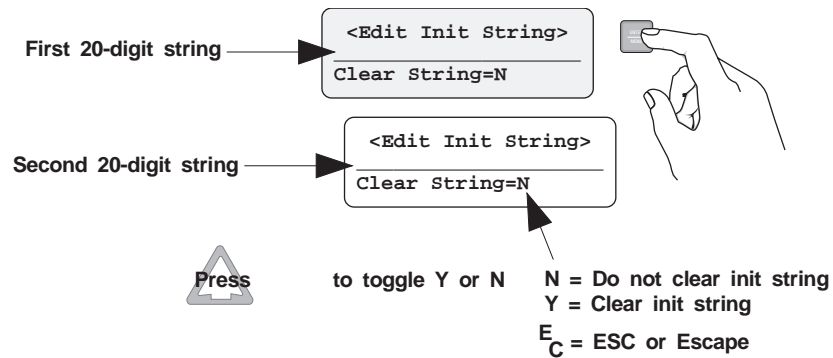


Figure 5-6 Initialization String Display

2. Press the ▲ or ▼ button until the desired character flashes.

Table 5-7: Initialization String Characters

Character	Description
0 through 9	Numeric characters which can be entered from the touchpad or by pressing up/down arrows.
a-z and A-Z	Alpha characters entered with the up/down arrows.
: _ - . , & * # ? E _C = + and space bar	Special Characters entered with the up/down arrows.

3. Press ➡, the next character position will flash.
4. Repeat steps 2 and 3 until the desired sequence is complete.
5. Press **ENTER/MENU**.
6. Repeat steps 2 through 5 for the second string.

To Clear an Init String

1. At the Clear String=N field, press ▲ or ▼ until the desired option flashes (Figure 5-6)
2. Press **ENTER/MENU**.
3. Press **left** arrow button to exit menu.

Setting Automation Communication

Automation communication format and parameters can be set up through this option. (See Table 5-6 for format choices.)

Setting the Format

Follow these steps to set the automation communication format.

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **5** to setup Automation configuration.
5. Press the **▲** or **▼** button until the display flashes on the desired format setting.
6. Press **ENTER/MENU**.
7. Repeat steps 5 through 6 until all parameters are set.
8. Press **left** arrow button if you wish to exit menu or continue with heartbeat.

Enabling or Disabling the HeartBeat

A HeartBeat is a supervisory signal that continually tests the communication link between the automation computer and the receiver.

Follow these steps to enable or disable HeartBeat:

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **5** to setup Automation configuration.
5. Press **→** until the HeartBeat field is flashing.
6. Press the **▲** or **▼** button until the display flashes on the desired setting.
7. Press **ENTER/MENU**.
8. If you wish to exit, press **left** arrow button until you exit this menu.

Time (Period of HeartBeat)

If HeartBeat is enabled, this option determines how often the HeartBeat is sent to the automation computer. For example, if the time is set to 60 seconds (default setting) then a HeartBeat will be sent every 60 seconds.

Follow these steps to set the HeartBeat time period:

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **5** to setup Automation configuration.
5. Press **→** until the Time field is flashing.
6. Enter the desired time (10-600) and press **ENTER/MENU**.
7. If you wish to exit, press **left** arrow button until you exit this menu.

Ack Time (Acknowledge Time)

The acknowledge time is the duration that the receiver will wait for a response from the automation computer after a data packet has been sent. Data packets include all reports and HeartBeats.

Follow these steps to set the acknowledge time duration:

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **5** to setup Automation configuration.
5. Press **→** until the ACK Time field is flashing.
6. Enter the desired time (01-600) and press **ENTER/MENU**.
7. If you wish to exit, press **left** arrow button until you exit this menu.

ITI Options (Only Visible if ITI Gen or ITIComp Formats are Chosen)

These are options particular to the ITI automation format and can only be edited if one of these formats is used to communicate with the automation computer. (See “ITI Generic Computer Format” and “ITI Comp (Computer Interface) Format” in Section 8.)

Follow these steps to set the ITI options:

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **5** to Setup Automation configuration.
5. Press **→** until the ITI field is flashing.
6. Press **ENTER/MENU**.

Table 5-8: ITI Automation Format Options

Option	Choices	Default	Meaning	Comments
Log Recs	Y (Yes)	N	Log records identify the time and date of a incoming report.	
	N (No)			
XID	Y (Yes)	Y	Extended panel identification code.	See “Setting Automation Communication” in Section 5.
	N (No)			
SupCh[]	A-Z, a-z, 1-9, :-, =, +, *, _., &, #, ?, ESC	s	Supervisory Character sent during link test.	
NoDataCh[]	A-Z, a-z, 1-9, :-, =, +, *, _., &, #, ?, ESC	0	Defines the no data character in the automation output.	
Generic Rev	6.1, 6.2	6.1	Identifies selected ITI Generic & ITIComp revision level.	See Appendix E.

Note: ITI automation formats are covered in greater detail in the Section 8.

Log Recs (For ITI Formats)

1. At the flashing Log Recs field, press the ▲ or ▼ button until the display flashes on the desired setting.
2. Press **ENTER/MENU**.
3. If you wish to exit, press **left** arrow button until you exit this menu.

XID (Extended ID for ITI Panels)

1. At the flashing XID field, press the ▲ or ▼ button until the display flashes on the desired setting.
2. Press **ENTER/MENU**.
3. If you wish to exit, press **left** arrow button until you exit this menu.

SupCh (Supervisory Character)

The supervisory character is the ASCII character sent to the receiver from the automation computer (or in response to a heartbeat) to request a supervisory record.

1. At the flashing SupCh[_] field, press the ▲ or ▼ button until the display flashes on the desired setting.
2. Press **ENTER/MENU**.
3. If you wish to exit, press **left** arrow button until you exit this menu.

NoDataCh (No Data Character for Automation Record)

1. At the flashing NoDataCh[_] field enter a digit from 0-9 from the touchpad or press the ▲ or ▼ button until the display flashes on the desired setting.
2. Press **ENTER/MENU**.
3. If you wish to exit, press **left** arrow button until you exit this menu.

Generic (& ITIComp) Revision

See Appendix E for version control details.

1. At the flashing GenericRev field press **ENTER/MENU**.
2. Press the ▲ or ▼ button until the display flashes on the desired setting.
3. Press **ENTER/MENU**.
4. If you wish to exit, press **left** arrow button until you exit this menu.

Configuring the On-board Annunciator Outputs

Program what will give a trouble annunciation or what will not annunciate from the on-board annunciator.

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **6** to Set Annunciator configuration and display a list of output options.
5. Press the ▲ or ▼ button to move through the annunciator output options.
6. When the equal sign highlights the option you wish to change, press **ENTER/MENU**.

Note: Additional presses of the Enter button toggle the setting between yes and no. See Table 5-9.

7. Repeat steps 5 through 6 for all annunciator options you wish to change. (See Table 5-9 for list of additional options.)

Table 5-9: On-board Annunciator and Auxiliary Relay Options

Option	Choices	Comments
Printer	Y (Yes) or N (No)	Y = The on-board annunciator will beep if there is an error condition. N = No on-board annunciation if an error condition exist.
Bkp Printer	Y (Yes) or N (No)	
Auto Comp	Y (Yes) or N (No)	
Bkp Auto Comp	Y (Yes) or N (No)	
MeterMinder	Y (Yes) or N (No)	
Battery	Y (Yes) or N (No)	
Line Card	Y (Yes) or N (No)	
Line Fault	Y (Yes) or N (No)	
AC Power	Y (Yes) or N (No)	
Buffer Full	Y (Yes) or N (No)	
Listen-In	Y (Yes) or N (No)	
Call Pending	Y (Yes) or N (No)	

Configuring the Auxiliary Relay Outputs

Program an event that will give a trouble output to the auxiliary relay contact. (See next section to program the normal state of the auxiliary relay.)

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **3** for Communications.
4. Press **7** to Set Relay configuration.
A list of the relay output options is displayed.
5. Press the ▲ or ▼ button to move through the relay output options.
6. When the equal sign highlights the option you wish to change, press **ENTER/MENU**.

Note: Additional presses of the enter button toggle the setting between yes and no (Table 5-9).

7. Repeat steps 5 through 6 for all relay options you wish to change. (See Table 5-9 for list of additional options.)

System Options

In System Options you can configure the backup battery configuration, the receiver ID number, and the normal state of the auxiliary relay.

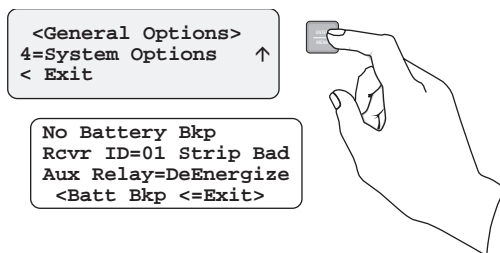


Figure 5-7 System Options Display

Table 5-10 list the available choices and gives a description of those choices.

Table 5-10: System Options

System Options Menu	Choices	Default	Comments
Battery Backup Cfg	No Battery Bkp	✓	No charging current applied to battery circuit. Receiver will not test battery output or give trouble annunciations.
	Battery Bkp		Charging current applied to battery circuit.
	DC Bkp		No charging current applied to battery circuit. Typically used for systems that use a UPS (uninterrupted power supply) for backup battery power.
Receiver ID	01-99	01	
Strip/Send Bad Data	Strip Bad	✓	Strips or sends bad data with good.
	Send Bad		
Aux Relay Normal State	De-energized	✓	See “Configuring the Auxiliary Relay Outputs” in Section 5 for auxiliary relay output options.
	Energized		

Changing the Backup Battery Setting

Through System Options the backup battery can be configured for the type of backup battery your installation site requires.

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **4** for System Options.
4. Press the **▲** or **▼** button until the display flashes on the desired setting.
5. Press **ENTER/MENU**.
6. If you wish to exit, press **left** arrow button until you exit this menu.

Setting the Receiver ID Number

In large central stations where calls may be coming in on several receivers at once, the automation software will need to identify from which receiver it received a call. This will help in troubleshooting if a problem occurred with the automation system or receiver.

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **4** for System Options.
4. Press **right** arrow button.

The display will flash on the receiver ID number: Rcvr ID=01

5. Enter the desired receiver ID number (a number from 01 to 99).
6. Press **ENTER/MENU**.
7. If you wish to exit, press **left** arrow button until you exit this menu.

Setting to Strip or Send Bad Data

Bad data (if any) can be stripped or sent with the good data. Default is for the bad data to be stripped.

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **4** for System Options.
4. Press **→, →**.

The display will flash on the setting: Strip or Send Bad

5. Press the **▲** or **▼** button until the display flashes on the desired setting.
6. Press **ENTER/MENU**.
7. If you wish to exit, press **left** arrow button until you exit this menu.

Setting the Auxiliary Relay Contact Normal State

The auxiliary relay contact is a “Form C” relay. This feature allows you to set the state of the auxiliary relay normally open contact when power is applied to the receiver.

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **4** for System Options.
4. Press **→, →, →**.

The display will flash on the auxiliary relay setting: Aux Relay=Energized

5. Press the **▲** or **▼** button until the display flashes on the desired setting.
6. Press **ENTER/MENU**.
7. If you wish to exit, press **left** arrow button until you exit this menu.

Message Queue Options

Set the percentage of how full the message queue must be before a “Message Queue Warning” and “Message Queue Warning Restore” occur. (See Section 7 “Troubleshooting” for trouble messages.)

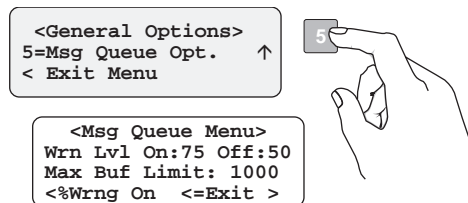


Figure 5-8 Message Queue Display

Note: The “Warning On” can be set from 10% to 99%, the “Warning Off” can be set from 1% to 90%. A minimum separation of 5% will be set between the On % and the Off %. For example, if the “Warning On” is set to 82% the “Warning Off” maximum setting can be 77%.

Setting the Message Queue Warning-On Level

Set the percentage of how full the message queue can get before the receiver indicates a “Message Queue Warning” condition.

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **5** for Message Queue Options.
4. Enter the level (in %) you wish the receiver message queue to get before it will indicate a message queue warning.
5. Press **ENTER/MENU**.
6. If you wish to exit, press **left** arrow button until you exit this menu.

Setting the Message Queue Warning-Off Level

Set the percentage level where the receiver will indicate a restore condition for a “Message Queue Warning.”

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **5** for Message Queue Options.
4. Press **→** until the display flashes on the Off field.
5. Enter the level (in %) you wish the receiver message queue to get before it will indicate a message queue warning restore.
6. Press **ENTER/MENU**.
7. If you wish to exit, press **left** arrow button until you exit this menu.

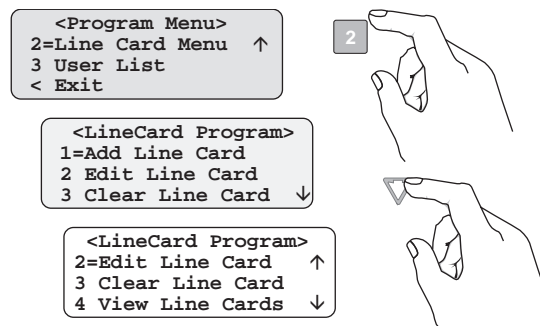
Set the Maximum Buffer Limit

Used to set the maximum number of bytes in a call. This number is used to determine if a call is a runaway call.

1. Enter program mode. (See “Entering Program Mode” in Section 5.)
2. Press **1** for General Options.
3. Press **5** for Message Queue Options.
4. Press **➔** until the display flashes on the Max Buf Limit field.
5. Enter the number of bytes you wish the receiver message queue to reach before it will indicate a Message Queue Buffer Full warning and hang up on the runaway call.
6. Press **ENTER/MENU**.
7. If you wish to exit, press **left** arrow button until you exit this menu.

Line Card Menu

Through the Line Card Menu you can add a new line card, edit, copy, clear, or view existing line cards.



Note: Copy Line Card menu item not shown.

Figure 5-9 Choosing Line Card Menu and Line Card Program Menu Items

Table 5-11 lists the menu options available under line card menu.

Table 5-11: Line Card Menu Options

Line Card Menu	Choice	Choice	Choice	Default	Comments
Add Line card	Line card #	Use Defaults			
		Copy Existing			
Edit Line Card (select card to edit)	Handshake Sequence	Handshake Sequence (HS) Number	1	See the corresponding numbers below.	The order in which the line card will output different handshakes. See “Changing the Handshake Sequence Number” in Section 5.
			2		
			3		
			4		
			5		
			6		
		Handshake Group	2225Hz	1 & 2	The handshake format group determines the handshake format to be used. The number in default column indicates the defaults per handshake sequence number. See “Changing the Format Group” in Section 5.
			1400Hz	5	
			1400_2300Hz	3	
			4/1 1400Hz		
			4/1 2300Hz	6	
			1400 Even		
			2300 Even		
			Not Used		
		Handshake Delay	0-255 In 50ms periods	1. 010 (500ms)	This is the duration of time that the receiver will wait before it sends its handshake tone. See “Changing the Handshake Delay Time” in Section 5.
				2. 000 (0ms)	
				3. 002 (100ms)	
				4. 002 (100ms)	
				5. 002 (100ms)	
				6. 002 (100ms)	
Handshake Duration	0-255 In 10ms periods	1. 090 (900ms)	The handshake duration is the length of time that the receiver will send a handshake tone. See “Changing the Handshake Duration Time” in Section 5.		
		2. 255 (2.55 sec)			
		3. 010 (100ms)			
		4. 100 (1 sec)			
		5. 100 (1 sec)			
		6. 100 (1 sec)			

Table 5-11: Line Card Menu Options (Continued)

Line Card Menu	Choice	Choice	Choice	Default	Comments	
Edit Line Card (Continued)	Handshake Sequence (Continued)	Maximum Handshake Wait	0-255 In 50ms periods	1. 064 (3.2 sec)	See "Changing the Maximum Handshake Wait Time" in Section 5.	
				2. 000 (0ms)		
				3. .010		
				4. 064 (3.2 sec)		
				5. 064 (3.2 sec)		
				6. 064 (3.2 sec)		
		Maximum Handshake Acknowledge Duration	0-255 In 10ms periods	1. 075 (750ms)		See "Changing the Acknowledgment Tone Duration Time" in Section 5.
				2. 075 (750ms)		
				3. 55 (550ms)		
				4. 100 (1 sec)		
	5. 100 (1 sec)					
	6. 100 (1 sec)					
	Line Options	Direct	Y (Yes)		Y = dedicated or direct connect phone line. N = used for standard phone lines. See "Setting the Line Card for a Direct Panel Connection" in Section 5.	
			No (No)	✓		
		Number of Rings	000-255	002	If caller ID is turned on (see "Line Card Menu" in Section 5.) Set rings set to 2.	
		On time	0-255 in 50ms periods	010 (500ms)	See "Changing the Ring On Time" in Section 5.	
		Off time	0-255 in 50ms periods	010 (500ms)	See "Changing the Ring Off Time" in Section 5.	
		Threshold	1-15 in 2.0 VDC steps	08 (16.0VDC)	See "Changing the Ring Threshold Voltage" in Section 5.	
		Sample Time	0-255 seconds	020 (20 Sec)	See "Changing the Phone Line Sample Rate" in Section 5.	

Table 5-11: Line Card Menu Options (Continued)

Line Card Menu	Choice	Choice	Choice	Default	Comments
Edit Line Card (Continued)	Listen-In	Listen Mode	Not Used	✓	See "Listen-In" in Section 5. Must not be used in UL installations.
			Common		
			PBX		
			PBX String <str> edit	None	See "Listen-In" in Section 5.
		Timeout	0-255	0	See "Listen-In" in Section 5.
		Listen-In account edit	Add Account	None	See "Adding a Listen-In Account" in Section 5.
			Edit Account		See "Adding a Listen-In Account" in Section 5.
	Clear Account			See "Adding a Listen-In Account" in Section 5.	
	Trap List	Add Account	Enter Account #	None	The trap list is used to trap an account that you wish to route to a downloading computer for initial or additional programming. See "Trap List" in Section 5.
		Edit Account	Choose Account		
		Clear Account	Choose Account		
	Misc. Line Options	Echo Suppress	Y (Yes)		Outputs a 2 second 2025Hz tone to disable echo suppression equipment that may interfere with modem formats.
			N (No)	✓	
		Caller ID	Yes	✓	The Caller ID information will only be sent on incoming call messages that contain no data. If the call message contains any data (valid or invalid) no Caller Id information will be output.
			No		
		Billing Delay	Y (Yes)		Initiates a 2 second delay at the start of each call before the handshake delay.
			N (No)	✓	See "Changing the Billing Delay Setting" in Section 5.
		Hunt Group	00-99	00	Allows multiple line cards to report under the same group number to the automation software.
		LineCard ID	000-999	000	

Table 5-11: Line Card Menu Options (Continued)

Line Card Menu	Choice	Choice	Choice	Default	Comments
Edit Line Card (Continued)	ITI Options	ITI SCode Menus	Add Acct./ SCode		Used in communication locking on ITI panels.
			Edit Acct./ SCode		
			Clear Acct./ SCode		
			Add SCode Table		
			Clear SCode Table		
	Date/Time Flag	Always		Used to update the panel clock.	
		Requested			
	ITI 300 Baud	Y (yes)		If enabled, the receiver will attempt to negotiate 300 baud communication with ITI panels that support 300 baud communication. See “ITI 300 Baud” for programming steps.	
		N (no)			
	Audio Mode	Instant	✓	See “Audio Mode” in Section 5.	
One ring					
Dial-back					
Copy Line Cards	Use Defaults	Choose line card #	Y (yes)		Copies existing user default.
			N (no)		
	Copy Existing	Choose line card #	Y (yes)		Copies existing line card settings.
			N (no)		
Clear Line Cards	Choose line card #	Y (yes)		Deletes a line card from the receiver.	
		N (no)			
View Line Cards	Choose line card #	Y (yes)		Views what line cards are installed.	
		N (no)			

Adding a Line Card

To program in a new line card, follow these steps:

1. Install the new line card. (See “Installing Line Cards” in Section 3.)
1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press **ENTER/MENU** button.
3. Press **7** for <Program Menu>.

The display will briefly display Initializing

Please wait . . .

4. Press **2** to choose Line Card menu.
5. Press **1** to Add a New Line Card.

The Display will show <Add Line Card> _ _

Enter Line card #:

6. Enter the slot number (1-12) of the line card being added.
7. Press **ENTER/MENU** button.
8. Choose **1** to use line card defaults, or
9. Press **2** to copy the programming of another line card.

Edit Line Card

To edit an existing line card follow these steps:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press **ENTER/MENU** button.
3. Press **7** for <Program Menu>.

The display will briefly display Initializing

Please wait . . .

4. Press **2** to choose Line Card Menu.
5. Press **2** to Edit Line Card.

The display will show a list of the existing line cards.

6. Press the ▲ or ▼ arrow buttons to move through the available list.
7. When the equal sign highlights the line card you wish to edit, press **ENTER/MENU**.

The display will show a list of choices. Table 5-12 lists these choices and a brief description.

Table 5-12: Edit Line Card List Items and Description

Edit Line Card List	Description
1 Handshake Seq	This function is used to program the handshake order and parameters for this line card.
2 Line Options	Used to set number of rings, ring on/off duration, threshold voltage, and sample time.
3 Listen-In	Used to program the parameters for the listen-in (two-way voice communication) feature if used. Must not be used in UL installations.
4 Trap List	Used to set up accounts that need to be trapped such as a panel which must be sent to a downloading computer for programming or updating.
5 Misc. Line Opt.	Used to program hunt group number, enable or disable echo suppression and billing delay.
6 ITI Options	Used to program ITI account/SCodes, SCode Tables, date/time flag, and 300 baud enable.

Handshake Sequence

Each line card is intelligent enough to determine what format is being sent from a reporting panel. You only need to program the handshake order and parameters for each line card. A line card will initiate up to six different types of handshake tone groups. The order in which the receiver sends out these handshake signals can be changed in this program location for each line card. Table 6-1 lists the proper handshake to use for the type of communication format you are using with a panel.

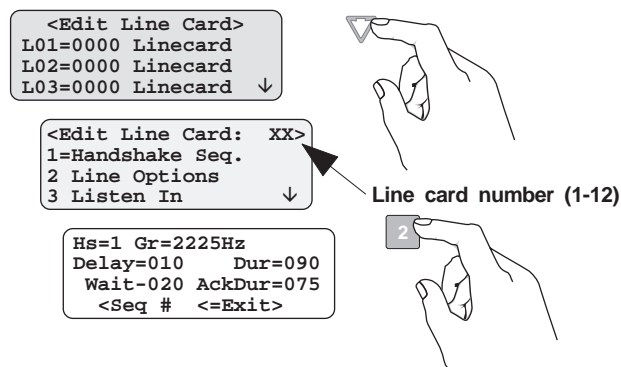


Figure 5-10 Handshake Sequence Menu

Follow these steps to change the handshake order and or the parameters associated with the handshake.

Changing the Handshake Sequence Number

Handshake sequence sets the order in which the receiver will send out handshakes.

1. Follow the procedures in the “Line Card Menu” section.
2. Press **1** for Handshake Sequence menu.

When display flashes on the Seq# (Figure 5-10).

3. Press the ▲ or ▼ button to change the ordered handshake number.

Note: Hs=1 is the first handshake tone sent. Hs=2 is the second handshake tone to be sent and so on.

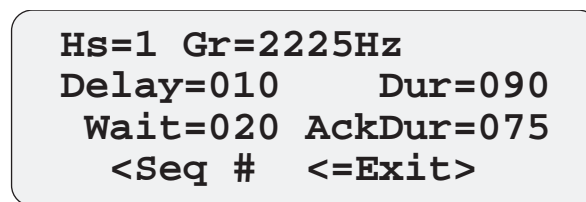


Figure 5-11 Handshake Order Number

4. When the desired order number is flashing, press **ENTER/MENU** or ➔.

The display will automatically start flashing the Format Group field.

