● SYSTEM OK

● ARMED STATUS

Installation Manual

the CareTaker

(UL)
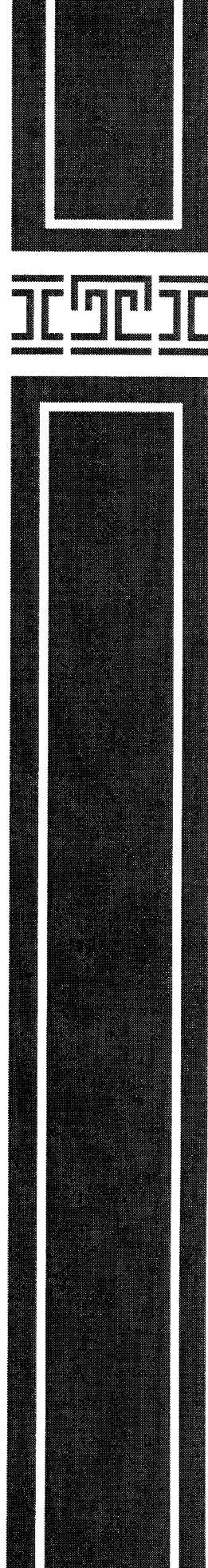
46-065

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Revision Date   19-90

C ongratulations ....

We at ITI hope you will find that your decision to install the revolutionary **CareTaker** system will result in such improvements in your sales, installation and service productivity as well as customer acceptance that you will become a steady **CareTaker** installer and seldom have to refer to this manual. However, because **CareTaker** employs several new concepts in control and programming as well as a completely re-designed wireless section and components, even those familiar with current ITI systems will want to review the information in this manual carefully.

THE THREE SECTIONS

1. CareTaker Installation

1.1 A **Guided Tour** highlights the major features and options of **CareTaker** and describes the new concepts involved and how they work. The **CareTaker** CPU, it's plug-in modules, accessories and sensors are functionally described.

1.2 Programming is a step-by-step guide for the first time installer which will show how to set up a **CareTaker** unit and a Touch Tone@ phone so that you may "talk" with **CareTaker** and explore it's many features and become familiar with various accessories and sensors or set up a system for an actual job.

1.3 Installation covers application considerations, mounting, wiring, adjustment, etc. for each type of sensor and accessory as well as the main CPU itself.

1.4 Testing and Troubleshooting describes a procedure for testing your installation using several unique test features of **CareTaker** and discusses built-in self tests.

2. Wireless Sensors

2.1 Application and Installation of the growing family of Wireless Sensors from ITI

3. Summing It Up

3.1 Quick Reference Guide to commands, sensor group characteristics and wiring diagrams as well as information about FCC rules and specifications.

Note. This manual contains references to UL listings which may not have been obtained at the time of this printing. ITI does not guarantee that such listings will ever be obtained on any or all of the products mentioned in this manual. Consult factory for current status. This manual, #46-065, has been revised 9/90 and reflects software enhancements as of that date.

SECTION 1

1.1 A Guided Tour - System Overview
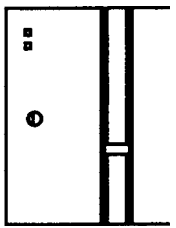
A GLANCE AT FEATURES

- Touch Tone phones control the system with voice responses using either on-premise or off-premise phones
- Touch Tone phones program system - no special programmer needed
- Alarm memory remotely accessible by service technician with service access code
- Optional wireless receiver module with at least 500' open air range works with up to 30 lithium battery powered sensors
- Optional digital communicator uses conventional Ademco/Sescoa format
- Optional hardwire modules provide 12 or 24 zones
- Optional Energy Saver allows remote reading and control of temperature
- Optional Voice/Siren Driver delivers voice annunciation of alarm as well as siren
- Three remote Touchpad options available - hand-held wireless, wall mounted wireless and hardwired with speaker and indicators
- 12 Volt backup battery automatically tested daily under load

The Intelligent Connection

The first thing that may strike you when you remove **CareTaker** from the box is the lack of keyboards and display digits. They are simply not necessary because of the unique way **CareTaker** is able to voice communicate with and be controlled by the operator using conventional Touch Tone phones - an instrument much more familiar to them than the often threatening, complex controls on many of today's alarm systems.

Not to worry. Remote Touchpads in both hardwire and hand-held wireless versions are available for **CareTaker** for those who may prefer them. These will be described later.

And there's more! Not only can the user communicate with **CareTaker** by phone, so can the service technician. Imagine calling a subscriber's system on the cellular phone in your service vehicle and bypassing a swinger!

How It Works. Caretaker has a radically different interface to the telephone network when compared to ordinary "communicators". It is able to sense when the subscriber has lifted the receiver (created an off-hook condition) of any phone on the premise and monitor the Touch Tone dialing commands for unique sequences beginning with a ⊡ and interpret them as commands or inquiries instead of routine outgoing telephone calls. **CareTaker** will then disconnect the out-going telephone line and respond with a voice synthesized message over the phone and beeps it's annunciators answering the request or confirming acceptance of the command.

Example: The customer picks up the phone and keys in ⊡ ⌗ and **CareTaker** replies *"ALARM SYSTEM IS OFF.. SENSOR TWO THREE OPEN"* The ⊡ ⌗ is the **CareTaker** short status inquiry which will tell you how the system is currently armed (level 1, 2 or 3) and identify any abnormal sensor conditions. All other commands or inquiries require one of two 4 digit codes be included in the entry sequence such as:

⊡ Ⓒ Ⓞ Ⓓ Ⓔ ③.The C O D E series in this command could be either the customer access code, usually known only to the customer, or the service access code, known only by authorized service personnel. This command will be expressed more clearly throughout this manual by substituting C O D E or S E R V for the respective 4 digit codes. The customer's entry would look like: ⊡ Ⓒ Ⓞ Ⓓ Ⓔ ③ which would return 3 beeps from the interior sirens indicating **CareTaker** has been armed to level 3 (Away Mode) and 3 more beeps when the delay time has expired. More about commands in Section 3.

Note. the ⊡ and ⌗ keys can be interchanged as the leading character of commands or inquiries. See Programming section.

The Wireless Universe

Background ITI has become regarded as the company that took wireless alarm technology out of the "Garage Door Opener" era into the generation of "supervised wireless" which has been very successful with the **SX-IV** product line. Now, **CareTaker**, a system already full of innovative features, goes a step further, incorporating the advanced **SX-V** fourth generation wireless technology! To implement this feature, simply plug the Wireless Module into the **CareTaker** CPU board, connect the antennas and select the wireless sensors you will need for the job. Then set the house code with the program switch on the CPU board and give each sensor a unique identity by programming it with a cable attached to the CPU using, again, your trusty Touch Tone phone.
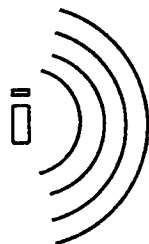
Many disadvantages of earlier wireless systems have been overcome by the state-of the-art ITI technology. Supervision, which is the ability of the CPU to detect a loss of periodic transmissions from sensors and individual sensor recognition are perhaps the most familiar features. Additionally, lithium batteries extend battery replacement intervals to years, non synchronous transmissions eliminate contentions between two transmissions occurring at the same time, crystal controlled transmitters and receivers extend range up to at least 500 feet, and the dual antenna diversity receiver eliminates loss of signal due to troublesome reflection interference or "dead spots".

Each wireless sensor transmits multiple bursts of data either every 69 minutes (if the sensor is a supervised one) or upon detecting a status change. Each burst contains the house code which identifies the sensor as belonging to one of up to 254 **CareTaker** systems, a sensor number identifying it as 1 of 30 possible sensors and a code telling whether the report is a supervisory, low battery, tamper or status change (open or close).

The Concept of Groups

Each sensor, whether a wireless or hardwired type, used in a CareTaker system must have a unique identification number. Hardwire zones automatically assume their terminal strip number and wireless sensors must be programmed with their number as will be explained later. In addition, each sensor must be assigned to one of 12 groups in the programming process. Each group is factory set to have a unique set of characteristics enabling it to work best with certain sensors. For example Group 05 is dedicated to fire and smoke sensors, Group 07 is for perimeter delay intrusion sensors and Group 09 is for motion sensors.

Self Test Features

CareTaker is constantly performing tests on itself, it's sensors, battery, AC power and phone line. If a problem is detected, a **Trouble Routine** is invoked which causes the following actions:

• The **Green LED** flashes until all troubles have been cleared.

• A **Trouble Report** will be sent to the Central Station if the communicator option is used. (Exceptions: Phone line failure or AC power failure)

• Once each 12 hour interval, when the phone is picked up for an outgoing call, CareTaker will announce the "ping pong" alert followed by the specific condition such as: *"PING PONG....SENSOR TWO THREE FAILURE"*

• Sensor failure conditions will be placed on the alarm memory "stack" which means that service personnel can call CareTaker and get a voice annunciation of the exact cause of the trouble report even if the problem has cured itself. The customer will get the message if he requests a status report.

• The trouble beeps will also sound at the end of status beeps when status is requested or the arming level is changed.

• ✱ 1 7 option, normally OFF, must be turned on for **UL 985** approved installations. This option causes the trouble alert sound to restart every 12 hours until acknowledged by picking up the phone or pushing the trouble key on the Hardwired Touchpad as long as the trouble condition persists. Refer to "Programming The System Features" section on page 17 for information on how to program this feature.

SYSTEM COMPONENTS

A Look At The CPU
ITI Part No. 60-134
Protection One Part No. 60-289

Modular Construction. Opening the CareTaker reveals the Central Processing Unit (CPU) circuit board and the 12 volt battery provided. The next drawing shows the location of the key elements on the CPU board and the wiring to external accessories, power and telephone circuits. There are 4 sockets labeled J1-J4 on the CPU which accept optional modules. J2 and J3 on the right hand side of the board are for the Digital Communicator and Voice Siren Driver. The Wireless Module or Radio Receiver and Hardwire Modules install in sockets J1 and J4 respectfully.

> ⚠ **Caution !!! Static electricity discharges from your body in amounts so small that you cannot sense them can do serious damage to electronic components. A 1/8" spark is 4000 Volts!!! Many ICs are rated at less than 20 Volts! Very often this damage is not immediatly apparent but may result in premature failures of IC devices.**

Jumper A (7-8) Install when not using Wireless Module
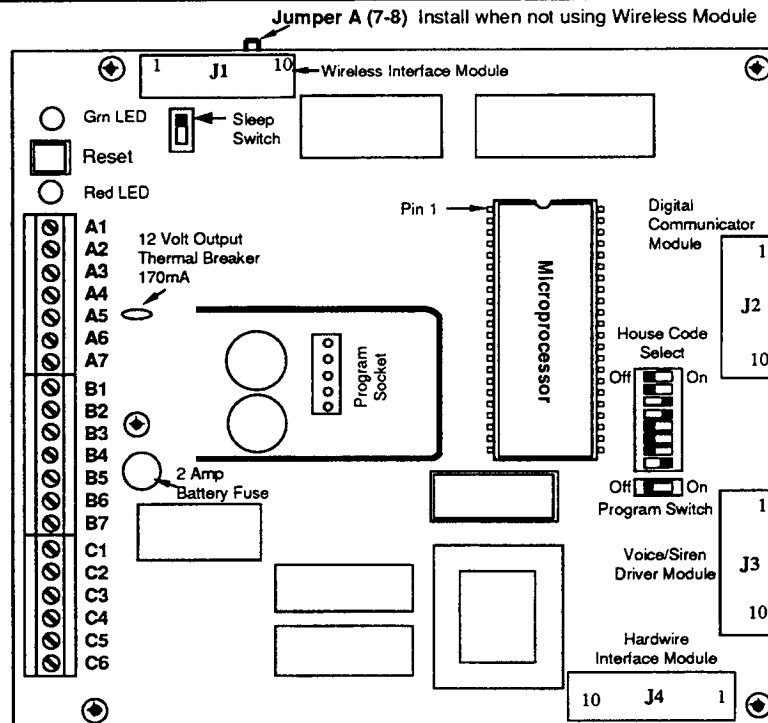
CareTaker main circuit board showing layout of switches, plugs and LEDs.

Terminals. The terminal strip on the left is actually several strips placed in line. We will refer to the individual terminals as A1-A7, B1-B7 and C1-C6.

LEDs. Two LEDs in the upper left corner of the CPU board are the only indicators which are visible to the customer. Their indications are as follows:

• Green System LED	• Indicates
ON steady	Normal
Blinking	Test in progress or trouble or failure condition. Phone message identifies trouble or failure.
OFF	Major failure - see Testing and Troubleshooting

• Red Arm Status LED	• Indicates
ON steady	Armed to level 3 - all intrusion sensors not-bypassed "ON"
Blinking	Armed to level 2 - only perimeter sensors "ON"
OFF	Armed to level 1 - all intrusion sensors "OFF"

Switches. There are 4 switches located on the CPU board:

- **Reset** is located between the LEDs as shown in Figure 1. Don't touch this switch unless you want to completely re-program CareTaker. You will want to do this when the unit is to be initially programmed to clear "garbage" that may be in memory.

- **Sleep** is located on the upper left and is left off during normal operation. It is useful when the unit is being transported or stored without connection to AC power because the sleep on mode retains your programmed memory with minimum drain on the battery (about 100 hours).

- **House Code Select** allows selection of one of 254 codes which will be part of the identification each wireless sensor will send. This prevents interference from sensors on neighboring systems within radio range (as long as they have different house codes).

- **Program Switch** is used in conjunction with the Program Socket and "Pigtail" when wireless sensors are being programmed with their identification codes and to enter the system features. Hardwire Zones cannot be programmed in this manner, see page 21 for Hardwire Zone Programming.

Fuses. There are 2 fuses located near the terminal strip:
- ***160 mA Fuse.** This fuse protects the 12 volt output on terminals A5 and B3.

- **2 Amp Fuse.** This fuse is in the battery line and will blow if the battery is connected backwards.

Jumpers. There is a jumper location labeled A as shown in the figure. The jumper can be made from a length of wire (not shipped with the unit)
- **Jumper A** must be installed between pins **7&8** on **J1** if a Wireless module is not used.

Program Socket. During the **Wireless** Sensor programming process the "Pigtail" which is shipped with the CareTaker CPU, is attached here and to the sensor being programmed. The Pigtail **must** be removed during normal operation.

* CareTaker boards manufactured after 1/1/90 will incorporate a 170mA Thermal Breaker instead of the 160mA fuse.

PLUG-IN MODULES

Wireless Module #59-036. The Wireless Module is technically known as a dual antenna, spatial diversity, double conversion, crystal controlled, narrow band AM, UHF, superhetrodyne receiver. It receives data from the ITI **SX-V** transmitter family of wireless sensors. A combination of up tp 30 wireless sensors and hardwire zones may be used.
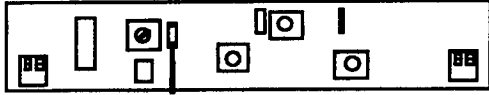
Sensor alarms and trouble conditions are indicated and reported to the Central Station in various ways depending upon which sensor level or group they are assigned to in the programming process and which arming level **CareTaker** is currently in. There are no adjustments on the Wireless Module. Just plug it in, attach antennas, apply power, program sensor transmitters and test.

*Digital Communicator Module #57-256. The **CareTaker** has 9 Codes of alarm information to report to the Central Station. The conventional format Digital Communicator Module simply reports a 3 or 4 digit customer code and a single digit alarm code (1-9) which minimizes Central Station traffic and avoids confusing multiple round transmissions. (See communicator codes on page 9)
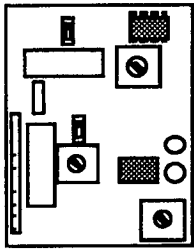
The Digital Communicator Module simply plugs into **J2** on the CPU board. The only set-up required is setting two switches for the appropriate format. A primary and, if desired a backup phone number, the account number and baud rate are programmed into the CPU program memory with a Touch Tone phone as will be described later.

Up to 10 pulse dialing attempts are possible in order to establish successful communication. If a backup number is programmed, the sequence will be 2 primary, 2 backup, 2 primary and 2 backup etc.with a 44 second wait between calls to foil attempts at call-in jamming. The wait period will shorten to 6 seconds if the Central Station was reached but communication was unsuccessful. If unable to communicate after 10 attempts, the **Trouble Routine** will be initiated with "Trouble Code 96" as the phone announcement message. The **Trouble Routine** can be terminated by a successful report such as a communicator test which can be invoked by

⧫ Ⓒ ⦿ Ⓓ Ⓔ Ⓑ or by entering program memory.

Note. CareTaker monitors the phone line even if a communicator module is not installed. See Testing and Troubleshooting.

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* Required to be used in an Underwriters Laboratories Inc. listed Household Fire and   .
Burglary Warning system.
The model 60-106 Smoke Adapter/Smoke Detector is also required.

Communicator Codes	Originating Groups
1 Fire	05
2 Help/Duress	13, 14, 15, ▣+▣, and ▣▣▣▣▣▣
3 Intrusion	06, 07, 08, 09, 10 and 16
4 Auxiliary	11
5 Auxiliary	12
6 Freeze	Energy Saver
7 Trouble	Any Supervised Wireless or Hardwired
Sensor or	System Troubles
8 Test	▣ C O D E 8
9 Restore	Alarm Reset or Cancel

All intrusion alarms will send a code 9 restore signal if they are reset by the customer by entering ▣ C O D E 1 before the siren time-out occurs (Groups 06, 07, 08, 09, 10 and 16). In addition, intrusion alarm signal transmission can be aborted if reset occurs before the unit receives the handshake signal from the Central Station (usually 15 - 20 seconds after alarm initialization). In this case the CareTaker will announce *"Alarm is Bypassed"* to notify the end user that the call to the Central Station has been aborted. This feature cannot be disabled.

Fire alarm reports will always be followed by a restore report regardless of when the reset takes place. All other reports do not send restore at all and their transmission cannot be aborted by a reset with the exception of the Freeze report. See chart in Section 3.

*Siren Driver Module #57-257. This module must be used to drive high level exterior or interior speakers and, in addition to siren output during alarm, reports the alarm type *("FIRE.. INTRU-SION.. HELP")* and the sensor number that caused the alarm by voice periodically. Up to 2 speakers with a minimum 20 watt rating may be used. Higher wattage rating speakers generally produce better voice quality and siren sound volume so 30 watt speakers are recommended. A 1 amp in-line fuse, such as those available at automotive stores, is suggested for wiring leading to an exterior speaker which may be subject to tampering resulting in a short circuit.
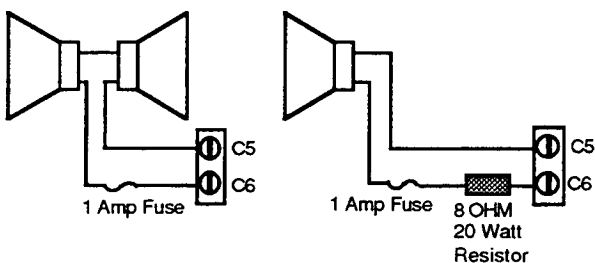
For optimum Central Station communication results, The CareTaker requires a 16 Ohm load on terminals C5 and C6. This can be accomplished in two ways:

1.Install two 8 Ohm speakers in series, or

2.Install an 8 Ohm, 20 Watt resistor in series with an 8 Ohm speaker (Radio Shack part #271-120)

> **Note.** Telephone voice messages will be temporarily interrupted during Central Station transmission time. The user must depend on the status beeps for arming level information.

* Required to be used in an Underwriters Laboratories Inc. listed Household Fire and Burglary Warning system.

Hardwire Module #59-037. A 12 zone Hardwire Module can be plugged into the CPU. The module has 10 (1-10) normally closed, open for alarm, loops and 2 (11-12) end-of-line resistor loops which can be used with normally open and/or normally closed devices. These two zones (11-12) are switch selectable to detect trouble conditions on the loops. In addition, an expander module can be added which provides another 12 zones with the same configuration (zones 13-22 normally closed, zones 23-24 supervised). For programming purposes, the sensor number of these zones is their zone number on the terminal strip (1-12 and 13-24) and wireless sensors used on the same system must not be assigned the same number as any hardwire zone that will be used.
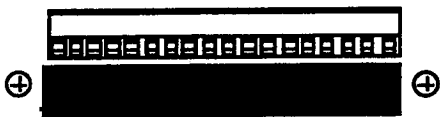
Although multiple sensors may be connected to an input zone, it is not advisable as the ability to identify an alarm or problem with an individual sensor is lost.

CONTROLS AND SIRENS

*Hardwire Interior Sirens. There are two models of surface mounted sirens offered by ITI, one with a built-in phone jack and one without. The Phone Jack Siren (#60-108) is intended to replace an existing telephone jack and take advantage of the wiring run that serves that jack. This is possible because normal telephone station wiring is 4 conductor minimum and the phone only requires 2 leaving a pair for the interior siren. Another is the **(60-136)** Interior Siren which is built into a surface mount wooden case.
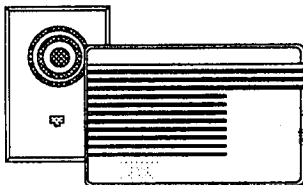
The Interior Speaker/Piezo **(#60-252)** generates a high level pulsed siren sound with voice annunciation for alarms and uses a low level "beeping" only for various status messages.

Up to 2 Interior Speaker/Piezos or PJS's in any combination may be used on a system. These devices do not give voice annunciation for any status or trouble conditions on the system. You must go to a Touch Tone phone or a Hardwire Touchpad for this information.

Interior Siren Sounds	Originator
• A series of 8 rapid low level beeps each minute or after status beeps	• System Trouble Routine. Caused by sensor or CPU problems.
• 1, 2 or 3 low level beeps	• Produced when arming to level 1, 2 or 3 and again when exit delay has expired in levels 2 and 3. Also at status request.
• Long low level beep (one second)	• Acknowledgement of a command to turn a feature ON or OFF such as Chime, Energy Saver or Bypass.
• Very long low level beep (2-3 seconds)	• The CPU is "protesting" an attempt to arm. with an open sensor. Check phone for messages.
• Rapid low level beeps until Central Station kiss-off or off-hook	• "Freeze" warning - Energy Saver, groups 11,12.
• Continuous high level	• "Fire" group 05.
• Intermittent high level	• "Intrusion" groups 06, 07, 08, 09, 10 and 16 and "Help" groups 13 and 14.

* Required to be used in an Underwriters Laboratories Inc. listed Household Fire and Burglary Warning system.

*Hardwired Touchpad #60-258
## (Protection One #60-311)
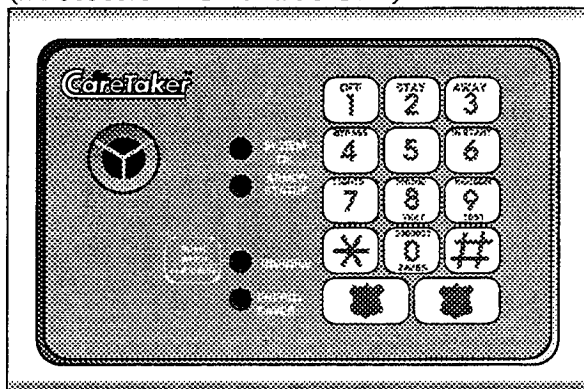
This wall mount unit combines an interior siren, a speaker, a Touch Tone style keypad and four LEDs as system status indicators.

Trouble alerts may be audibly identified by pressing the "Trouble" key.

The HELP/Emergency command is activated by **pressing both Police Shields simultaneously** or by **pressing the * key six times**.

* One Hardwired Touchpad required to be used in an Underwriters Laboratories Inc. listed Household Fire and Burglary system.

Wireless Touchpads
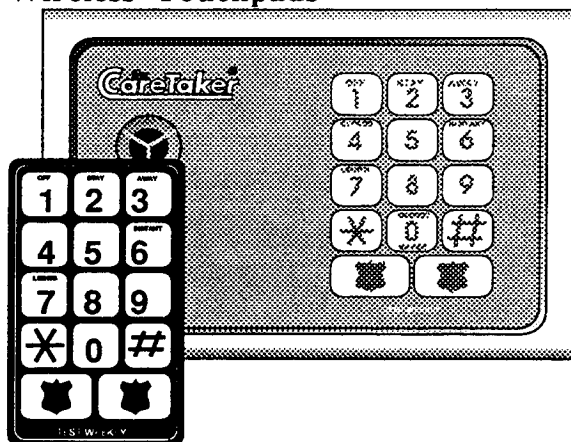
Two wireless touchpad models are available:

1) A Portable Handheld unit, **#60-144** and 2) a Wall Mount unit, **#60-273**. Both units have the same keys and functions.

The HELP command is activated by **pressing and holding the Police Shields for 1 second** or by pressing the * **key six times**.

Wireless touchpads **cannot** perform the * **CODE 9** command or any # commands.

