REGENCY

by ITI ®

REGENCY
Model 4734 Access Control Expander

Installation Manual

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FCC Notices

FCC Part 15 Information to the User

Changes or modifications not expressly approved by Interactive Technologies, Inc. can void the user's authority to operate the equipment.

FCC Part 15 Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try the correct the interference by one or more of the following measures:
- Reorient or relocate the panel's receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the affected equipment and the panel receiver to separate outlets, on different branch circuits.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Part 68

This equipment complies with part 68 of the FCC Rules. Located on this equipment is a label that contains, among other information, the FCC registration number and the ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The REN is used to determine the maximum number of devices that may be connected to your telephone line. In most areas, the sum of all device RENs should not exceed five (5.0).

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

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

If you experience trouble with this equipment, please contact the company that installed the equipment for service and repair information. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected or you are sure that the equipment is not malfunctioning.

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

Table of Contents

Table of Contents

Table of Contents

List of Figures

List of Tables

Section 1: Introduction

The Model 4734 Control Expander is a plug-on unit that provides greatly enhanced software features, event storage memory, and user-friendly operation for the Model 4720 Control/Communicator. The 4734 replaces the control microprocessor on the 4720 (or on the obsolete Model 4721 Area Control Software). It allows full use of up to two zone expanders for a system maximum of 80 zones.

The 4734 supports the Model 4181 (PL513) Power Line Control Interface, which controls X-10 modules at various locations, making it possible to turn lamps and other appliances on and off at preprogrammed times, as the result of touchpad key press or a change in system status.

The Model 4734 hardware is powered by the 4720 hardware and supports the same expansion devices as the 4720. The 4734 can be added to existing 4720 (or 4721) installations.

1.1 Features

- Availability of up to 1000 user codes (or cards) programmable to allow control of selected functions.
- 1000 separate users, cards, or codes.
- Allows door relays to be bypassed (or latched) open.
- Any door can be controlled from any station.
- Can report "Access Denied" or "Door Restore" events.
- Support of up to 64 expansion zones which have all the same options as internal zones (except fast loop restore).
- Each touchpad panic zone is a separate zone, adding 64 more zones.
- Ability to report up to 1000 user codes (or cards), programmable to allow control of selected functions. Secondary user code (Code 2) option allows codes to be enabled temporarily for users such as guests and baby-sitters.
- High-security code option that requires selected users to enter a second code to gain access to restricted areas.
- 32 time windows for programming time restrictions and automatic arming and disarming times. Time windows can also be used to activated X-10 or 4180 auxiliary outputs.
- Holiday schedule can be programmed for 16 holiday dates.
- Two dates can be supplied to adjust automatically for daylight savings time.
- Event memory that stores at least the last 500 events, including alarms, troubles, bypasses, restores, openings, closings, and tests.
- Use of both door/card access and intercom/phone modules on the same installation. Each station is selected for either door or intercom operation.
- Enhanced access control features such as separate "door access" and "door left open" timers for each door.
- Control of up to 32 standard X-10 Power Line Control Interface Modules. Outputs can be activated by time events, zone status, alarms, touchpads, or virtually any internal condition or combination of conditions.
- Support of two Model 4180 Status Display Modules for a total of 32 outputs that can be programmed to annunciate status conditions such as armed, alarm, trouble, and tests.
- Built-in programmer with English-language prompts.
- Fully programmable using built-in programmer or Model 5540 Downloading Software.
- Enhanced split system (area control) capability, allowing separate control of system functions in up to eight different areas of the building.

Section 2: Installation

NOTE   *1. Because the 4724 and 4734 have different options, you cannot convert a 4724 into a 4734 by replacing a chip.*

2. The 4734 is for use with the 4720 Revision M circuit boards; the 4734-2 is for use with the 4720 Revision N or later circuit boards. When referring to both the 4734 and the 4734-2, these instructions use the convention "4734/4734-2." (The 4734/4734-2 cannot be used with Revision A-L 4720 boards.)

Figure 1 on the next page shows the placement of the 4734/4734-2 board in relation to the 4720.

The Model 4734N is a 4720 and a 4734-2 (shipped together), which has been partially installed at the factory.

Maximum current draw for the 4734/4734-2 is 50 mA.

2.1   4734 Installation

1. **Very important.** Remove power from the 4720 by disconnecting the AC power and battery.

2. (**Skip this step if you are installing a 4734N.**) Carefully remove the 4720 control microprocessor chip from its socket by inserting a flat-blade screwdriver under each end of the microprocessor and prying it out slowly.

    If you are installing a 4734-2 board, which has a socket for this chip, press the chip into the socket. Observe proper polarity (it is the opposite of the other large ICs).

    If you are installing 4734-2 board which does not have a socket for this chip, the chip is no longer needed because the 4734-2 has its own control chip. If you want to, you can save the chip for later use (for example, in case you ever need to downgrade a 4734-2 back into a 4720).

3. **(Skip this step if you are installing a 4734N.)** Insert the socket adapter into the 4720 control microprocessor socket. Pin 1 (marked on the adapter) goes in the upper left hand corner of the socket. Make sure all pins are aligned. Press adapter in, making sure the adapter is fully seated (this requires a fair amount of pressure).

4. Remove the lower left hand mounting screw from the 4720 panel. The screw will no longer be used. (If an earth ground wire was attached at this screw move the wire to another mounting screw.)

5. Place the 4734/4734-2 circuit board over the pins on the socket adapter. The plastic mounting bar should extend down over the mounting hole. Carefully press the 4734/4734-2 onto the socket adapter. The 4734/4734-2 will rest level on the 4720 with the mounting hole aligned with the hole in the mounting bar.

6. Fasten the 4734/4734-2 to the 4720 by placing the long 6-32 Phillips screw (provided) through the mounting bar into the mounting hole and tightening the screw.