Changing the Format Group

The handshake format group determines the handshake format to be used.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **1** for **Handshake Sequence** menu.
3. Press **→** until the display flashes on the **Format Group** field. (See Table 5-11 for valid entries.)
4. Press the **▲** or **▼** button to change the format group. (See Table 6-1 for communication formats.)
5. When the desired format group is flashing, press **ENTER/MENU** or **→**.

Changing the Handshake Delay Time

This is the duration of time that the receiver will wait before it sends its handshake tone (0-255 in 50ms periods). (See Table 5-11.)

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **1** for **Handshake Sequence** menu.
3. Press **→** until the display flashes on the **Hs delay** field.
4. Enter the desired value from the keypad or press the **▲** or **▼** button to change the delay time.
5. When the desired handshake delay time is flashing, press **ENTER/MENU** or **→**.

Changing the Handshake Duration Time

The handshake duration is the length of time that the receiver will send a handshake tone (0-255 in 10ms periods). (See Table 5-11.)

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **1** for **Handshake Sequence** menu.
3. Press **→** until the display flashes on the **Hs Duration** field.
4. Enter the desired value from the keypad or press the **▲** or **▼** button to change the handshake duration time.
5. When the desired handshake duration time is flashing, press **ENTER/MENU** or **→**.

Changing the Maximum Handshake Wait Time

The wait time is the amount of time (0-255 in 50ms periods) the receiver will wait for data from the reporting panel before outputting the next handshake sequence. (See Table 5-11.)

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **1** for **Handshake Sequence** menu.
3. Press **→** until the display flashes on the **Max Wait** field.
4. Enter the desired value from the keypad or press the **▲** or **▼** button to change the wait time.
5. When the desired wait time is flashing, press **ENTER/MENU** or **→**.

Changing the Acknowledgment Tone Duration Time

The acknowledgment tone duration time is the amount of time (0-255 in 10ms periods) the receiver will send an acknowledgment tone to the reporting panel. (See Table 5-11.)

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **1** for Handshake Sequence menu.
3. Press **→** until the display flashes on the Ack Duration field.
4. Enter the desired value from the keypad or press the **▲** or **▼** button to change the acknowledgment tone duration time.
5. When the time is flashing, press **ENTER/MENU** or **→**.

Line Options

Line Options is used to set the type of phone line, number of rings, ring on/off duration, threshold voltage, and sample time.

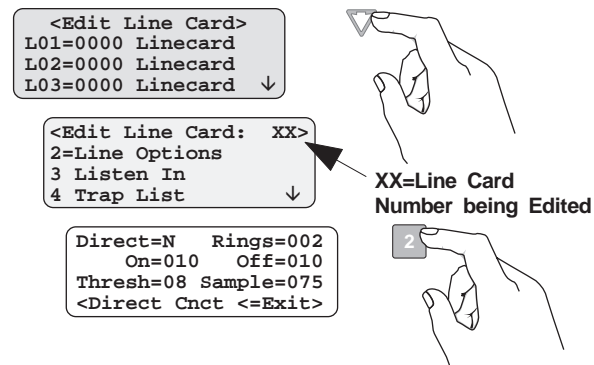


Figure 5-12 Line Options Menu

Setting the Line Card for a Direct Panel Connection

Select “Y” (yes) for the Direct setting if instead of going through a phone system, the receiver and a panel are directly connected as shown in “Direct Panel Connection” in Section 3.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **2** for Line Options menu.
3. The display will flash on the Direct field.
4. Press the **▲** or **▼** button to toggle between Y for yes, or N for no.
5. When the desired setting is flashing, press **ENTER/MENU**.

Changing the Number of Rings

This controls the number of rings the receiver needs to see before it will answer the call.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **2** for Line Options menu.
3. The display will flash on the Num Rings field.
4. Enter the desired value from the keypad (0-255) or press the ▲ or ▼ button to change the number of rings before the receiver will answer.
5. When the desired number of rings is flashing, press **ENTER/MENU** or →.

Note: If Caller ID is turned on (see “Miscellaneous Line Options” the number of rings must be set to two.

Changing the Ring On Time

The On field controls the ring on time. The ring on time is the length of time the receiver will listen to a ring prior to recognizing it as a ring.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **2** for Line Options menu.
3. Press → until the display flashes on the On Time field.
4. Enter the desired value from the keypad or press the ▲ or ▼ button to change the ring on time. Values range from 0 to 255 in increments of 50ms (1=50ms, 2=100ms, 3=150ms and so on).
5. When the desired ring on time is flashing, press **ENTER/MENU** or →.

Changing the Ring Off Time

The Off field controls the ring off time. The ring off time is the length of time the receiver will recognize an “Off” ring voltage.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **2** for Line Options menu.
3. Press → until the display flashes on the Off Time field.
4. Enter the desired value from the keypad or press the ▲ or ▼ button to change the ring off time. Values range from 0 to 255 in increments of 50ms (1=50ms, 2=100ms, 3=150ms and so on).
5. When the desired ring off time is flashing, press **ENTER/MENU** or →.

Changing the Ring Threshold Voltage

The Threshold field controls the phone line low voltage/line fault threshold level. If the voltage on the phone line connected to the line card drops below this set threshold level for that line card, the receiver will indicate a Line Fault on that phone line.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **2** for Line Options menu.
3. Press → until the display flashes on the Threshold field.
4. Enter the desired value from the keypad or press the ▲ or ▼ button to change the line fault threshold level. Values range from 1 to 15 in 2.0 VDC increments (1=2.0VDC, 2=4.0VDC, 3=6.0VDC and so on).
5. When the desired line fault threshold is flashing, press **ENTER/MENU** or →.

Changing the Phone Line Sample Rate

The sample time field controls how often the receiver will sample the phone line to verify that it is above the set threshold level of that line card. This time setting is how often the receiver verifies the phone line integrity.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **2** for Line Options menu.
3. Press **→** until the display flashes on the Sample Time field.
4. Enter the desired value from the keypad or press the **▲** or **▼** button to change the line sample rate. Values range from 0 to 255 in 1 second increments (0=line monitor disabled, 1=1 second, 2=2 seconds, 3=3 seconds and so on). The receiver will make two to three samples before generating a trouble condition on a faulty line.
5. When the desired sample time is flashing, press **ENTER/MENU** or **→**.
6. Press **left** arrow button to exit this menu.

Listen-In

The listen-in feature is used to perform two-way voice alarm verification between the central station and the alarm installation site.

Note: See “UL Requirements” in Section 2 for UL listen-in requirements.

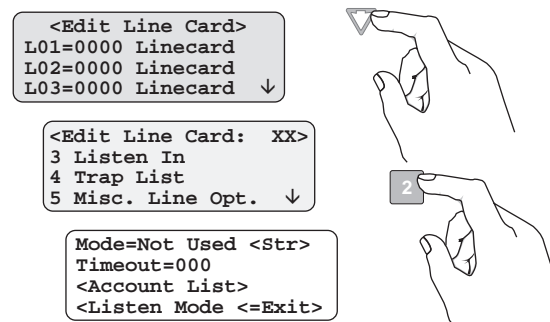


Figure 5-13 Listen Mode Menu Display

Changing the Listen Mode

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **3** for Listen-In Options menu.
3. When the display shows the listen-in options menu (Figure 5-13):
Press the **▲** or **▼** button to change the Listen Mode setting.
4. When the desired setting is flashing, press **ENTER/MENU**.

Changing the PBX String

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **3** for Listen-In Options menu.
3. Press **→** until the display flashes on the **<Str>** field.
4. Press **ENTER/MENU**.

5. Enter the desired numeric value from the keypad or press the ▲ or ▼ button to enter any special characters.
6. Press **ENTER/MENU**.

Table 5-13: Valid Programmable String Characters

Character	Description
F	Flash hook.
P	Delay 500ms
,	Delay 2 seconds
H	Force a hang up of the line.
@	Detect dial tone.
T	Check to see if the line is busy by looking for a busy tone.
0-9, *, #, A, B, C, D	DTMF digits.

Changing the Listen-In Timeout

Timeout is the amount of time listen-in will remain active before timing out.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **3** for Listen-In Options menu.
3. Press **→** until the display flashes on the <Timeout> field.
4. Enter the desired value from the keypad or press the ▲ or ▼ button to change the timeout setting. Values range from 0 to 255 in 1 second increments.
5. When the desired value is flashing, press **ENTER/MENU**.

Editing the Listen-In Accounts Lists

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **3** for Listen-In Options menu.
3. Press **→** until the display flashes on the <Account List> field.
4. Press **ENTER/MENU**.

The Figure 5-14 shows the next display.

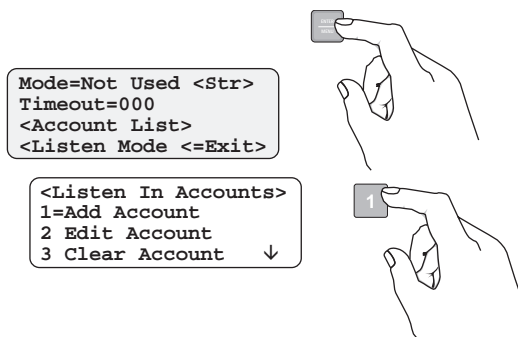


Figure 5-14 Listen-In Accounts Menu

Adding a Listen-In Account

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **3** for Listen-In Options menu.
3. Press **→** until the display flashes on the <Account List> field.
4. Press **ENTER/MENU**.
5. Press **1**. The display briefly shows the number (indicated by XX) of the lowest available listen-in account number slot (20 total listen-in account numbers). Adding # XX
6. Enter the account number you wish to add to the listen-in account list.
7. When the desired account number is flashing, press **ENTER/MENU**.

Table 5-14: Account Characters

Characters	Description
0-9	Numeric entries
A-Z	Alpha entries
*	Alpha-numeric wild card entry. Example: 123* = any account starting with 123.
#	Numeric wild card entry. Example: # = 0 to 9. Example: 12345# = 123450 to 123459.

Editing a Listen-In Account

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **3** for Listen-In Options menu.
3. Press **→** until the display flashes on the <Account List> field.
4. Press **ENTER/MENU**.
5. Press **2**.
6. Press the **▲** or **▼** button until the desired listen-in account is highlighted by the equal sign.
7. Press **ENTER/MENU**.
8. Enter the revised account number to the account list. (See Table 5-14.)
9. Press **ENTER/MENU**.

Note: When editing an existing account, the account number must be completely re-entered.

Clearing a Listen-In Account

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **3** for Listen-In Options menu.
3. Press **→** until the display flashes on the <Account List> field.
4. Press **ENTER/MENU**.
5. Press **3**.
6. Press the **▲** or **▼** button until the desired listen-in account is highlighted by the equal sign.
7. Press **ENTER/MENU**.

The Display will read: < WARNING! >
Delete Record No

8. Press the **▲** or **▼** button to toggle to Yes.

Note: Additional presses of the up or down arrow will toggle the choice between Yes and No.

9. Press **ENTER/MENU**.

Trap List

The trap list is used to trap an account that you wish to route to a downloading computer for initial or additional programming.

Adding an Account to the Trap List

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **4** for Trap List menu.
3. Press **1**.

The display briefly shows the number (indicated by XX) of the lowest available trap account number slot (20 total trap account numbers). Adding # XX

4. Enter the account number you wish to add to the trap account list. (See Table 5-14.)
5. When the desired account number is flashing, press **ENTER/MENU**.

Editing an Account in the Trap List

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **4** for Trap List menu.
3. Press **2**.
4. Press the **▲** or **▼** button until the desired trap account is highlighted by the equal sign.
5. Press **ENTER/MENU**.
6. Enter the account number you wish to add to the trap account list. (See Table 5-14.)
7. Press **ENTER/MENU**.

Clearing an Account from the Trap List

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **4** for Trap List menu.
3. Press **3**.
4. Press the **▲** or **▼** button until the desired trap account is highlighted by the equal sign.
5. Press **ENTER/MENU**.

The Display will read: < WARNING! >
Delete Record No

6. Press the **▲** or **▼** button to toggle to Yes.

Note: Additional presses of the up or down arrow will toggle the choice between Yes and No.

7. Press **ENTER/MENU**.

Miscellaneous Line Options

Some phone lines may use echo suppression, billing delay feature, or hunt group options. These miscellaneous phone options can be set through this programming menu.

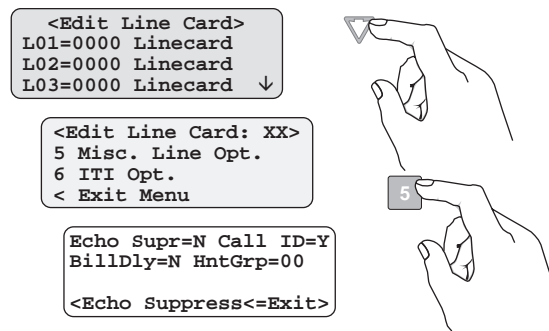


Figure 5-15 Miscellaneous Phone Line Options

Changing the Echo Suppress Setting

If echo suppression is enabled (Y), a 2025Hz signal will be output for two seconds to disable echo suppression equipment.

Caution

Only use this option for panels that require a 2225Hz handshake.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **5** for Miscellaneous Line Options menu (Figure 5-15).

The display Flashes on the Echo Supress= field.

3. Press the ▲ or ▼ button to change the echo suppress option from Y (Yes) to N (No) or vice versa.
4. When the setting is flashing, press **ENTER/MENU**.

Setting Caller ID

Caller ID information is displayed and sent to the printer only if the incoming call contains no data.

Note: If the incoming message contains any data (valid or invalid) no Caller ID information will be sent.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **5** for Miscellaneous Line Options menu (Figure 5-15).

The display Flashes on the Echo Supress= field.

3. Press → until the display flashes on the Caller ID field.
4. Press the ▲ or ▼ button to change the caller ID option from Y (Yes) to N (No) or vice versa.
5. When the setting is flashing, press **ENTER/MENU**.

Changing the Billing Delay Setting

If billing delay is enabled (Y), a delay of two seconds will be inserted at the beginning of each incoming call.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **5** for Miscellaneous Line Options menu.
3. Press **→** until the display flashes on the Billing Delay field.
4. Press the **▲** or **▼** button to toggle the billing delay between Yes or No.
5. When the desired setting is flashing, press **ENTER/MENU**.
6. To exit, press the **left** arrow button.

Changing the Hunt Group

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **5** for Miscellaneous Line Options menu.
3. Press **→** until the display flashes on the HntGrp field.
4. Enter the desired value from the keypad or press the **▲** or **▼** button to change the hunt group number.
5. When the desired hunt group is flashing, press **ENTER/MENU**.
6. To exit, press the **left** arrow button.

ITI Options Menu

Some ITI panels may use communication locking features such as account/security codes, tables, date/time flags, or 300 baud options. These ITI options can be set through this edit line card programming menu.

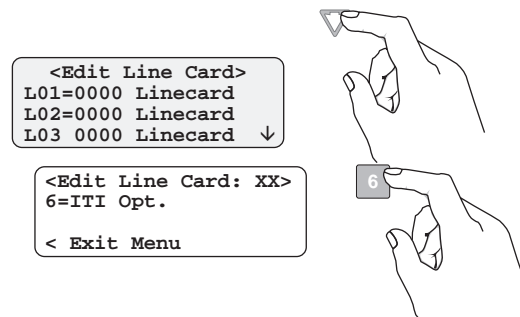


Figure 5-16 ITI Options

ITI SCode (Security Code) Menu

Some ITI control panels use one of two types of communication locks (phone lock or a central station lock). On the panels using a central station lock, a security code is required during communication.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **6** for ITI Options menu.
3. Press the **▲** or **▼** button to view the various options.
4. To exit, press the **left** arrow button.

Adding an Account/SCode

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **6** for ITI Options menu.
3. Press **1** for ITI SCode Menu.
4. Press **2** for Add Acct/SCode.
5. Enter the desired account number and press **ENTER/MENU**.
6. Select **SET** or **CLEAR** and press **ENTER/MENU**.
7. Enter the desired five-digit account security code.
8. Press **ENTER/MENU**.
9. To exit, press the **left** arrow button.

*Note: If an incorrect entry is made, you can move back to that digit by pressing the **left** arrow button.*

Editing an Account/SCode

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **6** for ITI Options menu.
3. Press **1** for ITI SCode Menu.
4. Press **3** for Edit Acct./SCode.
5. Press the **▲** or **▼** button to highlight the account to edit and press **ENTER/MENU**.
6. Enter the desired account number and press **ENTER/MENU**.
7. Select **SET** or **CLEAR** and press **ENTER/MENU**.
8. Enter the desired five-digit account security code.
9. Press **ENTER/MENU**.
10. To exit, press the **left** arrow button.

*Note: If an incorrect entry is made, you can move back to that digit by pressing the **left** arrow button.*

Clearing (Deleting) an Account/SCode

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **6** for ITI Options menu.
3. Press **1** for ITI SCode Menu.
4. Press **4** for Clear Acct./SCode.
5. Press the **▲** or **▼** button to select the account to be cleared and press **ENTER/MENU**.
6. Press the **▲** or **▼** button to toggle between Y or N.
7. When the desired setting is flashing, press **ENTER/MENU**.
8. To exit, press the **left** arrow button.

Adding an SCode to the Table

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **6** for ITI Options menu.
3. Press **1** for ITI SCode Menu.
4. Press **5** for Add SCode to Table.
5. Enter the desired 5-digit security code
6. Press **ENTER/MENU**.
7. To exit, press the **left** arrow button.

*Note: If a incorrect entry is made you can move back to that digit by pressing the **left** arrow button.*

Clearing an SCode from the Table

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **6** for ITI Options menu and press **ENTER/MENU**.
3. Press **1** for ITI SCode Menu and press **ENTER/MENU**.
4. Press **6** for Clear SCode and press **ENTER/MENU**.
5. Press the **▲** or **▼** button to select the SCode to be cleared and press **ENTER/MENU**
6. Press the **▲** or **▼** button to toggle between Y or N.
7. When the desired setting is flashing, press **ENTER/MENU**.
8. To exit, press the **left** arrow button.

Date/Time Flag

The date/time flag configures how the receiver will update ITI panels that have a clock. The receiver can update the panel clock every time it calls or only when the panel requests to have its clock updated.

Changing the Date/Time Flag

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **6** for ITI Options menu.
3. Press **1** for ITI SCode Menu.
4. Press **2** for Date/Time Flag.
5. Press the **▲** or **▼** button to toggle between Requested and Always.
6. When the desired setting is flashing, press **ENTER/MENU**.
7. To exit, press the **left** arrow button.

ITI 300 Baud

ITI 300 baud is a connection sequence that is used to negotiate a 300 baud connection with ITI panels that support 300 baud communications.

Changing the ITI 300 Baud Enable

To Enable or Disable ITI 300 Baud Negotiation:

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **6** for ITI Options menu.
3. Press **1** for ITI SCode Menu.
4. Press **3** for ITI 300 Baud.
5. Press the **▲** or **▼** button to toggle between Y (enabled) or N (disabled). If enabled, the receiver will attempt to negotiate 300 baud communications. (See Table 5-11.)
6. When the desired choice is flashing, press **ENTER/MENU**.
7. Press the **left** arrow button to exit.

Audio Mode

The audio mode listen-in options set the listen-in answering method for ITI panels.

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **4** for Audio Mode menu.
3. Press the **▲** or **▼** button until the desired listen in answering method is highlighted by the equal sign.
4. Press **ENTER/MENU**.

Copying Line Cards

To copy existing line card settings follow these steps:

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **3** to copy a line card.
3. Press the **▲** or **▼** button to select Use Default or Copy Existing type of copy and press **ENTER/MENU**.
4. When display shows the list of line cards (Figure 5-17), press the **▲** or **▼** button to select the line card to be copied and press **ENTER/MENU**.
5. To exit, press the **left** arrow button.

Clearing (Deleting) Line Cards

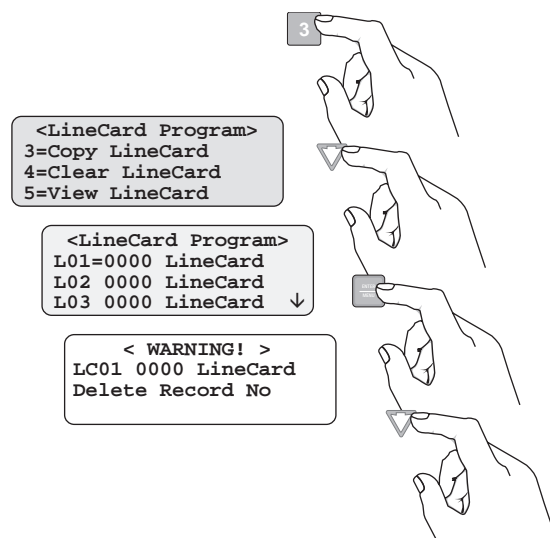


Figure 5-17 Visual Steps to Clear a Line Card From the Receiver

To Clear or Delete a Line Card From the Receiver

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **4** to clear a line card.
3. When display shows the list of line cards (Figure 5-17), press the **▲** or **▼** button until the desired line card to be cleared is highlighted with the equal sign. Press **ENTER/MENU**

The display will read: <Warning!>
 LC01 13-417 Linecard
 Delete Record No

4. Press the **▲** button until Yes is flashing.
5. Press **ENTER/MENU**.
6. To exit, press the **left** arrow button.

Viewing Line Cards

To view all of the line cards in the receiver follow these steps:

1. If required, follow the procedures in the “Line Card Menu” section.
2. Press **5** to view line cards.
3. When display shows the list of line cards (Figure 5-17), press the **▼** button to scroll through the list of line cards.
4. To exit, press the **left** arrow button.

User List

User List is used to program and store the information on the various installers and operators who will operate and maintain the receiver. Through this program menu item you can add, edit or clear (delete) an operator/installer (up to 40 users). The user is identified by name, then assigned a PIN (personal identification number) and a profile.

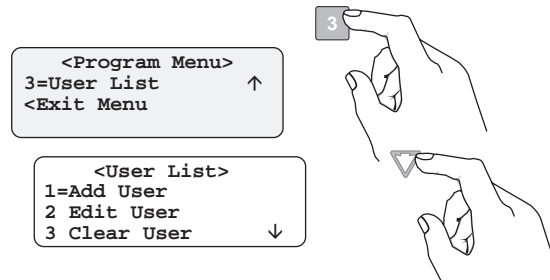


Figure 5-18 User List Menu Items

Table 5-15 lists the available choices under User List and provides a matrix of choices.

Table 5-15: User List Menu Items and Steps

Choice	Step 1	Step 2	Step 3	Comments
Add User	Enter user name: 1. Use the up or down arrow to move through characters. 2. Press the right arrow to move to next character slot. 3. Press enter key to move to next step.	Enter PIN code: 4 digits minimum 9 digits maximum	Choose profile level: Operator or Installer	Add user is used to add a new user to the system and enter the user's PIN and profile information.
Edit User	When "Choose User" list appears: 1. Press the down arrow key until the desired user is highlighted with the equal sign. 2. Press enter to move to next step.	Repeat Steps 1-3 under Add User.		Edit user is used to change an existing user's profile.
Clear User	When "Choose User" list appears: 1. Press the down arrow key until the desired user is highlighted with the equal sign. 2. Press enter to move to clear user from profile list.			Clear user is used to delete a user from the receiver's memory.

Adding a User

Use the following steps to add a user to the system:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press **ENTER/MENU** button.
3. Press **7** for <Program Menu>.

The display will briefly display **Initializing**
Please wait . . .

4. Press **3** to choose **User List**.
5. Press **1** to add a user.

The user number to be programmed will appear in the display for one second. This user number will always be the lowest available user number.

6. Press the ▲ or ▼ arrow buttons to move through the available characters. (See Table 5-16.)

Table 5-16: Available Characters

Characters	Comments
Space, 0-9, :, -, _ , . , , & , * , #	The word “Space” indicates that a physical space would be inserted if this character were chosen.
A-Z	Upper case alphabetical characters
a-z	Lower case alphabetical characters

There are 16 characters available for each user name.