Alarm Speakers
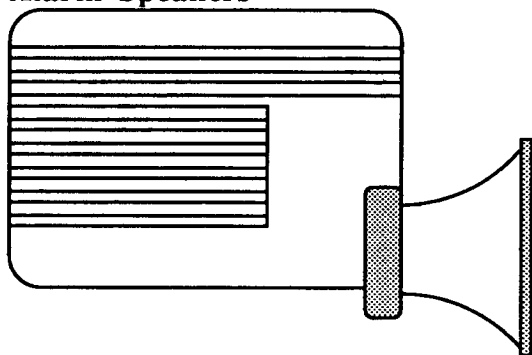
One or two 20 to 40 watt, 8 ohm speakers can be driven by the CPU when the Siren Driver module is installed. The higher wattage is desirable for better voice quality and more alarm volume. While 40 watt speakers are recommended, 30 watt speakers are quite adequate as well as more readily available.

Speakers:	#13-060	20 Watt	Exterior
	#13-061	30 Watt	Exterior
	#60-252		Interior
	* #60-136		Interior

* One ITI Model 60-136 Interior siren is required to be used in an Underwriters Laboratories Inc. listed Household Fire and Burglary system.

Energy Saver Module #60-140. This unit is used in conjunction with the on premise thermostat and will provide an energy set-back or high/low temperature limiting feature which over-rides the normal thermostat setting when it is turned ON. The feature can be activated with the **CareTaker** arming sequence when the occupants are leaving the premise or turned ON or OFF from a remote Touch Tone phone. The unit will also cause the "Freeze" signal to be sent to the Central Station if the premise temperature drops below a programmable value (42 degrees is default value, 01 degrees is the minimum value, and 00 degrees turns OFF the freeze reporting). High and low temperature limits may be changed by the customer using a local or remote Touch Tone phone when the unit is disarmed. (A back up fixed temperature 42° thermostat is included as a safety feature.) **CAUTION:** Special considerations may be necessary if a rechargeable battery powered set back thermostat is being used.
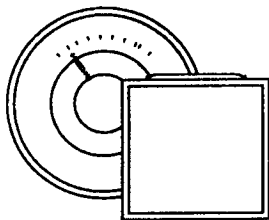
Light Controls. CareTaker has an output which can control AC line powered devices such as lights by power line carrier using a "BSR X-10 Burglar Alarm Interface" (BA284) and one or more switch modules (AM466). The X-10 method can control multiple lights that can simply plug-in to the modules and eliminates high voltage wiring.

CareTaker turns lights ON during entry and exit delays and during all alarms until reset (except duress and silent help). In addition entering ✱ C O D E 7 changes (toggles) the lights from ON to OFF or from OFF to ON. **Note:** Lights turned ON in this manner will only stay on 5 minutes (unless overridden by an alarm).

1.2 Programming

PROGRAMMING CONCEPTS

In order to provide flexible feature selection for the CareTaker dealer and user, it is necessary to have a means for storing selected options and variables such as arming levels and account numbers and a means for initially or periodically changing (editing) them. We generally call the storage "Memory" and the editing "Programming". Memory can be classified further by describing where it is located (CPU, wireless sensor, etc.),what type it is (switch, battery-backed RAM, etc.) and how and by whom it can be accessed (user by phone, dealer with CPU key, etc.). The following is an overview of the memory elements in a CareTaker system.

House Code (CPU)

Type	Dip switch (8 position).
Location	CPU circuit board
Access	Physical by dealer with key to CPU cabinet.
Contains	A key code (01-254) which any wireless transmitters installed with that particular CPU must match in every transmission in order to be recognized by the CPU .

Program Memory

Type	Battery-backed RAM.
Location	CPU circuit board.
Access	1. Physical by dealer with key to CPU cabinet using the "Program Switch" and a Touch Tone phone.
	2. Telephone either on or off premise with dealer access code and user access code.
Contains	1. System options and variables which are normally dealer programmed such as Central Station telephone numbers, siren timeout, etc.
	2. The list of "active" sensor numbers and the group to which they are assigned.

User Memory

Type	Battery-backed RAM.
Location	CPU circuit board
Access	1. Telephone either on or off premise with user access code only.
	2. Limited non-security access by telephone either on or off premise with dealer access code.
Contains	User code and options and arming levels. Status, alarm memory, test and limited bypass are allowed dealer access.

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Wireless Sensor/Touchpad

Type	Battery-backed RAM.
Location	Sensor/Touchpad circuit board
Access	Electrical by plugging into CPU Programming Socket and using the Program Switch on the CPU board to access Program Memory at the same time. When sensor numbers are added to the "active list" in Program Memory and assigned to a group, using a Touch Tone phone or Hardwire Touchpad, the necessary information is automatically passed to the sensor's memory .
Contains	The CPU House Code, the unit's sensor I.D. number and either an active or sleep state.

Hardwire Module

Type	Battery Backed RAM.
Location	Hardwire Interface Module
Access	1. Electrical by shorting zones.
	2. Entering Program Memory resets.
Contains	A list of all of the hardwire zones that are being used on the Hardwire Interface Module and Expander module which is, in turn, used to send supervisory and status signals to the CPU.

More about Wireless Sensor Programming. Most security industry people are quite familiar with the concept of programming system options and variables. It may be helpful, however, to consider some of the ramifications of the coordinated programming required of wireless sensors and the CPU Program Memory.

1. Normally you will be connecting the sensors to the CPU and programming both at the same time, adding (or deleting) the sensor's I.D. number and assigned group to the "active list" in Program Memory and, at the same time, turning the sensor's "active" state ON (or OFF) as well as programming (or erasing) the House Code and sensor I.D. number in the sensor's memory.

2. It is also possible to add (or delete) a sensor I.D number on the Program Memory "active list" without having an actual sensor plugged into the CPU. This can only be done by accessing Program Memory from a local or off premise telephone and requires the user's cooperation as the user code as well as the dealer code is required to gain access. This feature has two useful benefits:

   a. If your customer called and reported that they were about to do some remodeling which necessitated the temporary removal of a protected door you could simply access their system by phone and delete that particular sensor eliminating the need to frequently bypass it or deal with possible false alarms.

   b. You could send a customer an add on sensor or Touchpad by first programming it with a shop CareTaker and then, once he has received it, add the sensor or Touchpad to his CPU by phone accessing Program Memory. Note that, in most cases, you wouldn't want to add the sensor number to the "active list" until the unit was actually on the premise because the CPU would begin looking for supervisory transmissions from it and, not finding any, would sound a trouble alert.

The rest of this section deals with the specifics of programming including lists of commands and examples.

BENCH SETUP

You will find it convenient to set up an area on a work bench to test and program CareTaker because you will not have to spend as much time at the premise and will not have to tie up the customer's phone for programming. For first time CareTaker users, this bench experience will give you the practice and experience you will want to have before you make that first installation.

First. Study the Tour and Installation Sections of this manual to to understand which sensors you will want to work with and how to connect the optional accessories and modules to the CPU.

What you will need. Other than the usual basic hand tools, you will need:
* An AC power outlet,
* A live telephone line (only if you plan to test the communicator module)
* An RJ-31X jack
* A Phone Jack Siren connected as shown
* A Touch Tone phone.

In addition to the CareTaker CPU itself, you may connect or install as many sensors, controls or modules you wish as long as you observe the power limitations noted in the Installation section. If the installation is to be wireless, you will, at least, need the Wireless Module, the programming pigtail and the wireless sensors and Wireless Hand Held Touchpad, if it will be used. If the job will be hardwired, you will, at least, need the Hardwire Module.

Hooking it up.
1. Discharge yourself of **static electricity** by touching the lock on the CPU cabinet before opening it.
2. Disconnect the battery so that any accidental shorts will not cause damage.
3. Install the optional modules being sure they are placed in the right sockets and that you have jumpers in the sockets which are not used and require them.
4. Connect the RJ-31X cord.
5. Connect the transformer.
6. Connect any other hardwired components (see installation instructions for details).
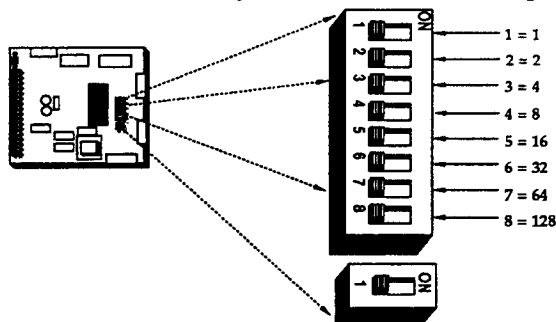
Setting the House Code. Next you will set the House Code by choosing a combination of ON or OFF settings on the eight position DIP switch on the CPU board. The switch selects a code between 1 and 254 which will automatically be programmed in each wireless device along with it's identification code. Because the house code is sent each time a wireless sensor transmits, the CPU can ignore sensors from neighboring systems on the same frequency if their house codes are different.

1 = 1
2 = 2
3 = 4
4 = 8
5 = 16
6 = 32
7 = 64
8 = 128

Normally the setting of this switch can be done randomly unless you know your installation will be near (within a quarter mile) another **CareTaker** or ITI **SX-V** system whose House Code you know and can avoid duplicating. Because changing a house code on an installed system involves removing and re-programming each sensor it is important you enter the setting on the installation worksheet for reference to avoid problems when you do the house next door.

ITI #60-108

Phone Jack Siren

Bench Test Wiring Diagram
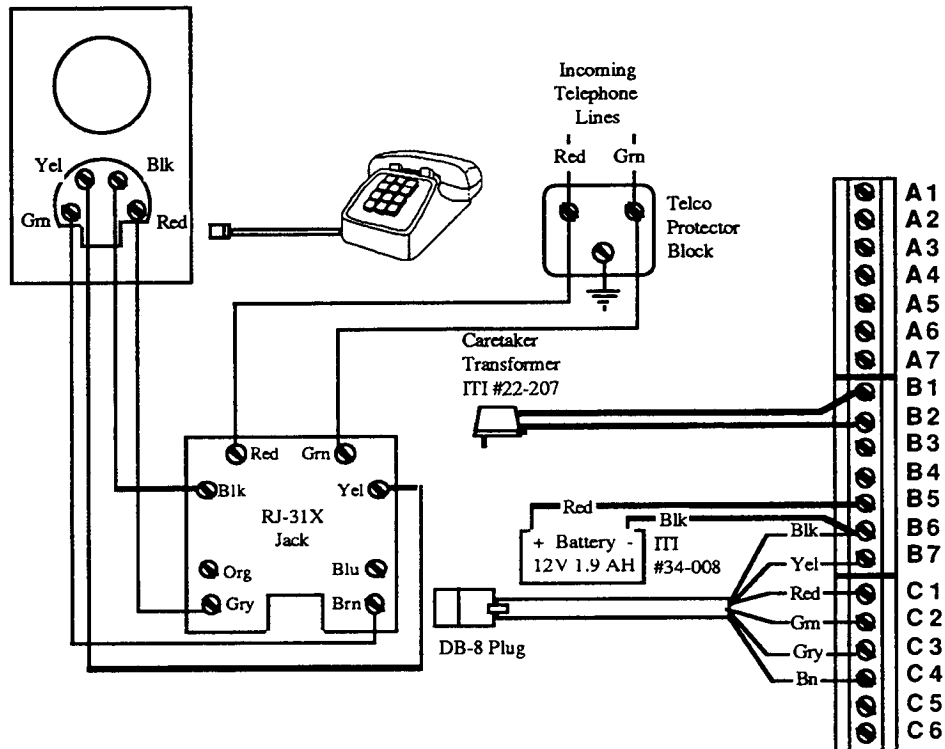
Powering up.
1. Plug the RJ-31X cord from the CPU into the RJ-31X jack
2. Be sure your Touch Tone phone is plugged into the Phone Jack Siren or other phone jack
3. Connect the battery and plug the transformer into the AC outlet.
4. Turn the sleep switch OFF if it was ON.
5. Push the reset switch on the CPU to clear any "garbage" in memory.

You should have a steady green LED on the CPU. If not, check to see that the program switch is OFF. If the green LED is still blinking you can find out what the problem is by lifting the phone off hook (it must have been "ON" for 15 seconds) and, if necessary, refer to the Test and Troubleshooting section for help in curing the problem.

Note. A handy item for programming is a "tee adapter" which plugs into the RJ-31X jack and accepts the RJ-31X cord from the CPU as well as a standard 4 pin RJ-11 phone plug. This allows a telephone connection at the CPU installation site which is often in an area where no phone is handy. These are available at Radio Shack or telephone stores.

NOTE: ▣,#,1 2 3 4 etc. represent Touch Tone phone keys.

16

Your first conversation. Pick up the phone and you should hear CareTaker announce "Trouble Code Zero Zero." This indicates the CPU memory is clear. Now, push ⊡ ①②③④ #①. This is the full status report which would be useful during remote interrogation of an unoccupied premise, for example. The short status ⊡ # , which only announces arming level and open intrusion sensors will probably be used more often by your customer to check if any doors or windows are open before arming the system. Also note that the sequence 1234 that you keyed in is the default customer access code (the initial factory set code).

Programming the System Features

Accessing Memory. To give CareTaker the information it needs to operate using your Touch Tone phone "programmer", you will have to access a mode called "*PROGRAM MEMORY*". This can be done from a local or remote phone by a service technician which will be discussed later. A second way to gain access is to turn the "Program Switch" on. Pick up the phone and you should hear CareTaker announce "*PROGRAM MEMORY*" repeatedly. Key ⊡ ⓪① and CareTaker should announce "*PROGRAM LEVEL ZERO ONE.......STAR ONE TWO THREE FOUR....PROGRAM MEMORY*"......*PROGRAM MEM.....*". You have entered **Program Level 01** which contains the default customer access code "1234". Program level is a means of cataloging where information is stored. In all levels but this one you would now be able to enter new data from your Touch Tone phone. The customer access code, however, is protected and can only be changed by the customer. To leave Program Memory turn the program switch OFF.

> **Note.** The aluminum power heat sink is near the program socket and if you come in contact with it it may feel quite hot, especially during a programming session when the unit is being used a lot. This is a normal condition.

Now let's put the system options such as exit delays and communicator phone numbers into CareTaker and program the Wireless Touchpad. Following is a list of the program levels, what belongs in them and the default (factory) setting:

Programmable System Features

⊡ ⓪①
Customer access code   Can be read only. To program see Customer Commands. Referred to as Ⓒ Ⓞ Ⓓ Ⓔ. **Default** = 1234.

⊡ ⓪②
Duress code   Modifies the last two digits of the customer access code to form a second code which can perform all commands of the regular code but produces a duress report as well. Enter 00 to turn OFF feature. **Default** = 00. **Note:** Duress reports are not recorded in any alarm memory.

⊡ ⓪③
Entry time delay   6 - 58 seconds. **Default** = 30 sec. For U.L. installation, maximum entry delay is 45 seconds.

⊡ ⓪ ④
Exit time delay

6 - 58 seconds. **Default** = 30 seconds. For U.L. installation, maximum exit delay is 60 seconds.

⊡ ⓪⑤ To ⊡ ①⑥
Sensor groups

See "Assigning the Sensors".

⊡ ① ⑦
One shot trouble annunciation.

Status toggles when entered. Changes renewed trouble annunciation from one time (OFF) to every 12 hours (ON). **Default** = "OFF". **(should be ON to comply with UL 985).**

⊡ ① ⑧
Wireless Touchpad code.

(1-254) Non supervised. Touchpad must be plugged into CPU just like a sensor to receive it's House Code from the CPU. No entry is needed beyond **⊡ ① ⑧**. The Touchpad responds with a series of beeps when plugged in and when it has accepted the program and *"PROGRAM OK"* is announced on the phone.

> Note. Wireless Touchpads are inoperative during a trouble or failure condition.

⊡ ① ⑨
Lockout delay

Changes characteristics of Groups 09 and 10 providing a 3 minute lockout delay which allows use of motion detectors which do not have such a delay built-in. **Default** = OFF.

⊡ ② ⓪

Primary

Primary Central Station phone number. Enter **#** after last digit. **Default** = OFF. Pauses may be added anywhere in the phone number by pressing the 1st A in the CareTaker logo on the keypad.

⊡ ② ①
Secondary

Secondary Central Station phone number. Dialed if first number is not reached. Enter **#** after last digit. **Default** = OFF. Pauses may be added anywhere in the phone number by pressing the 1st A in the CareTaker logo on the keypad.

⊡ ② ②
Account number

Three or four digit Central Station account number that the communicator reports. **Default** = 000. Enter **⊡ ② ②** 'nnn#' for three digit code, **⊡ ② ②** 'nnnn' for four digit code.

⊡ ② ③
Energy Saver
Freeze alarm

Sets temperature activation point (01° to 59°F range). **Default** = 42° F. Setting 00 will turn off freeze reports.

⊡ ② ④

Help alarm

Turns the **⊡⊡⊡⊡⊡⊡** HELP feature ON or OFF. Status toggles when entered. **Default** = ON.

⊡ 2 5
Siren time-out

Changes siren timer within the range of 01 - 20 minutes. 00 = OFF. **Default** = 04 Minutes.

⊡ 2 6
Service access code

Four digit code for service access. 0000 = OFF. Referred to as S E R V. **Default** = OFF. It is essential to have the Service Code programmed into the system in order to program sensor groups without sensors attached.

⊡ 2 7
Call twice for access

Call premise, let phone ring 2 times, hang up, call back within 60 seconds but no sooner than 10 seconds and **CareTaker** will answer. Status will toggle when entered. **Default** = ON.

⊡ 2 8
Communicator speed

Sets the communicator baud rate at 10 or 20 baud. Default =10 baud.

⊡ 2 9
Touch Tone sensitivity

ON means a 100 ms long Touch Tone signal is required for **CareTaker** to respond. This minimizes false trips of the *"CODE PLEASE"* message during normal telephone conversations. OFF (45 ms) should be used if phones which only emit a short tone when a dialing key is pushed are used to operate the system. **Default** = ON.

⊡ 9 9
Leave Program Memory

Departure code for "service access entry mode" to Program Memory. Not required when program switch access is used.
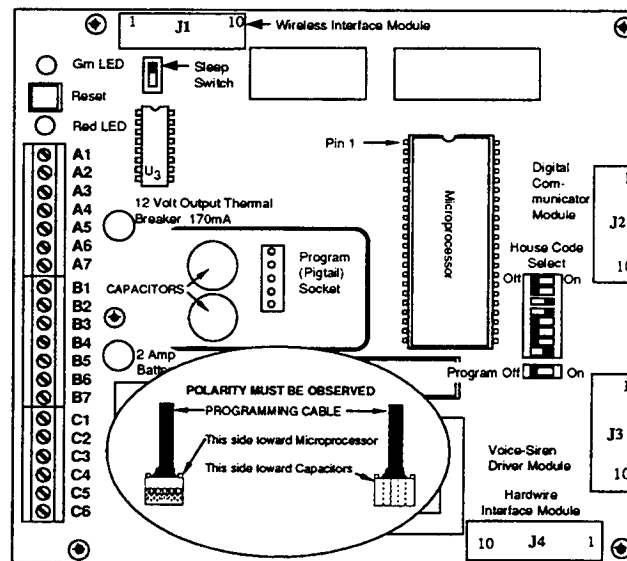
Programming Wireless Sensors

Each of up to 30 wireless sensors or hardwire zones you will use with a CareTaker system must be assigned to one **and only one** group (level) in CareTaker's memory so that it knows what to do when it receives (or fails to receive) a signal from it. Additionally each wireless sensor must have a unique identification number as well as the house code of the system it "belongs to". ITI has provided a very convenient way to do all this with just one two digit entry for each sensor on your Touch Tone phone.

Program levels. [*] [0] [5] to [*] [1] [6] are the 12 possible groups to which a sensor can be assigned. Each group has a unique set of characteristics making it most suitable for a certain application as shown below:

[*] [0] [5] **Smoke and Fire sensors.**

[*] [0] [6] **Perimeter instant** intrusion sensors.

[*] [0] [7] **Perimeter delayed** intrusion sensors.

[*] [0] [8] **Interior instant** intrusion sensors. Instant but will honor an entry delay.

[*] [0] [9] **Motion sensors.** Instant but will honor a delay.

[*] [1] [0] **Motion sensors.** Will initiate a delay.

[*] [1] [1] **Auxiliary N.O.** Non supervised. Rapid low level alarm stops on CS kissoff.

[*] [1] [2] **Auxiliary N.C.** Supervised. Rapid low level alarm stops on CS kissoff.

[*] [1] [3] **Audible panic (HELP).** Supervised.

[*] [1] [4] **Audible panic (HELP).** Non supervised, for ITI Portable Panic Button*.

[*] [1] [5] **Silent panic (HELP).** Non supervised, for ITI Portable Panic Button*.

[*] [1] [6] **24 Hour** intrusion sensors. Active in all arming levels unless bypassed.

> * Supervised for low battery detection only.

Example: You wish to assign a smoke detector to program Group 05 (an easy decision) and call it sensor number 23.
1. Connect the sensor to the CPU programming socket with the "pigtail".
2. Turn on the Program Switch. You will hear *"PROGRAM MEMORY"* repeatedly on the phone.
3. During a pause, enter [*] [0] [5]. You will hear *"SENSOR PROGRAM LEVEL ZERO FIVE"*.
4. Enter [2] [3]. You will hear *"SENSOR TWO ....THREE PROGRAM OK"* If you hear *"SENSOR PROGRAM FAILURE"* try again. Multiple failures indicate a bad sensor or that the sensor is not properly connected to the CPU.
5. Enter any other sensors into Group 05 in the same manner.
6. Pause about 15 seconds and CareTaker will leave Group 05 and you will, again, hear *"PROGRAM MEMORY"* .
7. To confirm your entries, enter Group 05 again and you will hear a listing of all sensors assigned to that group.

Deleting Wireless Sensors. To delete a wireless sensor from the CPU memory, first turn the program switch on. Enter the sensor's level or group and then enter ⌗ followed by the sensor number. You can also delete a sensor from an off premise phone by entering ⌗+Ⓒ Ⓞ Ⓓ Ⓔ+⌗Ⓦ+Ⓢ Ⓔ Ⓡ Ⓨ command. Enter the sensor's level or group, followed by entering ⌗ and the sensor number. This method does not alter the memory of the sensor itself so it will go on transmitting but the CPU will ignore it.

> **N**ote. If you have made a programming error or wish to change a value such as an exit delay, simply access that value and, after it has been announced, key in the new value and you will "write over" the existing value.

Programming Hardwired Sensors (Zones).

You can assign the full limit of a combination of 30 wireless and hardwire zones to one group or any combination of groups. Although the Hardwire Module and the Hardwire Expander have provisions for 12 zones each, the zones do not become active and begin reporting to the CPU until they are "awakened" by having a closure applied to them or, in the case of zones 11, 12 and 23, 24, have the EOL resistor connected to them. When they do "awaken" they automatically assume the zone numbers on their terminal strip as their sensor numbers. **Therefore you must not assign a wireless sensor the same number as one of the zones you are going to use on the Hardwire Module or Expander.**

> **N**ote. The maximum line resistance for all hardwire zones is 100 Ohms.

When programming (or deleting) hardwired zones <u>always</u> enter Program Memory with the Touchpad access code (⌗+Ⓒ Ⓞ Ⓓ Ⓔ+⌗Ⓦ+Ⓢ Ⓔ Ⓡ Ⓨ). **The program switch method of entering Sensor Numbers only works if a Wireless Sensor is plugged into the Program Socket.** Assign the zone numbers to the desired groups just as you would a wireless sensor. It is necessary to have a Ⓢ Ⓔ Ⓡ Ⓨ code programmed for this to work.

> **N**ote. Do not jumper or momentarily short unused zones! Do not connect end-of-line resistors to unused zones! The Hardwire Module has a memory which stores the numbers of the zones that it "sees" as active each time you enter program memory. The first closure on a zone while in program memory "wakes it up" causing it to begin sending supervisory signals to the CPU. If you need to access program memory after hardwire zone programming is completed, be sure ALL programmed hardwire zones are closed! If a programmed hardwire zone is in an open state at this time, it will cease to send supervisory signals to the CPU. This will cause "Sensor Failure" reports. Always perform a complete sensor test after leaving program memory when the Hardwire Module is used.

Deleting Hardwired Sensors. You can delete a sensor from a group by entering ⌗
🔲🔲 when you are in that sensors program level. (🔲🔲 = the sensor's number)
CareTaker will respond with *"SENSOR nn OFF"* and not respond to any further
transmissions from it.

When you have finished programming sensors be sure the program switch is OFF and
the programming **Pigtail is removed from the CPU**. If you were not using the
program switch, to exit Program Memory enter ⊡ 🔟 🔟 to exit immediately or hang
up and the system will return to normal in one minute.

Note: In some cases, such as when the CareTaker is used on a PBX line, it may be necessary
to add "additional pauses" in between dialing digits when programming the Central Station
phone number. To program pauses between digits, you must use the Hardwire Touchpad
which has a hidden button located under the first "A" in the CareTaker logo. Pressing this
hidden button while in Program Level 20 or 21 (the Central Station number) will insert a .8
second pause in the dialing sequence. For example, you would first enter Program Level 20
or 21. Then, if a pause is required after dialing a "9" to get an outside line, you would enter
"9" followed by pressing the hidden button in the CareTaker logo four times. This would be
followed by the rest of the Central Station phone number. To confirm your entry, the
CareTaker will respond with *" PROGRAM LEVEL TWO ZERO....NINE...PING*
PONG...PING PONG...PING PONG...PING PONG..." and the rest of the number. Each
Ping Pong tone indicates a .8 second pause in the sequence or a total of 3.2 seconds.