7. Reconnect power to the 4720 and turn on. The normal power-up display is "Default in 250s. Press CLR."

NOTE   *The 4791 EEPROM chip on the 4720 is not used by the 4734/4734-2 and may be removed if desired. The 4734/4734-2 has its own EEPROM.*
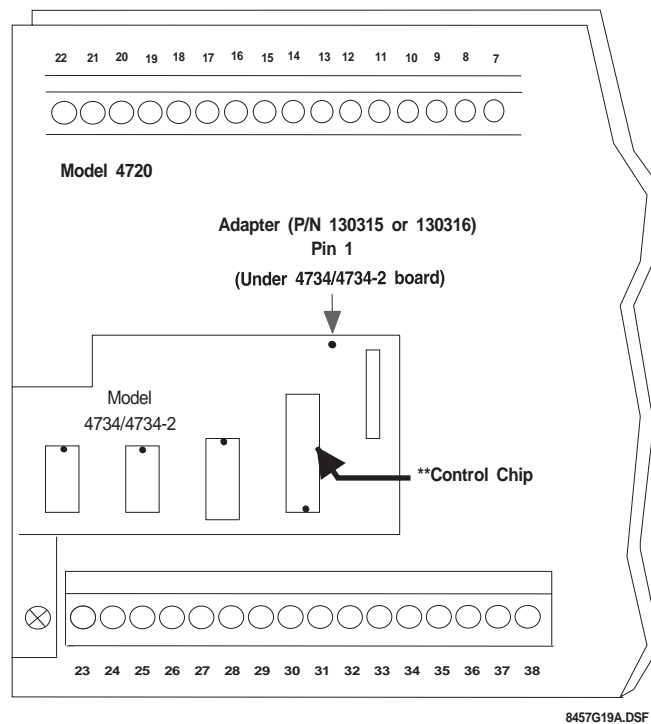
Figure 1: Model 4734 Installation

*If you are upgrading a Rev. M 4720 board:
Use 4734 Access Expander
Use 130315 Adapter

*If you are upgrading a Rev. N or later 4720 board:
Use 4734-2 Access Expander
Use 130316 Adapter

NOTE   **4720 board revision labeled on board*

**4734 uses 50747 series control chip
4734-2 uses 38000 series control chip

2.2 Access Control

For access card performance with the 4734, use the Model 4420 Interface or 4660C touchpads with card readers. Refer to the *4300 Installation and Operation Manual* (P/N 150497) for information on how to install the access control system.

2.3 Zone Expanders

For more information on wiring zone expanders, see the *4720 Installation Manual* (P/N 150476).

In some situations, zone expanders operate differently with a 4734 system than they do with a 4720 only. The instructions below describe such differences (or refer to additional sources of information).

2.3.1   Current Models

The 4115 Serial Zone Expander and 4126 Hardwire Zone Expanders are the models currently available for use with the 4720. Each of these products has its own installation manual. The *4115 Installation Manual* (P/N 150648) is shipped with the product; the *4126 Installation Manual* (P/N 150860) is part of the Regency Technical Documentation binder.

2.3.2   Older Models

The following information about zone expander models that are no longer available is retained for installers who may need to troubleshoot or repair an existing system.

Model 4110 Serial Zone Expander

4110 zones using 4100 or 4101 sensors may be supervised, but the NO EOL option must be selected as **yes** since the sensors have no end-of-line resistor. Two 4110 expanders may be used for up to 120 additional serial zones.

Model 4125 Multiplexed Zone Expander

The 4125 is enhanced by the 4734 to allow zones to be wired like 4720 internal zones.

Normally Closed Zones must have either a 15 K end-of-line resistor in series with the contact or, if not using a resistor, they must be programmed as NO EOL:YES.

Zones may be programmed as normally open and normally closed for UL type burglary zones. Zones programmed in this manner must have a 15 K end-of-line resistor and must be programmed as NO EOL:NO. These zones may also have day supervision selected.

Two 4125 zone expanders may be used for up 128 added zones. Zones on the second expander should be wired starting at Zone #1, the actual zone number will be offset by the number of zones on Expander #1 plus the number of internal zones.

Model 4130 RF Zone Expander

4130 zones must be programmed as normally open on the 4734. The transmitters are then individually programmed as normally open or closed.

Two RF zone expanders may be used under special circumstances. Typically this would be used in installations where the two receivers are isolated by some type of barrier wall which blocks signals from the other expander.

NOTE *Using more than 64 total transmitters is not recommended.*

2.4 Model 4181 X-10 Power Line Control Module

NOTE *The Model 4181 and the X-10 modules are for supplementary use only and are not UL Listed as control unit accessories.*

2.4.1   Installation

The optional Model 4181 X-10 Power Line Interface provides remote and automatic control of lighting and appliances in an installation. When X-10 modules are used with the 4734, the control panel can provide automatic control based on internal status and key commands. The 4181 (PL513) allows the 4734 to support up to 32 of the X-10 light or appliance modules. The 4181 also provides the 4734 with power line synchronized real time.

Plug the Model 4181 into a 120 VAC, 60 Hz wall outlet to the panel. Use a 4-wire modular phone cable (P/N 130071, supplied) to connect the 4181 to the modular jack (P5) on the 4734 as shown in Figure 2. The maximum length of the cable is 20 feet. The 4181 is optically isolated from the powerline.

NOTE   *The modular connectors on both the 4734 and the 4181 must NOT be connected to a phone line or anything other than each other. The X-10 modules may be distributed throughout the building.*

To install the X-10 modules, plug them into outlets close to the appliances you want them to control.

The 4181 LED is normally on when power is applied. The LED flashes during transmission.

Model 4181 (PL513) Power Line Interface

Model 4720

Do not connect P5 to a phone line.