*Note: If no characters are entered in the name field, the user name will default to **User #XX**. XX = the number location of the user being programmed. For example, if user 12 location is being programmed and no name characters are entered in the name field, then that user will be named **User #12**.*

When the desired character is flashing in the display:

7. Press the → arrow key.
8. Repeat steps 6 and 7 until the user’s name is complete.
9. Press **ENTER/MENU**.
10. Enter the desired PIN code for the user using a minimum of 4 and a maximum of 9 digits.
11. Press **ENTER/MENU**.

The display will flash **Operator**.

12. Press the ▲ or ▼ arrow buttons to toggle between **Installer** and **Operator**.
13. When the desired profile level is flashing, press **ENTER/MENU**.

Editing a User

Use the following steps to edit an existing user:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press **ENTER/MENU** button.
3. Press **7** for <Program Menu>.

the display will briefly display: Initializing

Please wait . . .

4. Press **3** to choose User List.
5. Press **2** to Edit a User.

A list of all the users will appear starting with the lowest user number.

6. Press the ▲ or ▼ arrow buttons to move through the user list.
7. When the equal sign highlights the user you wish to edit, press **ENTER/MENU**.
8. If you **do not** want the user name changed, press **ENTER/MENU**.
Or, to change the user name, press the ▲ or ▼ arrow buttons to move through the available characters. (See Table 5-16 for list of available characters.) When the name change is complete press **ENTER/MENU**.
9. If you **do not** want the PIN code changed, press **ENTER/MENU**.
Or, to change the PIN code enter the desired code (4 to 9 digits long), then press **ENTER/MENU**.
The display will flash the current profile level.
10. Press the ▲ or ▼ arrow buttons to toggle between Installer and Operator.
11. When the desired profile level is flashing, press **ENTER/MENU**.

Clearing (Deleting) a User

Use the following steps to clear or delete a user from the system:

1. Log on to the receiver. (See “Logging On and Off” in Section 4 for the logon procedure.)
2. Press **ENTER/MENU** button.
3. Press **7** for <Program Menu>.

The display will briefly display: Initializing

Please wait . . .

4. Press **3** to choose User List.
5. Press **3** to clear (delete) a user.

A list of all the users will be displayed starting with the lowest user number.

6. Press the ▲ or ▼ arrow buttons to move through the user list.
7. When the equal sign highlights the user you wish to clear, press **ENTER/MENU**.

The display shows < WARNING ! >
Delete Record No

8. Press the ▲ or ▼ arrow button to toggle the flashing display to Yes.
9. Press **ENTER/MENU**.

Section 6

Compatible Reporting Formats

This section lists the available CS-5000 receiver reporting formats. Table 6-1 shows the formats that the CS-5000 receiver can decode and the handshake frequency format group which accommodates that format. (See “Line Card Menu” in Section 5 for line card programming). Each line card can decode every format listed below, however; a line card can be programmed to prioritize the handshake order in which that line card will communicate.

Formats By Communication Group

Table 6-1 shows which formats fit under the general communication groups and the corresponding handshake frequency.

Table 6-1: CS-5000 Compatible Formats

Communication Group	Format Name	Description	Handshake Format Group
Tone Burst	SIA P1	Sends a 3-digit account code and a 1-digit alarm code up to two rounds (10pps).	1400 Hz
	SIA P3, 4+2, ITI Euro Commander	Sends a 4-digit account and a 2-digit alarm code up to four rounds.	1400 Hz
	SIA P4, Radionics 3+1 Checksum	Sends a 3-digit account and a 1-digit alarm code and a checksum.	1400 or 2300 Hz
	3+1 Standard, 3+1 Extended	Sends a 3-digit account and a 1-digit alarm code up to four rounds (10-40pps). If a second block of data is sent, it will contain the extended information. The account number cannot have repetitive digits (333, 888, etc.).	1400 or 2300 Hz
	Radionics Hex Pulses	Sends a 3-digit account and a 1-digit alarm code up to two rounds in a hex pulse format (10-40pps).	1400 or 2300 Hz
	4+1, 4+1 Extended	Sends a 4-digit account code and a 1-digit alarm code up to four rounds in a pulse format (10-40pps).	4/1 1400 or 4/1 2300 Hz
	SIA P2	Sends a 3-digit account code and a 1-digit alarm code up to two rounds (20pps).	2300 Hz
	Sescoa 3+1, Franklin 3+1	Sends a 3-digit account and a 1-digit alarm code up to four rounds in a tone burst format. Each digit can be programmed from (0-9). Because there is no standard, this format reports in codes only.	2300 Hz

Table 6-1: CS-5000 Compatible Formats (Continued)

Communication Group	Format Name	Description	Handshake Format Group
Modem	ITI SX-III, SX-IVA	Sends a 5-digit account and 2-digit alarm code in a Bell 103, pseudo-octal format with parity and checksum. The data is decoded into English account information.	2225 Hz
	ITI SX-IVB		
	ITI SX-V		
	ITI Commander, Euro Commander, RF Commander, Harbor Guard		
	ITI Commander 2000, LifeGard	Sends a 5-digit account and 2-digit alarm code in a Bell 103, hex (Learn Mode) format with parity and checksum. The data is decoded into English account information.	
	ITI CareTaker+, SecurityPro 4000		
	ITI MeterMinder		
	ITI FONSAFE, PhoneWatch		
	ITI SX-V Special, Rollins System 6		
	ITI SIMON		
	ITI UltraGard, CareTaker EX		
	SIA 1993 DCS Level 2+ (SIA F1) Digital Communication Standard), ITI Concord (WESTAR), SIMON II	Sends a 6-digit (10-digit for WESTAR) account and a variable-digit alarm code in a Bell 103 format with parity and checksum. The data is decoded into English account information.	
	SIA 2000 (pending approval) ITI Advent	Sends an 8-digit account and a 2-digit alarm code in a Bell 103, 212 format with Fletcher's checksum. The data is decoded into English account information.	
FSK	BFSK	Sends a 3-digit account and a 1-digit alarm code similar to 3+1 Extended format except the data is decoded into English account information.	1400 or 2300 Hz
DTMF	Contact ID, ITI Advent, Concord, SIMON II, Ademco	Sends a 4-digit account and a 3-digit alarm code in a Dual Tone Multiple Frequency (DTMF) (9 digits per second) format with checksum. The data is decoded into English account information.	1400 & 2300 Hz

Format Numbers Used In Printer Output

In a printed report, the calling panel format is listed as a format number. Table 6-2 lists these format numbers and corresponding types.

Table 6-2: Formats By Report Number

Format Number	Fomat Type
0	No Response
3	SIA 2000
4	SIA DCS, Level-2
10	ITI SX-III, SX-IVA
12	ITI RF Commander
13	ITI UltraGard, CareTaker EX
14	ITI CareTaker Plus, Security Pro 4000
15	ITI SX-V
16	ITI Commander 2000, EuroCommander
17	ITI HarborGard
18	ITI Simon
20	ITI Commander
21	ITI SX-V Special, Rollins System 6
25	ITI SX-IVB
31	Franklin/Sescoa 3/1
32	3/1
33	3/1 Extended
37	4/1
38	4/1 Extended
41	SIA P3, SK 4/2
47	SIA P4, Radionics 3/1 with checksum
50	Ademco Contact ID
60	BFSK
	ITI MeterMinder (pending)
	ITI (Sprint) FONSAFE, PhoneWatch (pending)

Section 7

Troubleshooting

This section contains a list of possible error messages and a troubleshooting process for each.

Error Messages

Table 7-1 lists the error messages that are displayed by the receiver as well as the message sent to the printer.

There are two types of error messages that are displayed and printed; line card communication errors, and system event errors. Line card communication errors relate specifically to how the receiver communicated to an incoming call. System event errors relate specifically to the system and the performance of its peripheral devices such as the automation software, printers, etc.

In Table 7-1, heading “LC Error” indicates that the error message was a line card communication error and “SYS Error” indicates any system event related error messages.

Table 7-1: Error Messages

LC Error	Sys Error	Display Message	Printer Message	Description	What to Do
✓		No Data Received	No Data Received	On an incoming call, no data was sent to the receiver after the receiver gave its handshake tones.	Usually a wrong number.
✓		0 Length Block	0 Length Blk	One of the message blocks received contained no data.	Possibly a call with caller ID information but no data from a control panel.
✓		No Ack	No Ack	Receiver was unable to acknowledge the call.	Check the line card setup and retest the panel.
✓		Time Out	Time Out	The incoming call timed out and the phone line was released.	1. Retest panel. 2. Replace panel. 3. Replace line card.
✓		Corrupted Data	Corrupted Data	Bad or corrupted data was sent to the receiver.	
✓		Illegal Specifier	Illegal Specifier	An error occurred in the look-up table for this call message.	Call Technical Support.
✓		Undefined Event	Undefined Event	The panel communicating to the receiver sent an event code that the receiver does not recognize.	Call Technical Support.
✓		Unsupported Event	Unsupported Event	The panel communicating to the receiver sent an event code that the receiver recognized but does not support.	Call Technical Support.

Table 7-1: Error Messages (Continued)

LC Error	Sys Error	Display Message	Printer Message	Description	What to Do
✓		Unsupported Format	Unsupported Fmt	The calling panel communicated in a format not supported by the receiver.	Program the panel to a different reporting format.
✓		Communication Error	Communication Error, Panel Requested Re-send	There was a communication error between the panel and the receiver, and the receiver asked the panel to re-send the message.	If it continues, test the panel.
✓		Possible Incomplete	Possible Incomplete Call	The receiver missed information in the call sequence.	Retest the panel.
	✓	System Power Up	System Power Up	Indicated that the receiver powered up.	
	✓	Expander Trouble	Expander Trouble	Trouble with a device connected to the SBUS.	Check the connection of that device on the SBUS. If connection is OK replace SBUS device (line cards and touchpads).
	✓	Expander Trbl Rst	Expander Trouble Restore	The trouble condition of a SBUS device was corrected.	
	✓	AC Trouble	AC Trouble	AC power failure.	Check AC outlet and AC power cord.
	✓	AC Trouble Rst	AC Trouble Restore	AC power was restored.	
	✓	Battery Low Restore	Battery Low Restore	The backup battery power supply trouble has been corrected.	Restores at 12VDC after a low battery condition.
	✓	Battery Low	Battery Low	The back-up battery is checked continually every second. This message would be displayed if the backup battery were set to "Battery Bkp." (See "System Options" in Section 5. Indicates a low battery when the voltage drops to 10.2 VDC or lower.	Check battery cables. If they are OK, replace back-up battery.
	✓	Local Program Begin	Local Program Begin User #	This message indicates the time a system "installer" entered program mode.	
	✓	Local Program End	Local Program End User #	This message indicates the time a system "installer" exited program mode.	
	✓	Local Program Fail	Local Program Fail User #	The receiver will stay in program mode for 15 minutes without any activity, then it will time out and go back to normal mode. This message indicates that an installer entered programming and did not exit programming before it timed out.	
	✓	Listen-in End	Listen-in End	A listen-in session completed	
	✓	Listen-in Begin	Listen-in Begin	A listen-in session started.	
	✓	System Date Changed	System Date Changed User #	An installer changed the system date.	
	✓	System Time Changed	System Time Changed User #	An installer changed the system time.	

Table 7-1: Error Messages (Continued)

LC Error	Sys Error	Display Message	Printer Message	Description	What to Do
	✓	Msg Queue Full	Message Queue Full	Messages can be sent to automation computer, a printer or can be manually acknowledged. If one or more of these devices does not respond to messages being sent or manually acknowledged, the message queue will fill up. When the message queue is full, the receiver will no longer accept incoming calls.	Verify that messages are acknowledged to any printers and automation software while in manual mode.
	✓	Msg Queue Full restore	Message Queue Full restore	Indicates that the message queue full error has been corrected.	
	✓	Main Computer Trbl	Main Computer Trouble	A communication problem exists between the automation software and the receiver.	Check cable connections. Verify that the port is configured properly.
	✓	Main Computer Rst	Main Computer Restore	The communication error between the receiver and the automation software has been corrected.	
	✓	Bkup Computer Trbl	Bkup Computer Trouble	A communication problem exists between the backup automation software and the receiver.	Check cable connections. Verify that the port is configured properly.
	✓	Bkup Computer Rst	Bkup Computer Restore	The communication error between the receiver and the backup automation software has been corrected.	
	✓	Main Prn Off Trbl	Main Printer Off Line	The port programmed as the primary printer port is off line.	Check cable connections. Verify that the port is configured properly. Check power to printer.
	✓	Main Prn Paper Out	Main Printer Paper Out	The port programmed as the primary printer port is out of paper.	Replace paper in printer.
	✓	Main Prn Restore	Main Printer Restore	The error on the primary printer has been corrected.	
	✓	Bkup Prn Off Trbl	Bkup Printer Off Line	The port programmed as the backup printer port is off line.	Check cable connections. Verify that the port is configured properly. Check power to printer.
	✓	Bkup Prn Paper Out	Bkup Printer Paper Out	The port programmed as the backup printer port is out of paper.	Replace paper in printer.
	✓	Bkup Prn Restore	Bkup Printer Restore	The error on the backup printer has been corrected.	
	✓	DC Input Low Rst	DC Input Low Restore	The backup DC power supply trouble has been corrected.	Restores at 12VDC after a low battery condition.

Table 7-1: Error Messages (Continued)

LC Error	Sys Error	Display Message	Printer Message	Description	What to Do
	✓	DC Input Low	DC Input Low	The backup battery is checked continually every second. This message would be displayed if the backup battery setting were set to "DC Bkp". (See "System Options" in Section 5.) Indicates a low when the voltage drops to 10.2 VDC or lower.	Check the connection to the DC power supply. Verify the output from DC power supply.
	✓	Msg Queue > Warning	Message Queue Warning	When the message queue reaches the programmed level mark, this message is given as a pre-warning to "Message Queue Full". See "Message Queue Options" in Section 5 to program the % level at which the receiver will indicate the warning.	Verify that messages are acknowledged to any printers and automation software while in manual mode.
	✓	Msg Queue < Warning Restore	Message Queue Warning Restore	This message is given when the message queue drops below the programmed level after a message queue warning indication has displayed. See "Message Queue Options" in Section 5 to program the % level.	
	✓	LC Run in ROM	Linecard Running ROM Code	The line card is not running the application code.	Replace the line card.
	✓	Line Fault	Line Fault	The phone line voltage has dropped below the threshold voltage as programmed. (See "Edit Line Card" in Section 5.)	Check phone line outlet and phone cord.
	✓	Line Fault Restore	Line Fault Restore	Phone line voltage has been restored to normal parameters.	
	✓	Line Card Deleted	Line Card Record Deleted	A line card has been deleted.	
	✓	Line Card Added	Line Card Record Added	A line card has been added.	
	✓	User Log In	User Log In: User #	A user has logged on to the receiver.	
	✓	User Log Out	User Log Out: User #	A user has logged off of the receiver.	

Troubleshooting Process

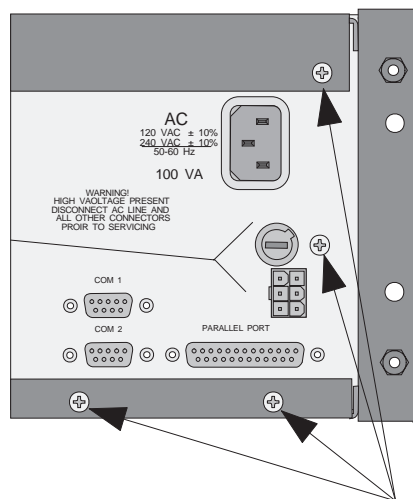
Before contacting Technical Support, you may be able to solve the problem yourself using the following procedures:

1. Verify that a problem exists.
2. Check the manual for suggestions or solutions.
3. Check connections.
4. Isolate the problem. Remove other devices that may be interfering.
5. Try swapping devices to isolate the problem.
6. Try to replace the problematic device.
7. Document the failures and the steps used to resolve them.

Removing the Power Supply/Mother Board Assembly

Once ITI Technical Support has determined that a problem exists with either the main power supply or the mother board, use the following procedure to remove the assembly and return it to ITI for repair.

1. Remove the front plate by unscrewing the front plate retaining screws. (See Figure 3-1 for locations of front plate retaining screws.)
2. Turn the main power switch to the “off” position. (See Figure 3-2.)
3. Disconnect AC power Cable.
4. Disconnect the backup battery. (See Figure 3-14.)
5. On the back of the receiver remove the four screws that hold the mother board/power supply assembly to the chassis. (See Figure 7-1 for screw locations.)
6. Pull the mother board/power supply assembly out from the front of the receiver.



Screw Locations

Figure 7-1 Mother Board/Power Supply Assembly retaining Screw Locations

Replacing the Mother Board/Power Supply Assembly

1. Remove the front plate by unscrewing the front plate retaining screws. (See Figure 3-1 for locations of front plate retaining screws.)
2. From the front side of the receiver slide the replacement mother board/power supply assembly back into the receiver chassis.
3. On the back of the receiver replace the four screws that hold the mother board/power supply assembly in place (Figure 7-1).
4. Make sure that the power switch is in the “off” position (Figure 3-12).
5. Reconnect the AC power cable.

Note: Make sure to plug the AC power cable into a grounded outlet. (See “How to Verify Earth Ground” in Section 3 for instructions on verifying earth ground.)

6. Reconnect the back-up battery (Figure 3-14).
7. Turn the main power switch to the “on” position (Figure 3-12).
8. Replace the front plate by screwing in the front plate retaining screws (Figure 3-1).

Safe Mode

Safe mode can be used to reset User #01 access code back to the default of 5000 regardless of its present setting.

For example, if the code for the installer (User #01) is lost and additional programming is required the receiver can be restarted in safe mode to return User #01 to an access code of 5000.

Follow these steps to initiate Safe Mode and default User code #01:

1. Follow the steps in “System Restart” in Section 4 to restart the receiver.

Note: All messages must be acknowledged before a system restart procedure can be performed. If all messages are not acknowledged, cycle the receiver’s power to restart the system. If the power is cycled, all unacknowledged messages will be lost.

2. When the display Shows Model CS-5000 Receiver
 ITI
3. Press the **STAR/HOME** button, then the **LOG/STATUS** button.

The display will read Safe Mode Activated

4. Press **ENTER/MENU**.
5. Enter the default installer code or **5000**.

Updating the Receiver Software

ITI will continue testing new reporting formats with the CS-5000 receiver. As additional reporting formats become available it may be necessary to update your receiver. This can be done from your own PC using a null modem cable (Figure 3-15 and Figure 3-16). Any software upgrades will be sent to you on a 3.5 inch floppy disk and will come with downloading instructions.

Section 8

Automation Communication Formats

Introduction

The receiver supports several automation communication formats which are used to communicate with an automation computer. The supported formats are:

- SIA-CIS
- SIA-2000 (pending)
- ITI Generic
- ITI Comp
- ITI MeterMinder (Custom COM 2 Output)

The remainder of this section details these formats.

Section Terms and Conventions

This manual uses the term “automation computer” to refer to a computer that receives data from the CS-5000 and interprets it through software that automates the central station.

A “message” is any data the CS-5000 is passing to an automation computer. The term “message” is reserved for discussions of the string as a whole.

A “Call from panel” refers to the complete data stream from a panel to the CS-5000.

“Event data” refers to the actual data (alarms, troubles, and so on) that are part of a call from a panel. (In the SIA protocol, the event data is the part of the message that is contained within brackets [].)

A “system message” refers to messages the CS-5000 sends to an automation computer about its internal status.

Hexadecimal values are used to refer to data (rather than the ASCII characters that represent the values). Hexadecimal numbers will be represented with a preceding \$ symbol as in “\$0A”.

SIA-CIS (Computer Interface Standard) Format

The receiver's SIA-CIS automation configuration follows the standards set forth in the SIA Computer Interface Standard. This section of the manual provides an overview of ITI's implementation of the CIS standard.

For more information about SIA standards, consult the publications: *Computer Interface Standard, June 1990* and *Digital Communication Standard, February 1993 Revision*. (Both documents are published by and available from the Security Industry Association.)

Data String Description And Special Characters

Table 8-1 Data String Description

Data Element	Byte Positions Occupied	Data Description
Identifier	1	\$0A indicates the beginning of a new message.
CRC (includes total length of message)	2-7	Bytes 2-7 are the cyclic redundancy check and the length of the entire message. (If you need to know how the CRC is calculated, refer to the publication, <i>Computer Interface Standard, June 1990 Revision</i> , published by and available from the Security Industry Association.)
Separator	8	\$09 separates the CRC from the next field which is the sequence number.
Sequence number	9-12	Four bytes. The sequence number of the message. Valid numbers are 0001-9999. Sequence numbers repeat after 9999. Note: A sequence # of "0000" is used for link test messages.
Receiver ID number	13-14	Two bytes indicating the ID number of the receiver that is sending the message. Valid numbers are 01-99.
Line card number	15-16	Two bytes indicating a line card number (01-12). Note: If the message is a system message (rather than a call from a panel), the data in this field will be "\$00".
Open bracket	17	\$5B indicates the beginning of event data.
Event Data	Variable, beginning at position 18.	Account numbers, alarms, modifier codes, system status messages, and so on. The CS-5000 can send up to 128 bytes of data per message to the automation computer. The data is a call from a panel if it has an account number and a system status message if it does not. The data field contains event data if the message is a call from a panel and system data if the message is a CS-5000 system message. The data is a link test if there is no data between the delimiting brackets (\$5B and \$5D) and the sequence number is "0000". If a message is a call from a panel, the first bytes after the open bracket will be \$23 (ASCII "#") followed by a 4-8 digit account. A field separator \$7C (ASCII "|"), will separate the account number from the first events. If there is more than one event, each event is separated by \$2F (ASCII "?") or by \$7C (ASCII "|"). Refer to SIA publication <i>Digital Communication Standard, February 1995 Revision</i> , for message syntax. Listen-in and Hang Up Requests Requests originating from the panel: In data sent to the CS-5000 by the panel, the event code "LF" indicates the beginning of a listen-in session. "LE" indicates the end of listen-in. See Section 2, "Agency Requirements" for UL requirement on listen-in.
Close bracket	Variable, 1 byte long	\$5D indicates end of event data.
End of message indicator	Variable, 1 byte in long calls	\$0D is always the last character in a message. Even if the data is too large to be sent in one message, the end of message indicator appears at the end of the partial message. If the message is too long to be contained in one line, a \$7C (ASCII "|") will precede the end of message indicator. In this case the header of the current message will be repeated in the second line with the remaining data.

Table 8-2 Special Characters

Hex Value	Meaning
\$7C	Field separator. Separates account number from what follows. Also indicates more data to come for messages that exceed 70 bytes.
\$23	Precedes an account number.
\$5B	Beginning of event data.
\$4E	New event.
\$4F	Old or previously reported event.
\$5D	End of event data.
\$0A	Beginning of message identifier.
\$0D	End of message indicator.
\$2F	Event separator.
\$09	Tab character, separates CRC from sequence number.

Basic Message Format

The basic format for any message coming from the CS-5000 to an automation computer is shown in Figure 8-1.