SENSOR GROUP CHARACTERISTICS

The following table shows the characteristics of each sensor group. Duress and Freeze are included for reference only as it is not possible to assign sensors to them.

Characteristic	05	06	07	08	09	10	11	12	13	14	15	16	Duress	Freeze
	(F)	(Intrusion)					(Aux/Panic)					(I)	(Dur)	(Frz)
Active Level														
Active Level 1	•						•	•	•	•	•	•	•	•
Active Level 3	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Active Level 2	•	•	•				•	•	•	•	•	•	•	•
Response														
Instant		•		•	•		•	•	•	•	•	•	•	•
5-10 second Delay	•													
Initiate Entry Delay			•			•								
Honor Entry/Exit Delay				•		•								
Wireless Features														
Supervised	•	•	•	•	•	•		•	•					
Tamper Feature		•	•	•					•			•		
Low Battery Feature	•				•	•	•	•		•	•			
8 Round Transmitter		•	•	•	•	•								
16 Round Transmitter	•						•	•	•	•	•			
Siren Sounds **														
Siren Steady with FIRE Msg.	•													
Siren Pulsed w/ INTRUSION		•	•	•	•	•			•	•		•		
Siren Pulsed with HELP Msg.									•	•				
Interior siren Rapid Low							•*	•*						•*
Turn Lights ON During Alarm	•	•	•	•	•	•	•	•	•	•		•		•
Silent Alarm												•	•	
Communicator														
Communicator Code	1	3	3	3	3	3	4	5	2	2	2	3	2	6
Restore (9) Anytime Reset	•													
Restore (9) Before Siren Done		•	•	•	•	•						•		
Abort Msg Before Ack Tone		•	•	•	•	•						•		

* Stops after Central Station has received message.
** Sirens don't give voice messages, Alarm Speakers do.

PROGRAMMING EXAMPLE

Assume you have a **CareTaker** system including the sensors and Wireless Touchpad you will need for a residential installation set up on the bench as described earlier. The planned installation is in a residence which has a main living area with a cathedral ceiling built on a slab but the rest of the house is conventional framed construction. You decide that you will hardwire the framed portion of the residence but will require wireless sensors in the main living area. Based upon your customer survey, you fill out the installation records as follows:

CARETAKER INSTALLATION RECORD

Customer Name	Jones, Henry T	Account No.	327
Install Date	3-21-88	Installer	Ed B

Programming Record

Feature Setting	Description	Default	
* 01	Access code (announces only)	*1234	*1234*
* 02	Duress code (last two digits of access code, 00=OFF)	OFF	99
* 03	Entry delay (6-58 seconds)	30	20
* 04	Exit delay (6-58 seconds)	30	40
* 17	Trouble alert re-occurs every 12 hours (Toggles)	OFF	OFF
* 18	To program a Wireless Touchpad with the House Code	N/A	N/A
* 19	Group 09 and 10 lockout delay (Toggles)	OFF	OFF
* 20	Primary Central Station phone number.	none	326-6653
* 21	Secondary Central Station phone number.	none	none
* 22	Account number. (3 digits)	000	327
* 23	Freeze alarm activation temperature	42° F	45
* 24	****** HELP from telephone (Toggles)	ON	ON
* 25	Siren timeout. (01-20 minutes)	04	12
* 26	Service code (4 digits)	none	9898
* 27	Call twice for access (Toggles)	ON	OFF
* 28	Communicator baud rate	10	20
* 29	Normal Touch Tone sensitivity	ON	ON

Sensors Installed

No	Group	Type	H/W	Location	No	Group	Type	H/W	Location
01	06	Mag	H	NE Wind BR 1	17	16	DW	W	Gun Cabinet
02	06	Mag	H	N Wind BR 2	18				
03	06	Mag	H	SW Wind BR 3	19				
04	06	Mag	H	E Patio Door	20				
05					21				
06					22				
07					23				
08					24				
09					25				
10					26				
11	05	SM	H	Bedroom Hall	27				
12					28				
13	05	SM	W	Main Living Front	29				
14	10	PIR	W	Main Living Dining	30				
15	09	PIR	W	Main Living Rec Rm	31		Panic		(T-pad or Phone)
16	07	DW	W	Garage Entry Door					

Accessories Installed

Type	Quan	Location
Wireless TP	1	NA
Hardwire Int. Sirens	2	BR Hall, Main Living
Siren Speaker	1	Garage Eave
Energy Saver	1	Main Living West

Housecode

ON=

OFF=

Note: Do not set all on or all off.

* H or W indicate hardwire or wireless under type

• Prepare **CareTaker** for Programming.

1. Set a House Code on the 8 position switch and record the setting in the System Installation Record.
2. Be sure the Sleep Switch is ON.
3. Apply power to the CPU by connecting the battery then the transformer.
4. Turn the Sleep Switch to OFF.
5. Hold the Reset Switch for 10 seconds to clear memory.
6. Turn the Program Switch ON. You should hear" *PROGRAM MEMORY* " repeatedly on the phone.
7. Plug one end of the programming Pigtail into the Program Socket on the CPU board.

• Program the System Options.

1. Press ✱ ⓪① to test your set-up. You should hear *"PROGRAM LEVEL ZERO ONE ....STAR ONE TWO THREE FOUR"* which is the default customer access code. You can not change the code with this command (see Less Frequently Used Customer Commands). You have decided to leave the default code as it is for convenience during installation and testing and train your customer to change the code as he wishes.

2. Press ✱ ⓪② for the Duress Code. You should hear *"PROGRAM LEVEL ZERO TWO OFF"*, the default setting. Press ⑨⑧ to enter the new code and you should hear *"PROGRAM LEVEL ZERO TWO....NINE EIGHT.*

3. Press ✱ ⓪③ for the Entry Delay and you should hear *"THREE ZERO"*, the default setting. Press ②⓪ to enter a twenty second time. You should hear *"TWO ZERO"*.

4. Press ✱ ⓪④ followed by ④⓪ to change the Exit Delay in the same way.

5. **Do not** press ✱ ①⑦ because you have elected not to change the default setting of "OFF" for the trouble alert feature. Doing so will toggle the feature "ON".

6. Remove the back cover from the Wireless Touchpad and plug the free end of the programming Pigtail into the socket near the battery. Press ✱ ①⑧ and you should hear a series of beeps from the unit and the message *"PROGRAM OK"* indicating the House Code has been successfully programmed. Remove the Pigtail from the Touchpad.

7. Do not press ✱ ①⑨ as you do not want to change the default "OFF" setting for the lockout feature.

8. Press ✱ 2 0 for the primary Central Station number. You should hear *"OFF"*. Press 3 2 6 6 6 5 3 +# to enter your Central Station number. It will be repeated on the phone.Note that # must be pressed to cause the number to be entered.

9. Skip ✱ 2 1 because you are not using a secondary Central Station.

10. Press ✱ 2 2 and you should hear *"ZERO ZERO ZERO"*. Press 3 2 7 # to enter a three digit communicator account number and you will hear *"THREE TWO SEVEN"*.

11. Press ✱ 2 3 and you should hear *"FOUR TWO"*, the default freeze alarm setting. Wait until you hear "Program Memory", then press 4 5 to enter the new temperature and you should hear *"FOUR FIVE"*.

13. Do not press ✱ 2 4 as you do not want to change the default "ON" setting for the HELP feature.

14. Press ✱ 2 5 and you should hear *"ZERO FOUR"*, the default Siren Timeout. Press 1 2 to enter your desired setting and you should hear *"ONE TWO"*.

15. Press ✱ 2 6 followed by 9 8 9 8 to enter your Service Code. You should hear *"NINE EIGHT NINE EIGHT"*.

16. Press ✱ 2 7 to change the default setting of "ON to "OFF" for the call twice feature. You should hear "OFF".

17. Press ✱ 2 8 to toggle the default communicator baud rate of 10 baud to 20 baud. You should hear *"TWO ZERO"* for 20 baud and *"ONE ZERO"* for 10 baud.

18. Press ✱ 2 9 to turn the normal slower Touch Tone sensitivity to "OFF". Do this only if a high speed automatic dialer is to be used to control **CareTaker.**

• Program the Wireless Sensors.

1. If you have left Program Memory, re-enter it using the **Program Switch.**
2. Select the **Wireless** Smoke Sensor which you have decided to number 13 and assign to group 05.
3. Plug the Pigtail into the socket on the sensor.
4. Press ✱ 0 5 and you should hear *"SENSOR LEVEL ZERO FIVE"*.
5. Press 1 3 and you should hear *"SENSOR ONE THREE PROGRAM OK"*.
6. Remove the Pigtail from the sensor.
7. Repeat for the other **Wireless** Sensors and Groups.
8. Remove the Pigtail from the CPU and turn the Program Switch "OFF".

Program the Hardwired Sensors.

1. Enter Program Memory by pressing [*] [1] [2] [3] [4] [#] [7] [9] [8] [9] [8]
   ([*] [C] [O] [D] [E] [#] [7] [S] [E] [R] [Y]). **Do not** use the Program Switch.

2. Select the **Hardwired** Smoke Sensor which you have decided to assign to group 05 and connect to zone 11 on the Hardwire Module.

3. Press [*] [0] [5] and you should hear *"SENSOR PROGRAM LEVEL ZERO FIVE"*.

4. Press [1] [1] (the sensor assumes the identification number of the **zone** it is connected to) and you should hear *"SENSOR ONE ONE ON"*.

5. Repeat for the other **Hardwired** Sensors.

6. Refer to page 21 for further requirements for Hardwire Sensor installation.

• Verify your program.

1. Press [*] [0] [2]. You should hear "NINE EIGHT" which is the Duress code that you programmed above. The complete Duress Code would be [*] [1] [2] [9] [8].

2. Repeat for all System Features through [*] [2] [7]. If you turn a "toggle" feature ON or OFF accidently, simply command it again to reverse the effect.

3. Press [*] [0] [5] and you should hear "SENSOR LEVEL ZERO FIVE...ONE ONE...ONE THREE" which is a read out of the sensors you have programmed to Group 05.

4. Repeat for all other active Groups.

5. Press [*] [9] [9] to leave Program Memory when you are finished.

CUSTOMER COMMANDS

⋆,#,1️⃣2️⃣3️⃣4️⃣ etc. represent Touch Tone phone keys. The sequence C O D E represents the customer 4 digit access code such as 1234 etc. (Option) indicates that optional hardware must be employed for the command to be valid.

Inquiries

⋆ #	**Short Status** - Announces current arming level & identifies any open sensors or alarms in memory. Reports status of Energy Saver if installed.
⋆ C O D E # 1️⃣	**Full Status** - As above plus lists troubles, status of AC power and standby battery. Gives alarm history and temperature and status if Energy Saver is used.

Arming Level Commands

⋆ C O D E 1️⃣	**Level 1 - Off** - Turns system OFF. Resets any alarm.
⋆ C O D E 2️⃣	**Level 2 - Stay** - Turns perimeter intrusion protection on.
⋆ C O D E 3️⃣	**Level 3 - Away** - Turns all intrusion protection on.

Commands That Can Be Added To Level 2 or 3 Arming Commands

4️⃣	**Bypass** - Arms to the level commanded but will ignore any sensors violated at the time of bypass for the duration of the arming period. (Indirect Bypass)
6️⃣	**Instant** - Changes all **Delay** sensors to instant.
7️⃣7️⃣	**Extend Lights** - Turns lights ON for 5 minutes for exit instead of just the exit delay time. (Option)
0️⃣	**Energy Saver** - Turns unit ON. An arming level change will turn unit OFF. (Option)

Help Call

⋆⋆⋆⋆⋆⋆	**Help** - Police call alarm. Can be activated from any on premise phone.

⊡ C O D E ⑦   **Light Control** - Turns lights ON or OFF (toggles). Lights will automatically shut off in 5 minutes unless they were turned ON by an alarm. (Option)

⊡ C O D E ⑧   **Central Station Test** - Tests optional communicator. Blinks green light until test is complete or manually turned off. (Option)

⊡ C O D E ⑨   **Sensor test** - Leave phone off hook, put phone on hook to terminate. Issues interior siren beep on receiving sensor signal followed by the sensor number and group over the phone. Press # to get a list of sensors not yet tested.

⊡ C O D E ⑩   **Energy Saver** - Turns unit ON or OFF (toggles).

⊡ C O D E # ②   **Chime Switch** - Turns chime feature ON or OFF. Must be in arming level 1.

⊡ C O D E # ③   **Energy saver** - Low temperature set point. Range 40° to 97° F low limit. (Option) Must be in arming level 1.

⊡ C O D E # ④   **Energy saver** - High temperature set point. Range 41° to 98° F high limit. (Option) Must be in arming level 1.

⊡ C O D E # ⑤   **Alarm History** - Gives last four alarms - most recent first.

⊡ C O D E # ⑥   **Local Disable** - Disables telephone control of system until telephone is hung up. This allows Touch Tone telephone to be used for controlling other than the local CareTaker system. Must be in arming level 1.

⊡ C O D E # ⑧   **Code Change** - Allows the user to change the access code of the system, by entering a new four digit code. For example: ⊡ C O D E # ⑧ ④ ③ ② ① changes the access code "1234" to "4321".

The **Leading Character,** either ⊡ or # , can be **reversed for all commands** if there are conflicts with some other telephone service, by including it before the new code. The above example would be changed to

⊡ C O D E # ⑧ # ④ ③ ② ① Any subsequent commands would have to start with # instead of ⊡. Must be in arming level 1.

> **Caution!** Your customer should be warned that entering an incorrect access code or forgetting the code could result in a service call to correct the problem.

⊡ C O D E ④ nn **Bypass sensor nn** - Ignores a specific sensor until arm level is changed. Must always be two digits as 06, 01, 17 etc. (The only way to de-activate a sensor assigned to group 16.) (Direct Bypass)

> **N**ote. The Direct Bypass command does not work with sensors assigned to Group 05 **(Fire/Smoke).**

SERVICE ACCESS AND COMMANDS

Remote Access. You or your customer can dial up an unattended CareTaker system two ways. If level ✱ ② ⑦ **Call Twice for Access** feature is ON, call and let the phone ring twice, hang up, wait 10 seconds, call again and CareTaker will answer. If the feature is OFF, CareTaker will answer after about 7 rings if it has an alarm or otherwise 12 or 13 rings. The auto answer feature is useful if an answering machine is on the line. Set the answering machine for three rings and you should never get it.

> **Note.** Access under worst case long distance connections can not be guaranteed. Usually re-dialing the call will cause a different call routing and clear the problem.

Once you reach CareTaker you can use the listed commands utilizing the four digit service code, represented here by **S E R Y**, to issue certain commands and inquiries but not those which are security oriented such as changing customer access codes or arming levels. If the customer access code is known, however, the alarm technician has access to all customer commands as well as full editing access to the programmed data in memory as described above. Refer to Program level ✱ ② ⑥ for **Service Code Entry.**

Service Technician Commands and Inquiries

✱ S E R Y ④	**Bypass** - Bypasses the first sensor in alarm memory that caused an alarm.
✱ S E R Y # ①	**Status** - Same as **Full Status** inquiry except no arming levels or bypass conditions are given.
✱ S E R Y # ⑤	**Alarm History** - Gives last four alarms, most recent first. Enter # to clear history.
✱ S E R Y ⑧	**Communication Test** - Initiates a test call to the Central Station (Option). Hang up phone after command.
✱ S E R Y # ⑨	**On Premise Signal Strength Sensor Test** - Beeps interior siren as each round of data is received from an activated sensor to assure good transmission. Announces sensor number over optional siren speakers.
✱ C O D E # ⑦ S E R Y	**Access Program Memory** - Allows editing of memory. Note that the announcement when adding a sensor will be *SENSOR nn ON"* instead of *"SENSOR nn PROGRAM OK"* which is given when using the program switch.
✱ ⑨ ⑨	**Exit Program Memory.** Returns to previous arming level.

30

OPTIONAL PROGRAMMING WITH THE SX-V PROGRAMMER

The SX-V programmer can be used to read or program House Codes and sensor numbers from or into sensors or Wireless Touchpads. This is useful for trouble-shooting or when a device must be re-programmed and bringing it to the CPU is not practical. The procedure uses a different numbering system for sensors and House Code selection than the SX-V. Converting from the SX-V protocol to the CareTaker is simple, using the explanations that follow. The terms "binary, octal and decimal" are included but understanding them is not necessary to use the programmer with the CareTaker.

Reading the House Code and sensor number is done by connecting the programmer to the sensor with the "pigtail" and pressing READ.
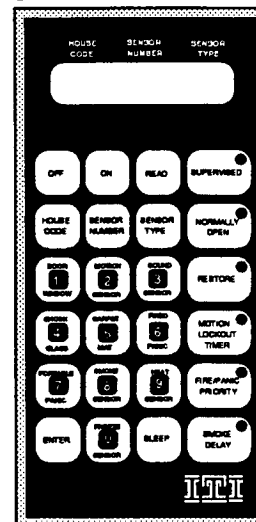
The **House Code** reading on the programmer is an ordinary, every-day **decimal** number between 1 and 254. For this to be of any value we must be able to relate it to the House Code setting on the DIP switches on the CPU PC board. A little arithmetic is necessary here as the switch settings are a **binary** (base 2) representation of the number. Each switch represents a decimal value as shown. Simply adding the values of all of the switches in the OFF position will yield the **decimal** number which the programmer reads.

House Code Select

1 — Off — On
2 —
4 —
8 —
16 —
32 —
64 —
128 — Off — On
Program
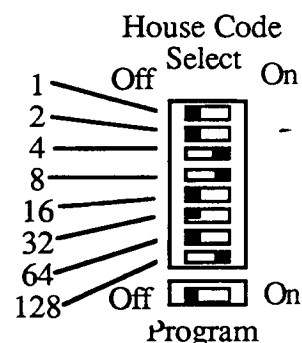
Example: As shown, the 1,2,16,32 and 64 switches are all turned OFF. The House Code would be the sum of the OFF values 1+2+16+32+64 = **115**. Remember that all switches OFF (House Code number 255) and all switches ON (House Code number 0) are settings that **won't work!**

The **sensor** number that the programmer reads is an **octal** (base 8) number whereas CareTaker sensors are numbered in the ordinary **decimal** fashion. The chart shows how to convert the programmer reading to or from the CareTaker sensor number.

Programmer	1	2	3	4	5	6	7	10	11	12	13	14	15	16	17
CareTaker	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Programmer	20	21	22	23	24	25	26	27	30	31	32	33	34	35	36
CareTaker	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

CareTaker SENSOR TYPE CONVERSION CHART

	CareTaker PROGRAMMING GROUPS											
PROGRAMMER OPTION LED's	05	06	07	08	09	10	11	12	13	14	15	16
SUPERVISED	X	X	X	X	X	X	X	X	X	X	X	X
NORMALLY OPEN	X				X	X	X	X	X	X	X	
RESTORE	X	X	X	X			X	X				X
MOTION LOCKOUT												
FIRE/PANIC PRIORITY	X								X	X	X	
SMOKE DELAY	X											
X = LED ON	8	1	1	1	2	2	0	0	7	7	7	1

SX-V PROGRAMMER
SENSOR TYPE KEY ENTRY

1.3 CareTaker Installation
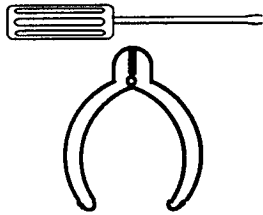
When surveying the installation make sure the phones are Touch Tone and not push button style pulse dial phones. Pick up a phone and dial - if you hear tones your OK - if you hear a series of clicks you have compatibility problems. Also make sure no special equipment exists which is activated by the ⊛ or ⌗ key such as re-dial features etc..

There are several solutions:
- Wireless and/or Hardwire Touchpads can be used for control and annunciation if Touch Tone phones are not available.

- Combination Touch Tone and Pulse phones can be used as the CareTaker control if the customer will tolerate switching the phone back and forth for control or dialing.

- If a conflict exists with the ⊛ or ⌗ key, their functions can be reversed (see Programming Section "Other Customer Commands" command ⊛ Ⓒ Ⓞ Ⓓ Ⓔ ⌗ ⑧).

INSTALLING THE CPU

Determine the CPU Mounting Location.

- **Centrally** locate the CPU with respect to all transmitters.
- Locate transmitters within a **100' radius** of the CPU location if possible.

Note. Lack of wireless range should be a rare problem as CareTaker has at least **500 foot** open field range. See Testing and Troubleshooting section for range testing.

- The location for the CPU should be **secure** yet **easily accessible** to the customer.
- Locate the CPU in a **heated area** of the building (42° F to 95° F).
- Verify the availability of a 110V **non-switched** AC outlet for the power transformer. Plan your wire run from the outlet to the CPU location.
- The RJ-31X Jack should be installed within **5 feet** of the CPU.

F.C.C. REGISTRATION NUMBER: B4Z8NW-16226-AL-R
RINGER EQUIVALENCE NUMBER: 0.0B

- Avoid locations with **excessive metal**, foil, pipes and electrical wiring.
- Good locations often include **coat closets** or behind the master bedroom door.

Prepare the CPU for Mounting.
- **Open** any knockouts you will be using to feed wire through. The **large hole** in the back of the unit was provided to allow stuffing excess wiring in the wall instead of in the cabinet.
- **Mark** the two keyhole mounting slots, the lower elongated hole and the knockout hole on the wall where the CPU is to be mounted, keep in mind that the CPU antennas extend about 9" above the CPU cabinet.

Level and Mount the CPU
- The CPU can be placed on a shelf, but **wall mounting** is best to reduce the possibility of compromise or attack.
- Mount the CPU near **eye level** so the LEDs can be easily viewed. Remember to leave enough room for the antennas which extend about 9" above the unit and room to allow the cabinet to fully open.
- Mount the CPU **securely**, either directly to a stud with 1-1/2" screws, or with toggle bolts. Begin by putting screws partially in the wall at the keyhole locations, then hang the unit, level it and fasten with the lower screw(s) and tighten remaining screws.
- The CPU is heavily protected against power surges and lighting using MOV, Spark Gap and Transorb transient protection. Grounding the CPU is recommended only if hardwired sensors are used.

INSTALLING MODULES

If you have not already done so during bench testing and programming, install the optional modules now. The Wireless and Hardwire each require that two screws holding the CPU board be loosened before installation and then re-tightened, securing the modules. **All power must be OFF. Discharge yourself of static electricity.** Be sure the jumper is in place in the module socket where it is required in the event a module will not be used.

- **Jumper A** must be installed between pins **7&8** on **J1** if a Wireless Module is not used.

CareTaker IMPORTANT NOTICE

If you plan to use the CareTaker as a reporting system to the Central Station, the CareTaker CPU requires <u>both</u> a Digital Communicator Module, Part #57-256, and a Voice Siren Driver Module, Part #57-257 for proper operation.

Without the Voice Siren Driver Module, the CareTaker will not communicate to the Central Station.

Digital Communicator and Siren Driver Modules. Both of these modules simply plug in to their respective sockets as shown. Set **both** switches on the Communicator Module in the same direction to select the desired format.

Note: Select 10 or 20 Baud rate with program location *28.

Format Switches (Select Both)

Sescoa/Franklin

Ademco/Silent Knight

House Code Select

On

On

Digital Communicator Module

Voice/Siren Driver Module

Caution !! Do not inter- change units. Note notch.

Hardwire Interface Module
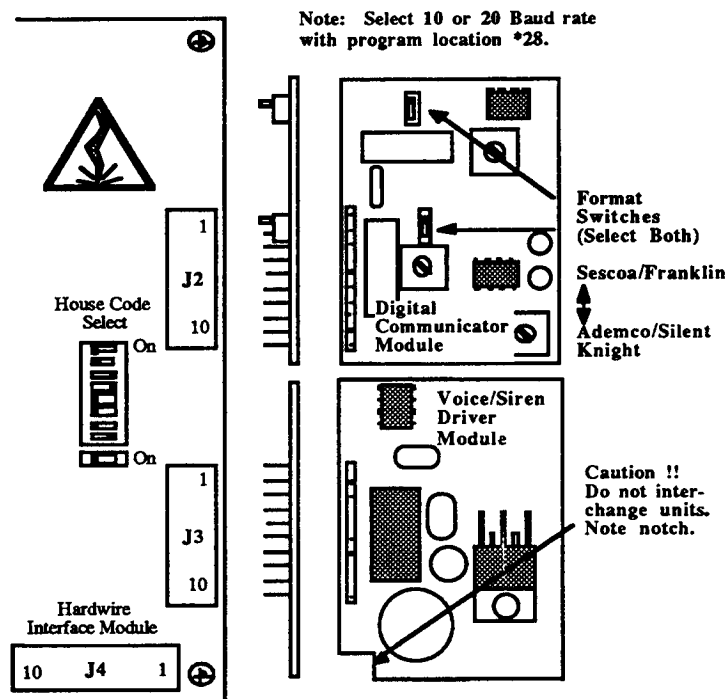
Note. The default baud rate for the communicator is 10 baud but can be toggled between 10 and 20 baud by programming level ✱ ② ⑧.