Model 4734/4734-2

P5

Modular Cable

8457G20A.DSF
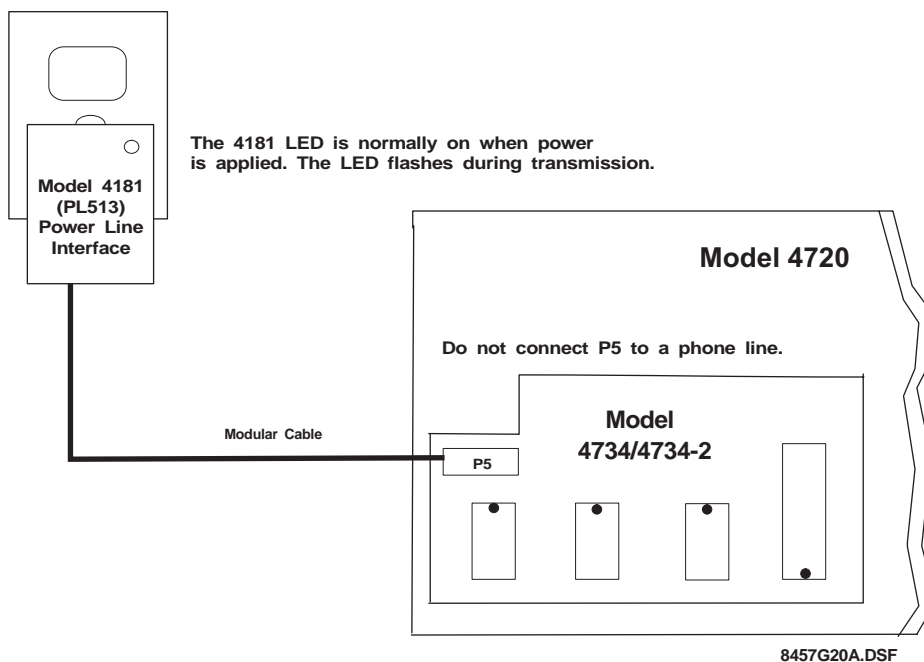
Figure 2: Model 4181 Connections

2.4.2 Suppliers Of X-10 Modules

X-10 modules can be obtained from ITI. If you need to order X-10 modules, contact ITI's Order Entry at 1-800-777-4841.

2.5 Software Updates

When placing the 4734 into an existing 4720 installation, you may need to replace the software (as shown in the table below) to support the additional capabilities of the 4734. The 4734 can only be used with the 4720 Revision M circuit boards and requires the 9332 dialer chip, Revisions B or C. If you need to order a chip, contact ITI Order Entry at 800-777-4841. The 4734-2 must use the 4720 Revision N board and requires the 9387 dialer chip.

Table 1: Software Updates

If You Are Using Device	Chip to Be Replaced	Software Revision Date Required	Socket Adapter
4734	9332	4720, Revision M	130315
4734-2	9387	4720, Revision N	130316

Section 3: 4734 Operation

This section describes operational features, other than programming, that are either unique to the 4734 or that operate differently than they do with the 4720 and 4724. 4734 programming is described in Sections 4 through 6 of this manual.

3.1 System Power Up

At power-up (or reset), the touchpads show "default in 250s" on the first line and "Press CLR" on the second line. This means that the system will go into Default Arm mode in the displayed number of seconds. The number of seconds displayed changes as the system counts down the seconds before it enters Default Mode. The first user to press **CLR** enters Set Time mode and the default countdown is canceled.

3.2 Access Control

3.2.1 Revision B Enhancements

Revision B (released October 1993) of the 4734 is greatly enhanced. It eliminates user traffic problems and system busy conflicts that could occur in the previous revision. Multiple users can operate the system simultaneously from different touchpads. This feature is especially useful in large access or area systems where users in different areas are not aware of each others' activities. The following are highlights of Revision B changes:

- Status displays such as Event Memory, Not Ready Zones, and so on, can be viewed by different users at the same time without interference. Users can access the system during the downloading. During downloading, zone alarms are disabled temporarily to ensure that zone options are accurate, but door access and status displays can be used while downloading is active.

- Other users can access the system while one user is in Program Mode. For example, a user can change system options at one station while other users are accessing doors or displaying status. As in the previous revision, only one user at a time can access Program Mode. This prevents users from making conflicting changes to the system or from using system resources that cannot be shared.

■ In a large system or during heavy use, display response may be slower than normal. For example, if 15 users are displaying Event Memory at the same time, the displays will be slower than normal. Entry or exit delay displays may be updated less often than once per second if the system is heavily loaded.

3.2.2   User Profiles

The 4734 controls system access through user profiles, which provide great flexibility while simplifying access programming for end-users. User profiles are groups of options, time windows, and areas that can be assigned to users. Up to 16 profiles can reside in a system. This differs from the 4724, which assigns options individually for each code.

For example, User Profile #1 could be created for card-only, Time Window #1, Area #1 users. Any time a user with these access needs is added to the system, User Profile #1 is selected when the code is added to the system. User profiles for users needing greater access to the system can be created accordingly, making use of the 10 access options, (Arm, Disarm, Door, Code2, Card-only, Bypass, Program, High Security, Time Windows, and Areas) available with the system.

3.3 Area Control

An area is a part of a building that is being treated as a subsection of the total system. The Model 4734 allows an installation to be divided into up to eight areas. The two levels of system operation using areas are described below in Sections 3.3.1 and 3.3.2

3.3.1   Simple System

At this level of operation, the area programming is used only to divide system door access into separately accessed areas. Codes and touchpads are programmed to determine which codes can be used to gain door access at each touchpad. Arming and other functions operate at all stations and apply to the entire system.

3.3.2   Split Arming

Split arming offers a high degree of independent operation for each area. Each area can be independently armed and disarmed. Each area has its own entry and exit timer. Entry or exit zones assigned to a particular area will be disabled during the entry or exit time for the area. The programmed entry and exit times are shared by all areas.

Interior and instant operation are also controlled separately for each area. Each area has its own interior zones and interior active status. Each area has its own instant status, which disables the entry and exit timers for that area.

Code2 operation applies separately for each area. When the Code2 feature is activated, Code2 restricted access codes may disarm the area once. Normally Code2 restricted codes can never disarm the system.

Each area can be armed and disarmed using only touchpads and codes that have been assigned to the area.

3.3.3   Area Assignments

Each zone can be assigned to any one of the eight areas. Any number of zones may be assigned to a particular area. Chime zones sound only at touchpads in the same area. Entry and exit zones are also activated by area. There are separate entry/exit timers for each area.