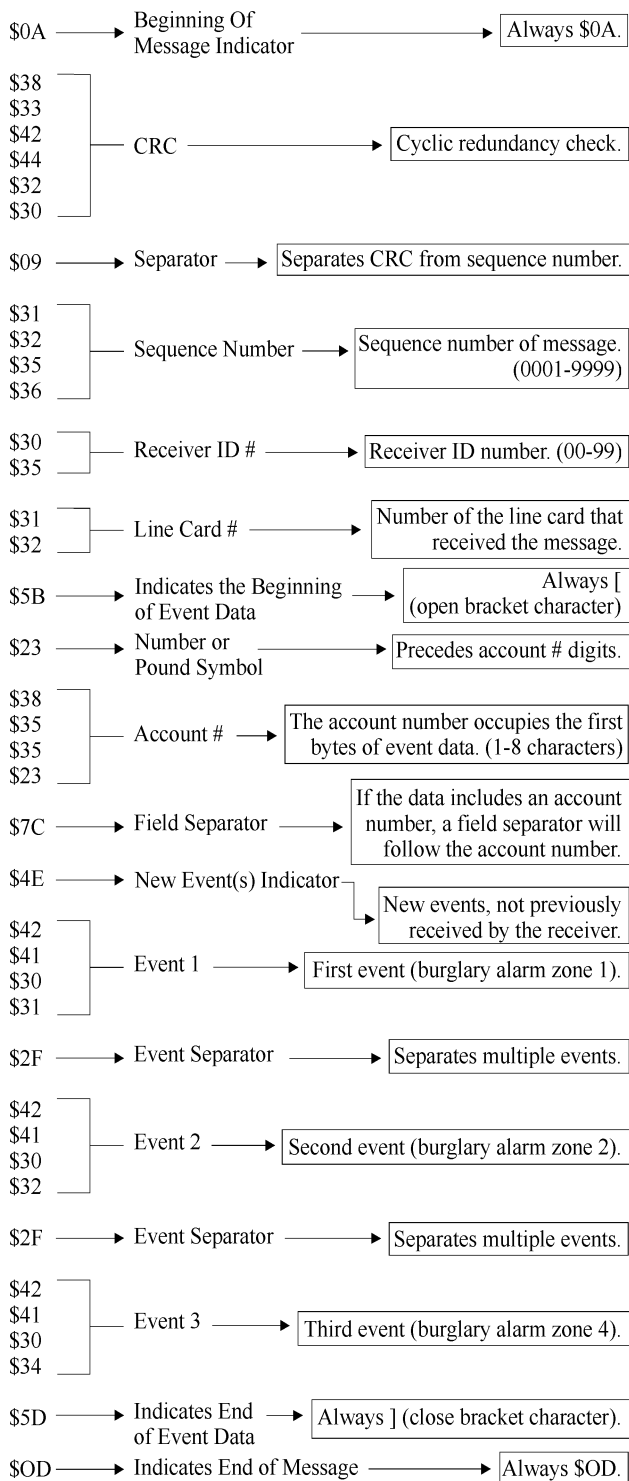


Figure 8-1 Example Message

Note: Figure 8-1 is a sample only. Sizes of data fields may vary in actual use.

Modifier Codes

The CS-5000 supports the SIA modifier codes shown in Table 8-3 below.

Table 8-3 Modifier Codes Used With The CS-5000

CODE	MEANING AND USE
da	Date modifier. Followed by MM-DD-YY as in <i>da04-01-94</i> .
ti	Time modifier. Followed by HH:MM:SS (:SS is optional) as in <i>ti05:45:52</i> .
ri	Area modifier. Followed by an area number (0000-9999, leading 0's not required).
id	Subscriber modifier. Used to identify the user causing the actions or events. (0000 - 9999)
pi	Peripheral ID modifier. Used to identify the device causing the action or event. (0000-9999)
ai	Automated ID modifier. Used to identify the logical function or timer causing the action or event and is included in the current block. (0000-9999)
ph	Telephone ID modifier. Identifies the index of the telephone service number used when the events occurred.

Note: SIA codes are case-sensitive; modifiers are always lowercase

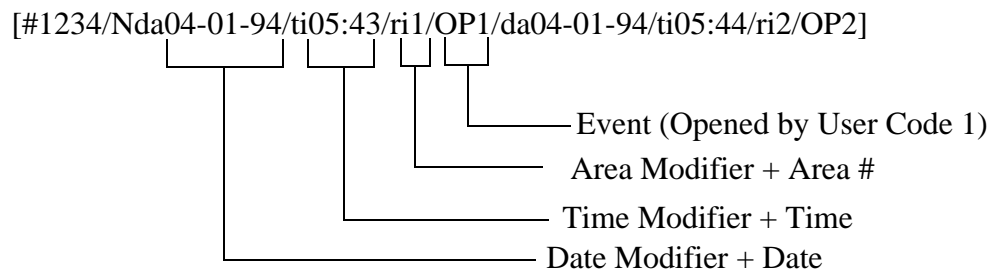


Figure 8-2 Event Data With Modifier Codes

Long Calls

The CS-5000 can send a maximum of 128 bytes in one message. When call data is more than 128 bytes, the CS-5000 breaks up the data into 128-byte chunks followed by a field separator, \$7C, (ASCII vertical bar character, |) and an end of message indicator, \$0D.

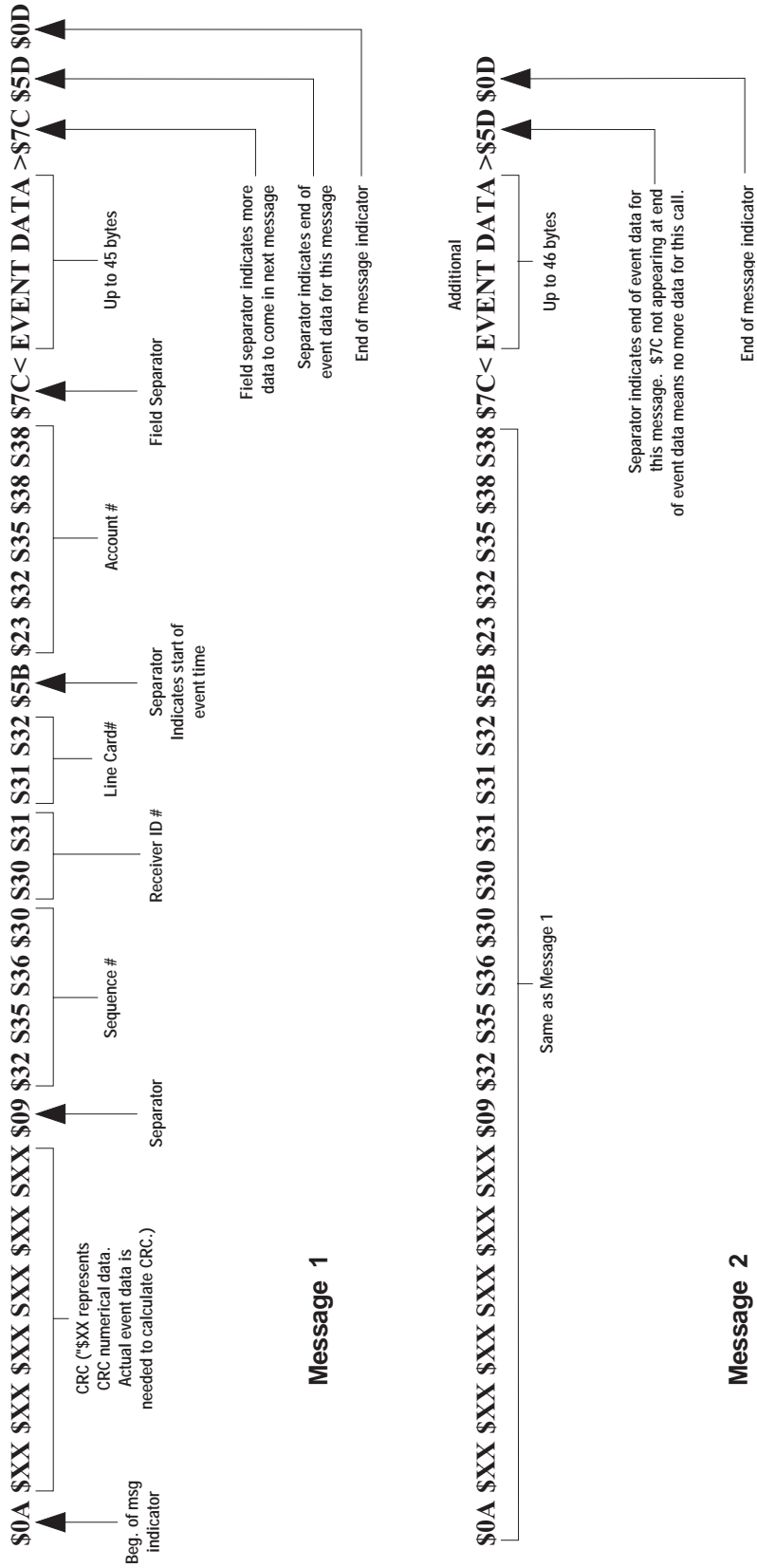


Figure 8-3 Long Call

System Status Messages

The CS-5000 can send 24 status messages. Status messages are a type of event data. They are differentiated from calls from panels because the first bytes after the open bracket are not an account number.

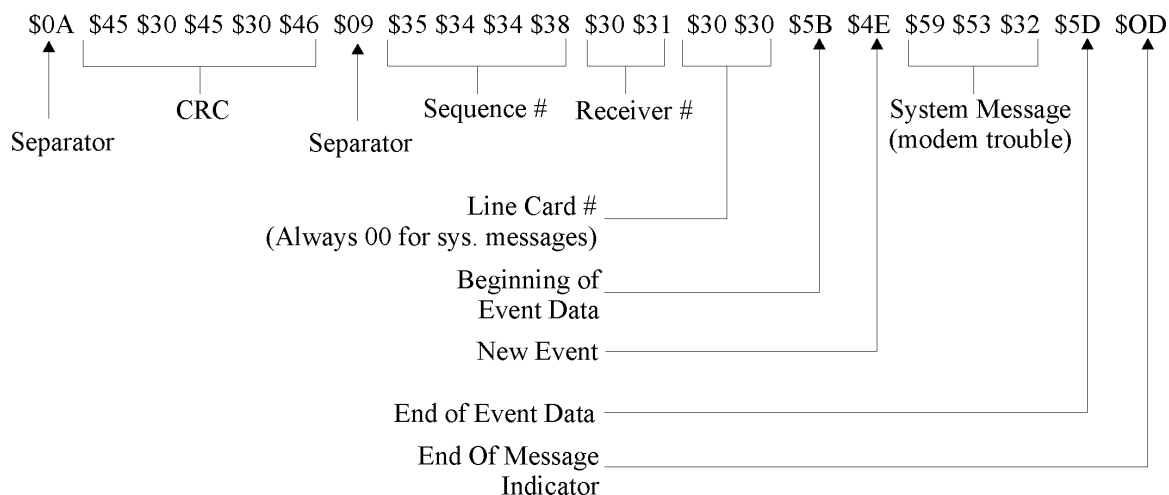


Figure 8-4 System Status Message

Table 8-4 System Status Messages

CODE	PRINT-OUT
AT	SYSTEM AC LOST
AR	SYSTEM AC RESTORE
CL	LOG ON OPERATOR (close report)
LB	LOCAL PROGRAM BEGIN
LE	LISTEN-IN END
LF	LISTEN-IN BEGIN
LR	LINE RESTORE L.C.#
LS	LOCAL PROGRAM END
LT	LINE FAULT L.C.#
LU	LOCAL PROGRAM FAIL
JD	SYSTEM DATE CHANGE
JT	SYSTEM TIME CHANGE
OP	LOG OFF OPERATOR (open report)
RR	SYSTEM POWER UP
RT	DATA LOST
VO	PAPER OUT (on-board printer)
VR	PRINTER RESTORE (for external printer)
VZ	PRINTER OFF-LINE

Table 8-4 System Status Messages

CODE	PRINT-OUT
YC	COMPUTER TROUBLE
YD	TROUBLE L.C.#
YE	LINE CARD TROUBLE RESTORE
YK	COMPUTER TROUBLE RESTORE
YR	BATTERY RESTORE (system battery restore)
YT	BATTERY TROUBLE (system battery trouble)

HeartBeat

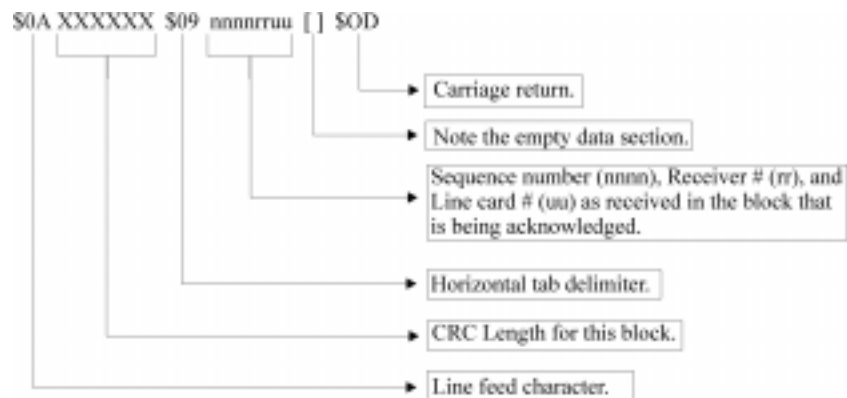
The SIA CIS protocol supports a periodic HeartBeat message to be sent to the automation computer. The HeartBeat message is used to verify the communication between the receiver and the automation computer. The sequence number of the HeartBeat message is always 0000.

Communication from a Computer to the CS-5000

ACKing and NACKing Data

The computer must respond to messages sent by the CS-5000 with a response packet.

The computer must ACK a received block by responding with the acknowledge packet (see Figure 8-5).

**Figure 8-5 Sample ACK Message**

The computer must NACK a received block by sending an ambiguous null response packet (Figure 8-6).

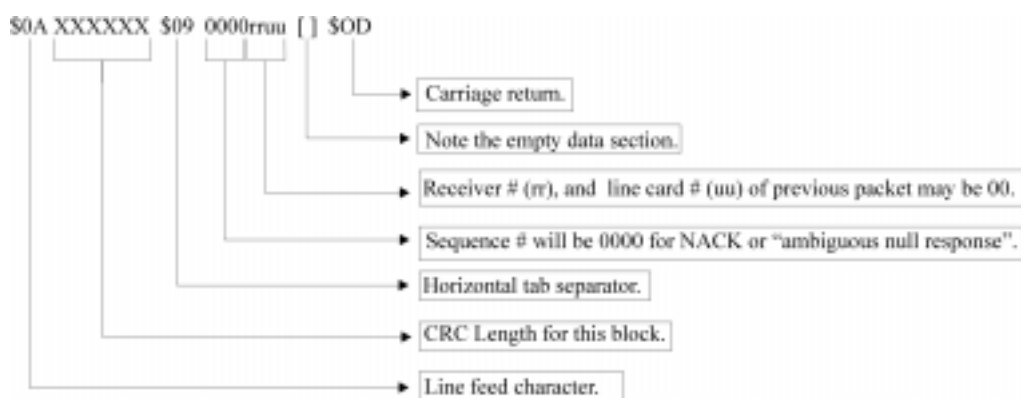


Figure 8-6 Sample NACK Message

Note: If the computer fails to respond to the receiver's transmission within the timeout period, the packet will be considered to be NACKED, and the NACK logic will be output on next page.

A specific null response is sent when the computer's CRC agrees with the CRC sent in the message and the general format of the message appears to be correct (for example, the last byte is \$0D).

An ambiguous null response is sent whenever the computer suspects an error in the transmission of the message.

Note: Refer to SIA CIS documentation for their format information.

The CS-5000 ignores any other communication from the computer when it is awaiting ACKing or NACKing.

Generally, after two ambiguous null responses or two timeout periods of no response from the computer, the CS-5000 generates a "computer trouble" message.

- If the computer sends a specific null response, the CS-5000 will send any additional data in its buffer.
- If the computer sends an ambiguous null response, the CS-5000 will immediately re-send the data.
- If the computer sends an ambiguous null response or 2 timeout periods a second time, the CS-5000 will generate a computer trouble message and begin periodically sending the "Link Test" message to test the channel for recovery.

Link Test

An ambiguous null response may be used to cause the receiver to send a link test to the automation computer. The receiver normally treats the ambiguous null response as an immediate time-out on any delay and transmits the next unacknowledged message. If the receiver has no unacknowledged message to transmit, the receiver will respond to the ambiguous null response with a link test message.

SIA-2000 Format

(Pending)

The receiver's SIA-2000 automation configuration follows the standards set forth in the SIA-2000 Digital Communications Standard. When information is available, this section of the manual will provide an overview of ITI's implementation of the SIA-2000 standard.

For more information about SIA standards, consult the publications: *Computer Interface Standard*, _____ 199__ and *Digital Communication Standard "SIA2000"*, _____ 199__ *Revision*. (Both documents are published by and available from the Security Industry Association.)

ITI Generic Computer Format

The ITI Generic Computer Format is designed to pass reported information through an RS-232 port to communicate with an automation computer. This format consists of four types of generic records: report, log, test, and okay.

Convention Used In This Subsection

An ITI digit in this section is an ASCII representation of a number from 0 to 61 as follows:

Table 8-5 Number and ITI Digit Equivalent

Number	Represented by ITI Digit
0 - 9	0 - 9
10 - 35	A - Z
36 - 61	a - z

Report Record

A report record is an alarm report from a control panel to the receiver.

The following is a general description of the information contained in a report record:

```
<$0A><" 1 " ><" B " ><" 1 " ><$6A><" 2345 " ><" 8 " ><" b " ><" 45 " ><" A " ><$0D>
```

Table 8-6 Report Record Components

Character	Byte	Description
<\$0A>	0	ASCII (0A hex) line feed character that marks the beginning of a record.
<"1">	1	Receiver ID digit. See Table 8-5 for value range.
<"B">	2	Phone line number digit. See Table 8-5 for value range.
<"1">	3	Most significant digit of account number. For example, A in account AB-CDE. Note: Account numbers greater than 5 digits will be truncated to the least significant 5 digits.
<\$6A>	4	Control panel type/zone attribute code.
<"2345">	5-8	Lower 4 digits of the account number. For example, B-CDE in account AB-CDE.
<"8">	9	Group number. See Table 8-5 for value range.
<"b">	10	User ID number. Will report the Generic Nodata character when a user number is not applicable. See Table 8-5 for value range.
<"45">	11-12	Zone number. Two ASCII digits 00 - 99, A = 100, C = 110.
<"A">	13	Alarm condition. See Table 8-11 for alarm codes and descriptions.
<\$0D>	14	ASCII (0D hex) carriage return marking the end of the record.

Control Panel Type and Zone Attribution Byte

Byte 4 (see Table 8-6) of the report record is divided into upper and lower nibbles. The upper nibbles (4 most significant bits) contain the code indicating the panel type.

Table 8-7 Upper Nibble Description

Upper Nibble Value	Description
2	Non-ITI formats
3	Pulse formats
4	SX-III or SX-IVa
5	SX-IVb
6	SX-V
7	All other ITI panels.

The lower nibble (4 least significant bits) contains the code describing the zone attributes (unique with ITI panels). The definition of this field varies depending on from which ITI panel the call was generated. For detailed communication specifications, refer to the installation instructions of the ITI panel with which you wish to communicate.

If the upper nibble is 2 (non-ITI formats), the lower nibble is used to identify the format as shown in Table 8-8.

Table 8-8 Non-ITI Formats Lower Nibble Description

Lower Nibble Value	Description
0x23 (#)	SIA-DCS
0x25 (%)	Contact ID
0x26 (&)	SIA-2000

If the upper nibble is 3 (pulse formats), the lower nibble is used to identify the panel as shown in Table 8-9.

Table 8-9 Pulse Formats Lower Nibble Description

Lower Nibble Value	Description
0	Anything not listed below
1	Slow 3/1 format
2	Fast 3/1 format
3	Slow 3/1 extended format
4	Fast 3/1 extended format
5	Slow 4/1 format
6	Fast 4/1 format
7	Slow 4/2 format
8	Fast 4/2 format
9	Radionics 3/1 hex format
\$A	Radionics BFSK

Extended Panel ID Codes

When XID is set to Y in programming mode the extended panel ID replaces the control panel type. (See “General Options” in Section 5 for to set XID.)

Table 8-10 lists the XID codes (both the Hex and the ASCII character) for the ITI Generic computer output.

Table 8-10 Extended Panel ID Codes (XID)

XID Code		Panel Type
Hex Character	ASCII Character	
\$40	@	SX-III
\$50	P	SX-IVb
\$60	‘	SX-V
\$70	p	Other ITI panel
\$71	q	PhoneWatch, FONSAFE

Table 8-10 Extended Panel ID Codes (XID) (Continued)

XID Code		Panel Type
Hex Character	ASCII Character	
\$72	r	SX-V Special
\$73	s	Commander
\$74	t	RF Commander
\$75	u	CareTaker +
\$76	v	MeterMinder
\$77	w	Commander 2000
\$78	x	Security Pro 4000
\$79	y	UltraGard
\$7A	z	European Commander
\$7B	{	Simon
\$7E	~	New Panels

Alarm Codes

Table 8-11 lists the alarm codes used in byte 13 of the report record, and descriptions of the alarm codes.

Table 8-11 Alarm Codes and Descriptions

Alarm Codes	Description
A	Alarm
B	Bypass
C	Closing Report
D	Dial out audio alarm
E	Exit fault
G	One-ring audio report
H	AC restore (non-ITI panels only)
I	Improper security code
J	Trouble
K	Key-chain access
L	Low battery
M	Low CPU battery (non-ITI panels only)
O	Opening report
P	Phone test
Q	AC failure (non-ITI panels only)
R	Cancel
S	Supervisory

Table 8-11 Alarm Codes and Descriptions (Continued)

Alarm Codes	Description
T	Tamper alarm
U	Burglary (non-ITI panels only)
V	Instant audio alarm
W	Restoral
X	Medical/auxiliary emergency (FONSAFE)
x	Medical/auxiliary emergency with audio verification (FONSAFE)
Y	Police emergency (FONSAFE)
y	Police emergency with audio verification (FONSAFE)
Z	Fire emergency (FONSAFE)
z	Fire emergency with audio verification (FONSAFE)
!	Undefined alarms (non-ITI panels only)

Log Record

If Log Record (Log Rec) is enabled a pair of phone log records surrounds all report records generated by the reporting panel. The unused data field of the log record is filled with six "NoData" characters (see "Communications" in Section 5).

The following is an example of how a log record surrounds a report record:

```

<$0A><"1"><"1"><"0100"><"000000"><"N"><$0D>   New Log Record
<Report Record>                                   Report Record
<Report Record>                                   Report Record
<$0A><"1"><"1"><"0100"><"000000"><"F"><$0D>   Final Log Record

```

Table 8-12 lists the components of a log record and their description.

Table 8-12 Log Record Components and Description

Character	Description
<\$0A>	Start or record indicator (line feed).
<"1">	Receiver ID number.
<"1">	Phone line number.
<"0100">	Reference number, equals four ASCII bytes ranging from 0001-9999. (Reference number 100 shown.)
<"000000">	Six No Data characters. Valid characters are: 0-9, A-Z, a-z, Space, :, -, _, ., ,, &, *, #, ?, E _C . See "Communications" in Section 5.
<"N">	New or start of log record.
<"F">	Final or end of log record.
<\$0D>	End of record indicator (carriage return).

Test Record

A special test record is sent to the automation computer whenever a panel clock is updated and the date/time line is displayed.

The following is an example of a test record:

<\$0A><"IT IRCV 234A"><\$0D>

Table 8-13 Test Record Components and Description

Character	Description
<\$0A>	Start of record (line feed).
<"IT IRCV 234A">	Predefined test record string. The predefined test string is automatically set when ITI Generic format is chosen to communicate with automation computer.
<\$0D>	End of record indicator (carriage return).

Okay Record

When the automation computer sends a supervisory character to the CS-5000 receiver (or in response to a heartbeat), the receiver will return with an Okay record.

Note: The supervisory character defaults to lower case "s" and is programmable. (See "Communications" in Section 5.)

The following is an example of an Okay record:

<\$0A><" 00 OKAY @"><\$0D>

Table 8-14 Okay Record Components and Description

Character	Description
<\$0A>	Start of record (line feed).
<" 00 OKAY @">	Predefined okay record string. The predefined okay record string is automatically set when ITI Generic format is chosen to communicate with automation computer.
<\$0D>	End of record indicator (carriage return).