Wireless Module. Loosen the two upper CPU board mounting screws so that the aluminum shield on the module can be slid beneath them as the unit is plugged in. Then tighten the screws and insert the two antennas through the holes provided in the top of the CPU and connect them to the innermost terminal of each terminal pair. The antennas should be vertical and clear of metal wires, pipes, duct work, etc.

J 1 Socket   Board hold-in tabs

Mounting Screws

Note Antenna Connects to Inner Terminal
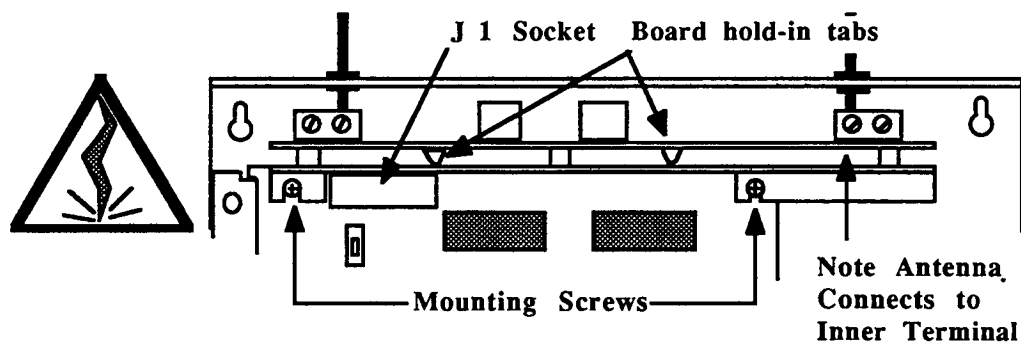
Hardwire Module. If the Hardwire **Expander** Module is to be used, remove the aluminum shield on the Hardwire Module and break out a portion of it to permit access to the second terminal strip as shown.

Break-away Tab
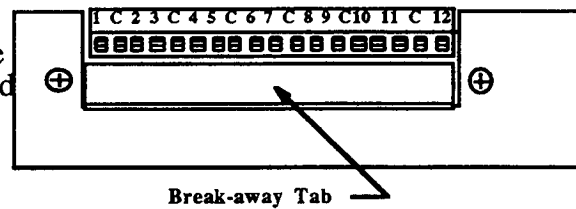
Loosen the two lower CPU board mounting screws and slide the Hardwire Module under them while plugging it into **J-4** and then secure the unit by tightening the screws.

Hardwire Module
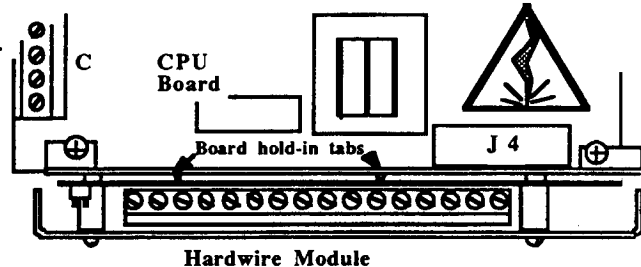
Note. Screws should be tightened securely for best lightning protection.

---

11 12
23 24 **Zones**

ON for EOL Super-vision

OFF for NO/ NC Sensors
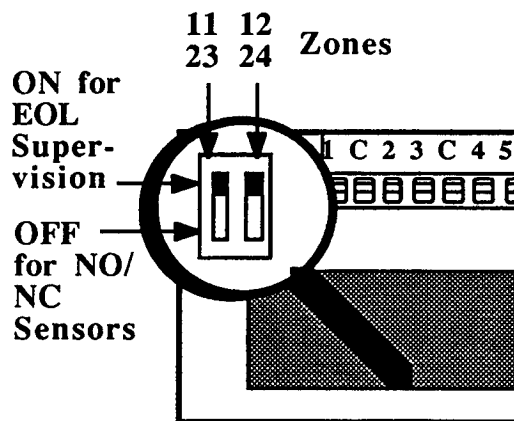
If zones 11, 12, 23, or 24 are to be set up for **Normally Open EOL supervised operation,** set the dip switches "ON" as shown for trouble/open line indication. With EOL supervisory "OFF" the zones behave like all of the other NC zones except they will honor a NC **or** NO switch. Zones 11,12,23 and 24 require EOL resistors regardless of their switch settings.

Then, if used, plug the Hardwire Expander in and secure it to the Hardwire Module with the threaded spacers provided and attach the shield with the original screws.

Note. Do not jumper or momentarily short unused zones! Do not connect end-of-line resistors to unused zones! The Hardwire Module has a memory which stores the numbers of the zones that it "sees" as active each time you short or close a zone. The first closure on a zone "wakes it up" causing it to begin sending supervisory signals to the CPU. If you need to access program memory after hardwire zone programming is completed, be sure to **always** close and/or test all programmed hardwire zones after leaving program memory. This is necessary because when the program switch is turned on, the Hardwire Module Buss Line is reset. Therefore, any programmed zones that are in an open state during Program mode must be closed and/or tested.

35

Wire sensors to the module as shown (zone 12 must have the EOL supervisory switch "ON" in this example and zone 11 must have it's switch "OFF" as it is used as a conventional NC zone). Note that you should not jumper NC inputs which are not used. An end of line resistor must be installed for the last two zones of either module.

Hardwire Interface Module
or Extender (Zones 13 - 24)

1 C 2 3 C 4 5 C 6 7 C 8 9 C10 11 C 12

N.C. Device

N.O. Device

Typical N.O. Sensor or Device

4.7K EOL Resistor

End of Line Resistor 4.7K Ohms

Heat Detector
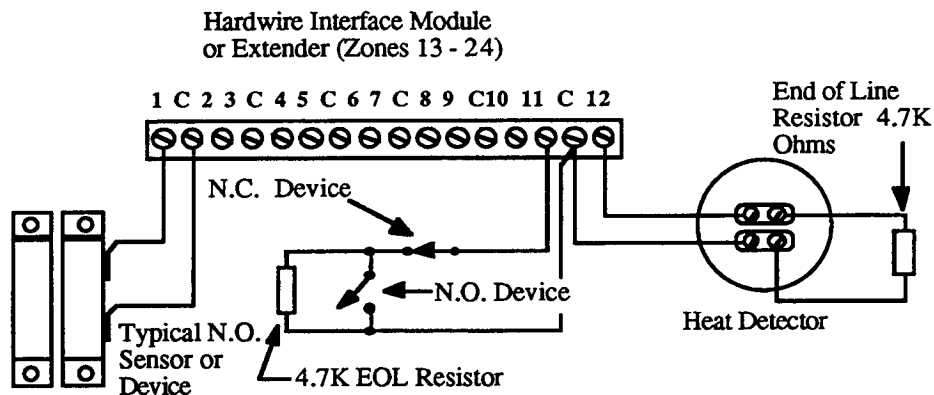
Note. The maximum allowable line resistance on any zone is 100 Ohms and the Loop Response Time is 250 ms.

Note. Up to 12 alarm input zones may be used on the Hardwire Module and an additional 12 input zones on the Expander Module.

CAUTION! Hardwired sensor installations greatly increase the risk of **lightning damage** to this panel! Always connect a #12 or greater wire to the lower left CPU support screw in the CPU cabinet and run it, as directly as possible, to a good **Earth Ground** such as a cold water pipe or 6' buried grounding rod using a gas discharge tube.

INSTALLING HARDWIRED ACCESSORIES

Power supply limitations. Some devices connected to the CPU terminal strip draw **continuous** current from the CPU. The maximum **continuous** current that is allowed is **110 ma.** Following is a list of devices normally connected and the average current they draw:

Hardwired Touchpad	30 ma
X-10 Light Control	25 ma
Energy Saver	40 ma
Other devices	???

You can calculate the maximum load by simply adding the current requirements of the devices you wish to connect. Example:

Hardwired Touchpad (1)	30 ma
Energy Saver (1)	40 ma
XYZ Co. PIR	40 ma
Total	110 ma........**O K**

Hardwire Siren Limitations. Devices containing piezo sirens draw 30 ma per siren. The maximum **siren** current that can be supplied by the CPU is **150 ma.** The table lists the devices normally connected and the current they draw (the Hardwire Interior Siren contains two piezos):

Hardwired Touchpad	30 ma
Phone Jack Siren	30 ma
Hardwire Interior Siren	60 ma

You can calculate the maximum load by simply adding the current requirements of the devices you wish to connect. Example:

Hardwired Touchpad (1)	30 ma
Phone Jack Siren (2) @ 30	60 ma
Hardwire Interior Siren (1)	60 ma
Total	150 ma........**O K**

The instructions which follow describe CPU connections for the primary devices connected to the main terminal strip, A1 - C6. In addition the Hardwire Module is discussed.

Hardwire Touchpad. Touchpads may be installed using 6 conductor cable runs (or 7 conductor if Energy Saver feature is used). The unit requires 30 ma of continuous current and 30 ma of siren current. The maximum current allowed by the CPU is and 150 ma. Wire the unit as shown.

A1 ◄— Orange
A2 ◄— Blue
A3 ◄— Brown
A4 ◄— Green
A5 ◄— Red
A7 ◄— Black
B7 ◄— White
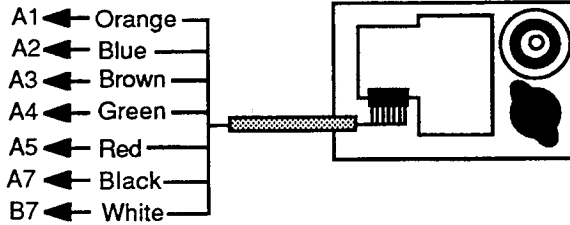
Two is the maximum number of HTD's that can be connected to a single CareTaker. If your application requires the installation of two, a diode on both HTD's must be cut in order for them to function properly. Before connecting the HTD to the CPU, carefully remove the diode, as shown, by cutting at least one side. **NOTE:** Once the diode has been removed, the Touchpad will function normally and the piezo siren will also work. However, there will be no voice on alarm from the Hardwire Touchpad speakers.

REMOVE THIS DIODE IF TWO HARDWIRE TOUCHPADS WILL BE USED IN THE INSTALLATION
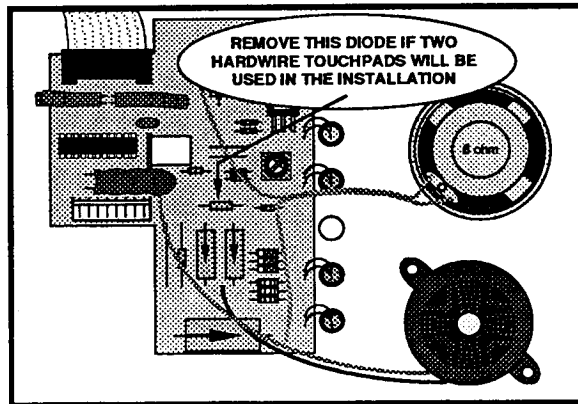
Note: Only one (1) HTD is to be used in a U.L. installation.

If you are using two HTD's, they must be wired in parallel to the CareTaker CPU. In other words, each HTD must be directly wired to the terminals on the CPU using a 6 conductor cable (7 conductor if Energy Saver feature is being used). Remember that each HTD requires 30 mA of continuous current and 30 mA of siren current. The maximum currents allowed by the CPU are 110 mA continuous and 150 mA of siren current.

NOTE: When using the Energy Saver Module, you must not connect CPU terminal A7 to terminal 4 on the Energy Saver Module. Leave this connection open.

Hardwire Interior Speaker/Piezo Sirens. Up to two Interior Speaker /Piezo Sirens can be wired using #22 gauge jacketed wire or larger.

Observe Polarity
To CPU Term B-6, -12 VDC
To CPU Term B-7, HWS
To CPU Term C-5, SPKR
To CPU Term C-6, SPKR

1 Amp Fuse
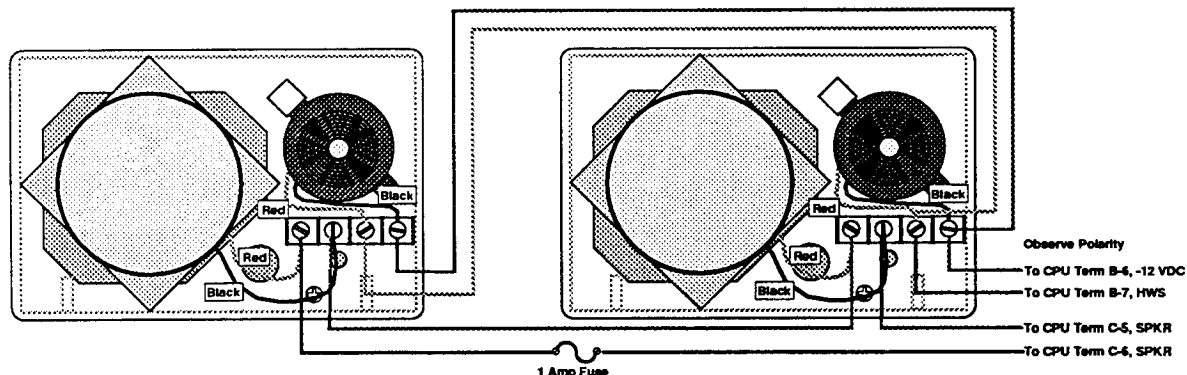
Phone Jack Sirens. The Phone Jack Siren contains a standard phone jack and uses the spare pair of wires in the installed telephone wiring to carry the Interior Siren signal from the CPU via the RJ-31X Jack. The unit draws 30 ma of **siren** current of the 150 ma allowed by the CPU.

CAPACITOR
(Observe Polarity)

PIEZO + (Red) —————— PIEZO - (Black)
TIP (Green) —————— RING (Red)

Observe Polarity

To Incoming
Phone Lines
To Siren + (yellow)
To Siren - (black)
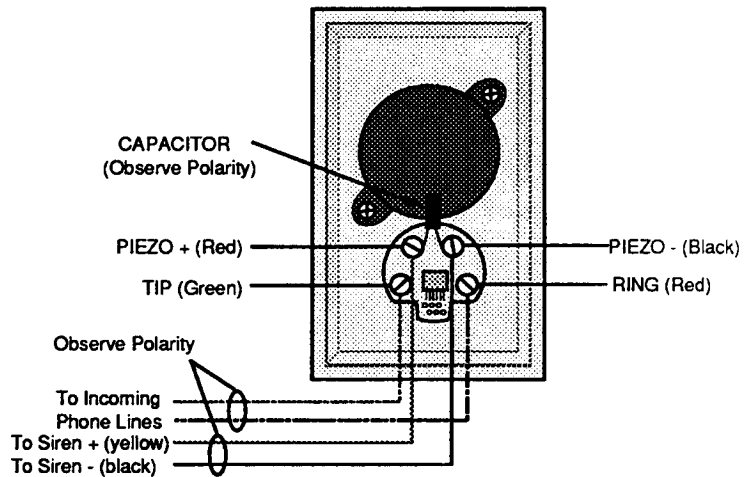
Phone Jack Siren Installation

1. Remove and disconnect the existing phone jack.
2. Remove the front plate from the Phone Jack Siren and mark the mounting hole locations on the wall.
3. Connect the four telephone station wires to the proper terminals on the back of the Phone Jack Siren.
4. Mount the Interior Siren using #6 screws.

Note. This product is designed to take advantage of existing telephone wiring which may not always be available for use. Also Public Utility Commission rules regulating the use of such wiring may vary from State to State. Therefore it is suggested you obtain an opinion from them before proceeding.

Phone Plug. Connect the DB-8 plug and cord, which is supplied, to the CPU terminal strip as shown. The orange and blue wires are not used.

B1
B2
B3
B4
B5
BLK — B6
YEL — B7
RED — C1
GRN — C2
GRY — C3
BRN — C4
C5
C6

RJ-31X
PLUG
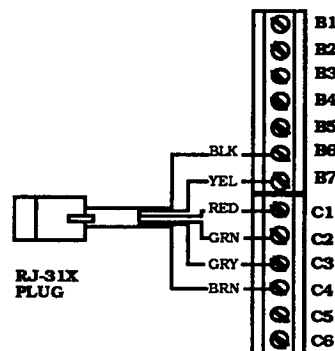
Siren Speakers. Use a maximum of two **30 or 40 watt** speakers in series for best quality and sound volume. To protect the CPU install an automotive style in-line fuse with a 1 Amp rating as shown. For a single speaker installation, an 8 Ohm 20 Watt resistor in series is recommended.

C5
C6
1 Amp Fuse

C5
C6
1 Amp Fuse   8 OHM
20 Watt
Resistor

39
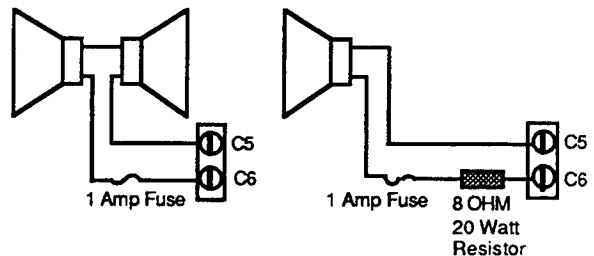
RJ-31X Jack. Locate the incoming telephone line protector block and run either a 4 or 6 conductor cable to the RJ-31X jack which should be within 5 feet of the CPU. Use a 6 conductor cable if you plan to install Phone Jack Sirens.

1. **First** connect your cable to the jack as shown below. Then to minimize interrupted telephone service, make the connections at the protector block.
2. **All** splices at the protector block should be weatherproof and insulated.
3. **Polarity MUST be Observed.**
4. **If** Phone Jack Sirens are to be used, connect the remaining two wires to an existing unused pair.
5. **When wiring is completed, Check** all phones for proper dialing operation with the DB-8 plug disconnected from the RJ-31X Jack. **Incorrect wiring and reversed polarity are common problems.** See Troubleshooting and Testing section.
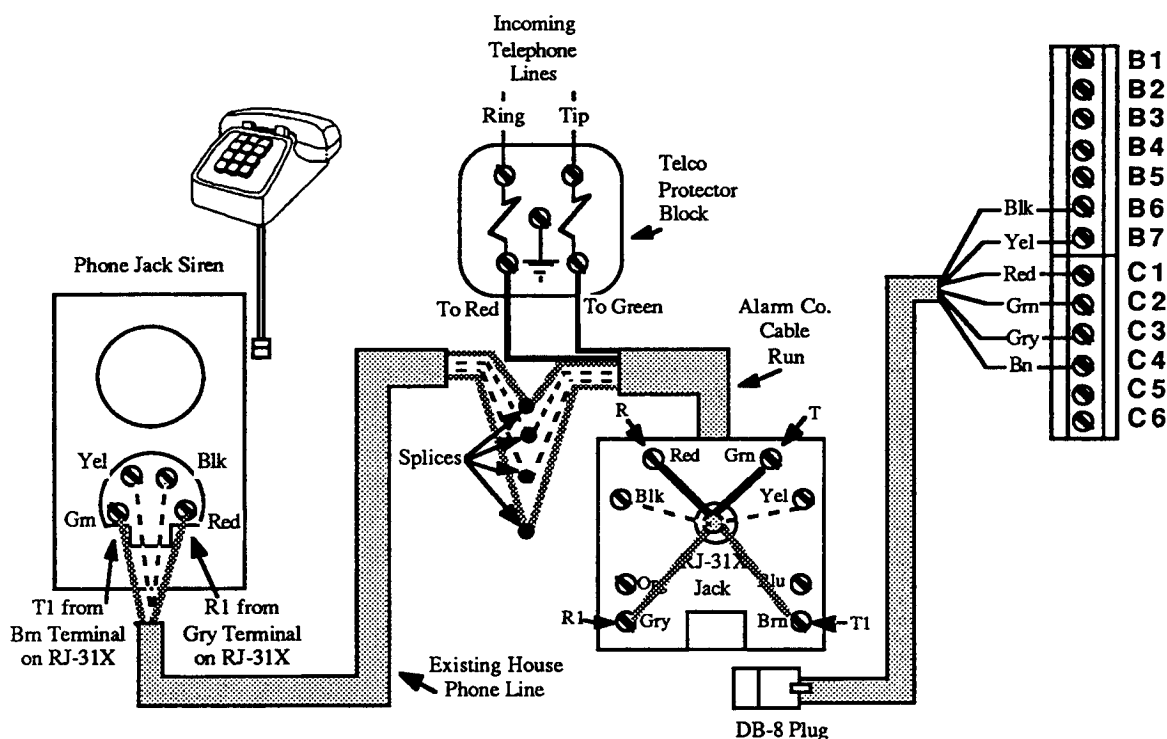
Light Control. Light control can be interface through the use of a plug in "X-10 Burglar Alarm Interface Module" (#BA284) manufactured by BSR and available from X-10 USA Inc. 1-(800) 526-0027. This interface module can be wired to the CareTaker CPUs terminals B3 and B4 (observe polarity). Multiple plug in"Control Modules" (#AM466 - Appliance Module, #LM46 - Lamp Module) available from the same source can be addressed by the Interface with signals sent over the power line without the need for direct connection.

40
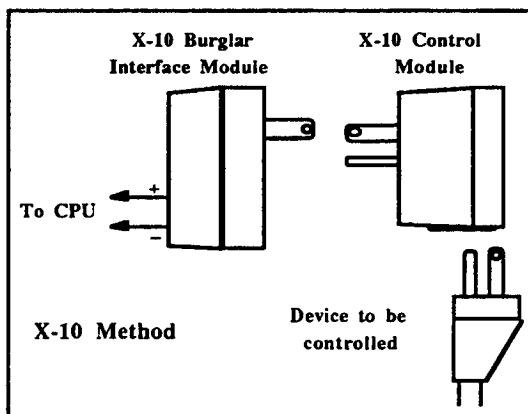
Transformer. With the transformer **unplugged,** connect it's two wires to CPU terminals **B1** and **B2.** For wire runs of 1'-15' use minimum 22 gauge wire and for 16'-50' use minimum 18 gauge wire. In Canada use Magnetic Consultants type #14 V 20 VA, CSA File 47968-2.

Transformer should be secured to outlet via the mounting tab.

```
        CareTaker™ Transformer          B1
                                         B2
          ITI #22-027                    B3
          14 VAC, 20 VA                  B4
                          RED            B5
                          BLK            B6
                                         B7
      +        -       ITI
          12 Volt      #34-008
        1.9 AH Battery
```
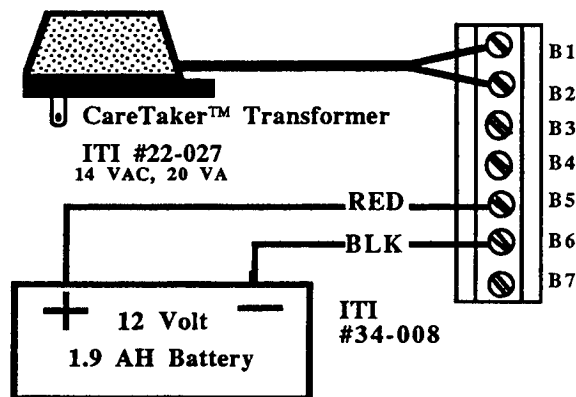
Battery. Standby battery leads are connected to the CPU prior to shipping. The CPU is designed to use only the **Panasonic LCR12V1.9P or Yuasa 1.9 - 12** battery for standby power - ITI part # 34-008. Use the 1" square of Velcro to fasten the battery to the rear of case.

The maximum charging current to the battery is 500 ma. The battery does not require any regular maintenance. Under normal conditions, it will last approximately 3 years. Replace only with an exact replacement battery (ITI #34-008).

The condition of the battery is automatically tested every 12 hours. If the battery voltage falls below 11.6 VDC during the test, the system will announce *"System Battery is Bad"* and report a "Code 7" to the Central Station on monitored systems.

Energy Saver. This unit is used in conjunction with the on premise thermostat and will provide an energy set-back or high/low temperature limiting feature which over-rides the normal thermostat setting when it is turned ON. The feature can be activated with the arming sequence when the occupants are leaving the premise or turned ON or OFF from a remote Touch Tone phone. The unit will also cause the "Freeze" signal to be sent to the Central Station if the premise temperature drops below a programmable value (42°F is default value, 01°F is the minimum value, and 00 turns OFF the freeze reporting). A back up fixed temperature 42° thermostat is included as a safety feature. The high temperature set point (41°-98°F) is used for cooling and the low temperature set point (40°-97°F) is used for heating.

Press to open

```
        Energy
    Saver  Module
```
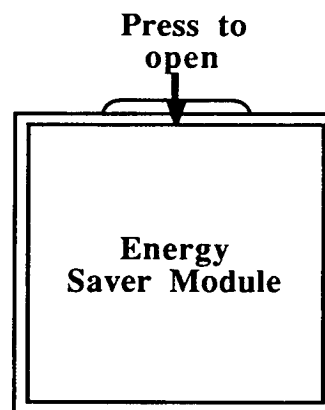
• An installation location near the thermostat is desirable because it minimizes the wire run to the thermostat and the thermostat is usually located centrally on an **interior wall** which is desirable for most meaningful temperature readings. The unit also acts

as a freeze alarm which will report a temperature reading below a programmable level (01° to 59° F - see page 18.)