Each code can be assigned to any or all of the eight areas. The code will only function at touchpads that are also assigned to the same area or areas.

Each touchpad can be assigned to one or more areas. More than one touchpad can be assigned to each area. Each touchpad will display global system troubles and the status of any areas to which it is assigned.

The Model 4180 Status Display Module can be programmed to activate speakers and bells for alarm and trouble conditions that occur anywhere in the system or only for those that occur in specific areas.

The only items that report by area are openings and closings.

3.4 Touchpad Operation

3.4.1   Touchpad Designations

The Model 4734 Access Expander allows the system to use both door/card access and intercom features in the same installation.

Each touchpad location (up to 15) has several programmable options. Touchpads designated as door stations will allow codes to be used for door access. A programmable option allows single-swipe access and disarm at door stations. The EXIT feature on door access touchpads can be programmed to generate a report and printout. Each card (code) must be assigned an area or a group of areas to which it is granted access. The card will work only at stations that are assigned to the same areas or group of areas.

Touchpads NOT selected as door stations will allow cards to be used for arming and disarming, but not door access. Cards swiped at these stations will arm or disarm the system, depending on the card's current privileges.

Touchpads designated as intercom stations will be able to use the intercom features, but will not have door-access capabilities.

NOTE   *Any station may access Model 4150 relays or X-10 modules.*

Alarms and touchpad troubles are defined by location. Panic keys report as separate zones for each station. Duress alarms caused by entering the duress prefix also have a separate zone I.D. for each touchpad. Table 2, below, lists the zone reported for each touchpad.

Panic Key zone numbers may be found in Table 2 or by using the following formula:

Zone = (STATION ID #) X 4 + 81 + KEYNUM

KEYNUM is **0** for DURESS, **1** for POLICE, **2** for AUXILIARY, and **3** for FIRE. The STATION ID is set to 0-15 by programming the EEPROM in the touchpad (Models 4660B/C/R) or by using the DIP switches on the back of each touchpad (older touchpad models).

Table 2: Panic Key Zones

	Zone Generated By Key							
	STATION:	0	1	2	3	4	5	6	7
	DURESS	81	85	89	93	97	101	105	109
Key	POLICE	82	86	90	94	98	102	106	110
	AUX	83	87	91	95	99	103	107	111
	FIRE	84	88	92	96	100	104	108	112
	STATION:	8	9	10	11	12	13	14	15
	DURESS	113	117	121	125	129	133	137	141
Key	POLICE	114	118	122	126	130	134	138	142
	AUX	115	119	123	127	131	135	139	143
	FIRE	116	120	124	128	132	136	140	144

When one touchpad is in use and access is attempted at another location, the second location will receive a "SYSTEM BUSY" message. However, the system will respond to a panic key activation or exit request at the second location. Touchpads are assigned to a group of areas for area control (see Section 3.3 of this manual).

3.4.2   Touchpad Operation

The Model 4734 Access Expander provides the following additional touchpad functions:

Table 3: Touchpad Functions

DOOR ACCESS	To gain access at a card reader or touchpad at a controlled access door, just present the card or press **DOOR** and enter the PIN at the touchpad.
	To open a door at another station, press the number of the door and then present the card or press **DOOR** and enter the PIN at the touchpad.
	If High Security mode is used, the card must be presented first and then the PIN is entered on the touchpad.
DISPLAY ALARMS	Press **MEM**.
DISPLAY TROUBLES & SUPERVISORIES	Press **STAT**.
BYPASSING DOORS	To latch a door open or release the latch, press **DOOR BYPS** and then present the card or enter the PIN on the touchpad. The touchpad will display "DOOR BYPASS" when doors are latched open. Doors remain latched until they are manually unlatched.
4150 STATUS	To view the status of the analog inputs and relay outputs (controlled by the Model 4150 Auxiliary Control), press **5 STAT**. The analog inputs will be shown on the touchpad display along with the programmed description. If a 5260 printer is connected to the system (see Section 5.6 of this manual), the status will also be printed.
TOGGLE X-10s	To toggle X-10 Modules on and off, press a number from 101-116 or 201-216, then * or **CODE2** or **DOOR**, followed by **1** for ON and **0** for OFF. Numbers 201-216 activate modules 1-16 from House Code 1. Numbers from 201-216 activate modules 1-16 from House Code 2. The house codes for each section are programmed into the EEPROM. The display shows the actual house code and module address activated**.**
DISPLAY EVENTS	To display the event memory, press **1 MEM**, then enter a START DATE to begin the event display. Press the digits of the month, day, and year, then press **TEST**. All events on or after this date will be shown. To show all the events in memory, press **CLR TEST.**
CLEAR EVENTS	To clear the event memory, press **1 0 TEST** and enter a code with Program Mode access. Press **1** to erase the memory, **0** to quit, and press **TEST** to continue.
ZONE DISPLAY	Press **1 STAT** to display all zone locations assigned to the same areas as the touchpad.
TOUCHPAD DISPLAY	Press **2 STAT** to view the touchpad location.
SOFTWARE REVISION	Press **4 STAT** to view the 4734 software date.

3.5 Dumping Event Memory to Central Station

The 4734's event memory can be transmitted to the central station to be saved as a permanent record. Currently, this must be done using the Model 5540 Downloading Software.

The 4734's event memory can be uploaded using a procedure similar to the one used to upload programmed options. The procedure is explained in Section 6.3 of this manual.

3.6 Walk Test

The 4734 Walk Test mode allows the system to be tested without causing alarm reports. Follow the procedure below to perform a walk test.

1. Press **2 TEST** followed by Code 0 or Code 1.

2. The display will show WALK TEST or your customized walk test message (see Section 5.12 of this manual).

3. Arm individual areas or the entire installation. Then violate the sensors by walking through the armed areas. The system will operate as normal except that it will not report alarms to the central station, and alarm tones will not be sent to the external bell. The alarm conditions will be displayed on the touchpad LCD and annunciated on the internal speakers.