ACKing and NACKing Data

After the end of message byte (<0Dh>) is sent by the receiver, the automation computer will respond with an ACK (<\$06>) or NACK (<\$15>). This response can be delayed between 1 byte time (depending on the baud rate) and the ACK timeout period. (See “Communications” in Section 5.)

If the receiver doesn’t get an ACK within the ACK timeout period or receive a NACK from the automation computer, it will re-transmit the data.

After two NACKs or two ACK time-outs, the receiver will generate a Computer Trouble message. When a computer trouble message is generated, the receiver will continually send a heartbeat until it receives an ACK from the automation computer. When communication is restored, a Computer Trouble Restore message will be generated.

ITI Comp (Computer Interface) Format

ITI Computer Interface format consists of four types of records: report, test, supervisory, and log (see Table 8-16).

Convention Used In This Subsection

An ITI digit in this section is an ASCII representation of a number from 0 to 61 as follows:

Table 8-15 Number and ITI Digit Equivalent

Number	Represented by ITI Digit
0 - 9	0 - 9
10 - 35	A - Z
36 - 61	a - z

General Record Structure

Each record begins with <"|"><Record Type> field (see Table 8-16 for record identifiers) and end with a <"|]"><Checksum/Ctrl> field. Any fields within a record may be included in an individual record as needed.

A record is made up of field of data (in varying lengths), and each field within a record begins with a <"|"> character. The <"|"> is followed by a field identifying character. Individual field identifiers are unique to the specific record where they are contained. For example, an |L field in a report record has a different meaning than an |L field of a test record and so on. There is no specific order to the fields of a record, with the exception that it will begin with the record type and end with a checksum/control field.

After the checksum/control field, each record is terminated with a carriage return (<\$0D>).

Table 8-16 Type of Record Identifiers

Field Identifier	Definition
|R	Report record
|T	Test record
|S	Supervisory record
|L	Log record

The following is a generic example of a transmitted message record:

<"| |"><Record Type><Info fields...><"|]"><Checksum/Ctrl><\$0D>

Table 8-17 Record Components

Character	Description
<"| |">	Start of record indicator.
<Record Type>	Record type. See table Table 8-16.
< Info fields...>	Information fields. See Table 8-19.
<"|]">	End of information fields indicator.
<Checksum/Ctrl>	Checksum/control field.
<\$0D>	End of record indicator.

Report Record

A report record is generated when a control panel calls into the receiver for any reason.

The following is an example report record (see also Table 8-17):

```
<"|[ "><"R"><"|IA1"><"|LB"><"|A123456"><"|V55600"><"|D0514"><"|T1019"><"N0005"><"|Z1"><"|CA"><"|]"><Cksum/Ctrl><$0D>
```

Table 8-18 lists the components of a report record and their description.

Table 8-18 Report Record Components and Description

Character	Description
<"|[ ">	Start of record indicator.
<R>	Report record identifier.
<"|IA1">	Unit ID = A, followed by receiver ID = 1.
<"|LB">	Line Card #, B = 11. Acceptable values are 0-9, A (= 10), B (=11), C (=12).
<"|A123456">	Account Number.
<"|V55600">	Panel (see Table 8-20) and revision number. In this example the panel = SX-V and the revision is 5600.
<"|D0514">	Date of the report in mmdd format. mm = Month, dd = Day
<"|T1019">	Time of report in hhmm format. hh = Hour, mm = Minutes
<"N0005">	Reference number. See Operation - Main Menu, Call History section. 0001-9999
<"|Z1">	Zone number. One to four alphanumeric characters are acceptable values.
<"|CA">	Condition code indicating the nature of the reported message. See Table 8-21.
<"|]">	End of information fields indicator.
<Cksum/Ctrl>	Checksum/control field.
<\$0D>	End of record indicator.

Information Field Identifiers

The following characters (Table 8-19) signify which data is contained in an information field:

Table 8-19 Information Field Identifiers

Field Identifier	Description	Acceptable Values
I	System identifier. A unit ID (always an A) and the receiver ID digit. See “ <i>System Options</i> ” in Section 5 to set receiver ID.	"A" followed by 0-9.
O	Communication Lock (Comm-Lock) usage.	0 = Not Supported (✓) 1 = Phone lock 2 = Central Station Lock 3 = No lock used
M	Audio (Listen-in) usage.	0 = Not Used (✓) 1 = Instant mode 2 = Dial out mode 3 = One ring mode
L	Line Card number.	Line Card #. Acceptable values are 0-9, A (= 10), B (=11), C (=12).
A	Account number.	Three to six alphanumeric characters. If the account is more than 6 characters the account will be truncated to the last six characters.
P	Protection level of panel.	Two bytes, the first indicates the previous protection level and the second indicates the current protection level.
V	Panel type and revision.	One panel type code byte followed by a 4-digit revision number. See Table 8-20.
G	Group and attribute information.	Contact ITI for group and attribute information.
D	Date of report.	In mmdd format, where mm = month, and dd = day.
T	Time of report	In hhmm format, where hh = hour, and mm = minutes.
N	Reference number.	0001-9999. See “ <i>Call History</i> ” in Section 4.
Z	Zone number.	One to four alphanumeric characters.
U	User number.	See Table 8-15 for acceptable values.
K	Dealer key numbers. For Commander 2000 only.	Values from 00-99.
S	CPU sub-unit number	Values from 0-9
C	Condition code indicating the nature of the reported message. See Table 8-21.	See Table 8-21 for condition code values.

Panel Type Characters

Table 8-20 lists the characters used to identify panel types:

Table 8-20 Panel Type Characters

Character	Panel Type
0	Unknown type
3	SX-III or SX-IVA
4	SX-IVB
5	SX-V
9	FONSAFE
A	Commander
B	SX-V Special
C	Magnetic card reader
D	Euro Commander
E	Security Pro 4000
I	SIMON
K	HarborGard
M	UltraGard
N	Network Security
P	Pin Point
R	RF Commander
S	Commander 2000 or LifeGard
T	CareTaker +
U	MeterMinder
V	Protector
X	New panels
Z	Nutone
a-d	3/1
e-h	3/1 extended
i-l	4/1
m-p	4/2
r	Radionics BFSK
s	SIA DCS
t	Contact ID
u	SIA 2000
v	Ademco Touch Tone
w	Acron Touch Tone
x	Westec Touch Tone

Table 8-20 Panel Type Characters (Continued)

Character	Panel Type
y	Ademco DTMF 4/2
z	Ademco DTMF 4/1
#	SIA D1
(	FBI 4/3/1

Condition Codes

Condition codes are a one-digit character which indicates the nature of the call from a control panel to the receiver.

Table 8-21 lists the different condition codes and their descriptions:

Table 8-21 Condition Codes and Descriptions

Condition Code	Description
A	Alarm
B	Bypass
C	Closing Report
D	Undefined Alarm (non-ITI panels only)
E	Exit Fault
F	Force Arm
G	Burglary (non-ITI panels only)
H	AC Restore (non-ITI panels only)
I	Improper Security Code
J	Trouble
L	Low battery
M	Medical/Auxiliary Emergency
N	Fire Emergency
O	Opening Report
P	Power Failure (non-ITI panels only)
Q	Police Emergency
R	Restoral
S	Supervisory
T	Tamper
U	Status Report (non-ITI panels only)
W	CPU Low Battery (non-ITI panels only)
X	Cancel

Table 8-21 Condition Codes and Descriptions (Continued)

Condition Code	Description
Y	CPU Low Battery Restoral (non-ITI panels only)
Z	Phone Test
c	Key Access Closing Report
o	Key Access Opening Report

Test Record

A special test record is sent to the automation computer whenever a panel clock is updated and the date/time line is displayed.

The following is an example of a test record:

```
<" | [ "><"T"><" | IA1 "><" | D970514"><" | T145056 "><" | V042097 ">
<" | L6.1 "><" | ] "><Cksum/Ctrl><$0D>
```

Table 8-22 lists the information fields contained in a test record and their descriptions.

Table 8-22 Test Record Information Fields and Descriptions

Character	Description	Acceptable Values
I	System identifier. A unit ID (always an A) and the receiver ID digit. See "System Options" in Section 5 to set receiver ID.	"A" followed by 0-9.
D	Date	Current date in yymmdd format yy = year, mm = month, dd = day.
T	Time	Current time in hhmmss format hh = hours, mm = minutes, ss = seconds.
V	Software version	In date format.
L	ITIcomp revision level.	Two digits separated by a decimal point.

Supervisory Record

When the automation computer sends a supervisory character to the receiver (or in response to a heartbeat), the receiver will answer with a supervisory record.

The following is an example of a supervisory record:

```
<" | [ "><"S"><" | IA1 "><" | D970514 "><" | T145056 "><" | V042097 ">
<" | L6.1 "><" | ] "><Cksum/Ctrl><$0D>
```

Table 8-23 lists the information fields contained in a supervisory record and their descriptions.

Table 8-23 Supervisory Record Information Fields And Descriptions

Character	Description	Acceptable Values
I	System identifier. A unit ID (always an A) and the receiver ID digit. See "System Options" section to set receiver ID.	"A" followed by 0-9.
D	Date	Current date in yymmdd format yy = year, mm = month, dd = day.
T	Time	Current time in hhmmss format hh = hours, mm = minutes, ss = seconds.
V	Software version	In date format.
L	ITIcomp revision level.	Two digits separated by a decimal point.

Log Records

If Log Record (Log Rec) is enabled (see “Communications” in Section 5), a pair of phone log records surrounds all report records generated by the reporting panel. The unused data field of the log record is filled with six "NoData" characters (see “Communications” in Section 5).

The following is an example of how a log record surrounds a report record:

```
<"|"><"L"><"IA1"><"L1"><"Nooo1"><"S970425080020"><"|"><Cksum/Ctrl><$0D>Start Log Rec
```

```
<Report Record> Report Rec
```

```
<Report Record> Report Rec
```

```
<"|"><"L"><"IA1"><"L1"><"Nooo1"><"E970425080110"><"|"><Cksum/Ctrl><$0D>End Log Rec
```

Table 8-24 lists the information fields contained in a log record and their descriptions.

Table 8-24 Log Record Information Fields And Descriptions

Character	Description	Acceptable Values
I	System identifier. A unit ID (always an A) and the receiver ID digit. See “System Options” in Section 5 to set receiver ID.	"A" followed by 0-9.
L	Line Card number.	See Table 8-15 for accepted values.
N	Reference number.	0001-9999
S	Date and time.	YYMMDDhhmmss format where YY = Year, MM = Month, DD = Day, hh = hour, mm = minutes, ss = seconds.
E	Date and time.	YYMMDDhhmmss format where YY = Year, MM = Month, DD = Day, hh = hour, mm = minutes, ss = seconds.

Checksum/Control Field

The last field of every record is the checksum/control field. This field contains an upper case letter followed by four ASCII hexadecimal digits. Contained in these five characters are three controls to help guarantee data integrity between the receiver and the automation computer.

The first control is the Sequence Control Character (SCC). This is a letter code which cycles from "A" to "Z" continually, changing successively with each new record transmitted.

Note: If the receiver has to repeat a record in response to a NACK from the automation computer, the same SCC is sent both times.

The first digits sent (following the SCC) are the two least significant digits of an additive checksum for the record from the first "|" character up to and including the SCC. (See Table 8-25.)

The last two digits in the record are an XOR checksum. The XOR checksum starts with a value FFh. This value is XORed against the first byte in the record. The result is XORed against the next byte and so on, up through the SCC. (See Table 8-25.)

The following is an example of a checksum/control field:

|[X]A49E0

Table 8-25 Checksum Verification Process

Character	ASCII Code	Additive Checksum	XOR Checksum
|	7C	00 + 7C = 7C	FF ^ 7C = 83
[	5B	7C + 5B = D7	83 ^ 5B = D8
X	58	D7 + 58 = 12F	D8 ^ 58 = 80
|	7C	12F + 7C = 1AB	80 ^ 7C = FC
]	5D	1AB + 5D = 208	FC ^ 5D = A1
A	41	208 + 41 = 249	A1 ^ 41 = E0

ITI METERMINDER Format

The ITI METERMINDER[®] is a dual-purpose control panel that provides off-site meter reading for the utility company and provides home security functions for subscribers. The METERMINDER is based on the ITI CareTaker[®] Plus panel and the Panel ID sent in the account record is the same as a CareTaker[®] Plus (4x).

The CS-5000 passes the security related reports to the automation computer via serial (COM 1) and the meter related reports via serial (COM 2).

For more information on panel functions and programming commands, refer to the *METERMINDER Installation Manual* (46-729), *CareTaker[®] Plus Installation and Reference Manual* (46-504), and the *METERMINDER[®] Release Notes* (46-480).

Meter Format

The following describes all possible meter reports that the CS-5000 may receive from in-service meters. The reports include the text/data messages shown in Table 8-26. Please refer to the “Output Record Format” in Section 8 for details of the entire record.

Table 8-26 METERMINDER (COM 2) Reports

Report	Output Message	Description
Immediate Meter Reports		
90 RF Disk A/C Failure #n	aRFD AC Fail #n	AC power failure at the meter.
90 RF Disk A/C Restore #n	bRFD AC Rest #n	AC power has been restored at the meter.
7D RF Disk Failure #n	cRFD Failure #n	RF MeterLink has not reported.
7F Meter Loop Tamper! #n	Meter Tamper #n	Meter loop tamper.
Mtr n K _h yy.xx Cnt cccccccc Reading: rrrrr	dddddeeeefffff	Meter reading: dddd - meter 1 reading eeee - meter 2 reading ffff - meter 3 reading
M n K _h yy zz/aa Cnt cccccccc Reading: rrrrr	dddddeeeefffff	Meter reading: dddd - meter 1 reading eeee - meter 2 reading ffff - meter 3 reading
Immediate Voltage Reports		
7E Voltage Error nnn V #n	dVError nnnV #n	RF MeterLink voltage has gone out-of-range (above or below the threshold for 3 minutes
Monthly Voltage Events Reports		
Voltage Events nnnnn #n	eVEvent nnnnn #n	RF MeterLink voltage error number of out-of-range events (above or below the threshold for any amount of time) that have occurred since the last monthly report or since events count was cleared. The panel generates a message for each of the three meters. No report will be generated for hardwire or uninitialized meters.

Where:*n* is the meter number(1-3)*nnn* is the error voltage*nnnn* is the voltage events count sent by the panel*ccccccc* is the meter pulse count*mm* is the meter reading*yy* is the whole part of K_h*xx* is the decimal part of K_h*zz/aa* is the fractional part of K_h

Output Record Format

The output record general message format includes the following:

- A 5-character meter account (panel account)
- A 12-digit meter utility number
- A report message (*a, b, c, d, or e*) described in Table 8-26
- The date, time, and a record terminator carriage return (hex 0D)

The following example includes a space between each item; these spaces do not appear in the actual record output.

```
55555 121212121212 abcde DATE TIME<CR>
```

For example, the report “90 RF Disk A/C Failure #1,” would be:

```
55555121212121212aRFD AC Fail #1 DATETIME<CR>
```

Where:

55555 is the reported account number (if enabled).

121212121212 is the reported utility number (if enabled).

DATETIME is the date and time of the report. This field is 8 characters long; 2 digits each for month, day, hours, and minutes. For example, November 11 at 3:30 p.m. is:

```
11 11 15 30.
```

abcde field identifies the report type. The first byte of the message field (*a, b, c, d, or e*) will be unique for each output record. The field also contains a short text message describing the report and any relative data sent by the panel.

<CR> is the record terminator (hex 0D).

For example, the report “90 RF Disk A/C Failure #1,” would be:

```
55555121212121212aRFD AC Fail #1 DATETIME<CR>
```

An example tamper loop report (meter 1 shown) is:

```
TEST5121212121212Meter Tamper#111220033
```

Where:

TEST5 is the 5-digit account number (if enabled)

121212121212 is the 12-digit utility number (if enabled)

1122 is the date

0033 is the time

Meter Test Record

A meter test record is reported when the SUPCHAR character is received. SUPCHAR defaults to a question mark (?). The following shows how the meter test record reports:

TEST5121212121211111222223333301211230

Where:

TEST5 is the 5-digit account number (if enabled)

121212121212 is the 12-digit utility number (if enabled)

11111 is meter 1 reading

22222 is meter 2 reading

33333 is meter 3 reading

0121 is the date

1230 is the time

Commands Initiated by the Automation Computer

Typically all communications are initiated by the receiver, however, there are several commands available to the automation computer to control or request information from the receiver. The automation computer may send these requests only when the receiver is not transmitting data to the automaton computer.

The following sub-sections show the message format that must be sent from the automation computer to the receiver in order that these command requests function properly.

The receiver will respond to these requests from the automation computer with one of the following messages:

Table 8-27: Response Messages by the CS-5000 Receiver

ASCII Hex Character	Character Name	Description
\$06	ACK	The request is granted.
\$15	NACK	The request is unrecognized because of one of the following reasons: <ul style="list-style-type: none"> Checksum error Invalid request code/format
\$1B	ESC (Escape)	The request is refused because of one of the following: <ul style="list-style-type: none"> Unauthorized access Invalid receiver/line card number Receiver/line card is busy Invalid PBX string Account list full Account number not found in the account list

Table 8-28 lists which request can be made from the automation computer by request identifiers.

Table 8-28: Command Requests by Identifiers

Command Request Identifier	Description
\$4A	Log-on request
\$4B	Log-off request
\$05	Hang up request
\$04	Add a listen-in account. (This adds an account number to the listen-in account list.)
\$03	Delete a listen-in account. (This deletes an account number from the listen-in account list.)
\$4C	Listen-in extend request.
\$48	Listen-in end request.
\$49	PBX string request.
\$02	Add a trap account. (This adds an account number to the trap account list.)
\$01	Delete a trap account. (This deletes an account number from the trap account list.)
\$0D	Link test request.

Remote Log-on/Log-off

You must log-on to the receiver before you can change any system program options. Remote log-in and log-off commands can be sent from the automation computer to the receiver.

To Log-in:

<\$4A><Receiver ID><\$22><User PIN><V-byte><\$0D>

Table 8-29: Log-in Request Components

Component	Description
<\$4A>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<User PIN>	The users PIN code.
<V-byte>	A validation byte always precedes the end of message indicator and is the only error checking used when sending commands to the receiver through the automation port. The following equations are used to calculate the V-byte: <ol style="list-style-type: none"> 1. Set the V-Byte comparison byte to zero. 2. Add the first (or next) byte of the message to the V-Byte comparison byte. 3. Clear bit seven of the result V-Byte comparison byte. 4. Set bit six of the V-Byte comparison byte. 5. Repeat steps 2, 3, and 4 until the last byte of the event data (up to and including the byte preceding the V-Byte). The range of V-Byte is \$40 to \$7F.
<\$0D>	End of message indicator.

To Log-off:

<\$4B><Receiver ID><\$22><User PIN><V-byte><\$0D>

Table 8-30: Log-off Request Components

Component	Description
<\$4B>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<User PIN>	The user's PIN code.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

Force Hang-up Request

This command is used to immediately hang up the phone line regardless of line card state.

To Force Hang-up:

<\$05><Receiver ID><\$22><LC#><V-byte><\$0D>

Table 8-31: Force Hang-Up Request Components

Component	Description
<\$05>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<LC#>	The line card number.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

Add or Delete a Listen-in Account

If the account number of a control panel is in the listen-in account list, when that control panel calls in to the receiver, the receiver will perform a listen-in operation with that control panel. The maximum length of a listen-in account number is 8 characters and may include wild card characters (# and or *). Each line card can have up to 20 listen-in accounts. (See “Adding a Listen-In Account” and “Clearing a Listen-In Account” in Section 5.

To Add a Listen-in Account:

<\$04><Receiver ID><\$22><LC#><\$22><Act#><V-byte><\$0D>

Table 8-32: Add Listen-in Account Request Components

Component	Description
<\$04>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<LC#>	The line card number.
<\$22>	Separator
<Act#>	Account number to be added to the listen-in account list.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

To Delete a Listen-in Account:

<\$03><Receiver ID><\$22><LC#><\$22><Act#><V-byte><\$0D>

Table 8-33: Delete a Listen-in Account Request Components

Component	Description
<\$03>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<LC#>	The line card number.
<\$22>	Separator
<Act#>	Account number to be deleted from the listen-in account list.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

Common Listen-in Extend/End Request

During a listen-in operation if the call requires additional time you can extend the listen-in period by sending an extend request. At the end of a listen-in call you can end the session by sending an end request.

Some control panels send a listen-in period included in the reported message to the receiver. If the listen-in period is not sent from the control panel, the programmed listen-in period will be used. (See “Listen-In” in Section 5.

To Extend Listen-in:

<\$4C><Receiver ID><\$22><LC#><V-byte><\$0D>

Table 8-34: Extend Listen-in Period Request Components

Component	Description
<\$4C>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<LC#>	The line card number.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

To End a Listen-in Session:

<\$48><Receiver ID><\$22><LC#><V-byte><\$0D>

Table 8-35: End Listen-in Period Request Components

Component	Description
<\$48>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<LC#>	The line card number.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

PBX Listen-in String

When PBX listen-in mode is selected (see “Changing the PBX String” in Section 5), the receiver will transfer the call to the extension X string. The PBX string can also be programmed in to the receiver from the automation computer.

To Create or Edit PBX String:

<\$49><Receiver ID><\$22><LC#><\$22><PBX String><V-byte><\$0D>

Table 8-36: Create PBX Listen-in String Request Components

Component	Description
<\$49>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<LC#>	The line card number.
<\$22>	Separator
<PBX String>	PBX string to transfer a call to a specified extension. See Table 5-13 for valid string characters.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

Add or Delete a Trap Account

The receiver provides a trapping feature that allows the automation computer to trap certain account numbers when these account numbers are identified in the trap account list. Trapping is typically done to panels that are to be sent to an up-load/down-load computer for programming.

To Add a Trap Account:

<\$02><Receiver ID><\$22><LC#><\$22><Act#><V-byte><\$0D>

Table 8-37: Add Trap Account Request Components

Component	Description
<\$02>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<LC#>	The line card number.
<\$22>	Separator
<Act#>	Trap account number to be added to the trap account list.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

To Delete a Trap Account:

<\$01><Receiver ID><\$22><LC#><\$22><Act#><V-byte><\$0D>

Table 8-38: Delete Trap Account Request Components

Component	Description
<\$01>	Command request identifier. See Table 8-28.
<Receiver ID>	Receiver ID number. 1 or 2 ASCII digits.
<\$22>	Separator
<LC#>	The line card number.
<\$22>	Separator
<Act#>	Trap account number to be deleted from the trap account list.
<V-byte>	Validation Byte (V-byte). See Table 8-29.
<\$0D>	End of message indicator.

Glossary

AC

Alternating current.

access code

A group of numbers and/or letters that when properly entered allow authorized entry into a specific area without causing an alarm.

account

A subscriber to an alarm company's services.

account number

A character string that identifies the control panel to the central station

AC failure

A condition that results after a specific time without AC power, determined by the software. The power indicator flashes, showing the back-up battery is working.

ACK

Acknowledgment. A control signal used to complete a handshaking sequence in telecommunications. See also NACK

AH

Amp hour (back-up battery capacity).

alarm

A warning by signal or sound, used to get the attention of users and/or the central station.

alarm report, alarm reporting

An alarm message sent by a control panel to the central station. A tripped sensor sends a signal to the control panel, which in turn sends an alarm report to the central station.

alarm system

A device which detects fire, access, and emergency alarm conditions and alerts the user and central station.

alarm type

The alarm state that is initiated when a particular sensor or emergency button is activated. Alarm types include police, auxiliary (medical), fire, and silent.

alphanumeric

Consisting of letters and numbers. As opposed to numeric.

ampere, amp, amps, A

The rate of electrical flow in a circuit.

annunciator

The element of an alarm system that alerts humans to the status of the system such as a bell, siren, or strobe light.

annunciation

A sound or light emitted to announce activity or report system status.

approval

The certification that a device meets specific standards such as the FCC and UL.