- Mount with screws using at least two of the mounting holes provided and orient with tab up as shown.
- The temperature must be between 01°F and 99°F or no announcements will occur. The CPU samples the unit once each minute so you may expect up to a one minute delay after powering up the Energy Saver before the messages can be heard. The delay also applies to reactions to temperature changes such as reporting the new temperature.
- A four conductor run to the CPU is required. Connect the unit as shown.
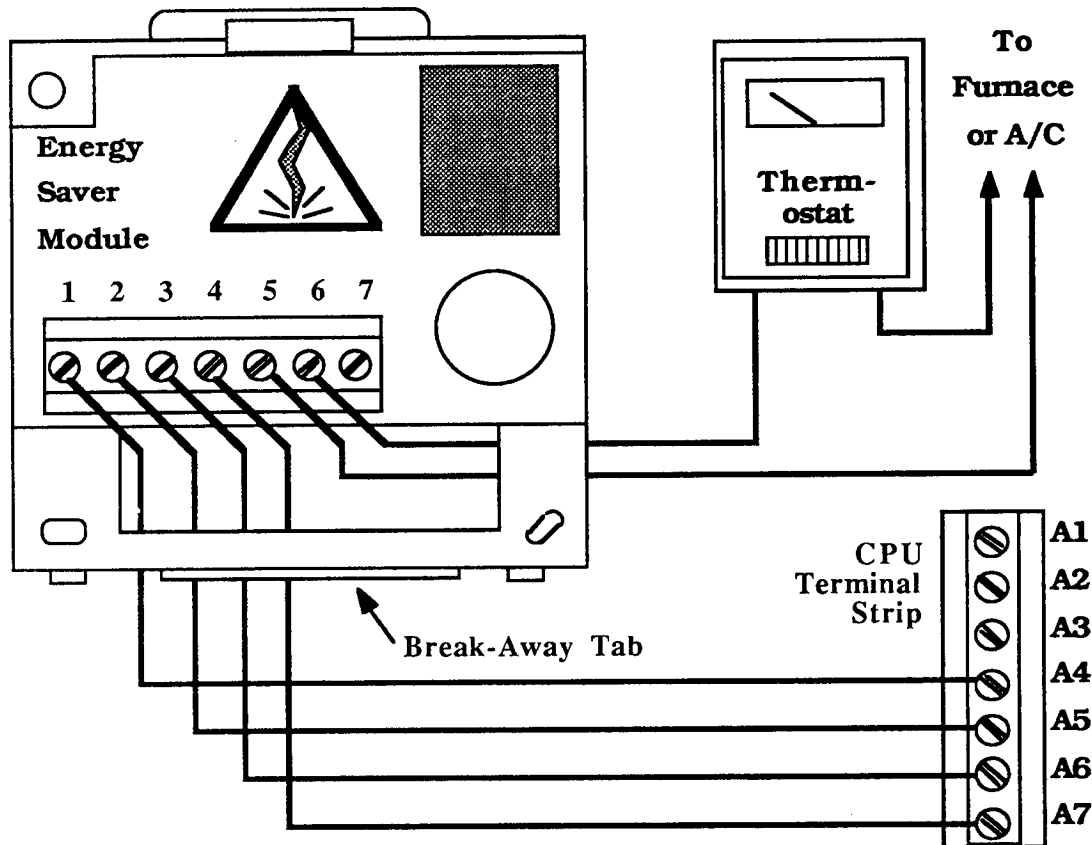
NOTE: *If using an Energy Saver Module with the CareTaker Hardwire Touchpad and Display, do not connect terminal A7 of the CPU to terminal 4 of the Energy Saver. Leave this connection open.*

Caution! Some installations may already have an energy setback thermostat which contains Ni-Cad batteries that are trickle charged by the HVAC control transformer. Wiring the Energy Saver Module in series with that type of unit may deprive it of battery charge current for an extended period of time causing it's clock to lose time.

> **I**f the Energy Saver is used in unheated facilities, you may need to program the Energy Saver Freeze Alarm to 00 - see page 18. It is important, however, to realize that an alarm system failure could cause the furnace connection to remain continuously open. This would make the furnace inoperative.
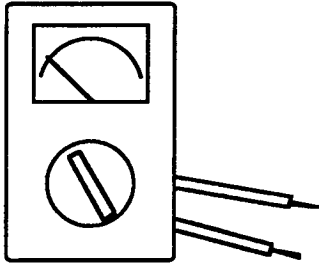
TESTING THE PHONES

• Test telephone operation first by attempting to dial and then accessing **CareTaker** by keying ▣ ⌗ (short status report) from all phones on premise with the DB-8 cord connected to the RJ-31X. Then unplug the DB-8 cord and test at least one phone for dialing operation.

Telephone troubles:

• No dial tone when DB-8 is plugged in

• Improper wiring of RJ-31X Jack. Trace telephone "battery voltage" (48 volts) from protector with voltmeter to isolate problem.
• Improper wiring of RJ-31X plug or CPU problem. Unplug DB-8 to isolate.

• No dial tone when DB-8 unplugged

• Defective or improperly wired RJ-31X jack.

• Touch Tone dialing inoperative

• Reverse polarity of incoming telephone line (reverse red and green wires from protector).

• After ▣ no further entries work

• Reverse polarity of Telco line **at CPU** (reverse C1 with C2 and C3 with C4).

• Faint click heard on phone every second

• Phone is connected on Telco side of RJ-31X instead of house side. Line seizure will not work until corrected.

TESTING THE CPU

If the Green LED is blinking when you have completed your installation, a system or sensor trouble condition probably exists or was inadvertently created during the installation process. Picking up the telephone or pushing ⊞+⌗ will result in an announcement of the problem. Following is a summary of announcements with their meaning and probable cause:

"SENSOR nn FAILURE"

• The CPU has not received an hourly supervisory signal from one or more supervised wireless sensors (all except those assigned to groups 11, 14 and 15) in the last 12 hours, a programming error occurred, or the Hardwire Module may be defective. Trip the reported sensor. If the problem does not clear, re-program the sensor and try it again before replacing it.

"SENSOR nn TROUBLE"

• Smoke detectors, Portable Panic Buttons and PIRs will produce this signal if they have a low battery. Other sensors have a "cover off" or tamper feature which will cause this report. Correct the problem and activate the sensor to clear this condition.

"PHONE LINE FAILURE....,

• The CPU does not detect a telephone line voltage of 20 volts or more (normal is 48) when telephones are "on hook". This could be a wiring problem with the RJ-31X jack or DB-8 plug. Trace with a voltmeter. This condition does not produce an audible alert, nor is an attempt made to communicate. Telephones can still operate the CareTaker because the CPU applies its own line voltage to the premise phones.

"SENSOR nn FIRE TROUBLE

• Fire sensor nn has remained in an alarm condition longer than 5 minutes suggesting it will not reset automatically.

"AC POWER FAILURE"

• Loss of AC power will cause this condition and power restoral will clear it. There will be no audible alert or Central Station report. Instead CareTaker relies on its low battery test to report serious power conditions to the CS, eliminating many unnecessary reports.

"SYSTEM BATTERY IS BAD"

• The battery is tested under load every 12 hours, during level **9** sensor tests and at any full status request and will immediately revert to AC power and initiate this trouble condition if the battery voltage drops below 11.6 VDC. The condition can be cured by allowing the battery time to recharge or replacing it if that fails. **Failure to restore power to the battery charging circuit within 24 hours will result in the battery deep discharging to the point where it cannot recover.**

Note. This periodic test under load is a state-of-the-art battery test. However, battery manufacturers tell us that there is no substitute for a complete discharge test to accurately gauge battery condition. Since periodic tests of this type would tend to reduce battery life by fully cycling the battery, we believe our battery test is a practical compromise but cannot guarantee it will detect all battery problems. An annual check under load for several hours is recommended.

Note. If you replace a battery, you will probably still get a bad battery indication because battery tests are only run every 12 hours and the system will likely not have "discovered" the new battery right away. To correct this enter Level **9** sensor test or request a Full Status which will also perform a battery test and clear the trouble condition if the battery is good.

"TROUBLE CODE NINE SIX"

• If the unit is equipped with the communicator module and was not able to successfully commu nicate with the Central Station in 10 attempts, this trouble condition will be invoked. A successful communication or entering and leaving "Program Memory" is required to clear the condition.

No phone response.

• Check phones as above. If Green LED is blinking the unit may be in communication with the Central Station. If not, reset by keying **⁕** **C** **O** **D** **E** **1**. If the Green LED is OFF, the unit may have completely lost power or failed or the sleep switch may be ON. Before replacing it, clear the memory using the reset switch located be tween the LEDs. Then reprogram the system.

Test the communications (if installed) by informing the Central Station and then entering **⁕** **C** **O** **D** **E** **8**. The green LED should blink for 15 to 25 seconds and then become steady indicating receipt of the test message. At this point you may either unplug the DB-8 cord to disable further communications while testing or inform the Central Station that you will continue to send test signals to verify all aspects of the communicator.

Test the arming levels and **exit/entry delay times** by first arming to level 2. Enter
⊡ Ⓒ Ⓞ Ⓓ Ⓔ ②. You should hear two beeps from the interior siren indicating the command has been accepted and again when the exit delay has timed out. Check to see that interior intrusion sensors do not set off the alarm. Arm to level one to cancel any alarm. When arming to level three you should get three beeps from the interior siren.

Test the "Help" command ⊡⊡⊡⊡⊡⊡ from all telephones if you have it turned ON.

Note. A Central Station message **will be sent** if you activate the "Help" command from a telephone during a sensor test. (⊡ Ⓒ Ⓞ Ⓓ Ⓔ ⌗ ⑨, ⊡ Ⓢ Ⓔ Ⓡ Ⓥ ⌗ ⑨).

Test the Chime feature when in Level 1. Entering ⊡ Ⓒ Ⓞ Ⓓ Ⓔ ⌗ ② will produce a low level beep on all interior sirens when any group 06 or 07 sensors are violated. A pause between activations is required.

Test the Alarm Memory. At some time during your test procedure after you have activated several alarms, key ⊡ Ⓒ Ⓞ Ⓓ Ⓔ ⌗ ⑤ and CareTaker will announce the last 4 alarms over the phone, beginning with the most recent one. Clear the memory by entering ⊡ Ⓢ Ⓔ Ⓡ Ⓥ ⌗ ⑤ ⌗.

Test Indirect Bypass. Arm to Level 3 with a sensor open. You should hear the long protest beep and the message *"PING PONG...SENSOR nn IS OPEN...PLEASE SECURE OR BYPASS."* Key ④ and you should hear *"SENSOR nn IS BY-PASSED...ALARM SYSTEM IS ON LEVEL THREE'.* The sensor should not activate the alarm.

Test the Duress Code by first alerting the Central Station and then disarming with the code. A phone number must have been programmed in order for this option to work - see " System Options" in the Programming Section.

Test Direct Bypass by arming the system. Then enter ⊡ Ⓒ Ⓞ Ⓓ Ⓔ ④ ⓝⓝ to bypass sensor **nn**. Activate sensor **nn**. There should be no alarm.

TESTING WIRELESS DEVICES.

Two modes of sensor testing are provided by CareTaker. The **customer test mode** is entered by keying [*] [C] [O] [D] [E] [#] [9] and leaving the phone off hook for the duration of the test. As each sensor is activated, a beep should be heard over the interior sirens indicating the CPU has received a signal from that sensor. The sensor number and function (intrusion, fire etc.) will be announced over the phone. CareTaker keeps track of sensor numbers tested and will announce *"ALL SENSOR TEST OK"* over the phone when all sensors have been successfully tested. You can enter [#] during the test to get an announcement of any sensor numbers not yet tested.

The second mode of testing sensors is a signal strength sensor test. This mode operates the same as the customer mode with two exceptions: 1). It sounds a series of beeps as each sensor is tripped. Each sensor sends it's information 8 or 16 times to assure reception. Fire and Panic sensors send 16 rounds. The CPU needs to receive <u>only</u> one round. By counting and detecting missing beeps from each sensor activation you can discover marginal signal strength to the CPU. Receiving 7 of 8 rounds or 14 of 16 rounds is considered good. Relocate sensors with less than 5 of 8 or 12 of 16 rounds. 2. CareTaker will announce the sensor number and function over the exterior speakers, if installed, as well as over the phone. 2). You enter the **service test mode** by entering [*] [S] [E] [R] [Y] [#] [9] and exit the mode by hanging up the phone. If no response is received from a sensor try reprogramming it. Remember, PIR motion sensors require 3 to 5 minutes of inactivity before alarm recognition.

Testing the Wireless Touchpad. Arm and disarm the unit with the Wireless Touchpad and test the double "Help" key from the extremes of the premise.

Note. Commands using the [#] key will not work from the Wireless Touchpad.

Note. A Central Station message **will not be sent** if you activate the "Help" commands from a Wireless Touchpad if you are in one of the test modes. ([*] [C] [O] [D] [E] [#] [9] or [*] [S] [E] [R] [Y] [#] [9])

TESTING HARDWIRED DEVICES

Testing Interior Sirens and Alarm Speakers. Check for adequate volume and voice quality when in alarm. If alarm speaker voice quality is not good try a better quality, higher wattage speaker.

Testing Hardwired Zones. Since ITI does not supply sensors for hardwire applications at this time, test the devices you choose to install per manufacturer's recommendations. All hardwire zones will send **1 round** of data to the CPU. See page 35 to confirm EOL Supervision switch settings.

Testing the Hardwire Touchpad. Test arming, disarming and the double "Help" keys on the Hardwire Touchpad. If you have installed two Hardwire Touchpads, make sure to cut the diode - see page 38. The system may not be able to be disarmed from either Hardwire Touchpad if these diodes are not cut.

Note: Only one (1) Hardwire Touchpad is to be used in U.L. installations.

Testing the Energy Saver Module.(ITI Part No. 60-140) To check for furnace control, program the **low** temperature set point **higher** than the room temperature and turn the Energy Saver ON by entering ✳ Ⓒ Ⓞ Ⓓ Ⓔ Ⓞ. The furnace should come on when the Energy Saver is ON. If the unit is wired to control air conditioning, set the **high** temperature set point **lower** than room temperature and turn the Energy Saver ON and OFF. The air conditioning should come on when the Energy Saver is ON and the room temperature exceeds the set point.

> **Note.** Allow for the fact that room thermostats and thermometers may be calibrated a few degrees different from the settings of the Energy Saver's temperature sensor.

> **Note.** The CPU checks the Energy Saver at one minute intervals so it is possible, when testing, that a delay of up to a minute may be experienced before a reaction occurs.

Testing the Freeze Alarm. To test the Freeze Alarm, place an ice cube in a plastic bag on the temperature sensor IC on the Energy Saver circuit board for a few seconds. A low level siren sound should be heard until the signal is received by the Central Station. A circuit cooler spray is another alternative for testing, if available.

Energy Saver Module
1 2 3 4 5 6 7

Back-up Freeze Sensor 42 Degrees Turns on Furnace if Energy Saver Fails

Temperature Sensor

Use an ice cube to test the 42 degree fixed temperature back-up furnace thermostat. Activation of this unit should only turn the furnace on.

> **Note.** In order to recover to normal, the Energy Saver thermostat will have to warm up about 5 degrees warmer than its trip point.

SECTION 2

2.1 Wireless Sensors
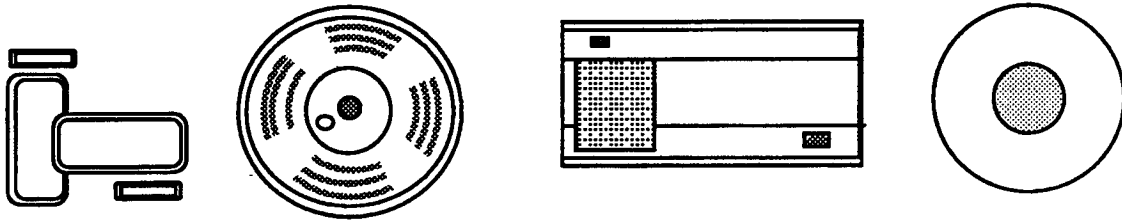
GENERAL

Supervision. All ITI wireless devices are supervised which means that every 69 minutes each sensor sends a supervisory signal to the CPU. The CPU keeps track of these signals and checks, after 12 hours, to be sure all sensors have checked in. If no signals have been heard from a particular sensor the **Trouble Routine** will be initiated with *"Sensor nn Failure"* as the phone announcement message. The **Trouble Routine** can be terminated by a successful transmission from the sensor. The 12 hour timer is reset whenever you exit Program Memory.

In general, devices that are not supervised are Portable Panic Buttons and Wireless Touchpads which may be carried out of range of the CPU without causing sensor failure annunciations.

Tamper/Low Battery. Wireless devices are equipped with either a tamper or a low battery report feature. Smoke Sensors, Portable Panic Buttons and PIRs are examples of sensors with the low battery feature. If a sensor battery is low the **Trouble Routine** will be initiated with *"Sensor nn Trouble"* as the phone announcement message. The **Trouble Routine** can be terminated by replacing the batteries and causing a transmission to be sent to the CPU or it will automatically terminate on receipt of a normal supervisory signal.

Note. **Trouble** indicates a condition of the sensor itself as opposed to **Failure** which indicates a loss of transmissions from a sensor. Both conditions are reported to the Central Station as the same Trouble Code 07.

The Door/Window Sensor is an example of a sensor which has tamper instead of low battery. If a cover is removed from a tamper proof sensor, a tamper signal is immediately sent to the CPU. If the system is armed to a level which includes that sensor, the signal will be treated as an alarm. If not, the CPU will store the tamper signal until it makes one of it's 12 hour supervisory checks. If the CPU discovers a tamper record during a supervisory check the **Trouble Routine** will be initiated with *"Sensor nn Trouble"* as the phone announcement message. The **Trouble Routine** can only be cleared by a restore transmission from the sensor because no signal is sent when the cover is replaced. It is necessary to open and close the sensor to cause the restore signal to be sent.

49

Programming Sensors

Each wireless sensor or hardwire zone you will use with a CareTaker system must be assigned to one **and only one** group in memory so that CareTaker knows what to do when it receives (or fails to receive) a signal from it. Additionally each wireless sensor must have a unique identification number as well as the house code of the system it "belongs to". ITI has provided a very convenient way to do all this with just one two digit entry for each sensor on your Touch Tone phone.

Program levels. ✱ 0️⃣5️⃣ to ✱ 1️⃣6️⃣ are the 12 possible groups to which a sensor can be assigned. To enter a sensor number into a program level group and simultaneously program a wireless sensor with its house code and identification number, you must have the CPU program switch ON. Connect the program pigtail to the program socket on the CPU board and plug the other end into the sensor, observing polarity. Next, choose the desired group and enter its level with your Touch Tone phone.

Example: You wish to assign a smoke detector to Program Level (Group) 05 (an easy decision) and call it sensor number 23. You confirm that you are in "Program Memory" by listening for the announcement on your phone. **After** the announcement (to avoid interference from the announcement) you enter ✱ 0️⃣5️⃣ and CareTaker will announce *"SENSOR PROGRAM LEVEL ZERO FIVE"*. Now enter 2️⃣3️⃣ and the next announcement should be *"SENSOR TWO ....THREE PROGRAM O K"* indicating that the programming attempt was successful. Now, after a short wait, you will hear the "program memory" announcement again indicating CareTaker has given up listening for additional commands in level 05 and has reverted to the program memory prompt. Then enter ✱ 0️⃣5️⃣ again and you should hear *"SENSOR PROGRAM LEVEL ZERO FIVE....TWO THREE"* confirming that sensor 23 is in level 05.

If the sensor programming attempt was not successful, most often due to improper polarity, the announcement would have been *"SENSOR PROGRAM FAILURE."*

You can assign all 30 sensor numbers (1-30) to one group or any combination of groups. Remember, however, that hardwire zones automatically take on the sensor number on their terminal strip once they are activated by placing a closure or end-of-line resistor across them while in Program Memory. That sensor number cannot be changed by any programming. Therefore you <u>must not</u> assign wireless sensor numbers which are the same as the hardwired zones you use.

You can delete a sensor from a group by entering #️⃣ 🔢🔢 when you are in that sensors program level. (🔢🔢 = the sensor's number). CareTaker will respond with *"SENSOR nn IS OFF"*. The CPU will not respond to any further transmissions from the sensor.

Note. To program **wireless sensors** you must have a sensor properly plugged into the CPU with the "Pigtail" supplied with the CPU. Then enter Program Memory using the program switch on the CPU board. Part of the programming process is a check routine that senses if the sensor is plugged in. You will get a "Ping-Pong .... *PROGRAM FAILURE"* error message from the phone if the connection is incorrect.

Note. As an alternative, sensors may be programmed and their sensor numbers and House Codes may be read using the Hand Held SX-V Programmer. This method is usually not as convenient as using the CPU but may be helpful in diagnosing programming problems. See the Programming Section page x?.

Precautions and Limitations. Proximity to metallic objects effects the performance of wireless devices. Avoid mounting on foil wallpaper, heating ducts, metal lath walls, etc. Also when running wires to sensors from auxiliary devices, avoid runs parallel to AC wiring. Always cross AC wiring at a right angle.

Sensor Groups (Program Levels)

[✱] [0] [5] **Smoke and Fire sensors.**

[✱] [0] [6] **Perimeter instant** intrusion sensors.

[✱] [0] [7] **Perimeter delayed** intrusion sensors.

[✱] [0] [8] **Interior instant** intrusion sensors. Instant but will honor an entry delay.

[✱] [0] [9] **Motion sensors.** Instant but will honor a delay.

[✱] [1] [0] **Motion sensors.** Will initiate a delay.

[✱] [1] [1] **Auxiliary N.O.** Non supervised. Rapid low level alarm stops on CS kissoff.

[✱] [1] [2] **Auxiliary N.C..** Supervised. Rapid low level alarm stops on CS kissoff.

[✱] [1] [3] **Audible panic (HELP).** Supervised.

[✱] [1] [4] **Audible panic (HELP).** Non supervised, for ITI Portable Panic Button*.

[✱] [1] [5] **Silent panic (HELP).** Non supervised, for ITI Portable Panic Button*.

[✱] [1] [6] **24 Hour** intrusion sensors. Active in all arming levels unless bypassed.

* Supervised for low battery detection only.

When you have finished programming sensors be sure the program switch is OFF and the programming **Pigtail is removed from the CPU**. If you were not using the program switch, to exit Program Memory enter [✱] [9] [9] to exit immediately or hang up and the system will return to normal in one minute.

51

DOOR/WINDOW SENSOR (DWS)
ITI Part #60-135 (white)
ITI Part #60-151 (brown)

Description and Applications

Door/Window Sensors are designed to be used to protect doors, windows, gun cabinets, etc., anything that opens and closes. Each contains two built in magnetic reed switches and is designed to go into alarm by moving the supplied magnet away from one of the sensor's reed switches. The Sensor's cover has alignment marks to assist in magnet placement. The Sensor offers screw terminals that will accept normally closed hardwire devices (switches, motion detectors, etc.).
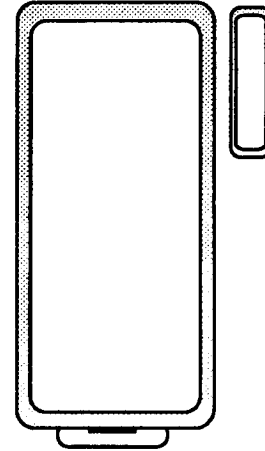
A Door/Window Sensor will transmit two signals during normal operation. When a door is opened, a "Violation" signal is sent to the CPU. When the door is closed a "Restore" signal is transmitted. **These signals are sent whether the system is armed or not.** If an attempt is made to arm the system when a sensor is in a violated state (door open, for example), the CPU will "protest" by emitting a long beep from the interior sirens and announce *"PING/PONG....SENSOR...nn IS OPEN....PLEASE SECURE OR BYPASS"* from the Touch Tone phone and refuse to arm to the desired level. The system can only be armed when all of the sensors used at a particular protection level are in the "Restore" condition or if the user deliberately "Bypasses" one or more sensors.

Supervision. Door Window Sensors send a supervisory signal to the CPU every 69 minutes. If no signals are received by the CPU during one of its 12 hour check periods, *"SENSOR nn FAILURE "* will be announced on the phone and reported to the Central Station.

Temperature Range. 10°F - 120°F.

Battery Power. The Door/Window sensors are powered by a 3.6 volt lithium battery which should have a life of 5 to 8 years. The battery is not monitored but the loss of supervisory signals from the unit when the battery has become exhausted will be recognized by the CPU and be announced and reported.

Tamper Switch. Door/Window Sensors contain a built-in tamper switch. Removing the sensor cover causes the switch to activate and the sensor to transmit a "Tamper" signal to the CPU. If the CPU is armed to a protection level in which the tampered sensor is active, an alarm will occur just as if the sensor was violated. If the tampered sensor is not active in the current protection level the CPU will interpret it as a trouble condition and announce "SENSOR nn TROUBLE" and report it to the Central Station. The tamper record in the CPU can only be cleared by replacing the cover then opening and closing the protected door or window. The tamper feature **cannot** be disabled.