NOTE   *The system will remain in the same armed/disarmed state after you exit Walk Test Mode, so be sure to arm or disarm it as desired.*

4. Interior zones may be armed or disarmed during the test to verify operation of the **INT** key and options.

5. Test the exit and entry zones to verify the delay times you have programmed.

6. View the alarm memory to see that the desired areas have been activated.

7. To exit Walk Test Mode, press **MUTE MUTE** on any touchpad.

Section 4: Using the 4734 Built-In Programmer

The 4734 includes a built-in programmer that can program all system operating parameters. The programmer is simple to use and includes help displays for entering data. The 4734's built-in programmer can be accessed using any 4000 series touchpad, Section 4.7 of this manual shows diagrams of the built-in programmer's menu structure.

Before you begin programming, write your option selections down in the programming record, (P/N 150675). For descriptions of the options available with the 4734 Access Expander, see Section 5 of this manual.

Programming can also be performed using the Model 5540 Downloading Software. See Section 6 of this manual for instructions.

4.1 Entering Program Mode

1. To go into Program Mode, press **1 1 TEST** followed by Code 0.
   Code 0 (installer's code) is granted access to all system options. (The factory programmed value for Code 0, the installer's code, is *1234*.) Other codes are granted access to the first four program menus if the PG or "program" access option is enabled for that code. When Program Mode is active, the display lists the available menus one by one.

2. Press the number of the menu that includes the options you wish to program. Press **TEST**. The first line of the touchpad display will show the option name and the most recently programmed value for that option. The second line will show the available choices.

3. To exit the current menu, press **MUTE**. To leave Program Mode from the main manual, press **MUTE**; to leave Program Mode from within a menu, press **MUTE MUTE** (twice).

4.2 Stepping Through the Program

By pressing **TEST**, you can view the current option settings in a menu. The option description appears on the top line, followed by the current setting. The bottom line shows which keys can be used at that step of the program. In some cases, the key name will be followed by a word that explains how the key is used.

EXAMPLE: **TEST** - **ENTER** means you use the **TEST** key as you would use the **ENTER** key on a computer, to enter data into the program.

Press **TEST** again to proceed to the next option without changing the one you just viewed.

Some of the menus (ACCESS, for example) repeat options for many numbered items. The first step in the loop may allow you to choose which numbered item you wish to program. The menu will automatically advance to the next numbered item when it reaches the end of the options for the current item.

4.3 Programming the Options

For some options, the available choices are numbered and appear on the bottom line of the display. To program an option, key in the number of the desired choice. The top line of the touch-pad display will show the new value.

For YES/NO options, press **0** for NO and **1** for YES.

Press **TEST**. The display will advance to the next option.

4.4 Correcting Errors

To CORRECT AN ERROR you made or to clear displayed data, press **CLR**. The LCD will show "0" or the first choice. Enter in the correct data, then press **TEST**.

To restore factory default data, press the **CHM** key. This will cancel the new data and restore the default data. Press the **TEST** key to advance to the next option.

NOTE   *The* **CHM** *key will restore the factory-programmed default value to any option.*

4.5 Entering Text

There are several menus that require text and other characters to be entered (for example, zone location descriptions). The display will show the current programmed text on the first line of the display, with an underscore character (or "cursor") denoting the end of the programmed text. The second line will show the option name momentarily, followed by numbered groups of symbols.

4.5.1   General Form

To enter text or characters, follow the procedure below and refer to Table 4.

1.   Find the character you want in the area below and to the right of the double lines.

2.   Press the digit to the left of the vertical double line in the same row.

3.   Press the digit above the horizontal double line in the same column.
      The character will appear on the top line of the display. Continue selecting characters this way, until you have finished programming the message.
      To erase the last character, press **STAT**. Pressing **BYPS** will move the cursor to the right, entering a blank space after the last character. Pressing **CLR** will erase the text and place the cursor at the beginning of Line 1.
      If you select the wrong group of letters when you press the first digit, press **MUTE** or **CLR** to return to Step 2.

Hints:

1. To enter capital letters, press the number that corresponds to the letter's position in the alphabet. e.g., **0 1** for "A" and **2 6** for "Z."

2. To enter numbers as part of the text, press **6** followed by the desired number, e.g., **6 0** for "0," and so on.

3. The numbers 96-99 will cause a "beep" character of varying duration to be entered into the text. If beeps are inserted into the text, the touchpad will beep whenever the text is displayed. The cursor does not move when a beep is entered into the text.

4. The # and * keys, if needed for phone numbers, can be entered directly. Use **7 3** for # and **8 0** for *.

Table 4: Text and Characters

Second Digit (To Right) / First Digit (Below)	...0	...1	...2	...3	...4	...5	...6	...7	...8	...9
0...	@	A	B	C	D	E	F	G	H	I
1...	J	K	L	M	N	O	P	Q	R	S
2...	T	U	V	W	X	Y	Z	[	\ or ¥	]
3...	'	a	b	c	d	e	f	g	h	i
4...	j	k	l	m	n	o	p	q	r	s
5...	t	u	v	w	x	y	z	{	|	}
6...	0	1	2	3	4	5	6	7	8	9
7...	(blank)	!	"	#	$	%	&	'	(	)
8...	*	+	,	-	.	/	:	;	^	_
9...	→	←	<	=	>	?	beep 0.05 sec.	beep 0.1 sec.	beep 0.5 sec.	beep 1 sec.

4.5.2 Display Macros

There are several "macro" message characters that activate special displays and may be embedded within any message. Be aware that the displays take a certain number of characters each.

When using the 5540, the macro characters are preceded with a \ (backwards slash) character. In the built-in programmer, macro characters are preceded by the character ¥. To enter this character, press **2 8** on the touchpad.

Table 5: Macro/Function

Macro	Function	Display	Width
\T	TIME	DAY HH:MM AM	9 + day field
\M	24HR TIME	DAY HH:MM	6 + day field
\D	DATE	MM/DD/YY	8
\E	DATE (European format)	DD/MM/YY	8
\A	ARMED AREAS	12345678	8
\R	READY/NOT READY	READY, NOT READY, READY 12345678	(N/A)

EXAMPLE: To display ARMED with the armed areas on line one of the LCD, enter **ARMED:\A** for System Message #57. To display DATE with the current date on Line 2, enter **DATE:\D** for System Message #58.