ASCII (American Standard Code for Information Interchange)

An acronym for American Standard Code for Information Interchange; a widely-used 7-bit binary code for storing data, often used to transfer data from one system to an incompatible system.

audible alarm

A signaling device which is within the user's hearing range.

automatic mode

All event information is sent directly to the automation computer and must be acknowledged by the automation software.

auxiliary

Supplementing, subsidiary, or additional.

auxiliary relay

Relay output used to control external alarm signaling devices.

back-up battery

An optional kit that provides a back-up DC power source if the primary AC power to the receiver fails.

back-up battery mode, supply

An operation status which is initiated when the receiver is programmed to shutdown after four hours without AC power or when a low-battery is detected while on battery power. The back-up battery supplies standby power while in back-up battery mode.

back-up time

The period of time the receiver will operate from battery power, without restoral of AC power, using a specific battery capacity with sufficient charge.

battery

A storage device for and source of direct current.

battery test

A diagnostic feature that checks the condition of the receiver panel back-up battery.

battery monitor, battery monitoring

The process by which the receiver bypasses AC power and tests the battery's direct current voltage periodically.

baud, baud rate

The number of changes in an electrical line per second. Often used as measurement of printer or modem speed.

BFSK

A form of binary frequency modulation commonly used in low speed modems in which the two states of the signal are transmitted as two separate frequencies. See also FSK.

billing delay

A delay of two seconds will be inserted at the beginning of each incoming call.

buffer

See history buffer.

bus

A common channel, or pathway, between hardware devices.

bypass

Ignore. Such as bypassing unused devices.

byte

An 8-bit sequence of binary digits. Each byte corresponds to 1 character of data, representing a single letter, number, or symbol.

card

See line card.

call from panel

The complete data stream from a panel to the CS-5000.

central station

A central station is defined by UL as a monitoring station that observes certain physical characteristics and operating guidelines.

central station lock

A security code is required during communication.

central station receiver

The equipment licensed to receive transmissions, monitor control panel alarm and status reports, and notify operators of emergency situations.

central station operator

The individual responsible for operating the central station monitoring device and responding to alarm reports.

central station report

The message sent from a control panel over a phone line when an alarm, trouble, or phone test occurs.

checksum

A method of qualifying that data was transmitted without errors by summing the bytes of data together in some way.

CIS

Computer Interface Standard

closing report

The control panel message sent to the central station when the system is armed, or rearmed to another level.

communication group

ITI has separated the different types of communication by handshake type. These handshake types are assigned in a numbered order.

comlock

Communications lock. A method of ensuring that customer accounts are not lost to other dealers. Comlock is used to change a panels security code (SCode) so that the panel will only communicate with a receiver with a matching security code. See also, SCode.

com port, serial port

Computer communications connection. PC serial port.

Contact ID

Ademco event reporting format standard.

control panel

The central point of an alarm system monitoring the detection devices and activating any number of signaling devices. Also known as the Central Processing Unit, CPU, Master Processing Unit, and Panel.

dry contact

Contacts that are used as a switching device, as in a relay. The externally switched circuit must have its own source of power and is merely routed through the dry contacts.

DACT

Digital Alarm Communicator Transmitters.

DB-9, 15, 25, 50

A D type connector with 9, 15, 25, or 50 pins or conductors.

DC

Direct current. An electric current that flows in one direction. As opposed to AC.

DCS

Digital Communications Standard. See also SIA.

default, default settings

Factory settings or values.

DTE

Data Terminal Equipment.

DTMF (Dual tone multi-frequency)

In a telephone system, using two simultaneous voice band tones for dialing. Also called tone dialing.

DOC (Department of Communications) approval

Canada's equivalent to FCC approval. The certification that a device meets specific DOC standards.

download, downloader

PC-based software which allows uploading and downloading of receiver setup (programming) to and from any modem equipped personal computer.

echo suppression

A 2025 Hz signal with a two second duration that is sent at the start of the connection sequence to disable the phone system echo suppression equipment.

EEPROM (Electrically Erasable Programmable Read-Only Memory)

Electrically erasable programmable read-only memory. This memory chip contains the installer programmed information.

EPROM (Erasable Programmable Read-Only Memory)

Programmable read-only memory that is read-only in normal use but that can be erased by a special technique and then reprogrammed.

event data

The actual data (alarms, troubles, and so on) that are part of a call from a panel.

face plate

Removable front of CS-5000.

false alarm

A signal from a monitoring service subscriber indicating an emergency condition when no emergency exists.

false dispatch

A request for emergency service to a location where no emergency exists.

FCC (Federal Communications Commission)

Board of commissioners having the power to regulate all electrical communications systems originating in the United States, including radio, television, facsimile, telegraph, telephone, and cable systems.

FCC approval

The certification that a device meets specific FCC standards.

fields, data fields

Sections of display or data record.

flash memory

Read/write memory capable of retaining stored information with power off.

Fletcher's checksum

A method of qualifying that data was transmitted without errors by summing the data bytes together into two checksum bytes that are then divided by 255. See also checksum.

format

The arrangement by which data are stored, transmitted, or displayed.

Form C contact

Single pole double throw contact or relay, providing both normally open and normally closed outputs.

FSK (Frequency Shift Keying)

A form of frequency modulation commonly used in low speed modems in which the two states of the signal are transmitted as two separate frequencies. See also BFSK.

full duplex

A multiplex system that can simultaneously transmit in both directions on a transmission line.

Grade A, AA, B, BB or C

A UL rating of a system.

ground, earth ground

The part of a circuit that is connected to a metallic object buried in the earth. The ground connection is usually designated as negative.

handshake

A process in which predetermined arrangements of characters are exchanged by the receiving and transmitting equipment to establish synchronization.

Heart Beat

A supervisory signal for continually testing the communication link between the automation computer and the receiver.

hex

Hexadecimal. The base-16 number system, which is used to condense binary-based codes, such as bytes, for more efficient computer processing. Denoted by preceding \$ symbol.

history buffer

A history storage containing the date, time, and user ID for each event. The history is limited by the buffer size and is refreshed by erasing events on a first in/first out basis.

hook flash

Places an incoming call on hold by completing a quick on-/off-hook on the phone line. Also see PBX.

hunt group

A group of associated telephone lines within which an incoming call is automatically routed to an idle (not busy) telephone line for completion.

initialization string

A list of ASCII characters used to customize the output of a receiver port connected device.

installer access code

The access code that lets the installer operate and program all features of the system. See operator access code.

installer profile

Part of access code allowing both operation and programming. See also operator profile.

initialize, reinitialize

To set memory addresses or contents of storage to zero or other starting values at prescribed points in the operation of a computer routine.

kissoff

A signal sent from the central station to the control panel, confirming that a message was received. Both sides release the phone line. Siren shutoff confirms a successful central station report.

LCD

Liquid crystal display.

LED (Light-Emitting Diode)

A semiconductor chip that gives off visible or infrared light when activated. See also indicator light.

line card

Line card for phone lines.

line ring

One of two connections to the telephone company. Line ring is typically the red wire paired with line tip, the green wire. A qualified technician should connect these two wires to provide phone service. Note: Line ring normally has a nominal -48 volts DC relative to line tip.

line tip

See line ring.

listen-in

Listen-in is the ability to listen in to what is happening real-time from the central station to a remote location. This can help the central station operator determine if s/he should dispatch for a particular alarm situation.

LC Error

Line card communication error message.

log

To record in memory and/or print to external printer.

log-in, log out

Process of entering access code to start or end a session.

log only mode

All event information is internally acknowledged and put into event history buffer.

low battery

A condition that results when the back-up battery charge level weakens, and the receiver's power requirements cannot be sufficiently supplied by the back-up battery.

manual mode

Requires manual acknowledgments of each call or event from an operator.

MCPU

Master Central Processing Unit.

main menu

The main menu will be displayed as either <Installer Menu> or <Operator Menu>.

message

Any data the CS-5000 is passing to an automation computer. The term "message" is reserved for discussions of the string as a whole.

mode

A method of operation.

motherboard

The primary electronic printed circuit board in a piece of equipment.

ms

Milliseconds.

NACK

No acknowledgment. See also ACK.

NEC

National Electrical Code.

NFPA

National Fire Protection Association.

normal mode

The receiver's operating mode when it is not in the programming mode. When in normal mode, the receiver displays alarm report information on the display "logo" screen.

normally closed, N.C.

An unactivated switch or contact connection that allows current to flow through it.

normally open, N.O.

An unactivated switch or contact connection that does not allow current to flow through it.

null modem cable

Special serial cable used to simulate modem connections.

off-hook

Activated. Busy or in use. A phone handset is off-hook, but a communication line is busy or in use. See also on-hook.

on-hook

Not active. Not busy or not connected. A phone handset is on-hook, but a communication line is not busy or not connected. See also off-hook.

opening report

The message sent to the central station when the system is disarmed. For example, when a store is opened.

operator profile

Part of access code allowing operation only. See also installer profile.

operator access code

The access code that lets the operator operate the system. See installer access code.

panel

Security system control panel.

parallel port

Industry standard printer communications cable and connections. Also known as "Centronics parallel" type.

parity bit

Additional bits added to a character code or string of codes to provide a means for determining if transmitted information has been received correctly.

PBX (Exchange, Private Branch)

A small manual telephone switchboard providing local and trunked telephone service on a subscriber's premises. Also see hook flash.

PC

An abbreviation for personal computer; a microcomputer that serves one user.

phantom signals

Various communication format signals that can be used to test the receiver or automation software configurations.

phone

Telephone.

phone lock

A panel configuration that will not allow the installer to change the panel's phone numbers unless the installer enters program mode with the correct dealer access code.

PIN

Abbreviation for Personal Identification Number. PINs are used to log in and out of the receiver.

programming mode

The type of control panel operation that allows system defaults and values to be programmed with user defined values.

profile

See operator and installer profile.

protocol

The rules for communications between devices, giving a means to control the orderly communication of information between devices.

port

An interface on a computer system to allow the connection of a modem or data terminal.

PZT

Abbreviation for a piezo alert transmitting sounder.

que, queue

A lineup of operations or input signals in a system.

RAM

An abbreviation for Random Access Memory; same as memory. Contents of RAM may be retrieved and altered

by the user.

RAM test, memory test

The self-test of RAM when a receiver is powered up for the first time.

receiver

The central station receiver assembly.

relay

An electrically operated switch. On a receiver, the relay is used to operate external bells or strobes.

report

To communicate information, usually in detail.

RJ-11 jack, phone jack

A phone port connecting the receiver to phone equipment.

RMA

Returned Material Authorization.

ROM

An abbreviation for Read Only Memory; a permanent memory.

RS-232

An Electronics Industry Association (EIA) specification for asynchronous communications that use a 9 or 25 pin DB connector.

Telco

Telephone company.

safe mode

Mode used to reset User #01 access code back to the default of 5000 regardless of its present setting.

SIA (Security Industry Association)

The association that develops equipment standards, has adopted warranty return and repair policies, sponsors market research, and participates in false alarm prevention activities.

SBUS

Serial Bus interface for future expansion.

SCode, Security Code

The number assigned that is used to authorize communications between the panel and the receiver. See also, Comlock.

shutdown, shutdown mode

An operation status initiated when the receiver detects a low back-up battery after AC power is interrupted. At this point the receiver enters shutdown mode, storing programmed information in RAM, and maintaining a low-power consumption state.

siren

A sounding device capable of loud alarm sounds, used to alert alarm conditions.

standby, standby mode, standby power

The receiver's energy conservation mode of operation.

supervisory

A signal indicating the need for action in connection with the supervision of guard tours, fire suppression systems or equipment, or with the maintenance features of related systems.

SYS Error

System event related error message.

system message

Messages the CS-5000 sends to an automation computer about its internal status.

trap

Mode used by the receiver to capture the calling panel for programming.

trap list

A list of panel account numbers that the receiver will route to a downloader for programming.

threshold

The point or value to be measured against.

tie wrap

Plastic device for securing wire bundles.

time-out

A time interval allotted for certain operations to occur.

toggle

To switch between two states.

UL-listed

The certification that a device meets specific UL standards.

UPS

Uninterrupted Power Supply.

V

Volts.

wait

A pause while testing; the pause will end when the desired state occurs or when the specified time elapses.

watt

A unit of electrical power. One watt is equal to one volt of electrical pressure multiplied by one amp of current.

XID

Extended panel Identification code.

zones

Small subdivision into which large areas are divided, This permits selective access to some zones while maintaining other zones secure; and permits pinpointing the specific location from which an alarm signal is transmitted.

Appendix A

Programming Quick Chart

Table A-1: Programming Quick Chart

Program Mode Options	Choices	Choices	Choices	Choices	Comments	
General Options	Operation Mode	Manual			See "Modes of Operation" in Section 4.	
		Automatic				
		Log Only				
	Language	English				See "Displays" in Section 4.
		español				
	Time Display	AMPM				Not available at this time.
		24Hr				
	Date Display	M\D\Y				See "Displays" in Section 4.
		D·M·Y				
		Y·M·D				
	Day light Savings	Yes				M = month, D = day, Y = year.
		No				
	Display Options	Attempts			Yes or No (Default))	See "Displays" in Section 4.
No						
CPU Time					Yes or No (Default))	Show number of dialing attempts made by the reporting panel before communication was successful.
CPU Type					Yes or No (Default))	Show the CPU time reporting.
Panel Rev. (Flags)					Yes or No (Default))	Show the CPU type reporting.
Arming Level					Yes or No (Default))	Show the software revision of the reporting panel.
Meter Acct 5					Yes or No (Default))	Show the arming level of the reporting panel.
Meter Acct 12				Yes or No (Default))	Use special 5-digit MeterMinder account number.	
						No
Hold Last Event				Yes or No (Default))	Use special 12-digit MeterMinder account number.	
						No
Hold Last Event				Yes or No (Default))	See "Displays" in Section 4.	
						No

Table A-1: Programming Quick Chart (Continued)

Program Mode Options	Choices	Choices	Choices	Choices	Comments
General Options (Continued)			Com1	Unused, Automation, Printer	Rules for Port Configuration:
			Com2	Unused, [Auto Bkp], [Auto Bkp Pm], {Print Bkp}, Diag, MeterMinder, Printer	1. Functions in Brackets [] will not appear unless "Automation" is selected for Com1 function.
		Port Functions	Par (Parallel)	Unused, Printer; [Auto Bkp Pm], Printer, Diag	2. Functions in { } will not appear unless "Printer" is selected in Com1 or Par.
			Baud	19200, 9600, 7200, 4800, 2400, 1200, 600, 300, 110	3. A function may be selected only once in the 3 ports (only one printer, only one Diag, and so on).
			D (# Data Bits)	8, 7	4. All ports may be configured "Unused".
			S (# Stop bits)	1 or 2	See "Communications" in Section 5.
		Com Port1	P (Parity)	Even, Odd, No, Space, Mark, Hdwtr, None	
			F (Flow Control)		
			Init Str (Initialization String)		Enter ASCII characters for the Escape command sequence desired. For example: Set the page size or number of lines per page for a serial printer.
		Com Port2	Same as Com1		
		Par Port	Edit Init String		Enter or edit an escape command sequence. For example: Set the page size or number of lines per page for a serial printer.
			Format	SIA-CIS, SIA-2000 (pending), ITI Gen, ITIComp	See "Communications" in Section 5.
		Automation Cfg.	HeartBeat	Y (Yes, enabled) N (No, disabled)	
			Time (of HeartBeat)	10-600 seconds	
			AckTimeout	01-600 seconds	

Table A-1: Programming Quick Chart (Continued)

Program Mode Options	Choices	Choices	Choices	Comments
General Options (Continued)	Automation Cfg. (Continued)	ITI	Log Records XID SupCh[] NoDataCh[] GenericRev Yes or No	Displayed only if ITI Gen or ITI Comp automation formats are selected. See Table 5-7 for details.
		Printer Bkp Printer Auto Comp Bkp Auto Comp MeterMinder Battery Line Card Line Fault AC Power Buffer Full Listen In Call Pending	Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No		See "Communications" in Section 5. Yes = alert on trouble indication See "UL Requirements" in Section 2 for UL requirements on listen-in.
General Options (Continued)	Communications (Continued)	Annunciator Configuration	Printer Bkp Printer Auto Comp Bkp Auto Comp MeterMinder Battery Line Card Line Fault AC Power Buffer Full Listen In Call Pending	See "Communications" in Section 5. Yes = alert on trouble indication See "UL Requirements" in Section 2 for UL requirements on listen-in.
			Printer Bkp Printer Auto Comp Bkp Auto Comp MeterMinder Battery Line Card Line Fault AC Power Buffer Full Listen In Call Pending		Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No
General Options (Continued)	Aux Relay Cfg	Aux Relay Cfg	Printer Bkp Printer Auto Comp Bkp Auto Comp MeterMinder Battery Line Card Line Fault AC Power Buffer Full Listen In Call Pending	See "Communications" in Section 5. Yes = alert on trouble indication See "UL Requirements" in Section 2 for UL requirements on listen-in.
			Printer Bkp Printer Auto Comp Bkp Auto Comp MeterMinder Battery Line Card Line Fault AC Power Buffer Full Listen In Call Pending		Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No Yes or No

Table A-1: Programming Quick Chart (Continued)

Program Mode Options	Choices	Choices	Choices	Choices	Comments	
General Options (Continued)	System Options	No Battery Bkp	Battery Bkp		See "System Options" in Section 5.	
		Battery Backup Cfg	Battery Bkp		See "System Options" in Section 5.	
		Receiver ID	DC Bkp		No charging current. See "System Options" in Section 5.	
	Strip/Send Bad	01-99			See "System Options" in Section 5.	
		Strip Bad (Default)			Strip bad data before sending good.	
		Send Bad			Send bad data with good.	
		Auxiliary Relay	DeEnergize		See "Configuring the Auxiliary Relay Outputs" in Section 5.	
	Message Queue Opt.		On: 10 to 99%		75%	Set the percentage of how full the message queue must be before a "Message Queue Warning" will occur.
		Wrn Lvl	Off: 01 to 90 %		50%	What percentage the queue must go back down to before a "Message Queue Warning Restore" message will be sent.
		Max Buf Limit	500 to 5000		1000	Used to set the maximum number of bytes in a call. This number is used to determine if a call is a runaway call.
Add Line Card		Use Defaults			See "Line Card Menu" in Section 5.	
Line Card Menu	Line Card #	Copy Existing				
		Handshake Sequence No.		1 through 6	See "Line Card Menu" in Section 5.	
	Edit Line card	Handshake Sequence	Handshake Group		See table 5-10 for details	
			Handshake Delay		0-255 in 50ms periods	
			Handshake Duration		0-255 in 10ms periods	
			Handshake Wait		0-255 in 50ms periods	
			Handshake Ack Duration		0-255 in 10ms periods	

Table A-1: Programming Quick Chart (Continued)

Program Mode Options	Choices	Choices	Choices	Choices	Comments
Line Card Menu (Continued)	Edit Line Card (Continued)	Line Options	Direct	Y (yes) N (no)	Y = dedicated or direct connect phone line. N = used for standard phone lines.
			Number of Rings	0-255	See "Line Card Menu" in Section 5.
			On Time	0-255 in 50ms periods	
			Off Time	0-255 in 50ms periods	
			Threshold	1-15 in 1.64 VDC steps	
			Sample Time	0-255 seconds.	
			Listen-In Mode	Common, PBX, Not Used	See "Line Card Menu" in Section 5.
			PBX string edit screen	Up to 20 characters.	See "UL Requirements" in Section 5 for UL requirements on listen-in.
			Timeout	0-255 seconds?	
			Listen-In account edit screen	Add, Edit, or Clear Account (up to 20 accounts).	
Trap List	Trap List	Add Account	Up to 20 accounts.	See "Line Card Menu" in Section 5.	
		Edit Account			
		Clear Account	Highlight with equal sign and press enter.		
Misc. Line Options	Misc. Line Options	Echo Suppress	Y (yes) N (no)	See "Line Card Menu" in Section 5.	
		Caller ID	Y (yes) N (no)		
		Billing Delay	On Off		
		Hunt Group	00-99		
		Line Card ID	000 (default) -999		

Table A-1: Programming Quick Chart (Continued)

Program Mode Options	Choices	Choices	Choices	Choices	Comments						
Line Card Menu (Continued)	Edit Line Card (Continued)	ITI Options	ITI SCode Menus	Add Acct./SCode	Used for ITI panels with Central Station Lock initialized. See "Line Card Menu" in Section 5.						
				Edit Acct./SCode							
				Clear Acct./SCode							
				Add SCode Table							
				Clear SCode Table							
				Always							
				Requested							
				Y (yes)							
				N (no)							
				Instant, One-ring, dial-back							
User List	Add User	User Name	Choose Line Card #	Up to 16 characters.	Copies selected line card and uses default settings. Copies selected line card and existing settings. Clears (deletes) selected line card. Views selected line card settings. See "User List" in Section 5.						
				4-9 digits							
				Installer/ Operator							
				User name, code and profile							
				Edit User		List of users	Choose Line Card #	View Line Card	User Code		
										List of users	User Profile
				Clear User		List of users					

Table A-1: Programming Quick Chart (Continued)

Program Mode Options	Choices	Choices	Choices	Choices	Comments	
Diagnostics	Phantom Menu				Troubleshooting/Diagnostics tools.	
	Message Queue					
	Event Log					
	Format Raw Hex					
	Line Card Debug Mode	Choose Line Card #				
	Line Card Statistics					
	Port Status		Com Port 1			
			Com Port 2			
			Para Port			

Appendix B

US ASCII Character Codes

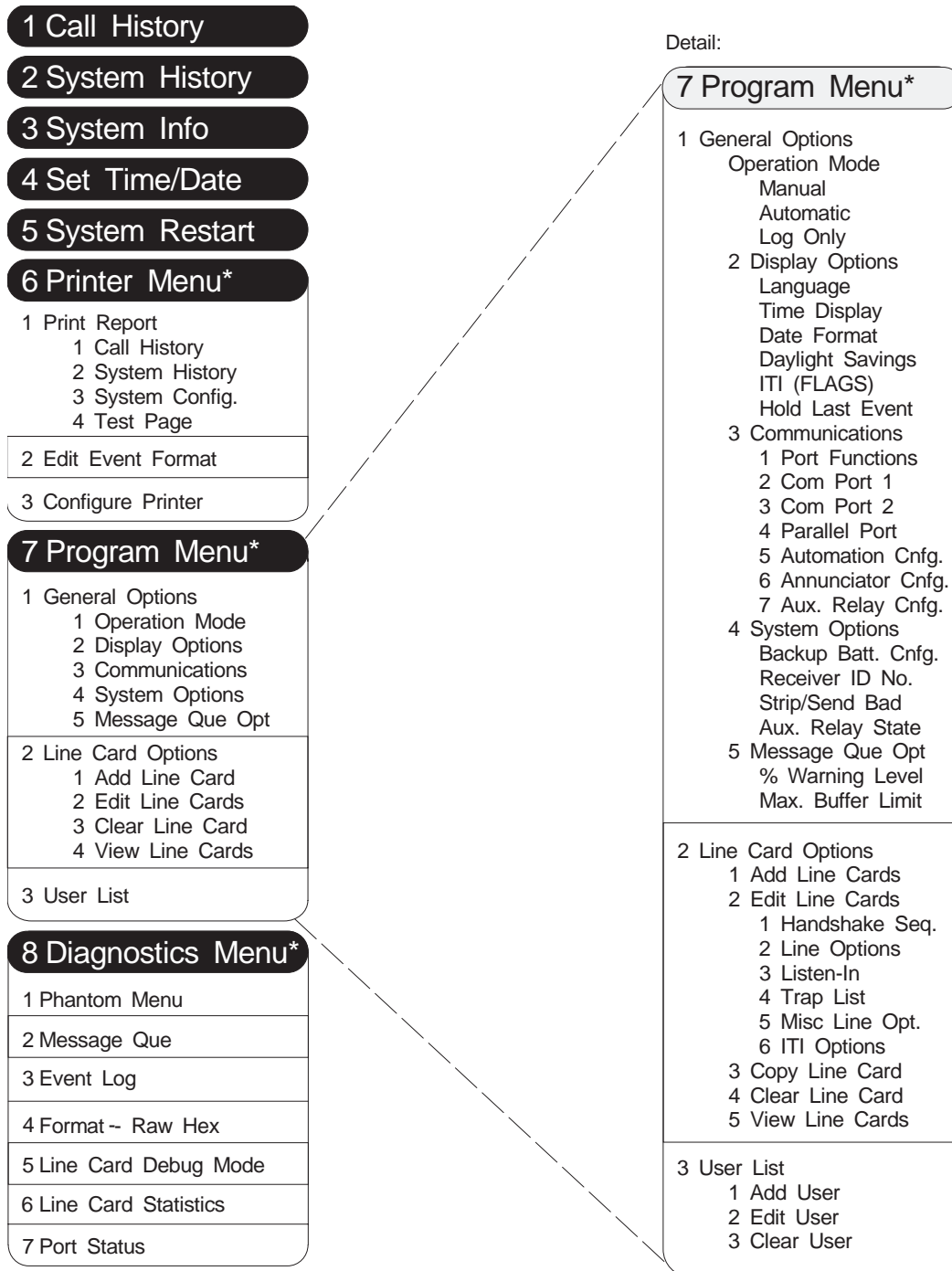
The following table displays the US ASCII character and its hexadecimal code equivalent.