Installing Door/Window Sensors

1. Considerations for Sensor Mounting.

- **DO NOT** mount within 5 inches of the floor on a door to avoid damage.
- **DO NOT** mount sensors or magnets on any metallic surfaces such as metal doors or foil wallpaper. If you must, then use spacers to keep sensor & magnet away from the metal.
- **DO** mount magnet on one door, sensor on the other for double door installation.
- **DO** mount sensors with #4 or #6 flathead or panhead screws, **not two sided tape.**
- **DO** try to keep all sensors within 100 feet of the CPU.

> **Note.** Although the open air range of ITI sensors can be over 500 feet, the installation environment will influence this distance. The 100 foot distance recommendation is given as a starting guideline. In your actual installation, transmission range may be much greater.

- **DO** avoid locating sensors where it is likely to be exposed to moisture.
- **DO** install the sensor in a location where the temperature will not exceed the sensor's operating limits of 10 to 120 degrees F.
- **DO** watch for "over travel" on sliding glass doors that could dislodge sensor if closed hard.

2. Remove The Cover.
Press on the end of the housing to release the locking tab holding the cover as shown.

To Open DWS Housing

Press Here
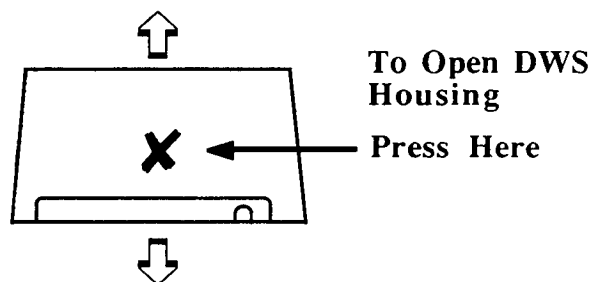
3. Program Before Installation.
If you haven't already done so, **program the sensor** to one of the following groups using the CPU:

> **Note:** When using the SX-V Handheld Programmer, mount the sensor base first, then replace the sensor board in the base and program the sensor. See page 31 for Handheld Programmer instructions.

⊡ 0 6 **Perimeter instant** intrusion sensors.

⊡ 0 7 **Perimeter delayed** intrusion sensors.

⊡ 0 8 **Interior instant** intrusion sensors.

⊡ 1 6 **24 Hour** intrusion sensors. Active in all arming levels unless bypassed.

4. Carefully **remove the circuit board** by Pressing the tab as shown.

PRESS TO RELEASE BOARD →
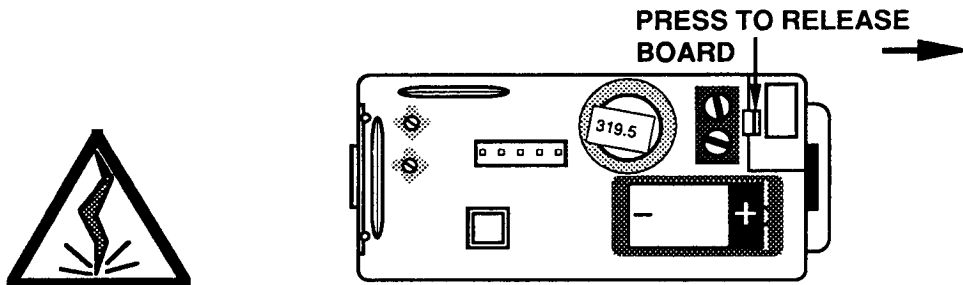
5. Mount the Sensor Base. The circuit board must be removed by pressing the tab and lifting the battery holder as shown. Two screw holes are provided, one is larger to allow sensor alignment. Use #4 or #6 flathead or panhead screws (or #18 wire nails in the small holes provided) to mount the sensor. Replace the circuit board by sliding it under the mounting tabs first and then snapping it into place by applying down pressure on the terminal strip. Spacers are available for use when mounting on a metallic surface or require height alignment.
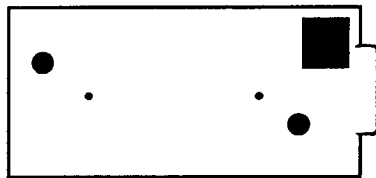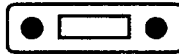
MAGNET
SPACER

SENSOR SPACER

Door/Window Sensor Spacers (white) ITI Part #60-189, (brown) ITI Part #60-191
Magnet Spacers (white) ITI Part #60-188, (brown) ITI Part #60-190

6. Mounting the Magnet. Mount the magnet base within 3/8 inch and centered on one of the marks on the cover which show the position of a reed switch. Use #6 X 1/2 screws or #18 X 1/2 wire nails. A brad driver works well with wire nails.
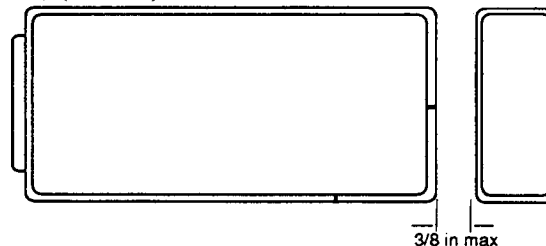
3/8 in max

• **Do** mount magnet within 3/8" of **one** of the sensors reed switches, centered on the switch.
• **Do** be sure magnet won't interfere with door or window opening.
• **Do** be sure to use a non-metallic spacer if mounting the magnet on metal.
• **Do** use only **one** magnet-reed switch location.

3/8 in max
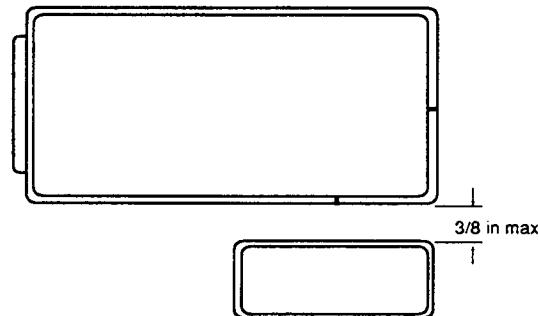
Note. In high security installations, after determining which reed switch you will be using, you may want to remove the other switch by clipping its leads as close to the board as possible.

7. Replace circuit board and the DWS cover.

8. Testing Door/Window Sensors. Set the CPU arming level to ⧫ Ⓒ Ⓞ Ⓓ Ⓔ ⑨ or ⧫ Ⓢ Ⓔ Ⓡ Ⓨ # ⑨. Open and close protected openings and listen for the transmission beeps from the sirens or announcements from the alarm speakers.

Interfacing Remote Devices To a Door/Window Sensor

The Door/Window Sensor can be connected to Normally Closed (open on alarm) devices. Whenever anything is wired to the terminals in the Door/Window Sensor, a magnet placed near a reed switch renders the connected device inoperative. Therefore, unused reed switches should be removed.
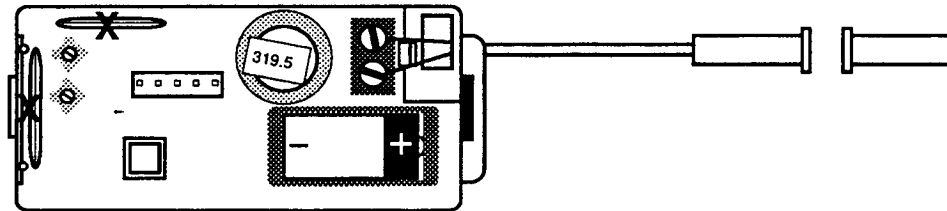
1. Interfacing Considerations

- **DO** make sure the device connected to the sensor is a hermetically sealed type, such as a sealed reed switch.
- **DO** make sure the device supplies a minimum 100 millisecond open or closure on alarm. **This is important! DO NOT** attempt to connect fast pulse devices such as Window Bugs to a sensor.

- **DO NOT** exceed 25 feet of twisted wire in any wire run.
- **DO** use stranded wire, not solid core wire.
- **DO NOT** connect more than 5 switches to a DWS. Fewer than 5 is preferred.
- **DO NOT** connect more than 1 alarm screen to a DWS
- **DO NOT** run wires within 18" of electrical wiring. Never run parallel to electrical wires, cross them at a 90 degree angle.
- **DO NOT** stuff excess wire in the DWS housing as it can effect transmission.

Note. Do not attempt to use the built-in reed <u>and</u> a remote device on the same Door/Window Sensor as the terminals and reed switches are in parallel.

Note. The GlasTrak™ GSU 2000 Glass Break detector will not function with SX-V or **CareTaker** equipment. Other alternatives to detect the breakage of glass, such as the Litton Terminus SP 3237 or Maximal SD-15 shock detectors, can be interfaced to the ITI Shock Sensor.

SHOCK SENSOR
ITI Part #60-107 (white)
ITI Part #60-192 (brown)