As you are programming, you will see the shortened form of the message. During normal use, the actual, non-abbreviated message will appear.

4.6 Programming Secret Codes or Cards

This menu is useful if you only want to change secret codes without going through all the options in the CARDS/CODES Menu (Menu 1). See Section 5.2 of this manual for more information. To access the SECRET CODES Menu, press **7 TEST** then enter Code 0 or Code 1, other codes may be used, but they must have PROGRAM selected in their user profile and they will only program codes with higher ID's.

4.6.1 Loading Cards

After **7 TEST** is entered, the prompt "BULK LOAD?-YES/NO" appears. Select **yes** if you will be loading access cards which will all be using the same user profile. For loading cards by swiping, the card reader must be connected to the same touchpad that Program Mode is activated from. Alternatively, the 4420 Card Interface can temporarily be set to the same station ID as the touchpad where Program Mode was activated.

After selecting BULK LOAD, select the first code ID slot to program at the "CODE#:0" prompt. Codes will be programmed into successive ID slots. At the "PROFILE#0:0" prompt, select the profile number that will be used for the card block being loaded. All cards will be assigned to the same profile as entered here. After pressing **TEST**, begin presenting cards to the card reader, until all cards are programmed. After the last card, press **MUTE MUTE** to exit Program Mode.

4.6.2 Loading Individual Secret Codes Or Cards

If BULK LOAD mode is not selected, each code entered will also require the user PROFILE to be entered. Each code may be assigned a different profile.

4.7 Built-In Programmer Menu Structures

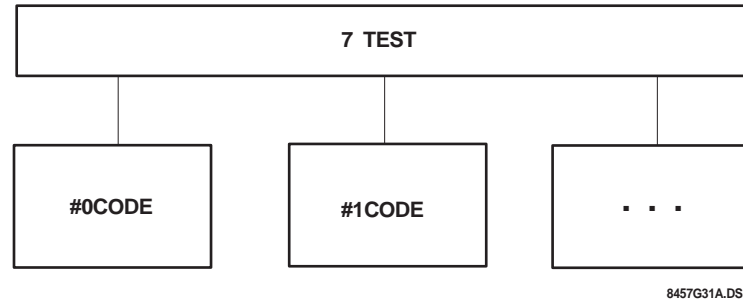**Figure 3: 1 1 TEST Menu Structure**

8457G31A.DSF

Figure 4: 7 TEST Menu Structure

Section 5: Programming Options Description

This section explains the options that can be programmed for the 4734. The options are listed here are as they appear on the touchpad display when the built-in programmer is used. The menu structure for the Model 5540 Downloading Software is slightly different. The selections shown below are the factory-programmed default values.

NOTE *This section shows ALL of the available options. However, some options will determine whether or not another option is available.*

> EXAMPLE: If you selected NO for the AUTO TEST option, the DAILY TEST, TEST DAY, and TEST TIME options will not function.

Before you begin programming, read through the options, then write down the selections you plan to make in the programming record (P/N 150675). The procedure for using the built-in programmer is explained in Section 4 of this manual. Instructions for using the Model 5540 Downloading Software can be found in Section 6 of this manual.

NOTE *1. After installing the 4734, you must reprogram all the options, even if the options had been programmed previously. This is because the 4720 EEPROM, on which the options were originally programmed, is no longer used.*

2. When the 4734 is installed, options can be programmed using the 4734's built-in programmer (accessed through any 4000 series touchpad) or the Model 5540 Downloading Software. The Model 5520 Desk Top Programmer cannot be used with the Model 4734.

5.1 Time Windows (Menu 0)

The 4734 provides 32 available time windows (time periods), each specified by days of the week and a starting and ending time. Each access code can be programmed to be used during any combination of the 32 time windows (PROFILES, Menu 2).

Opening and closing can be enabled by a programmed combination of the 32 time windows. Each time window can also be enabled on holidays. Up to 16 calendar days can be designated as holidays (HOLIDAYS, Menu 3).

For auto-arming, there is a programmable delay period during which the user may extend the delay or cancel the auto-arm. During the delay, the time remaining will be displayed at the touchpads along with an audible warning. This delay is programmed in TIMERS (Menu 13).

These features replace the NORMAL/SPECIAL and CLOSED DAYS option previously used with the 4720. Time windows can be programmed by the end-user to provide optimum system flexibility.

NUMBER:#0

Select the time window to program.

START#0:00:00

Using military time, key in the beginning time for the window.

END#0:00:00

Key in the ending time for the window.

NOTE   *Time windows may cross midnight.*

DAYS#0:SMTWTFSH

Select the days on which the window will be active by toggling the digits 0 through 7 on and off.

> EXAMPLE 1: If you want Time Window #0, which has been programmed to last from 7:00 AM to 8:30 AM, to be in effect on weekdays, select:

> **-MTWTF-**

> by toggling keys 1 through 5 ON and keys 0, 6 and 7 OFF.

> EXAMPLE 2: If you want Time Window #3, which has been programmed to last from 8:00 AM to 9:00 AM, to be in effect on Sundays and holidays, then when you program DAYS#3:SMTWTFSH, select:

> **S------H**

> by toggling keys 0 and 7 ON and keys 1 through 6 OFF.

NUMBER:#1

Select the next time window to program. Continue programming the options for up to 32 time windows.

The easiest way to disable a time window is to go to the DAYS option (TIME WINDOWS, Menu 0) and deselect all days by pressing **CLR TEST**.

5.2 Codes/Cards (Menu 1)

Secret codes or cards and profile assignments can be programmed by the end user.

NOTE   *1. The programming steps for Code 0 (installer's code) and Code 1 (main user's code) profiles have no effect because they are fixed. Code 0 can always activate all features and can program all options. Code 1 can activate all control functions (arming, disarming, bypassing, etc.), and can program all user-programmable options.*

*2. Built-in programmer Menu 1 (Codes/Cards) is the same as the menu accessed with **7 TEST**.*

BULK LOAD:NO

Select **YES** if you will be loading cards which will all be using the same profile. Select **NO** if you will be manually entering secret codes or if you are entering codes that will each have different profiles.