Table B-1 US ASCII Character Codes

Character	Hex	Character	Hex	Character	Hex	Character	Hex	Character	Hex
NUL	00	DC4	14	(	28	<	3C	Q/q	51/71
SOH	01	NACK	15	)	29	=	3D	R/r	52/72
STX	02	SYN	16	*	2A	>	3E	S/s	53/73
ETX	03	ETB	17	+	2B	?	3F	T/t	54/74
EOT	04	CAN	18	,	2C	@	40	U/u	55/75
ENQ	05	EM	19	-	2D	A/a	41/61	V/v	56/76
ACK	06	SUB	1A	.	2E	B/b	42/62	W/w	57/77
BEL	07	ESC	1B	/	2F	C/c	43/63	X/x	58/78
BS	08	FS	1C	0	30	D/d	44/64	Y/y	59/79
HT	09	GS	1D	1	31	E/e	45/65	Z/z	5A/7A
LF	0A	RS	1E	2	32	F/f	46/66	[	5B
VT	0B	US	1F	3	33	G/g	47/67	\	5C
FF	0C	SPACE	20	4	34	H/h	48/68	]	5D
CR	0D	!	21	5	35	I/i	49/69	/	5E
S0	0E	“	22	6	36	J/j	4A/6A	—	5F
S1	0F	#	23	7	37	K/k	4B/6B	‘	60
DLE	10	\$	24	8	38	L/l	4C/6C	{	7B
DC1	11	%	25	9	39	M/m	4D/6D	|	7C
DC2	12	&	26	:	3A	N/n	4E/6E	}	7D
DC3	13	‘	27	;	3B	O/o	4F/6F	~	7E
						P/p	50/70	DEL	7F

Appendix C

CS-5000 Central Station Receiver Menu Map



Press:
 ENTER - to select item
 v - to skip to next item
 ^ - to skip to previous item
 < - to exit menu

*Denotes installer profile only

Appendix D

CS-5000 Specifications

Approvals/Listings/Registration

- UL-listed (UL 864) for residential and commercial fire and burglary central station service.
- ULC-listed (UL-Canada)
- Meets UL and IEC 801 Level 3 transient requirements.
- Meets FCC part 15 and part 68 for commercial applications.
FCC #AC6USA-31519-AL-E
- DOC Canadian Department of Communications approval.
- DOC #7013-SIL-1

Supported Panel Communications Formats

Modem Formats (Bell 103, 212)

- SIA-2000 (*pending*), ITI® Advent™
- SIA-1993, SIA- DCS Level 2+ (SIA F1), ITI® Concord™, SIMON™ II
- ITI® Commander® 2000, LifeGuard®, UltraGuard™, CareTaker® EX
- ITI® Commander®, Euro Commander®, RF Commander®, HarborGuard™
- ITI® Caretaker® Plus, Security Pro™ 4000
- ITI® METERMINDER®
- ITI® FONSAFE™, PhoneWatch™
- ITI® SIMON™
- ITI® SX-V® Special, Rollins System 6®
- ITI® SX-IVB, -V
- ITI® SX-III, -IVA

DTMF Formats

- Contact ID™
- ITI® Advent™
- ITI® Concord™
- ITI® SIMON™ II
- Ademco®

FSK Formats (1850Hz and 2150 Hz)

- SIA F2 (BFSK)

Tone Burst Formats (1800, 1900 Hz)

- SIA P1, Franklin® 3+1
- SIA P2
- SIA P3, 4+2
- SIA P4, Radionics® 3+1 with Checksum
- Radionics® Hex pulses
- 3+1 Standard
- 3+1 Extended
- Sescoa® 3+1, Franklin® 3+1

Supported Computer Automation Communication Protocols

SIA

- SIA-CIS

ITI

- ITI® Generic
- ITI® Comp
- ITI® METERMINDER®

Operation/Programming

- Receiver throughput: Continuous calls from 12 line cards simultaneously receiving SIA DCS events at 300 baud.
- 500 call minimum call history. (Actual number of calls depends on call size and number of message queue system events.)
- Built-in test and diagnostics
- Up to 40 unique programming user passwords with up to two user profiles.
- Up to 20 audio accounts and up to 20 trap accounts per line card.
- Up to 8 character alphanumeric account numbers.
- Up to 5 character alphanumeric account security codes.
- “#” and “*” account number wild card characters.
- Mitsubishi M7700 16 bit microprocessor with up to 8M of Flash or EPROM program memory and 128K of RAM.
- On-board FLASH memory operating parameter storage.
- Local (front panel) or remote (automation port) operating parameter programming.
- Standard “TELCO” and special PBX line card listen-in modes of operation.
- Automatic line card interpretation of Modem, FSK/BFSK, Tone Burst, and DTMF formats.

Inputs/Outputs

Annunciator Output

- “Form C” relay annunciator normally open and normally closed dry contacts rated 24VDC at 1A maximum.

Line Cards/Phones

- Supervised line cards with 0-255 seconds (programmable) fault detection.
- Front mounted, dual-line RJ-11 line card phone jacks.
- 12 line card capacity.
- Line cards (and phone lines) are front panel accessible.
- Line card operating code resides in EPROM and in RAM, controlled by a Mitsubishi 3800 processor. RAM operating code can be downloaded from the master via the SBUS port.
- Four bit DAC line monitoring with a measurement resolution to 1.64 volts over a range of approximately 1.64 to 24.5 volts.
- Optional line monitor disable for CDPD “Cellular” interface.
- Optional “Echo-Cancel” enable via the modem formats triggers echo cancellation in local phone subscriber loops.

Serial Communications Ports

- Two (primary and backup) supervised RS-232C (DB-9M) serial ports (IBM AT compatible). If the primary (computer automation) port fails, information will automatically be sent to the backup port if it has been selected.
- 1K call event buffer (memory) prevents loss of events due to a temporarily disconnected cable or non-responsive device.

CS-5000 Specifications

Parallel Printer Port

- One supervised “Centronics” type (DB-25F) parallel printer port (IBM AT compatible).
- Printer output can be prefaced with an optional receiver identification string.
- 1K parallel port buffering prevents loss of events due to a temporarily disconnected cable or non-responsive device.
- Backup printer capability available via either serial or parallel port connection.

System Future Expansion Ports

Dual (primary and secondary) RS-485 type SBUS (DIN9F) future expansion ports.

User Interface

Phone Line Status

Three red LED line card indicators show Active/Ring, Fault, and Listen-in status.

System Status

Four green LEDs indicate AC Power, System Fault, Operator Logged-In, and Call Pending status.

Display

- Front panel 4-line by 20-character LCD alphanumeric display provides system status indication.
- Display back-lighting.

Touchpad

Simple, 19-button operating and programming touchpad with visual and audio feedback.

Power Supply

AC Power

- Switch selectable 120 or 220V ((10%), 60 Hz, 100VA AC power supply, fused at 3A.
- Built-in AC power monitoring with annunciation of fault within 60 sec.

Backup Battery System

- DC Power Required; 12VDC at 1.75A maximum.
- 12VDC, 7 AH, lead acid battery provides a minimum of four hours of backup operation. (Backup battery does not provide standby time required for UL and NFPA standards. A UPS [uninterruptable power supply], listed for Fire Protection Signaling Use, must be utilized when standby power is required.)
- Built-in backup battery condition monitoring with fault annunciation within 60 sec.
- Backup battery connection short and reversal protection.

Physical Description

Color

- Black and silver.

Dimensions

- 5.25” H x 19” W x 11.5” D. (13.34 cm H x 48.26 cm W x 29.21 cm D.)

Shipping Weight

- 30 lbs (13.6 kg).

Other

- Rack mountable, anodized aluminum desktop chassis.
- “Tool-less” front panel access to all changeable cards.
- Holds up to 12 line cards.

Environmental

Operating Temperature

- 32° to 120° F.(0° to 49° C.)

Storage Temperature

- -4.0° to 158° F. (-20° to 70° C.)

Maximum Humidity

- 85% non-condensing, non-corrosive
- Indoor use only

Warranty

Two-year limited warranty

Optional Accessories (partial list)

Line Card (ITI 13-417)

Expands phone line capacity (one included with receiver).

Backup Battery (Powersonic Model 1270)

Provides power failure backup power. (Backup battery does not provide standby time required for UL and NFPA standards. A UPS [uninterruptable power supply], listed for Fire Protection Signaling Use, must be utilized when standby power is required.)

Printer (Okidata Microline 320 Turbo, 9-pin)

Provides hardcopy report output.

Appendix E

Automation Output Version Control

The CS-4000 receiver used a channel command option called VERSION to control the output of new Event codes to the automation computer. The CS-5000 uses the version control feature on the automation configuration menu to help coordinate the reporting abilities of the CS-5000 with that of the automation computer software.

The CS-5000 version control feature defaults to 6.1. Version 6.1 outputs the same codes as the CS-4000 software version 6.1 and does not include any new event codes.

When the automation computer software is updated to support the new codes, change the version control feature to 6.2. (To change the version, see “Setting Automation Communication” in Section 5.) Version 6.2 allows the new event codes to be sent to the automation software, which in turn will display the event. Once the version control feature is set to 6.2, the CS-5000 is able to send 8 new event codes.

Table E-1 New Event Codes

Generic Event Code	Event Description
Q	AC Power Failure
H	AC Power Restore
M	System Low Battery
U	Burglary Alarm
X	Medical/Auxiliary Panic Alarms
Y	Police Panic Alarms
Z	Fire Panic Alarms
!	Undefined Event—Sent for assorted test signals and other non-alarm reports.

Interpreting 3-Digit User Codes and Zone Numbers

To meet Contact ID and SIA reporting standards, the CS-5000 version control feature 6.2 combines the user and zone bytes. The combination of bytes allows 3-digit zone and user numbers to be displayed.

This applies only to Contact ID and SIA formats—all other reporting formats send user and zone information as before.

Whether the number represents user information or zone information is determined by the type of event.

Panel ID Characters

The CS-5000 identifies Contact ID, SIA-DCS, and SIA-2000 reporting formats with three panel ID characters (Table E-1).

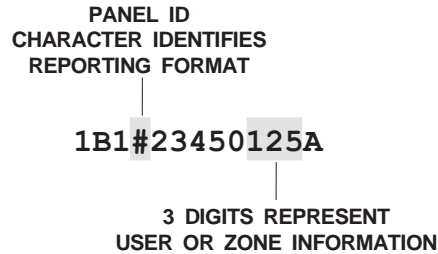


Figure E-1 Panel ID Signals Use of Three Digits

The appearance of any of these panel ID characters in the report record serves as a signal that the 3-digit number is utilizing bytes 10, 11, and 12 for either user or zone information.

Table E-2 Panel ID Characters

Reporting Format	Panel ID
Contact ID	%
SIA-DCS	#
SIA-2000 (pending)	&

When Zone Information is Represented

The 3 digits represent zone information in all cases except Opening or Closing reports.

If:

- the panel ID character is #, %, or &, and
- the event code of the Generic output is *anything but* an opening or closing report, then the three digits represent zone information.

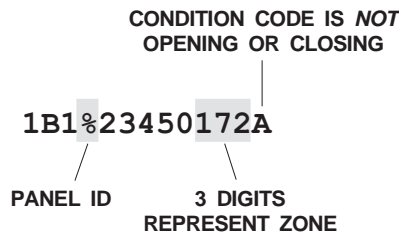


Figure E-2 Three Digits Representing Zone

The example above shows an alarm received from a panel using the Contact ID format. The three digits represent zone 172.

When User Information is Represented

The only instance in which the three digits will represent user information is in the case of Opening or Closing reports.

If:

- the version control feature of the CS-5000 is set to 6.2, and
 - the panel ID character is #, %, or &, and
 - the event code of the Generic output is C (Closing) or O (Opening), then
- the three digits represent user information.

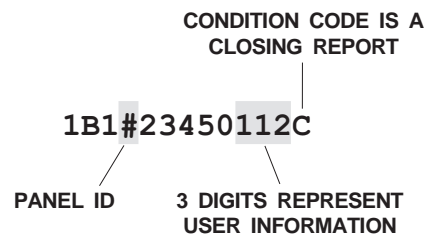


Figure E-3 Three Digits Representing User Information

The example above shows a closing report received from a panel using the SIA format. The three digits represent user 112.

Signs of Incompatibility

Problems can arise if the CS-5000 version control feature does not match the automation computer software:

- Only the last two digits of a 3-digit zone number will be interpreted.
- User information will not be interpreted correctly.

Reporting Format Codes

Table E-3 and Table E-4 give comprehensive information regarding SIA-DCS and Contact ID data codes.

Each table:

- lists all the SIA-DCS (Table E-3) or Contact ID (Table E-4) data codes and a short description of each.
- indicates which data codes ITI panels send.
- indicates which data codes the Caddax panel sends.
- lists the condition code in the Generic output stream for each data code.
- lists the condition codes in the ITICOMP output stream for each data code.

Table E-3 SIA-DCS Format

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
AN	Analog Restoral				W	CR
AR	AC Restoral	Yes	Yes	Yes	W	CH
AS	Analog Service				J	CJ
AT	AC Trouble	Yes	Yes	Yes	J / Q	CP
BA	Burglary Alarm	Yes	Yes	Yes	A / U	CG
BB	Burglary Bypass	Yes	Yes	Yes	B	CB
BC	Burglary Cancel	Yes			R	CX
BH	Burglary Alarm Restore		Yes		R	CX
BJ	Burglary Trouble Restore		Yes		W	CR
BM	Burglary Alarm - Cross Point				A / U	CG
BR	Burglary Restoral	Yes	Yes	Yes	W	CR
BS	Burglary Supervisory	Yes	Yes		S	CS
BT	Burglary Trouble	Yes	Yes	Yes	J	CJ
BU	Burglary Unbypass		Yes	Yes	B	CB
BV	Burglary Verified				A / U	CG
BX	Burglary Test				!	CD
BZ	Missing Supervision				J	CJ
CA	Automatic Closing				C	CC

Automation Output Version Control

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
CD	Closing Delinquent				C	CC
CE	Closing Extend				C	CC
CF	Forced Closing	Yes	Yes		C	CC
CG	Close Area				C	CC
CI	Fail to Close				C	CC
CJ	Late Close				C	CC
CK	Early Close				C	CC
CL	Closing Report	Yes	Yes	Yes	C	CC
CM	Missing Alarm - Recent Closing				J	CJ
CP	Automatic Closing				C	CC
CR	Recent Closing			Yes	J	CJ
CS	Closing Keyswitch				C	CC
CT	Late to Open				C	CC
CW	Was Force Armed	Yes	Yes		C	CC
CZ	Point Closing				C	CC
DA	Card Assigned				!	CD
DB	Card Deleted				!	CD
DC	Access Closed				C	CC
DD	Access Denied				A	CA
DE	Request to Enter				!	CD
DF	Door Forced				!	CD
DG	Access Granted				!	CD
DH	Door Left Open - Restoral				W	CR
DJ	Door Forced - Trouble				J	CJ
DK	Access Lockout				A	CA
DL	Door Left Open - Alarm				A	CA
DM	Door Left Open - Trouble				W	CR
DN	Door Left Open (non-alarm, non-trouble)				A	CA
DO	Access Open				O	CO
DP	Access Denied - Unauthorized Time				A	CA

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
DQ	Access Denied Unauthorized Arming State				!	CD
DR	Door Restoral				W	CR
DS	Door Station				!	CD
DT	Access Trouble				J	CJ
DU	Dealer ID				!	CA
DV	Access Denied Unauthorized Entry Level				A	CA
DW	Access Denied - Interlock				A	CA
DX	Request to Exit				!	CD
DY	Door Locked				A	CA
DZ	Access Denied - Door Secured				A	CA
EA	Exit Alarm				A	CA
EE	Exit Error			Yes	E	CA
ER	Expansion Restoral			Yes	W	CR
ET	Expansion Trouble		Yes	Yes	J	CJ
EX	External Device Condition				!	CJ
EZ	Missing Alarm - Exit Error				A	CA
FA	Fire Alarm	Yes	Yes	Yes	A / Z	CN
FB	Fire Bypass	Yes	Yes	Yes	B	CB
FC	Fire Cancel	Yes			R	CX
FH	Fire Alarm Restore		Yes		R	CX
FI	Fire Test Begin				!	CD
FJ	Fire Trouble Restore		Yes		W	CR
FK	Fire Test End				!	CD
FM	Fire Alarm - Cross Point				A / Z	CN
FR	Fire Restoral	Yes	Yes	Yes	W	CR
FS	Fire Supervisory	Yes	Yes		S	CS
FT	Fire Trouble	Yes	Yes	Yes	J	CJ
FU	Fire Unbypass		Yes	Yes	B	CB
FX	Fire Test				!	CD

Automation Output Version Control

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
FY	Missing Fire Trouble				J	CJ
FZ	Missing Fire Supervision				J	CJ
GA	Gas Alarm	Yes		Yes	A	CA
GB	Gas Bypass	Yes		Yes	B	CB
GH	Gas Alarm Restore	Yes			R	CX
GJ	Gas Trouble Restore	Yes			W	CR
GR	Gas Restoral	Yes		Yes	W	CR
GS	Gas Supervisory	Yes			S	CS
GT	Gas Trouble	Yes		Yes	J	CJ
GU	Gas Unbypass			Yes	B	CB
GX	Gas Test				!	CD
HA	Holdup Alarm	Yes	Yes	Yes	A	CQ
HB	Holdup Bypass			Yes	B	CB
HH	Holdup Alarm Restore				R	CX
HJ	Holdup Trouble Restore				W	CR
HR	Holdup Restoral			Yes	W	CR
HS	Holdup Supervisory				S	CS
HT	Holdup Trouble			Yes	J	CJ
HU	Holdup Unbypass			Yes	B	CB
HX	Holdup Test				!	CD
IA	Equipment Failure Condition				J	CJ
IR	Equipment Fail - Restoral				W	CR
JA	User Code Tamper		Yes		A	CA
JD	Date Changed				!	CD
JH	Holiday Changed				!	CD
JK	Latchkey Alert	Yes			C	CC
JL	Log Threshold		Yes	Yes	J	CJ
JO	Log Overflow				J	CJ
JP	User On Premises	Yes	Yes		O	CO
JR	Schedule Executed				!	CD

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
JS	Schedule Changed				!	CD
JT	Time Changed				!	CD
JV	User Code Changed				!	CD
JX	User Code Deleted				!	CD
JY	User Code Added				!	CD
JZ	User Level Set				!	CD
KA	Heat Alarm			Yes	A	CA
KB	Heat Bypass			Yes	B	CB
KH	Heat Alarm Restore				R	CX
KJ	Heat Trouble Restore				W	CR
KR	Heat Restoral			Yes	W	CR
KS	Heat Supervisory				S	CS
KT	Heat Trouble			Yes	J	CJ
KU	Heat Unbypass			Yes	B	CB
KX	Heat Test				!	CD
LB	Local Program				!	CD
LD	Local Program Denied				!	CD
LE	Listen-in Ended				V	CD
LF	Listen-in Begin	Yes	Yes		V	CD
LR	Phone Line Restoral			Yes	W	CR
LS	Local Program Success				!	CD
LT	Phone Line Trouble			Yes	J	CJ
LU	Local Program Fail				J	CJ
LX	Local Programming Ended			Yes	!	CD
MA	Medical Alarm			Yes	A / X	CM
MB	Medical Bypass			Yes	B	CB
MH	Medical Alarm Restore				R	CX
MJ	Medical Trouble Restore				W	CR
MR	Medical Restoral			Yes	W	CR
MS	Medical Supervisory				S	CS

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
MT	Medical Trouble			Yes	J	CJ
MU	Medical Unbypass			Yes	B	CB
MX	Medical Test				!	CD
NA	No Activity	Yes	Yes		A	CA
NC	Network Condition				!	CD
NF	Forced Perimeter Arm				A	CA
NL	Perimeter Armed				C	CC
NR	Network Restoral				W	CR
NS	Activity Resumed		Yes		W	CR
NT	Network Failure				J	CJ
OA	Automatic Opening				O	CO
OC	Cancel Report			Yes	R	CX
OG	Open Area				O	CO
OH	Early to Open from Alarm				O	CO
OI	Fail to Open				J	CO
OJ	Late Open				O	CO
OK	Early Open				O	CO
OL	Late to Open from Alarm				O	CO
OP	Opening Report	Yes	Yes	Yes	O	CO
OR	Disarm From Alarm				O	CO
OS	Opening Keyswitch				O	CO
OT	Late To Close				C	CC
OZ	Point Opening				O	CO
PA	Panic Alarm	Yes	Yes	Yes	A / Y	CA
PB	Panic Bypass	Yes	Yes	Yes	B	CB
PH	Panic Alarm Restore		Yes		R	CX
PJ	Panic Trouble Restore		Yes		W	CR
PR	Panic Restoral	Yes	Yes	Yes	W	CR
PS	Panic Supervisory	Yes	Yes		S	CS
PT	Panic Trouble	Yes	Yes	Yes	J	CJ

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
PU	Panic Unbypass		Yes	Yes	B	CB
PX	Panic Test				!	CD
QA	Emergency Alarm	Yes	Yes	Yes	A	CM
QB	Emergency Bypass	Yes	Yes	Yes	B	CB
QH	Emergency Alarm Restore		Yes		R	CX
QJ	Emergency Trouble		Yes		W	CR
QR	Emergency Restoral	Yes	Yes	Yes	W	CR
QS	Emergency Supervisory	Yes	Yes		S	CS
QT	Emergency Trouble	Yes	Yes	Yes	J	CJ
QU	Emergency Unbypass		Yes	Yes	B	CB
QX	Emergency Test				!	CD
RA	Remote Programmer Call Failed				J	CJ
RB	Remote Program Begin				!	CD
RC	Relay Close				C	CC
RD	Remote Program Denied				A	CA
RN	Remote Reset				A	CA
RO	Relay Open				O	CO
RP	Automatic Test	Yes	Yes	Yes	P	CZ
RR	Power Up		Yes		W / H	CH
RS	Remote Program Success			Yes	!	CD
RT	Data Lost			Yes	J	CJ
RU	Remote Program Fail				J	CJ
RX	Manual Test	Yes	Yes	Yes	P	CZ
RY	Test Off Normal				J	CJ
SA	Sprinkler Alarm			Yes	A	CA
SB	Sprinkler Bypass			Yes	B	CB
SH	Sprinkler Alarm Restore				R	CX
SJ	Sprinkler Trouble Restore				W	CR
SR	Sprinkler Restoral			Yes	W	CR
SS	Sprinkler Supervisory				S	CS