Description and Applications

```
Note:  Not to be used in an Underwriters Laboratories Inc. installation.
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The Shock Sensor is similar to a Door/Window Sensor except it contains additional circuitry which allows it to be interfaced to Litton SP3237 or Maximal SD-15 shock detectors in combination with internal and/or external reed switch contacts as well as other devices.

A Shock Sensor, utilizing internal or external magnetic switches, will transmit two signals during normal operation just like a DWS. When a door is opened, a "Violation" signal is sent to the CPU. When the door is closed a "Restore" signal is transmitted. As with the DWS, violated sensors may prevent the system from arming until restored or bypassed. The Shock Transmitter also sends a "Violation" signal when it detects shock from one of the sensors connected to it. A "Restore" follows immediately so that if one occurs when the system is disarmed, it does not prevent arming.

Supervision. Shock Transmitters send a supervisory signal to the CPU every 69 minutes. If no signals are received by the CPU during one of its 12 hour check periods, *"SENSOR nn FAILURE "* will be reported and announced.

Temperature Range. 10°F - 140°F.

Battery Power. The Shock Sensor is powered by a 3.6 volt lithium battery which should have a life of 5 to 8 years. The battery is not monitored but the loss of supervisory signals from the unit when the battery has become exhausted will be recognized by the CPU and be announced and reported.

Tamper Switch. Shock Sensors contain a built-in tamper switch. Removing the sensor cover causes the switch to activate and the sensor to transmit a "Tamper" signal to the CPU. If the CPU is armed to a protection level in which the tampered sensor is active, an alarm will occur just as if the sensor was violated. If the tampered sensor is not active in the current protection level the CPU will interpret it as a trouble condition, the same as a DWS. The tamper record in the CPU can only be cleared by replacing the cover then opening and closing the protected door or window. The tamper feature **cannot** be disabled.

Installing the Shock Sensor

1. Installation Considerations. The particular device or devices you will connect to the Shock Sensor will determine sensor mounting. The Shock Sensor can be connected to any Normally Closed (open on alarm) device if the following guidelines are adhered to.

- **DO** wire multiple **Normally Closed** devices in **Series** all in the same line.
- **DO** be sure the device connected to the sensor is a hermetically sealed type, such as a sealed reed switch, shock, or freeze detector.
- **DO** be sure the device provides a minimum 100 millisecond open or close on alarm. **This is important! Do Not** attempt to connect fast pulse devices such as Window Bugs to a sensor.
- **DON'T** exceed 6 feet of wire in any wire run if using zip wire (untwisted speaker wire).
- **DON'T** exceed 25 feet of wire in any wire run if using twisted wire.
- **DO** use stranded wire, not solid core wire.
- **DON'T** run wires within 18" of electrical wiring. Do Not run parallel to electrical wires, cross them at a 90 degree angle.
- **DO** realize that only <u>one</u> alarm screen can be wired to a Sensor.
- **DON'T** use mechanical type switches, use only reed type.
- **DO** note that a maximum of three devices should be wired to a Sensor. Fewer than three is preferable so you can zone out as much of the system as possible.

2. Prepare for Mounting. Remove the cover by pressing on the cover end to release the tab.
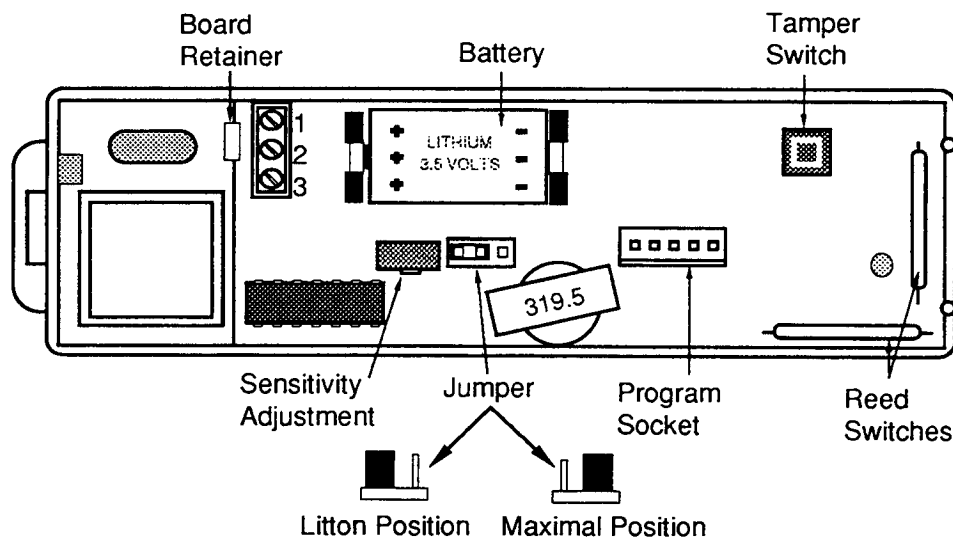
3. Program. If you have not already done so, program the Shock Sensor with the CPU. Shock Sensors are normally assigned to Group ⊞ ⓪⑥.

> **Note:** When using the SX-V Handheld Programmer, mount the sensor base first, then replace the sensor board in the base and program the sensor. See page 29 for Handheld Programmer instructions.

4. Mount the Sensor. Remove the circuit board by pressing the board retainer. Two screw holes are provided in the base. One is larger to permit alignment of the unit. Use #4 or #6 flathead or panhead screws to fasten to wood or other appropriate fasteners for other materials (two small holes are provided for #18 gauge wire nails).

5. Mount Magnet For Use With Internal Reed Switch. If using one of the internal switches to protect a window opening, align and mount it as you would with a DWS.

- **Do** mount magnet within 3/8" of **one** of the sensors reed switches, centered on the switch.
- **Do** be sure magnet won't interfere with door or window opening.
- **Do** be sure to use a non-metallic spacer if mounting the magnet on metal.
- **Do** use only **one** magnet-reed switch location.
- **Do** remove any unused reed switches.

6. Installation Considerations For The Terminus SP 3237 Detector.

- Use the SP3237 and Shock Sensor to detect the **shock of breaking glass only**.
  - Window rattles must be eliminated before installing Terminus detectors.
  - Terminus detectors must be mounted with the leads straight up or straight down.
  - Coverage guidelines: 5' radius for plate glass, 3' radius for multi-pane windows.
  - When glass mounted it is desirable to have the detector 2" away from the frame.
  - When frame mounted, it is desirable to have the detectors as **close** as possible to the glass it is protecting, but **never more than two inches from the glass**.

- The best location for a detector is on the frame at right angles to the glass being protected, as close to the glass as possible.

- It is best to have the detectors perpendicular to the glass it is protecting. When mounted perpendicular to the glass the "flat-pac" is less sensitive to low frequency shock waves (normal background shocks) and will still provide excellent protection.
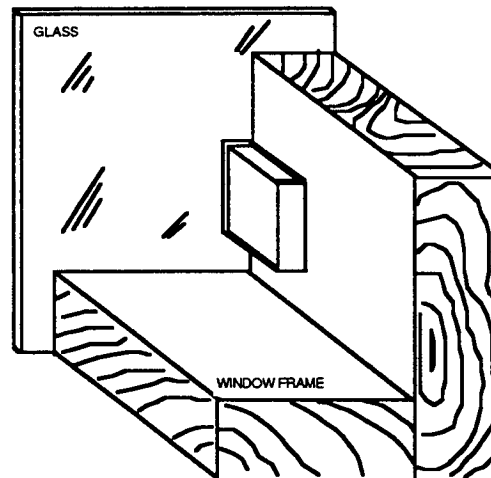
- A Litton SP 3237 detector is not designed to sense a window when it is opened, only when it is broken out.

7. Connecting the Terminus SP 3237 Detector to the Shock Sensor.

- **Do** connect the Terminus Detector only to the Shock Sensor. It will not work with regular ITI Door/Window Sensors.
- **Do** use only the standard Litton Shock Detector Model SP 3237. The Shock Sensor will not operate with Litton's dampened sensors.
- **DON'T** connect more than three detectors to one Shock Sensor. If you use multiple detectors they must all be mounted exactly the same way on a similar surface protecting similar glass areas. This is because the individual detector sensitivity is not adjustable. The only adjustment is on the Shock Sensor itself and thus it will be set the same for all detectors.
- **DO** be sure to crimp or solder the black and green leads of the last unit together. They can be used as a tamper loop.

Jumper

Litton Position

Increase

Sensitivity

If the internal reed switches are not to be used, connect one or more shocks to 1&3 as shown. Always solder or crimp the Black and Green leads of the last unit.

If an internal reed switch is to be used, connect shock(s) to 2&3 as shown.

If an external reed switch is to be used , connect the circuit to 1&3 as shown.

If an internal reed switch and external reed switch are both to be used, connect the circuit to 2&3 as shown.

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8. Connecting Maximal Shock Detectors to the Shock Sensor.

• **INSIDE SENSOR ITI Part # 13-056:** This detector is best used if you wish to place the Shock Sensor directly on the window frame. To install, snap the Detector Holder into the specially designed slot inside the Shock Sensor (see diagram), then mount the Shock Detector in the Holder.

1 2 3 Detector Holder snaps into this area.	Maximal Shock Detector Holder Notch **IMPORTANT!** Be sure the Maximal Detector is mounted with its leads at the **notched** side of the Detector Holder. The detector will not seat or react properly if its mounting in the Holder is reversed.	Once the mounting position of the Maximal Detector and Holder has been determined, remove the Detector Holder from the Shock Sensor and apply one drop of **hard curing epoxy** on each corner of the bottom of the Detector Holder. Then place the Holder back into the slot in the Shock Sensor. Bottom View of Detector Holder

CAUTION! Do Not use RTV Silicone or any soft curing adhesives to mount the Detector Holder. These types of adhesives will dampen shock vibrations and decrease usable sensitivity of the Maximal Detector.

9. Combining Internal and External Switches With Maximal Shock Detectors.

shock detector only.

shock & internal reeds.

shock & external reed only.

shock, external reed, and internal reeds.

Grey area represents area of tunability, with extremes on the outer edges. Turn pot clockwise to increase sensitivity.

Jumper

Maximal Position
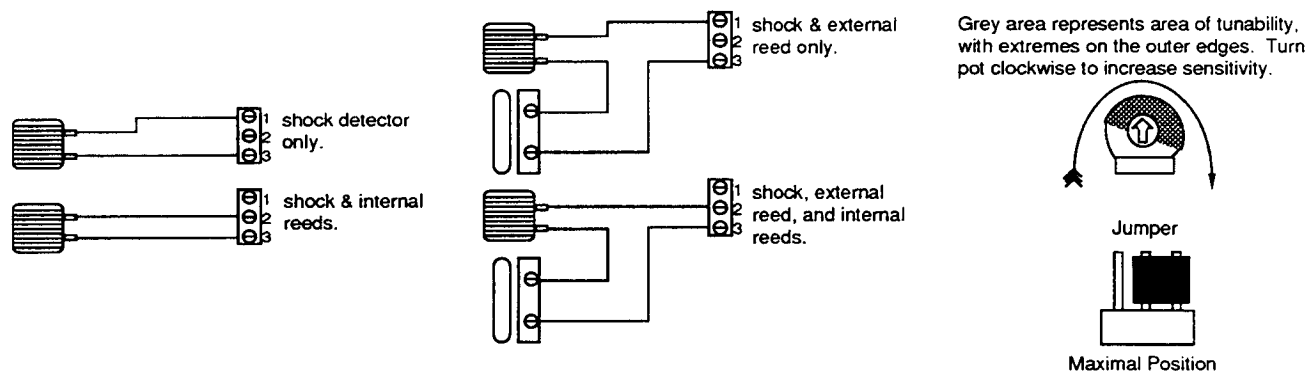
10. Adjustment. Set the CPU in one of the sensor test modes (✱ C O D E 9 or ✱ S E R V # 9).

• Since the sensor relies on the principle of a double shock wave being produced when glass is shattered ("initial" and "follow up" shock) it requires a double strike with an object such as a plastic screwdriver handle. To check for proper placement, strike the glass at the furthest point from the sensor.
• Strike the glass while listening for a response from the annunciators indicating a transmission has taken place.
• Adjust the sensitivity control on the Shock Sensor until only a firm rap will cause a transmission. Turn the control **clockwise** to **increase** sensitivity and **counter clockwise** to **decrease** sensitivity
• Remember to test other sensors connected to the unit and the internal reed switch contact if used.

Other Maximal Shock Detectors and Applications.

FLUSH MOUNT   ITI Part #13-051

The Flush Mount shock detector will detect vibrations through the window frame due to blows to the glass, and is best used when you want the detector hidden from view. The detector should be recess mounted in the window frame with the arrow in the "up"position.

Front view

Side View

Glass

Detector
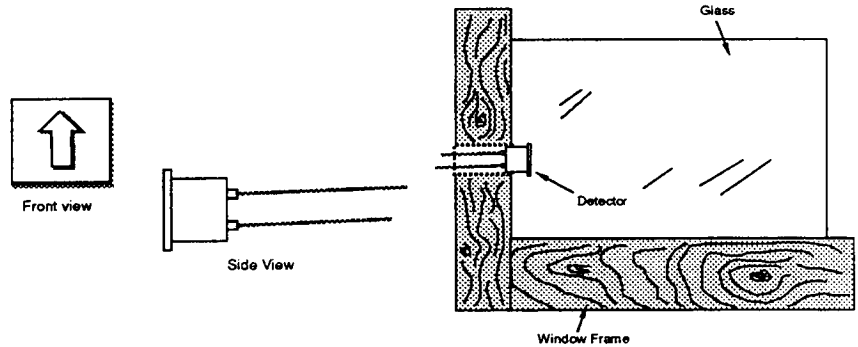
Window Frame

SURFACE MOUNT   ITI Part #13-053

This detector can be mounted directly on the window glass (if immovable) or on the window frame. To mount on the window frame use two #6 screws. To mount directly on the window glass use, apply one drop of **hard curing epoxy** to each bottom corner of the housing and hold on desired location for one minute. Be sure the arrow on the shock detector is in the "up" position after mounting.

Inside View (Cover Off)
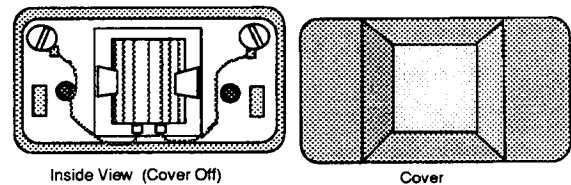
Cover

SURFACE MOUNT W/REED SWITCH & TAMPER   ITI Part #13-055

This detector can monitor a door or window opening as well as shock detection, and has an optional tamper feature on the cover. It mounts on a window or door frame using two #6 screws. Be sure the arrow on the shock detector is in the "up" position after mounting and check for proper magnet alignment to the reed switch (see far right diagram).

Reed

Tamper

Inside View (Cover Off)

Cover

Magnet

Mounting Holes

6 1
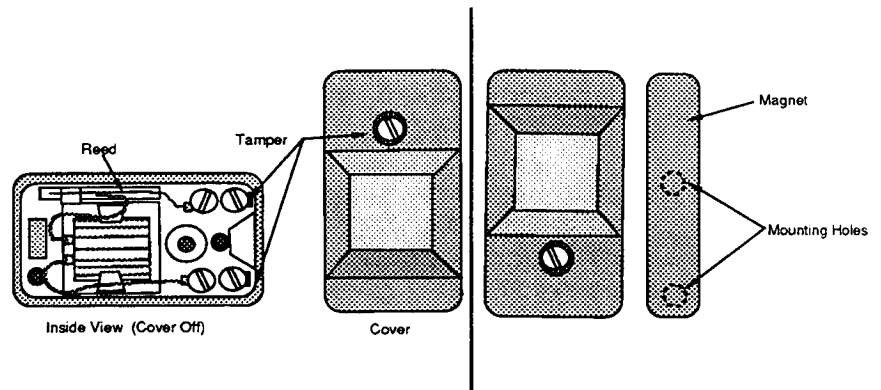
SOUND SENSOR
ITI Part #60-249

Note: Not to be used in Underwriters Laboratories Inc. installations.

Description and Applications
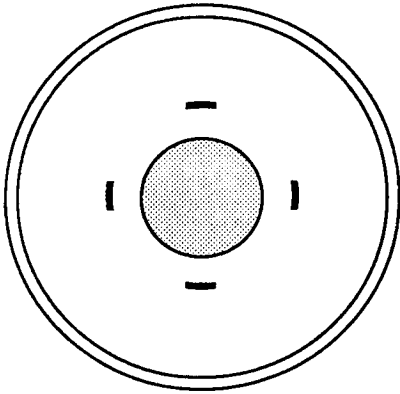
The ITI wireless RF Sound Sensor consists of an audio discriminator and a special ITI transmitter built into the same unit. The Sound Sensor is designed to respond only to the frequencies generated by breaking glass. The sensor will detect breaking glass of 1/16" to 1/4" thickness, as well as tempered glass. It must be programmed as an interior sensor only so that it will not be active when the premise is occupied.

Supervision. Sound Sensors send a supervisory signal to the CPU every 69 minutes. If no signals are received by the CPU during one of its 12 hour check periods, *"SENSOR nn FAILURE "* will be announced on the phone and reported to the Central Station.

Temperature Range. 10°F - 140°F.

Battery Power. The Sound Sensors are powered by a 3.5 VDC lithium battery which should last about 5 years. Should the Sound Sensor stop transmitting because of a battery fault, CareTaker will announce *"SENSOR nn FAILURE"* over the phone and report the trouble (Code 7) to the Central Station.

Installing Sound Sensors

1.Application Considerations. Consider these factors to determine if a Sound Sensor can be used and, if so, what is the best location for sensor mounting. In general, installation of a Sound Sensor requires common sense when deciding on whether or not an environment is suitable. With a Passive Infrared Sensor, you must avoid sources of heat such as heat vents and windows. With a Sound Sensor you must avoid sources of loud noises, such as those listed below:

- Avoid doors with metal mail chutes or door knockers.
- Avoid metal pole buildings and buildings with sliding metal or metal roll-up doors.
- Avoid china or glass stores.
- Avoid noisy machinery and air compressors.
- Avoid mechanical rooms and furnace rooms.
- Avoid steam heat radiators that can clang or hiss.
- Keep a sensor 10 feet away from a telephone or doorbell.
- Some electronic phones and door chimes have sonic ringers that can cause problems.
- Avoid buildings that shake from nearby airports or railroad tracks.

2. Environment. If you are in doubt whether or not an area is quiet enough for a Sound Sensor, place the system in the Sensor Test mode and turn on everything that makes noise. If the Sound Sensor does not activate, the installation is probably acceptable.

CAUTION! DO NOT attempt to change the sensitivity adjustment of the sensor. It has been factory set for optimal performance.

• **Do** be conservative in determining how much area you want one Sound Sensor to protect. If in doubt, place two Sound Sensors in the area. The Sound Sensor should be mounted no more than 15 feet from the glass to be protected and will cover approximately 900 square feet when centrally located in a direct line-of-sight from all glass to be protected.

3. Installing the Sound Sensor. Remove the mounting plate from the Sound Sensor by rotating it counter-clockwise. Then, attach the mounting plate to the wall or ceiling using the appropriate screws and anchors.
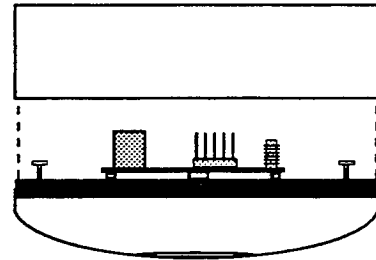
4. Programming. Using the built-in programmer on CareTaker, connect the "pigtail" from the CPU to the sensor observing polarity and program the sensor to Group 09.

When using the SX-V Handheld Programmer enter 3 for Sensor Type, then press the Motion Lockout Timer button to deactivate this feature and press the Enter button. Program the sensor number into program memory by entering: *** CODE #7 SERV.** Enter group 09 and the desired sensor number. Press ***99** to exit program memory.

5. Re-attach the Sound Sensor to the mounting plate.

POLARITY MUST BE OBSERVED
PROGRAMMING CABLE
This side toward Black Chip
This side away from Chip
BLACK CHIP
PROGRAMMING SOCKET
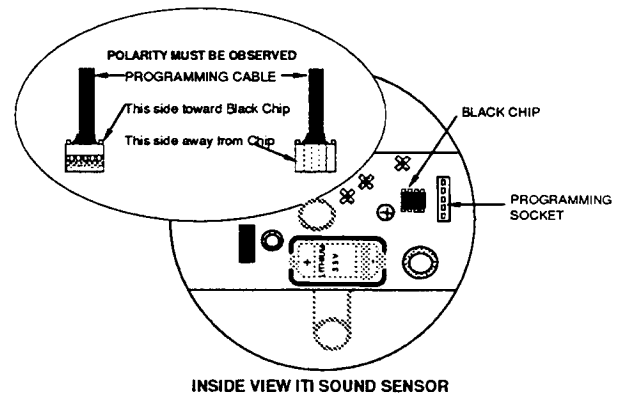
INSIDE VIEW ITI SOUND SENSOR

6. Testing the Sound Sensor. Enter the Service Test Mode by keying *** SERV #9.**

7. Use the IEI-515 Audio Glassbreak Tester, available from IEI and most distributors, to verify operation of the Sound Sensor.

8. While holding the tester at the glass to be protected, point directly at the sensor and press the test button.

9. Count the number of beeps sounded by the annunciators as the data rounds are received by the CPU; 7-8 are excellent, 5-6 are good, less than 5 are marginal and may indicate that the sensor should be relocated.

IEI-515 Audio Tester
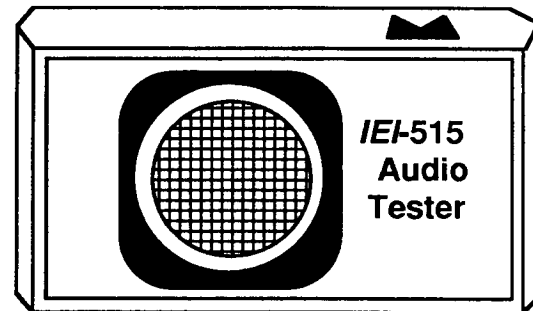
PASSIVE INFRARED SENSOR

Note: Not to be used in Underwriters Laboratories Inc. installations.

Description and Applications

A **Passive Infrared (PIR) Sensor** is designed to detect movement in the interior of an enclosed structure. The PIR sensor adapts to the environment in which it is placed, and continually gathers information about that area. Any change in this stable environment caused by an object which emits a different degree of infrared heat energy is sensed and an alarm is generated.
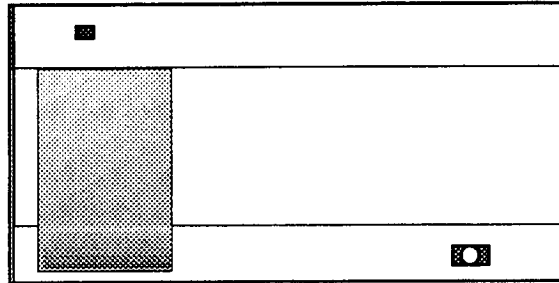
The PIR has an output that will trip a special ITI transmitter already built into the unit. When motion is detected a "VIOLATION" signal is sent to the CPU whether the unit is armed or not. The PIR cannot prevent the system from arming.

Supervision.PIR transmitters are **Supervised**, that is, they send a check in signal to the CPU every 69 minutes just like the Door Window Sensor. Supervisory problems are announced as *"SENSOR nn FAILURE"* and reported to the Central Station.

Battery power. The PIR uses two 9 Volt **Alkaline** batteries for power. Under normal conditions these batteries will last 12 months or more. Leaving the PIR in "LED Mode" will dramatically shorten battery life, and is not recommended. When the batteries begin to get low the **Trouble Routine** will be initiated with *"SENSOR nn TROUBLE"* as the phone announcement message. The **Trouble Routine** can be terminated by correcting the problem and causing a normal transmission to be received by the CPU.

Temperature Range. 32°F to 110°F

Background Noise Voltage. Passive Infrared "noise" is caused by changes of temperature of solid objects viewed by the unit. The number of objects, size and closeness to the sensor, and amount of temperature change all determines the amount of noise which will be detected. This noise is changed into a voltage which can be read by a meter. The maximum allowable noise, with no motion, is 0.15 VDC.

Test Features. A fast-reset LED walk light is selected by moving a jumper on the circuit board to the LED Mode. When in this mode the PIR's LED indicates when the unit detects movement. When in the LED Mode the PIR will also transmit every time it is tripped.

Transmitter Lockout. In the Radio Mode the transmitter will transmit once, then "lockout" (i.e. not transmit again) unless the detector sees no motion for at least 3 minutes. Any movement prior to 3 undisturbed minutes causes this timer to reset and another 3 undisturbed minutes would be required before the unit will transmit.

Installing PIR Motion Sensors

1. Installation Considerations.
* Mount the PIR so there is a solid **reference point** (wall) at the end of it's pattern.
* Mount these sensors so an **intruder** will most likely walk **across** the beams.
* **Permanently mount the PIR.** Do not simply set it on a shelf without screwing it down because the customer might move it and change its field of view.
* Mount at between **3 and 6 feet high** for best detection.

Note. When you study the patterns of the DS-984 Sensor that its detection pattern includes "down fingers" or sabotage zones so that an intruder cannot sneak under the field of view. For installations having **pets** to contend with, these must be taken into consideration. If **pets** will be allowed in the PIR's field of view you must use the optional PIR lens for **Pet Patterns**. The down finger zones are eliminated, thus making it possible for **pets** to have access to the protected area without causing an alarm.

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* Masking down looking zones should be avoided as those images will be present and will likely detect pets walking close to the sensor.
* Even though these PIR's are highly immune to false alarms you should follow these location guidelines.

Passive Infrared **locating guidelines**:

* **DO NOT** locate in direct sunlight.
* **DO NOT** aim at air conditioners, heat vents, wood stoves, fireplaces, etc.
* **DO NOT** aim at moving objects (curtains, handing displays, etc).
* **DO** attempt to mount on an outside wall facing in.
* **DO NOT** aim at solar heated walls or uninsulated metal walls.
* **DO** mount on a surface which is rigid and free from vibration.
* **DO NOT** mount on a metallic surface.

2. Preparation Before Installation.
Remove the PIR Sensor's front cover by applying pressure behind the front cover release tabs, (centrally located on the top & bottom of the front cover), and pulling the front cover towards you.

Transmitter Board

Programmer Socket

MODE SELECT JUMPER
LED Mode Radio Mode
Return to Radio Mode after testing

Important: Leave this end connected.

Cable Clip: Wires must be routed through clip.

Interconnect Cable: To disconnect the Transmitter, unplug the cable at this end only. Pull on the clip, not the wires.

Mounting holes: Battery and PIR PC board must be removed to gain access to the holes.

2.1 Selecting the Proper Lens. Determine the appropriate coverage pattern for the application, either barrier coverage or broad coverage. The standard lens can be "flipped" to select either barrier or wide angle coverage. These patterns are shipped with every PIR.

• **Standard Barrier Coverage.** Six pairs of zones oriented one above the other at varying degrees create a "curtain" of coverage extending out 40' feet.

STANDARD LENS BARRIER COVERAGE

Top View — Each zone 1' wide — 1' separation between zones

5 0 5

| | 10 | 20 | 30 | 40 Feet |
| | 3.0 | 6.1 | 9.1 | 12.2 Meters |

Side View — 2' wide — −1.5° — −10°

−80° −5° −3.1° −19.5°

Mounting Height Considerations

| Feet | 10 | 20 | 30 | 40 |
| Meters | 3.0 | 6.1 | 9.1 | 12.2 |

Side View

Distance from floor — Feet / Meters
2 .6
4 1.2
6 1.8
8 2.4

Note: A 6 ft. (1.8m) mounting height is ideal.
Mounting above 8 ft. (2.4m) is not recommended.
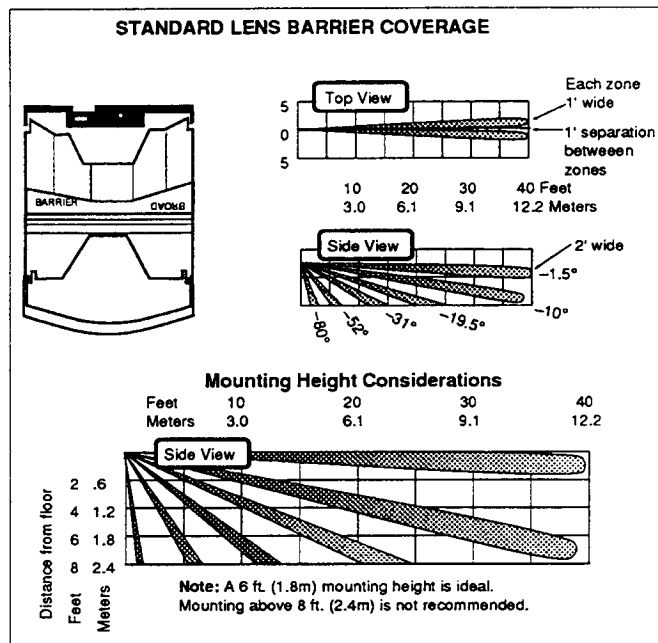
Standard Broad Coverage. Five pair of zones 40' feet wide at widest point and 40' feet out at center. Three pair of sabotage zones in lower field.

STANDARD LENS BROAD COVERAGE

Top View — 27° — 20° — −13.5° — −0° — −13.5° — −20° — −27°

Separation between zone pairs 1'
Each zone 1' wide

20 10 0 10 20

| Feet | 10 | 20 | 30 | 40 |
| Meters | 3.0 | 6.1 | 9.1 | 12.2 |

Side View — −4° — 2' wide

−5° −20° −14°

Mounting Height Considerations

Feet / Meters

| FEET | 10 | 20 | 30 | 40 |
| METERS | 3.0 | 6.1 | 9.1 | 12.2 |

Side View

Distance from floor
2 .6
4 1.2
6 1.8
8 2.4

Note: A 6 ft. (1.8m) mounting height is ideal.
Mounting above 8 ft. (2.4m) is not recommended.
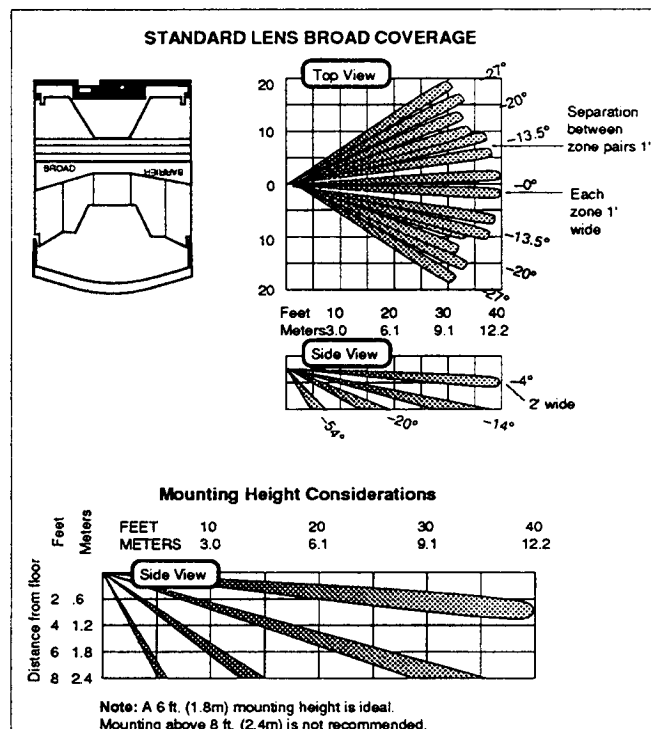
Optional Patterns Part #13-009. The following two optional patterns are available by purchasing an additional lens which contains both optional patterns. The optional lens can be "flipped" to select either barrier or wide angle coverage.

- **Optional Long Range Barrier Coverage.** Four pairs of zones oriented one above the other at varying degrees create a "curtain" of coverage extending out 100' feet.

PIR LONG RANGE LENS-LONG

Each zone 3' wide with 3' separation between zones

Top View

Feet	10	20	30	40	50	60	70	80	90	100
Meters	3	6.1	9.1	12.2	15.3	18.3	21.4	24.4	27.5	30.5

Side View

−2.8°

−43° −20° −8.2° 6' wide
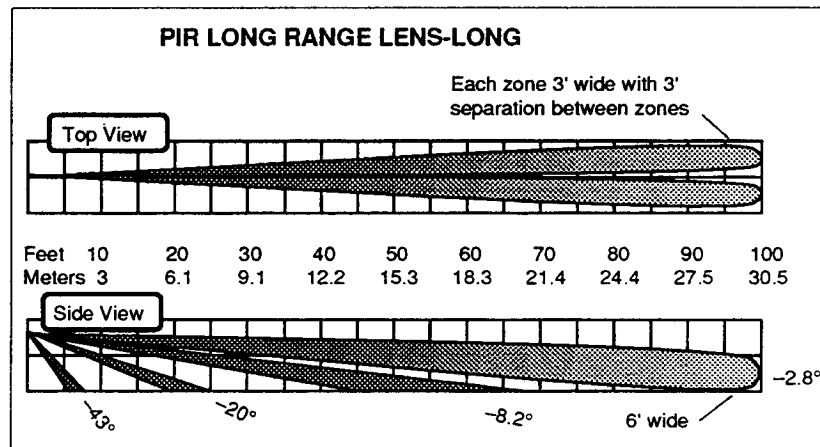
- **Optional Broad Angle Coverage.** Three pair of zones 20 feet wide at widest point and 25 feet out at center. Two layers of sabotage zones in lower field.

Top View

-18°

Each zone 8 in wide

-18°

PIR LONG RANGE LENS BROAD

| Feet | 10 | 25 |

Side View

16 in wide

-11°

-49° -25°

67
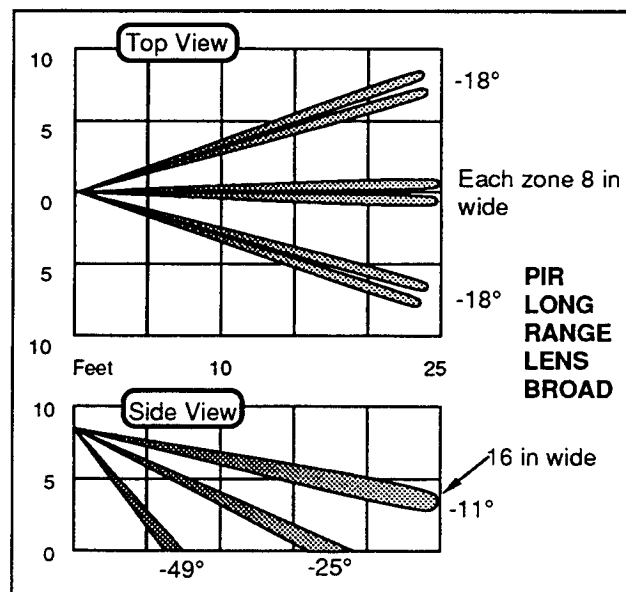