NUMBER:#2

Select the access code for which you want to program the options. Enter the identifying number—Code 2, Code 3, etc.—not the secret code. The code range is 0-999.

PROFILE#2:0

Select one of the 16 user profiles for this access code. If Bulk Load was selected, this profile will be used for all codes entered.

CODE#2:000000

Program the secret code or card PIN for this access code. The code can be from four- to six-digits in length. If a card reader is connected, present the card to the reader.

NOTE   *Do not begin any codes with the same digits that are used for the duress trigger. The duress trigger is programmed under SYSTEM (Menu 5).*

5.3 Profiles (Menu 2)

NUMBER:

Select the profile to program (0-15).

ARS#0:12345678

Select the areas to which this profile may gain access by toggling the digits 1 through 8 ON and OFF.

DOOR#0:YES

If this option is selected, this profile will be able to gain access to doors (within the areas selected in the previous option). Press **0** for NO, **1** for YES.

NOTE   *The 4734 is not UL Listed for door access control.*

BYPASS#0:YES

If this option is selected, this profile will be able to bypass (disable) intrusion zones.

ARM#0:YES

This option enables the profile to be used to arm (close) the system.

DISARM#0:YES

This option enables the profile to be used to disarm (open) the system.

PROGRAM#:YES

This option enables users with this profile to program the secret codes for codes with the same ID or higher, and the user-programmable options (time windows, holidays, access options, and daylight-savings time adjust dates).

CODE#0:NO

When this option is selected, the codes using this profile become restricted codes for use by guests, baby-sitters, and other temporary users. This means that when the **CODE2** key is pressed, the code can disarm the system once. Normally, **CODE2** restricted codes can never disarm the system.

HIGH SEC#0:NO

When this option is selected, codes using this profile become high security codes. For Door Access codes, which are high security require the code to be first entered with a card. Then the user must enter the PIN of the card on the touchpad before access is granted.

CARD ONL#0:NO

The card only option allows access to a door to be gained only by a card, not by a touchpad. The high security option overrides this option, because it requires that both presenting the card and entering the PIN at the touchpad.

WIN GRP#0:32

Select the time window group (programmed in WINDOW GROUPS, Menu 11) during which this user profile may be used. To make it possible to use a profile all the time, select ALWAYS (**3 2**). To make it impossible to use a profile at any time select NEVER (**3 3**).

NOTE *These options apply to all users using this profile.*

EXAMPLE: Suppose you have programmed Time Window #1 for 8:00 AM to 5:00 PM Monday through Friday, and you have programmed Time Window #2 for 10:00 AM to 5:00 PM on Saturdays (TIME WINDOWS, Menu 0). Then, suppose you have assigned Windows #1 and #2 to Window Group #4 (WINDOW GROUPS, Menu 11).

If you want the code to be able to gain access and/or use a touchpad during the times from 8:00 AM to 5:00 PM on weekdays, and from 10:00 AM to 5:00 PM on Saturdays, then select **4** for the WIN GRP option. Any group may be assigned to any profile and to more than one profile. A profile may be assigned to only one window group.

5.4 Holidays (Menu 3)

Up to 16 calendar days can be designated as holidays. Holidays can be programmed by the end-user.

DATE#1:01/01

Key in the date (month and day) you want to assign as the first holiday. Use leading zeros before single-digit data.

DATE#2:01/01

Key in the month and day you want to assign as the second holiday.

5.5 DST Dates (Menu 4)

The daylight savings adjustment dates can be programmed by the end-user. Adjustments occur at 2:00 AM on the specified date.

FWD DATE:00/00

Key in the month and day when you want the time to be set one hour forward automatically, for the spring (forward) daylight-savings time adjustment.

BACK DATE:00/00

Key in the month and day when you want the time automatically to be set one hour back, for the fall (back) daylight-savings time adjustment.

NOTE *To disable holidays or DST dates, enter **0 0 / 0 0** for the date.*

5.6 System (Menu 5)

DEF/MODE:FORCE (Default Mode)

This option is used to determine what the system will do when it times out of Program Mode or when power is restored to the panel. This would occur after power has been lost, then restored to the panel, if no one is present to control the system. Key in the number shown beside the desired selection in Table 6.

EXAMPLE: All power is lost at the panel (AC and DC). When the power is restored, the panel will enter the SET TIME Mode. If no action is taken by the user after four minutes, the panel will enter DEFAULT Mode.

Table 6: Default Mode Selections

Selection	Default Mode
0	The system will default to the DISARMED mode and will NOT generate an Open Report to the central station.
1	The system will default to the DISARMED mode and WILL generate an Open Report.
2	The system will default to the ARMED mode and will automatically bypass (shunt) any zones that are not ready to be armed. The system will also generate a Close Report.
3	The system will default to the ARMED Mode. If any zones are not ready to be armed, they will go into the ALARM condition and the appropriate report will be sent to the central station. If all of the zones are ready, only a Close Report will be generated.

BELL TST PU:NO (bell test at power-up)

This option causes the system to sound a two-second bell test whenever the system is reset.

DIALER:YES

The dialer must always be selected for normal operation. It can be disabled for troubleshooting or while training end users. When the dialer is disabled, there is no battery or AC detection.

PRINTER:NO

Select this option if you are using a Model 5260 Printer Interface.

ZONE EXP1:NO

If at least one zone expander is to be used with the system, this option must be selected.

ZONE EXP2:NO

If two zone expanders are to be used with the system, both ZONE EXP1 and ZONE EXP2 must be selected.

INTERCOM:NO

Select this option if you are using the Model 4140 Intercom Module.

AUX CONTROL:NO

Select this option if you are using the Model 4150 Auxiliary Control Module.

INTERN ZONES:16

Select the number of internal zones used (zones built into the 4720 panel). This will let the system know where to start the expansion zones.