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
ST	Sprinkler Trouble			Yes	J	CJ
SU	Sprinkler Unbypass			Yes	B	CB
SX	Sprinkler Test				!	CD
TA	Tamper Alarm	Yes		Yes	T	CT
TB	Tamper Bypass			Yes	B	CB
TC	All Points Tested				!	CD
TE	Test End				!	CA
TH	Tamper Alarm Restore				W	CR
TJ	Tamper Trouble Restore				W	CR
TP	Walk Test Point				!	CD
TR	Tamper Restoral			Yes	W	CR
TS	Test Start				!	CD
TT	Tamper Trouble			Yes	J	CJ
TU	Tamper Unbypass			Yes	B	CB
TX	Test Report				!	CD
UA	Untyped Zone Alarm			Yes	A	CA
UB	Untyped Zone Bypass			Yes	B	CB
UH	Untyped Alarm Restore				R	CX
UJ	Untyped Trouble Restore				W	CR
UR	Untyped Zone Restoral		Yes	Yes	W	CR
US	Untyped Zone Supervisory		Yes		S	CS
UT	Untyped Zone Trouble		Yes	Yes	J	CJ
UU	Untyped Zone Unbypass			Yes	B	CB
UX	Undefined				A	CA
UY	Untyped Missing Trouble				J	CJ
UZ	Untyped Missing Alarm				A	CA
VI	Printer Paper In				W	CJ
VO	Printer Paper Out				J	CJ
VR	Printer Restore				W	CR
VT	Printer Trouble				J	CJ

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
VX	Printer Test				!	CD
VY	Printer Online				W	CJ
VZ	Printer Offline				J	CJ
WA	Water Alarm			Yes	A	CA
WB	Water Bypass			Yes	B	CB
WH	Water Alarm Restore				R	CX
WJ	Water Trouble Restore				W	CR
WR	Water Restoral			Yes	W	CR
WS	Water Supervisory				S	CS
WT	Water Trouble			Yes	J	CJ
WU	Water Unbypass			Yes	B	CB
WX	Water Test				!	CD
XA	Extra Account Report				!	CD
XE	Extra Point				J	CJ
XF	Extra RF Point				J	CJ
XH	RF Interference Restoral				W	CR
XI	Sensor Reset				W	CR
XJ	RF Receiver Tamper Restoral				W	CR
XL	Low Received Signal Strength				J	CJ
XM	Missing Alarm - Cross Point				A	CA
XQ	RF Interference		Yes		J	CJ
XR	Transmitter Battery Restoral			Yes	W	CR
XS	RF Receiver Tamper		Yes		J	CJ
XT	Transmitter Battery Trouble	Yes	Yes	Yes	L	CL
XW	Forced Point				J	CJ
XX	Fail to Test				!	CA
YA	Bell Fault			Yes	J	CJ
YB	Busy Seconds				J	CJ
YC	Communications Fail	Yes			J	CJ
YD	Receiver Line Card Trouble				J	CJ

Table E-3 SIA-DCS Format (Continued)

Data Code and Short Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
YE	Receiver Line Card Restored				W	CR
YF	Parameter Checksum Fail				J	CJ
YG	Parameter Changed				!	CD
YH	Bell Restored			Yes	W	CR
YK	Communications Restoral	Yes			W	CR
YM	System Battery Missing				L / M	CW
YN	Invalid Report				!	CD
YO	Unknown Message				J	CJ
YP	Power Supply Trouble			Yes	J	CJ
YQ	Power Supply Restored			Yes	W	CR
YR	System Battery Restoral	Yes	Yes	Yes	W	CY
YS	Communications Trouble				J	CJ
YT	System Battery Trouble	Yes	Yes	Yes	L / M	CW
YW	Watchdog Reset				J	CJ
YX	Service Required				J	CJ
YY	Status Report				!	CD
YZ	Service Completed				!	CD
ZA	Freeze Alarm	Yes	Yes	Yes	A	CA
ZB	Freeze Bypass	Yes	Yes	Yes	B	CB
ZH	Freeze Alarm Restore		Yes		R	CX
ZJ	Freeze Trouble Restore		Yes		W	CR
ZR	Freeze Restoral	Yes	Yes	Yes	W	CR
ZS	Freeze Supervisory	Yes	Yes		S	CS
ZT	Freeze Trouble	Yes	Yes	Yes	J	CJ
ZU	Freeze Unbypass		Yes	Yes	B	CB
ZX	Freeze Test				!	CD

Table E-4 ITI Contact ID Table

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
4.1 ALARMS						
100	Medical Alarms					
100	Medical	Yes	Yes	Yes	A / X	CM
100	Medical (Store)	Yes	Yes	Yes	W	CR
101	Personal Emergency				A / X	CM
101	Personal Emergency (Restore)				W	CR
102	Fail to report in	Yes	Yes		A	CM
102	Fail to report in (Restore)	Yes	Yes		W	CR
110	Fire Alarms					
110	Fire	Yes	Yes	Yes	A / Z	CN
110	Fire (Restore)	Yes	Yes	Yes	W	CR
111	Smoke				A	CN
111	Smoke (Restore)				W	CR
112	Combustion				A	CN
112	Combustion (Restore)				W	CR
113	Water flow				A	CN
113	Water flow (Restore)				W	CR
114	Heat				A	CN
114	Heat (Restore)				W	CR
115	Pull Station				A	CN
115	Pull Station (Restore)				W	CR
116	Duct				A	CN
116	Duct (Restore)				W	CR
117	Flame				A	CN
117	Flame (Restore)				W	CR
118	Near Alarm				A	CN
118	Near Alarm (Restore)				W	CR
120	Panic Alarms					
120	Panic	Yes	Yes	Yes	A / Y	CA

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
120	Panic (Restore)	Yes	Yes	Yes	W	CR
121	Duress	Yes	Yes	Yes	A	CQ
121	Duress (Restore)	Yes	Yes	Yes	W	CR
122	Silent	Yes	Yes	Yes	A	CA
122	Silent (Restore)	Yes	Yes	Yes	W	CR
123	Audible			Yes	A / Y	CA
123	Audible (Restore)			Yes	W	CR
124	Duress – Access granted				A	CQ
124	Duress – Access granted (Restore)				W	CR
125	Duress – Egress granted				A	CQ
125	Duress – Egress granted (Restore)				W	CR
130	Burglar Alarms					
130	Burglary	Yes	Yes	Yes	A / U	CG
130	Burglary (Restore)	Yes	Yes	Yes	W	CR
131	Perimeter			Yes	A / U	CG
131	Perimeter (Restore)			Yes	W	CR
132	Interior			Yes	A / U	CG
132	Interior (Restore)			Yes	W	CR
133	24 Hour (Safe)			Yes	A / U	CG
133	24 Hour (Safe) (Restore)			Yes	W	CR
134	Entry/Exit			Yes	A / U	CG
134	Entry/Exit (Restore)			Yes	W	CR
135	Day/night			Yes	A / U	CG
135	Day/night (Restore)			Yes	W	CR
136	Outdoor				A / U	CG
136	Outdoor (Restore)				W	CR
137	Tamper		Yes	Yes	T	CT
137	Tamper (Restore)		Yes	Yes	W	CR
138	Near alarm				A / U	CG
138	Near alarm (Restore)				W	CR

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
139	Intrusion Verifier				A / U	CG
139	Intrusion Verifier (Restore)				W	CR
140	General Alarm					
140	General Alarm			Yes	A	CA
140	General Alarm (Restore)			Yes	W	CR
141	Polling loop open				J	CJ
141	Polling loop open (Restore)				W	CR
142	Polling loop short				J	CJ
142	Polling loop short (Restore)				W	CR
143	Expansion module failure				A	CA
143	Expansion module restore				W	CR
144	Sensor tamper				T	CT
144	Sensor tamper (Restore)				W	CR
145	Expansion module tamper				T	CT
145	Expansion module tamper (Restore)				W	CR
146	Silent Burglary				A / U	CG
146	Silent Burglary (Restore)				W	CR
150 & 160	24 Hour Non-Burglary					
150	24 Hour Non-Burglary			Yes	A	CA
150	24 Hour Non-Burglary (Restore)			Yes	W	CR
151	Gas detected			Yes	A	CA
151	Gas detected (Restore)			Yes	W	CR
152	Refrigeration				A	CA
152	Refrigeration (Restore)				W	CR
153	Loss of heat	Yes	Yes		A	CA
153	Loss of heat (Restore)	Yes	Yes		W	CR
154	Water Leakage			Yes	A	CA
154	Water Leakage (Restore)			Yes	W	CR
155	Foil Break				A / U	CG
155	Foil Break (Restore)				W	CR

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
156	Day Trouble				A / U	CG
156	Day Trouble (Restore)				W	CR
157	Low bottled gas level				A	CA
157	Low bottled gas level (Restore)				W	CR
158	High temp			Yes	A	CA
158	High temp (Restore)			Yes	W	CR
159	Low temp		Yes	Yes	A	CA
159	Low temp (Restore)		Yes	Yes	W	CR
161	Loss of air flow				A	CA
161	Loss of air flow (Restore)				W	CR
162	Carbon Monoxide detected	Yes			A	CA
162	Carbon Monoxide detected (Restore)	Yes			W	CR
163	Tank level				A	CA
163	Tank level (Restore)				W	CR
4.2	SUPERVISORY					
200 & 210	Fire Supervisory					
200	Fire Supervisory				S	CS
200	Fire Supervisory (Restore)				W	CR
201	Low water pressure				S	CS
201	Low water pressure (Restore)				W	CR
202	Low CO2				S	CS
202	Low CO2 (Restore)				W	CR
203	Gate valve sensor				S	CS
203	Gate valve sensor (Restore)				W	CR
204	Low water level				S	CS
204	Low water level (Restore)				W	CR
205	Pump activated				S	CS
205	Pump deactivated				W	CR
206	Pump failure				S	CS
206	Pump failure (Restore)				W	CR

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
4.3	TROUBLES					
300 & 310	System Troubles					
300	System Trouble				J	CJ
300	System Trouble (Restore)				W	CR
301	AC Loss	Yes	Yes	Yes	J / Q	CP
301	AC Restore	Yes	Yes	Yes	W / H	CH
302	Low system battery	Yes	Yes		L / M	CW
302	Low system battery (Restore)	Yes	Yes		W / H	CY
303	RAM Checksum bad				J	CJ
304	ROM checksum bad				J	CJ
305	System reset				J	CJ
306	Panel programming changed				!	CD
307	Self-test failure				J	CJ
307	Self-test failure (Restore)				W	CR
308	System shutdown		Yes		J	CJ
308	System shutdown (Restore)		Yes		W	CR
309	Battery test failure			Yes	L / M	CL
309	Battery test failure (Restore)			Yes	W	CR
310	Ground fault			Yes	J	CJ
310	Ground fault (Restore)			Yes	W	CR
311	Battery Missing/Dead				L / M	CL
311	Battery Missing/Dead (Restore)				W	CR
312	Power Supply Overcurrent			Yes	J	CJ
312	Power Supply Overcurrent (Restore)			Yes	W	CR
313	Engineer Reset				J	CJ
320	Sounder / Relay Troubles					
320	Sounder/Relay				J	CJ
320	Sounder/Relay (Restore)				W	CR
321	Bell 1			Yes	J	CJ
321	Bell 1 (Restore)			Yes	W	CR

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
322	Bell 2				J	CJ
322	Bell 2 (Restore)				W	CR
323	Alarm relay				J	CJ
323	Alarm relay (Restore)				W	CR
324	Trouble relay				J	CJ
324	Trouble relay (Restore)				W	CR
325	Reversing relay				J	CJ
325	Reversing relay (Restore)				W	CR
326	Notification Appliance Circuit. # 3				J	CJ
326	Notification Appliance Circuit. # 3 Restore				W	CR
326	Notification Appliance Circuit. # 4				J	CJ
327	Notification Appliance Circuit. # 4 Restore				W	CR
330 & 340	System Peripheral Trouble					
330	System Peripheral trouble		Yes		J	CJ
330	System Peripheral trouble (Restore)		Yes		W	CR
331	Polling loop open				J	CJ
331	Polling loop open (Restore)				W	CR
332	Polling loop short				J	CJ
332	Polling loop short (Restore)				W	CR
333	Expansion module failure		Yes	Yes	J	CJ
333	Expansion module restore		Yes	Yes	W	CR
334	Repeater failure				J	CJ
334	Repeater restore				W	CR
335	Local printer out of paper				J	CJ
335	Local printer out of paper (Restore)				W	CR
336	Local printer failure				J	CJ
336	Local printer restore				W	CR
337	Exp. Module DC Loss				L	CL
337	Exp. Module DC Loss (Restore)				W	CR

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
338	Exp. Module Low Battery.				L	CL
338	Exp. Module Low Battery. (Restore)				W	CR
339	Exp. Module Reset				J	CJ
339	Exp. Module Reset (Restore)				W	CR
341	Exp. Module Tamper				J	CJ
341	Exp. Module Tamper (Restore)				W	CR
342	Exp. Module AC Loss				J	CJ
342	Exp. Module AC Restore				W	CR
343	Exp. Module self-test fail				J	CJ
343	Exp. Module self-test fail (Restore)				W	CR
350 & 360	Communication Troubles					
350	Communication trouble	Yes			J	CJ
350	Communication trouble (Restore)	Yes			W	CR
351	Telco 1 fault			Yes	J	CJ
351	Telco 1 restore			Yes	W	CR
352	Telco 2 fault				J	CJ
352	Telco 2 restore				W	CR
353	Long Range Radio Transmitter fault				J	CJ
353	Long Range Radio Transmitter restore				W	CR
354	Failure to communicate event			Yes	J	CJ
354	Failure to communicate event (Restore)			Yes	W	CR
355	Loss of Radio supervision		Yes		J	CJ
355	Loss of Radio supervision (Restore)		Yes		W	CR
356	Loss of central polling				J	CJ
356	Loss of central polling (Restore)				W	CR
357	Long Range Radio VSWR problem				J	CJ
357	Long Range Radio VSWR restore				W	CR
370	Protection Loop					
370	Protection loop				J	CJ

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
370	Protection loop (Restore)				W	CR
371	Protection loop open				J	CJ
371	Protection loop open (Restore)				W	CR
372	Protection loop short				J	CJ
372	Protection loop short (Restore)				W	CR
373	Fire trouble				J	CJ
373	Fire trouble (Restore)				W	CR
374	Exit error (zone)				E	CE
374	Exit error (zone) (Restore)				W	CR
375	Panic zone trouble				J	CJ
375	Panic zone trouble (Restore)				W	CR
376	Hold-up zone trouble				J	CJ
376	Hold-up zone trouble (Restore)				W	CR
380	Sensor Trouble					
380	Sensor trouble	Yes	Yes	Yes	J	CJ
380	Sensor trouble (Restore)	Yes	Yes	Yes	W	CR
381	Loss of supervision - RF	Yes	Yes	Yes	S	CS
381	Loss of supervision - RF (Restore)	Yes	Yes	Yes	W	CR
382	Loss of supervision - RPM				S	CJ
382	Loss of supervision - RPM (Restore)				W	CR
383	Sensor tamper	Yes	Yes		J	CJ
383	Sensor tamper (Restore)	Yes	Yes		W	CR
384	RF low battery	Yes	Yes	Yes	L	CL
384	RF low battery (Restore)	Yes	Yes	Yes	W	CR
385	Smoke detector Hi sensitivity				J	CJ
385	Smoke detector Hi sensitivity (Restore)				W	CR
386	Smoke detector Low sensitivity				J	CJ
386	Smoke detector Low sensitivity (Restore)				W	CR
387	Intrusion detector Hi sensitivity				J	CJ

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
387	Intrusion detector Hi sensitivity (Restore)				W	CR
388	Intrusion detector Low sensitivity				J	CJ
388	Intrusion detector Low sensitivity (Restore)				W	CR
389	Sensor self-test failure				J	CJ
389	Sensor self-test failure (Restore)				W	CR
391	Sensor Watch trouble				J	CJ
391	Sensor Watch trouble (Restore)				W	CR
392	Drift Compensation Error				J	CJ
392	Drift Compensation Error (Restore)				W	CR
393	Maintenance Alert				J	CJ
393	Maintenance Alert (Restore)				W	CR
4.4	OPEN/CLOSE/REMOTE ACCESS					
400, 440, 450	Open/Close					
400	Open				O	CO
400	Close				C	CC
401	Open by user	Yes	Yes	Yes	O	CO
401	Close by user	Yes	Yes	Yes	C	CC
402	Group Open				O	CO
402	Group Close				C	CC
403	Automatic Open				O	CO
403	Automatic Close				C	CC
404	Late to Open (use 453, 454 instead)				O	CO
404	Late to Close (use 453, 454 instead)				C	CC
405	Deferred Open (Not defined)				O	CO
406	Cancel	Yes	Yes	Yes	R	CX
407	Remote arm				O	CO
407	Remote disarm				C	CC
408	Quick arm				C	CC
409	Keyswitch Open				O	CO

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
409	Keyswitch Close				C	CC
441	Armed STAY				O	CO
441	Armed STAY (Restore)				C	CC
442	Keyswitch Armed STAY				O	CO
442	Keyswitch Armed STAY (Restore)				C	CC
450	Exception Open				O	CO
450	Exception Close				C	CC
451	Early Open				O	CO
451	Early Close				C	CC
452	Late Open				O	CO
452	Late Close				C	CC
453	Failed to Open				O	CO
454	Failed to Close				C	CC
455	Auto-arm Failed				J	CJ
456	Partial Arm				C	CC
456	Partial Arm (Restore)				O	CO
457	Exit Error (user)		Yes	Yes	E	CE
458	User on Premises				O	CO
459	Recent Close				J	CJ
461	Wrong Code Entry				O	CO
462	Legal Code Entry				O	CO
463	Re-arm after Alarm				C	CC
464	Auto-arm Time Extended				C	CC
465	Panic Alarm Reset				W	CR
410	Remote Access					
411	Callback request made				!	CD
412	Successful download/access			Yes	!	CD
413	Unsuccessful access				J	CJ
414	System shutdown command received				!	CD
414	(Remote) System shutdown command received				W	CR

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
415	Dialer shutdown command received				!	CD
415	(Remote) Dialer shutdown command received				W	CR
416	Successful Upload				!	CD
420	Access control					
421	Access denied				A	CA
422	Access report by user				!	CD
423	Forced Access				!	CD
423	Forced Access (Restore)				W	CR
424	Egress Denied				!	CD
425	Egress Granted				!	CD
426	Access Door propped open				!	CD
426	Access Door propped open (Restore)				!	CD
427	Access point DSM trouble				!	CD
427	Access point DSM trouble (Restore)				!	CD
428	Access point RTE trouble				!	CD
428	Access point RTE trouble (Restore)				!	CD
429	Access program mode entry				!	CD
430	Access program mode exit				!	CD
431	Access threat level change				!	CD
431	Access threat level change (Restore)				W	CR
432	Access relay/trigger fail				!	CD
432	Access relay/trigger restore				!	CD
433	Access RTE shunt				!	CD
433	Access RTE shunt (Restore)				!	CD
434	Access DSM shunt				!	CD
434	Access DSM shunt (Restore)				!	CD
4.5	BYPASSES / DISABLES					
500 & 510	System Disables					
501	Access reader disable				J	CJ
501	Access reader restore				W	CR

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
520	Sounder / Relay Disables					
520	Sounder/Relay Disable				J	CJ
520	Sounder/Relay Restore				W	CR
521	Bell 1 disable				J	CJ
521	Bell 1 restore				W	CR
522	Bell 2 disable				J	CJ
522	Bell 2 restore				W	CR
523	Alarm relay disable				J	CJ
523	Alarm relay restore				W	CR
524	Trouble relay disable				J	CJ
524	Trouble relay restore				W	CR
525	Reversing relay disable				J	CJ
525	Reversing relay restore				W	CR
526	Notification Appliance Circuit. # 3 disable				J	CJ
526	Notification Appliance Circuit. # 3 restore				W	CR
527	Notification Appliance Circuit. # 4 disable				J	CJ
527	Notification Appliance Circuit. # 4 restore				W	CR
530 & 540	System Peripheral Disables					
531	Module Added				W	CR
532	Module Removed				!	CD
550 & 560	Communication Disables					
551	Dialer disabled				J	CJ
551	Dialer restore				W	CR
552	Radio transmitter disabled				J	CJ
552	Radio transmitter restore				W	CR
553	Remote Upload/Download disabled				J	CJ
553	Remote Upload/Download restore				W	CR
570	Bypasses					

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
570	Zone/Sensor bypass	Yes	Yes	Yes	B	CB
570	Zone/Sensor unbypass	Yes		Yes	W	CR
571	Fire bypass				B	CB
571	Fire unbypass				W	CR
572	24 Hour zone bypass				B	CB
572	24 Hour zone unbypass				W	CR
573	Burg. bypass				B	CB
573	Burg. unbypass				W	CR
574	Group bypass				B	CB
574	Group unbypass				W	CR
575	Swinger bypass				B	CB
575	Swinger unbypass				W	CR
576	Access zone shunt				B	CB
576	Access zone shunt (Restore)				W	CR
577	Access point bypass				B	CB
577	Access point unbypass				W	CR
4.6	TEST / MISC.					
600 & 610	Test/Misc.					
601	Manual trigger test report	Yes	Yes	Yes	P	CZ
602	Periodic test report	Yes	Yes	Yes	P	CZ
603	Periodic RF transmission				!	CD
604	Fire test				!	CD
604	Fire test (Restore)				W	CR
605	Status report to follow				!	CD
606	Listen-in to follow	Yes		Yes	V	CR
607	Walk test mode				!	CD
607	Walk test mode (Restore)				W	CR
608	Periodic test - System Trouble Present				!	CD
609	Video Transmitter active				V	CR
611	Point tested OK				!	CD

Table E-4 ITI Contact ID Table (Continued)

Event Code and Description		ITI Panels		Caddax	CS-5000 Automation Output	
		Simon	Concord	NX-8	Generic V6.1 / 6.2	ITICOMP
612	Point not tested				!	CD
613	Intrusion Zone Walk Tested				!	CD
614	Fire Zone Walk Tested				!	CD
615	Panic Zone Walk Tested				!	CD
616	Service Request				J	CJ
616	Service Request (Restore)				W	CR
620	Event Log					
621	Event Log reset				J	CJ
622	Event Log 50% full				J	CJ
623	Event Log 90% full		Yes		J	CJ
624	Event Log overflow				J	CJ
625	Time/Date reset				!	CD
626	Time/Date inaccurate				J	CJ
626	Time/Date inaccurate (Restore)				W	CR
627	Program mode entry			Yes	!	CD
628	Program mode exit			Yes	!	CD
629	32 Hour Event log marker				J	CJ
630	Scheduling					
630	Schedule change				!	CD
631	Exception schedule change				!	CD
632	Access schedule change				!	CD
640	Personnel monitoring					
641	Senior Watch Trouble				J	CJ
641	Senior Watch Trouble (Restore)				W	CR
642	Latch-key Supervision	Yes			O	CO
Misc.						
651	Reserved for Ademco Use				A	CA

Warranty

IMPORTANT

ITI products should be tested weekly to insure complete and proper operation and proper input and output connections.

LIMITED WARRANTY

Interactive Technologies, Inc. (ITI) warrants that the central station receiver shall be free from defects in materials or workmanship for two years from the date on the date code label, located on the printed circuit board, if such goods have been properly installed, are subject to normal proper use, and have not been modified in any manner whatsoever. Upon return of the defective product to ITI, ITI will, at its sole discretion, either repair or replace, at no cost, such goods as may be of defective material or workmanship. Customers outside the United States are to return products to their distributor for repair.

ITI SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM LOSS OF PROPERTY OR OTHER DAMAGE OR LOSSES OWING TO THE FAILURE OF ITI SECURITY SYSTEMS PRODUCTS BEYOND THE COST OF REPAIR OR REPLACEMENT OF ANY DEFECTIVE PRODUCTS.

ITI MAKES NO WARRANTY OF FITNESS OR MERCHANTABILITY AND NO OTHER WARRANTY, ORAL OR WRITTEN, EXPRESS OR IMPLIED, BEYOND THE TWO YEAR WARRANTY EXPRESSLY SPECIFIED HEREIN.

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W I R E L E S S

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