Pet Alley Patterns. The following two optional patterns are available by purchasing an additional lens which contains both optional patterns. The optional lens can be "flipped" to select either barrier or wide angle coverage.

- **Pet Alley Narrow Coverage.** One pair of zones approximately 10' wide at the furthest point (60 feet). No sabotage zones.
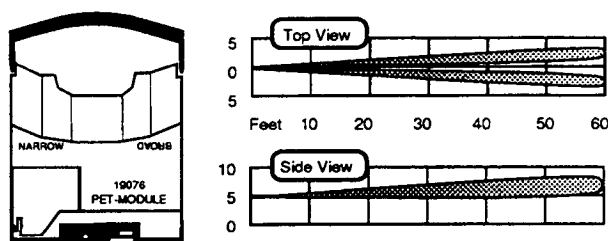
- **Pet Alley Broad Coverage.** Five pairs of zones approximately 40 feet wide at furthest point (30 feet). No sabotage zones.
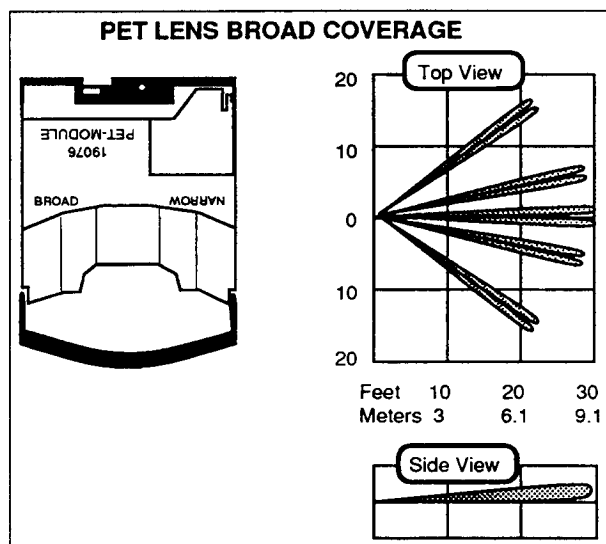
Note. When mounting unit for coverage in the presence of pets keep in mind the highest pets may be when they jump from furniture in the protection pattern.

Other Mounting Possibilities. The unit can be used to horizontally protect ceiling entrances, such as skylights, by rotating the unit one quarter-turn from normal. Mount the unit on the side wall close to the opening. Avoid position in direct or reflected sunlight.

When wall mounting is difficult, you can mount the unit on the ceiling if the ceiling is very rigid and free from vibration. More than one unit can be located in the same general area without any worry about interference.
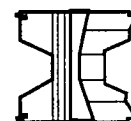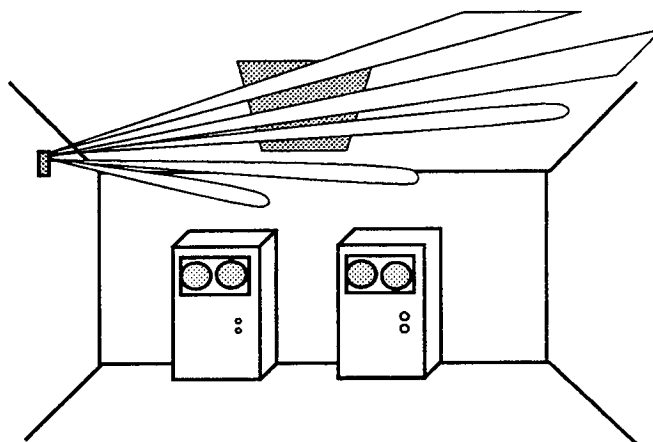
Barrier

Module Orientation

Permanent Mounting. Select a mounting height (between 3 and 6 feet) and location which avoids common sources of false alarms, yet maximizes detection potential.

- Remove the sensor circuit board assembly from the chassis by pulling back the retainer tab. One mounting hole is located under the board.
- Remove the two batteries. The second mounting hole is under the right battery.
- Use the chassis as a template and mark the location of the mounting holes.
- Level and mount the chassis using the screws and plastic anchors provided.
- Aiming is achieved by "shimming" the sensor housing if required.
- Replace the batteries and sensor circuit board in the chassis. Place the sensors left edge in first, then snap into place.
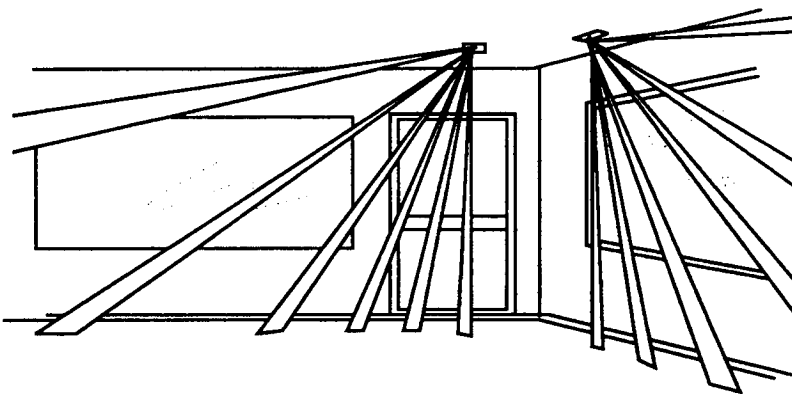
Testing PIRs. Walk test all PIRs across the pattern as shown at right to check for activation within the desired patterns.

Note. PIRs require a 3 minute settling time between activations. To completely test detectors, alert the Central Station if necessary.

69
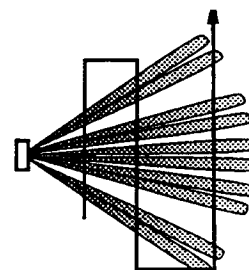
SMOKE SENSOR
ITI Part # 60-106

Note: One (1) Smoke Sensor required for U.L. installations.

Description and Applications

The **Smoke Sensor** is a Photo-Electric type that contains its own Alarm Horn and Low Battery Interior Siren. It has an output that will trip a special transmitter already built into the sensor. The built in alarm horn will sound as long as smoke remains in the Smoke Sensor.

Battery Power. The unit is powered by two 9 Volt Alkaline batteries connected in parallel. The batteries are monitored by the sensor transmitter for proper voltage. If a low battery is detected the **Trouble Routine** will be initiated with *"Sensor nn Trouble"* as the phone announcement message. In addition, the detector has a secondary low battery detect feature which will activate a periodic beep from the sensor itself if the condition is not corrected in a week or so.

Supervision. The sensors are also supervised so if they are not heard from by the CPU the **Trouble Routine** will be initiated with *"Sensor nn Failure"* as the phone announcement message. In addition, if a sensor fails to restore because it has not cleared of smoke or some other reason, the **Trouble Routine** will be initiated with the message *"SENSOR nn FIRE TROUBLE"*. The **Trouble Routines** can be terminated by correcting the problem and causing a normal transmission to be received by the CPU.
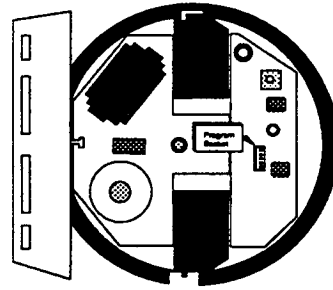
Temperature Range. 10°F to 120°F.

Installing Smoke Sensors

Sensor Location Considerations. While it is not possible to get too specific about Smoke Sensor location (since each house has different design requirements), there are some guidelines that can be followed. Refer to the sensors Owners Manual for detailed information on sensor location. Some additional hints appear below:

- Determine the best locations for each Smoke Sensor so as to optimize early detection, and maintain accessible escape routes out of the building.
- Stairways - A Smoke Sensor should be located at the bottom of the basement stairwell(s). For all other levels, it is usually best to locate Smoke Sensors at the top of the stairwell.
- Sleeping Areas - A Smoke Sensor should be located in any hallway servicing bedrooms. For maximum protection, place a Smoke Sensor inside each bedroom, especially smoker's bedrooms or bedrooms where electric blankets or other electrical devices are used.
- Ceilings - Whenever possible, mount sensors on ceilings, make sure that the sensor is no closer than 4 inches from any wall. For wall mounting, make sure that the nearest edge of the sensor is at least 4" and no more than 6" from the ceiling.

- Mobile Homes and RV's - The metal outside walls and roofs of mobile homes and recreational vehicles can transfer heat and cold from outdoors, making the air right next to the ceilings and outer walls hotter or colder than the rest of the inside air. These layers of hotter or colder air can prevent smoke from reaching a Smoke Sensor in one of these locations. Therefore, put Smoke Sensors in mobile homes and RV's only on inside walls, between 4 and 6 inches from the ceiling. Minimum protection requires one sensor as close to the sleeping area as possible.
- Avoid mounting sensors on any sloped surface.
- Try to keep the Smoke Sensor within 100' of the CPU.
- Check for areas of the installation which may inhibit the Smoke Sensors radio signals from reaching the CPU. This would include areas with excessive metallic surfaces or high voltage wiring.

Turn system option ⊕ ① ⑦ "ON" to comply with UL 985.

Refer to the Owners Manual included with each Smoke Sensor for detailed information on the sensor. Also, be sure to give the Smoke Sensor's Owners Manual to the purchaser of the system after the installation is complete.

Additional information on Household Fire Warning is available at nominal cost from: the National Fire Protection Association, Battery Mark Park, Quincy, MA 02269. Request NFPA Standard 74.

Permanently Mount the Smoke Sensor
- Remove the sensor's mounting bracket to screw onto mounting surface, then re-attach sensor onto the mounting bracket.
- Mount directly onto wood surfaces using 1 1/2" wood screws. If mounting onto plaster or dry wall use molly bolts or appropriate plaster anchors.

Testing the Smoke Sensor. Refer, **also**, to the Smoke Sensor's installation manual for testing procedures. To completely test sensors, alert the Central Station if necessary and use "canned smoke" sparingly from a distance of 2-3 feet or a smoldering hemp rope to set the sensor off. Too much can permanently impair the sensor's sensitivity. You can also press the sensor's test button but this will not test the entire detector mechanism. A steady siren sound should be heard with a periodic "FIRE" announcement if the siren speakers are installed. To reset the alarm, fan the smoke from the sensor and enter arming level one.

NOTE 1. The alarm system sirens and the smoke sensor's built in siren will **both** sound when smoke is detected. The CPU alarm is cancelled from the Touch Tone phone and the detector's alarm is cancelled by fanning the sensor free of smoke, or by releasing the test button.

Note 2. If the phone jack is plugged in, the Central Station will receive the alarm. The Central Station must be informed before testing begins.

Note 3. There is a 5 -10 second delay between sensor activation and transmission to the CPU.

Repeat the above steps for all Smoke Sensors.

THIS SMOKE SENSOR REQUIRES DURACELL ALKALINE BATTERIES (NEDA 1602). DO NOT USE SUBSTITUTES.

3.1 Summing It Up

CPU INDICATORS

•Green System LED	•Indicates
ON steady	Normal
Blinking	Test in progress or trouble or failure condition. Phone message identifies trouble or failure (must have been hung-up for 15 seconds)
OFF	Major failure - see Testing and Troubleshooting

•Red Arm Status LED	•Indicates
ON steady	Armed to level 3 - all intrusion sensors not-bypassed "ON"
Blinking	Armed to level 2 - only perimeter sensors "ON"
OFF	Armed to level 1 - all intrusion sensors "OFF"

COMMUNICATOR CODES

Communicator Codes	Originating Groups
1 Fire	05
2 Help/Duress	13, 14, 15 and [*][*][*][*][*][*]
3 Intrusion	06, 07, 08, 09, 10 and 16
4 Auxiliary	11
5 Auxiliary	12
6 Freeze	Energy Saver
7 Trouble Sensor or	Any Wireless or Supervised Hardwired System Troubles
8 Test	[*] [C][O][D][E] [8]
9 Restore	[*] [C][O][D][E] [1] (Alarm Reset or Cancel)

PROGRAMMABLE SYSTEM FEATURES

> To enter the program mode use the Program Switch on the CPU board or enter
> [*] [C][O][D][E] [#][7][S][E][R][V]. (SERV code must be programmed in the CPU
> using program memory switch -- [*][2][6])

System Features

[*] [0][1] Customer access code. Can be read only. To program see Customer Commands. Referred to as [C][O][D][E]. Default = 1234.

⊡ ⓪② **Duress code.** Modifies the last two digits of the customer access code to form a second code which can perform all commands of the regular code but produces a duress report as well. Enter 00 to turn OFF feature. **Default** = 00. **Note:** Duress reports are not recorded in any alarm memory.

⊡ ⓪③ **Entry delay** time. 6 - 58 seconds. **Default** = 30 sec. **UL 1023** Requires 15 seconds Max.

⊡ ⓪④ **Exit time delay.** 6 - 58 seconds. **Default** = 30 seconds. **UL 1023** Requires 45 seconds Max.

⊡ ⓪⑤ **Through** ⊡ ①⑥ **Sensor groups** - see next page.

⊡ ①⑦ **One shot trouble annunciation.** Status toggles when entered. Changes renewed trouble annunciation from one time (OFF) to every 12 hours (ON). **Default = "OFF". (should be ON to comply with UL 985).**

⊡ ①⑧ **Wireless Touchpad code.** (1-254) Non supervised. Touchpad must be plugged into CPU just like a sensor to receive it's House Code no entry is needed beyond ⊡ ①⑧. The Touchpad responds with a series of beeps when plugged in and when it has accepted the program.

> **N**ote. Wireless Touchpads are inoperative during a trouble or failure condition.

⊡ ①⑨ **Lockout delay.** Needed with non ITI motion sensors and mats assigned to Groups 9 or 10 which do not have a built-in lockout delay. Status toggles when entered. **Default** = OFF.

⊡ ②⓪ **Primary** Central Station phone number. Enter # after last digit. **Default** = none. Pauses may be added anywhere in the phone number by pressing the 1st A in the CareTaker logo on the keypad.

⊡ ②① **Secondary** Central Station phone number. Dialed if first number is not reached. Enter # after last digit. **Default** = none. Pauses may be added anywhere in the phone number by pressing the 1st A in the CareTaker logo on the keypad.

⊡ ②② **Account number.** Three digits communicator reports. **Default** = 000.

⊡ ②③ **Freeze alarm** temperature activation point. **Default** = 42 F

⊡ ②④ **Help alarm** from telephone ⊡⊡⊡⊡⊡⊡. Status toggles when entered **Default** = ON.

⊡ ②⑤ **Siren time-out.** 01 - 20 minutes. 00 = OFF. **Default** = 04 Minutes.

⊡ ②⑥ **Dealer service access code** - 4 digits. 0000 = OFF. Referred to as Ⓢ Ⓔ Ⓡ Ⓨ. **Default** = OFF.

⊡ ②⑦ **Off premise speed access.** Call premise, let phone ring 2 times, hang up, call back within 60 seconds but no sooner than 10 seconds and CareTaker will answer. Status will toggle when entered. **Default** = ON.

⊡ ②⑧ **Communicator speed.** Sets the communicator baud rate at 10 or 20 baud. Default =10 baud.

⊡ ②⑨ **Touch Tone sensitivity** . ON means a 100 ms long Touch Tone signal is required for CareTaker to respond. OFF means a 45 ms long Touch Tone signal is required for CareTaker to respond.

SENSOR GROUPS (PROGRAM LEVELS)

☑ ⓪⑤ **Smoke and Fire sensors.**

☑ ⓪⑥ **Perimeter instant** intrusion sensors.

☑ ⓪⑦ **Perimeter delayed** intrusion sensors.

☑ ⓪⑧ **Interior instant** intrusion sensors.

☑ ⓪⑨ **Motion sensors.** Instant but will honor a delay (wireless PIR sensors only).

☑ ①⓪ **Motion sensors.** Will initiate a delay (wireless PIR sensors only).

☑ ①① **Auxiliary N.O..** Non supervised. Low level alarm stops on CS kissoff.

☑ ①② **Auxiliary N.C..** Supervised Low level alarm stops on CS kissoff.

☑ ①③ **Audible panic (HELP).** Supervised.

☑ ①④ **Audible panic (HELP).** Non supervised.

☑ ①⑤ **Silent panic (HELP).** Non supervised.

☑ ①⑥ **24 Hour** intrusion sensors. Active in all arming levels unless bypassed.

The following table shows the characteristics of each sensor group. Duress and Freeze are included for reference only as it is not possible to assign sensors to them.

Characteristic   **Sensor Group**

Characteristic	05	06	07	08	09	10	11	12	13	14	15	16	Duress	Freeze
Active Level	(F)	(Intrusion)					(Aux/Panic)					(I)	(Dur)	(Frz)
Active Level 1	•						•	•	•	•	•	•	•	•
Active Level 3	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Active Level 2	•	•	•				•	•	•	•	•	•	•	•
Response														
Instant		•		•	•		•	•	•	•	•	•	•	•
5-10 second Delay	•													
Initiate Entry Delay			•			•								
Honor Entry/Exit Delay			•		•	•								
Wireless Features														
Supervised	•	•	•	•	•	•		•	•			•		
Tamper Feature		•	•	•								•		
Low Battery Feature	•				•	•	•	•	•	•	•			
8 Round Transmitter		•	•	•	•	•		•				•	–	
16 Round Transmitter	•						•		•	•	•			
Outputs														
Siren Steady	•													
Siren Pulsed		•	•	•	•	•			•	•		•		
Siren "FIRE" Message	•													
Siren "INTRUSION" Message		•	•	•	•	•						•		
Siren "HELP" Message									•	•				
Interior siren Steady High	•													
Interior siren Rapid Low							•*	•*						•*
Interior siren Pulsed High		•	•	•	•	•			•	•		•		
Turn Lights On During Alarm	•	•	•	•	•	•	•	•	•	•		•		•
Communicator														
Communicator Code	1	3	3	3	3	3	4	5	2	2	2	3	2	6
Restore (9) Anytime Reset	•													
Restore (9) Before Siren Done		•	•	•	•	•						•		
Abort Msg Before Ack Tone		•	•	•	•	•						•		

    * Stops after Central Station has received message.

CUSTOMER COMMANDS

⊞,⊞,①②③④ etc. represent Touch Tone phone keys. The sequence Ⓒ Ⓞ Ⓓ Ⓔ represents the customer 4 digit access code such as 1234 etc. (Option) indicates that optional hardware must be employed for the command to be valid.

Inquiries

⊞ ⊞	**Short Status** - Announces current arming level & identifies any open sensors or alarms in memory. Reports status of Energy Saver if installed.
⊞ Ⓒ Ⓞ Ⓓ Ⓔ ⊞ ①	**Full Status** - As above plus lists troubles, status of AC power, standby battery, chime. Gives alarm history and temperature and status if Energy Saver is used.

Arming Level Commands

⊞ Ⓒ Ⓞ Ⓓ Ⓔ ①	**Level 1 - OFF** - Turns system OFF. Resets any alarm.
⊞ Ⓒ Ⓞ Ⓓ Ⓔ ②	**Level 2 - Stay** - Turns perimeter intrusion protection ON.
⊞ Ⓒ Ⓞ Ⓓ Ⓔ ③	**Level 3 - Away** - Turns all intrusion protection ON.

Commands That Can Be Added To Level 2 or 3 Arming Commands

④	**Bypass** - Arms to the level commanded but will ignore any sensors violated at the time of bypass for the duration of the arming period. (Indirect Bypass)
⑥	**Instant** - Changes all sensors to instant.
⑦⑦	**Extend Lights** - Turns lights ON for 5 minutes for exit instead of just the exit delay time. (Option)
⓪	**Energy Saver** - Turns unit ON. An arming level change will turn unit OFF. (Option)

Help Call

⊞⊞⊞⊞⊞	**Help** - Police call alarm. Can be activated from any on premise phone.

[*] [C] [O] [D] [E] [7]	**Light Control** - Turns lights ON or OFF (toggles). Lights will automatically shut off in 5 minutes unless they were turned on by an alarm. (Option)
[*] [C] [O] [D] [E] [8]	**Central Station Test** - Tests optional communicator. Blinks green light until test is complete or manually turned off. (Option)
[*] [C] [O] [D] [E] [9]	**Sensor test** - Leave phone off hook, put phone on hook to terminate. Issues interior siren beep on receiving sensor signal followed by the sensor number and group over the phone. Press [#] to get a list of sensors not yet tested.
[*] [C] [O] [D] [E] [0]	**Energy Saver** - Turns unit ON or OFF (toggles).
[*] [C] [O] [D] [E] [#] [2]	**Chime Switch** - Turns chime feature ON or OFF. Must be in arming level 1.
[*] [C] [O] [D] [E] [#] [3]	**Energy saver** - Low temperature set point. 40° to 97°F range. (Option) Must access in arming level 1.
[*] [C] [O] [D] [E] [#] [4]	**Energy saver** - High temperature set point. 41° to 98°F range. (Option) Must access in arming level 1.
[*] [C] [O] [D] [E] [#] [5]	**Alarm History** - Gives last four alarms - most recent first.
[*] [C] [O] [D] [E] [#] [6]	**Local Disable** - Disables telephone control of system until telephone is hung up. This allows Touch Tone telephone to be used for controlling other than the local CareTaker system.
[*] [C] [O] [D] [E] [#] [8]	**Code Change** - Allows the user to change the access code of the system, by entering a new four digit code. For example: [*] [C] [O] [D] [E] [#] [8] [4] [3] [2] [1] changes the access code "1234" to "4321". **The Leading Character** either [*] or [#] can be changed if there are conflicts with some other telephone service, by including it before the new code. The above example would be changed to [*] [C] [O] [D] [E] [#] [8] [#] [4] [3] [2] [1]. All subsequent commands would have to start with [#] instead of [*].
[*] [C] [O] [D] [E] [4] [n] [n]	**Bypass sensor nn** - Ignores a specific sensor until arm level is changed. Must always be two digits as 06, 01, 17 etc. (The only way to de-activate a sensor assigned to group 16.) (Direct Bypass)

Note. The Bypass command does not work with sensors assigned to group 05 (Fire).

SERVICE ACCESS AND COMMANDS

Remote Access. You or your customer can dial up an unattended CareTaker system two ways. If level ✱ ② ⑦ **Auto Answer** feature is ON, call and let the phone ring twice, hang up, wait 10 seconds, call again and CareTaker will answer. If the feature is OFF, CareTaker will answer after about 7 rings if it has an alarm or otherwise 12 or 13 rings. The auto answer feature is useful if an answering machine is on the line. Set the answering machine for three rings and you should never get it.

Note. Access under worst case long distance connections can not be guaranteed. Usually re-dialing the call will cause a different call routing and clear the problem.

Once you reach CareTaker you can use the listed commands utilizing the four digit service code, represented here by Ⓢ Ⓔ Ⓡ Ⓨ, to issue certain commands and inquiries but not those which are security oriented such as changing customer access codes or arming levels. If the customer access code is known, however, the alarm technician has access to all customer commands as well as full editing access to the programmed data in CareTaker memory as described above. Refer to Program level ✱ ② ⑥ for **Service Code Entry.**

Service Technician Commands and Inquiries

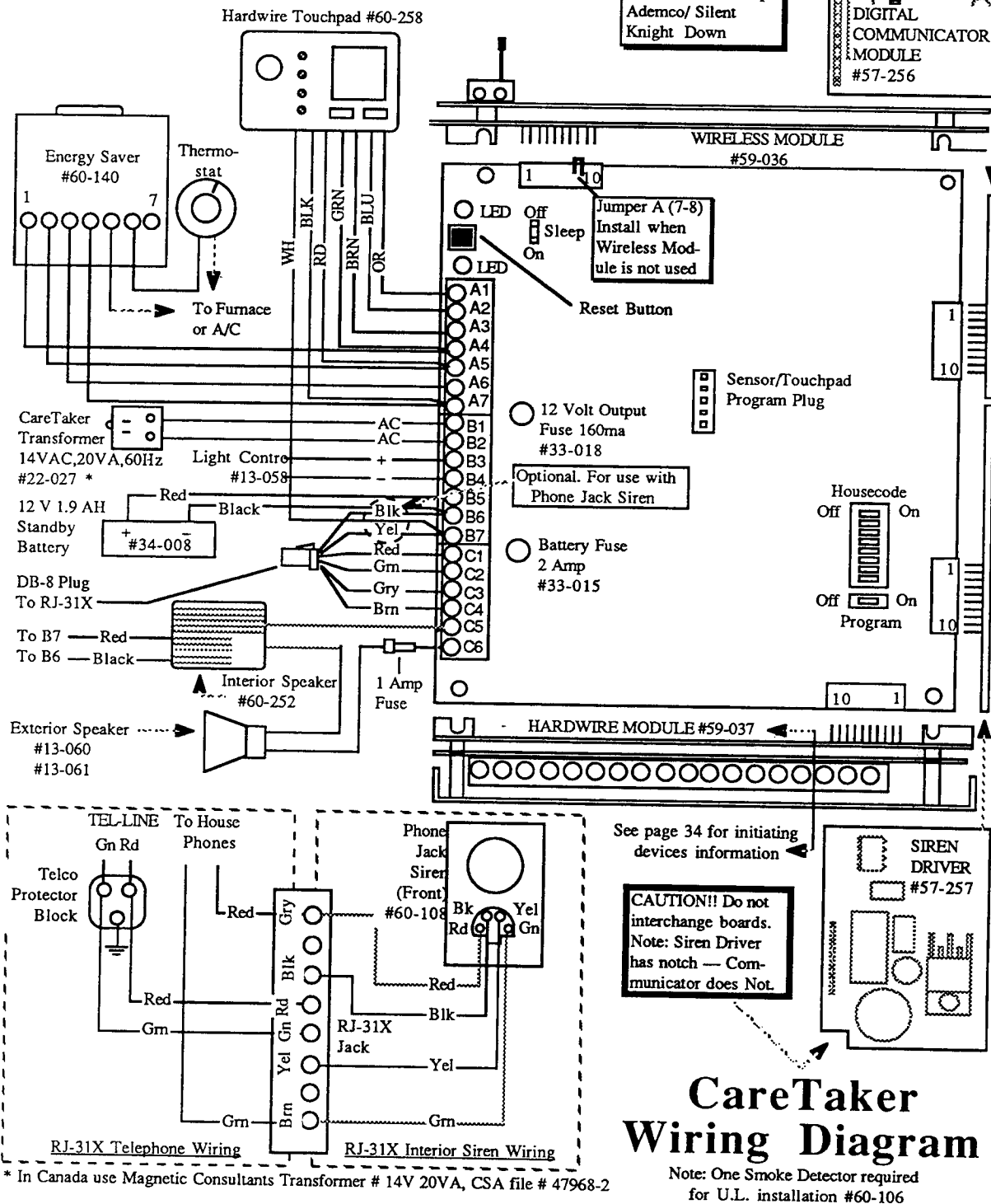|	
✱ Ⓢ Ⓔ Ⓡ Ⓨ ④	**Bypass** - Bypasses the first sensor in alarm memory that caused an alarm.
✱ Ⓢ Ⓔ Ⓡ Ⓨ # ①	**Status** - Same as **Full Status** inquiry except no arming levels or bypass conditions are given.
✱ Ⓢ Ⓔ Ⓡ Ⓨ # ⑤	**Alarm History** - Gives last four alarms, most recent first. Enter # to clear history.
✱ Ⓢ Ⓔ Ⓡ Ⓨ ⑧	**Communication Test** - Initiates a test call to the Central Station. (Option)
✱ Ⓢ Ⓔ Ⓡ Ⓨ # ⑨	**On Premise Sensor Test** - Beeps interior siren as each round of data is received from an activated sensor to assure good transmission. Announces sensor number over optional siren speakers.
✱ Ⓒ Ⓞ Ⓓ Ⓔ # ⑦ Ⓢ Ⓔ Ⓡ Ⓨ	**Access Program Memory** - Allows editing of memory. Note that the announcement when adding a sensor will be *"SENSOR nn ON"* instead of *"SENSOR nn PROGRAM OK"* which is given when using the program switch.
✱ ⑨ ⑨	**Exit Program Memory.** Returns to previous arming level.

CareTaker Wiring Diagram

CAUTION!!
TOUCH AN EXPOSED METAL SURFACE ON THE CABINET BEFORE TOUCHING ANY COMPONENTS.

Select Both
Format Switches
Franklin/Sescoa Up
Ademco/ Silent
Knight Down

DIGITAL COMMUNICATOR MODULE #57-256

Hardwire Touchpad #60-258

WIRELESS MODULE #59-036

Energy Saver #60-140

Thermostat

To Furnace or A/C

Jumper A (7-8) Install when Wireless Module is not used

Reset Button

Sensor/Touchpad Program Plug

CareTaker Transformer 14VAC,20VA,60Hz #22-027 *

Light Control #13-058

12 Volt Output Fuse 160ma #33-018

Optional. For use with Phone Jack Siren

12 V 1.9 AH Standby Battery #34-008

Housecode Off ── On

Battery Fuse 2 Amp #33-015

Off ── On Program

DB-8 Plug To RJ-31X

To B7 ── Red
To B6 ── Black

Interior Speaker #60-252

1 Amp Fuse

HARDWIRE MODULE #59-037

Exterior Speaker #13-060 #13-061

TEL-LINE To House
Gn Rd   Phones

Phone Jack Siren (Front) #60-108

See page 34 for initiating devices information

SIREN DRIVER #57-257

Telco Protector Block

RJ-31X Jack

CAUTION!! Do not interchange boards. Note: Siren Driver has notch — Communicator does Not.

RJ-31X Telephone Wiring   RJ-31X Interior Siren Wiring

* In Canada use Magnetic Consultants Transformer # 14V 20VA, CSA file # 47968-2

Note: One Smoke Detector required for U.L. installation #60-106

NOTE: When using the Energy Saver Module with a Hardwire Touchpad Display, you must not connect CPU terminal A7 to terminal 4 on the Energy Saver Module. Leave this connection open.

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FCC INFORMATION

Radio and Television Interference

This equipment has been tested to FCC requirements and has been found acceptable for use.The FCC requires the following statement for your information:

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Sub-part J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment cause interference to radio or television reception, which can be determined by turning the unit OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

> If using an indoor antenna, have a quality outdoor antenna installed.

> Reorient the receiving antenna until interference is reduced or eliminated.

> Move the receiver away from the control/communicator.

> Move the antenna leads away from any wire runs to the control/communicator.

> Plug the control/communicator into a different outlet so that it and the receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user might find the following booklet, prepared by the Federal Communications Commission, helpful.

> "How to Identify and Resolve Radio-TV Interference Problems"

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

Telephone Operational Problems

In the event of **telephone operational problems**, disconnect the control/communicator by removing the plug from the RJ-31X jack. We recommend your certified installer demonstrate disconnecting the phones on installation of the system. Do not disconnect the telephone connection inside the control/communicator. Doing so will result in the loss of your telephone lines. If your regular telephone works correctly after the control/communicator has been disconnected from the telephone lines, the con-trol/communicator has a problem and should be returned for repair.

If, upon disconnection of the control/communicator, there is still a problem on your line, notify the Telephone Company that they have a problem and request prompt repair service. The user may not, in any circumstances (in or out of warranty) attempt any service or repairs on the system. It must be returned to the factory or an authorized service agency for all repairs.