EXP ZONES#1:0

Enter the number of zones on Expander #1.

RESD CODE#1:0123

Select the residence code to be used with RF Zone Expander #1. This code must be the same as the residence code programmed into the transmitters; see the section on expansion zones in the *4720 Installation Manual* (P/N 150476). Skip this step if NOT using an RF zone expander.

EXP ZONES#2:0

Enter the number of zones used on Zone Expander #2.

RESD CODE#2:0223

If Zone Expander #2 is an RF zone expander, enter its residence code. Skip this step if NOT using an RF zone expander.

ARM MENU:NO

Causes the Interactive Arm Menu, normally used in split arm systems, to be active in all systems when a code is entered.

INST INTR:NO

When this option is selected, all delayed zones become instant zones whenever any intrusion alarm occurs.

FORCE ARM:NO

This option causes any zones that are not ready to be bypassed (shunted) when the system is armed. Upon arming, the 4734 will generate a "CF" (Forced Closing) Report.

NOTE *Since Force Arming may automatically cause zones to be bypassed, the AUT UNBYPASS option should be selected if the FORCE ARM option is enabled.*

INTR INTRU:NO

When this option is selected, all interior zones will automatically be enabled when there is an intrusion alarm.

INTR FLWRS:NO (Interior followers)

Selecting this option causes interior zone annunciations and reports to be delayed when an entry zone is violated.

INTR LOCK:NO

This option disables the **INT** and **DLY** keys whenever the system is armed (after the exit delay). This prevents anyone from disabling the interior zones while the system is armed.

AUT INTR OFF:NO

When selected, this option will automatically disable the interior zones when the system is disarmed.

AUT INTR ON:NO

When selected, this option will automatically disable the interior zones when the system is disarmed.

EXIT BEEPS:NO

This option causes an audible warning tone to be sounded during the exit delay.

SIL NGHT TRB:NO

When this option is selected, audible trouble tones will not be sounded while the panel is armed.

KEY BEEPS SPK:NO

If the installation includes a touchpad without a PZT beeper, you can use this option to send the beeps from the touchpad to the internal speakers; however, they will sound at all internal speakers.

E/E BEEP PZT:YES

Select this option if you wish to have the entry/exit tones sounded on the PZT beeper. (These tones are always audible on the internal speakers.)

SWINGER BYPS:YES

When this option is selected, the system will automatically bypass any zone that generates four alarms within a specified time period (programmed in TIMERS, Menu 13).

DELAYED BYPASS:YES

When this option is selected, the system will not report bypasses to the central station, until the panel is armed.

AUT UNBYPASS:NO

This option will automatically unbypass the bypassed zones when the panel is disarmed, to allow trouble conditions to be reported.

NOTE   *Since force arming may automatically cause zones to be bypassed, the AUTO UNBYPASS option should be selected if the FORCE ARM option is enabled.*

BYPASS CODE:NO

Selecting this option makes it impossible to bypass or unbypass a zone without first entering an access code, even if the panel is disarmed.

REP BYPS ID:NO

When this option is selected, the user ID will be reported when anyone bypasses a zone. This will only occur if the option BYPASS CODE has been selected. (Currently, the Model 9000 does not support this feature.)

ACCESS WINDW:NO

If this option is selected, all access codes are restricted to the time windows that have been assigned to them (PROFILES, Menu 2). Selecting **NO** disables all time restrictions.

If you will be using access windows, see Section 5.2 of this manual. The access windows restrict all functions that require an access code to certain times and days.

CHIME PZT:NO

When this option is selected, the chime tone will be heard at all touchpads assigned to the same area as the chime zone. (If this option is not selected, the chime will be heard only at the speakers.)

MAX SKEY ID:1 (Maximum Supervised Touchpad ID)

For this option, enter the highest touchpad ID number that will be supervised. Touchpads with higher numbers may be used, but they will not display area entry/exit or LED information. You must give your supervised touchpads ID numbers in sequential order, starting at 1; see the *Model 4720 Installation Manual* (P/N 150476).

NOTE   *1. Touchpads must be supervised to be fully functional.*
2. Stations with higher ID numbers can still be used, but will not be supervised.

DISPLAY RATE:3s

Select a speed in the range of 1-4 seconds. This option controls the rate at which all displays are updated.

FAST RESTORE:NO

When this option is selected, the system reports restores as soon as the alarm has been restored, instead of waiting for the shutdown time.

DURESS:NO

This option allows the use of the 4734's DURESS feature. The duress trigger is a two-digit code that the user can enter to notify the central station that an intruder has forced the user to enter an access code.

DURESS TRIG:99

If the DURESS option has been selected, you must enter a one- or two-digit code that will activate a duress alarm. The digits entered MUST NOT be the same as the beginning digits of an access code.

RING B CLOSE:NO (Ring Back at Closing)

When this option is selected, there will be a short bell test after kiss-off when a Closing Report is sent.

BELL TST ARM:NO

Selecting this option causes a two-second bell test every time the system is armed.

AUX CODE:NOW

When this option is selected, it will be necessary to use an access code to toggle auxiliary control (discontinued Model 4150) relays or X-10 modules.

X-10 HC 1:A

This option allows you to choose the house codes for the first 16 of the 32 allowable X-10 modules. There is a choice of 16 letters, from which one house code can be selected for this option. Enter the number next to the desired letter in Table 7.

The house code you select should be different from those of any other X-10 modules that may be in the building that you do not wish to be connected to the 4000 system.

X-10 HC 2:B

Select the second house code. This house code will apply to the last 16 of the 32 allowable X-10 modules.

Table 7: House Codes

Selection	House Code	Selection	House Code
0	A	8	I
1	B	9	J
2	C	10	K
3	D	11	L
4	E	12	M
5	F	13	N
6	G	14	O
7	H	15	P

NO PULS BELL:NO

Select **yes** for steady fire bell output. (Used for strobes.)

5.7 Access Options (Menu 6)

REP DG:NO (report door access granted)

This option causes the system to send a report indicating that the door was accessed using a valid code number. The event is also printed.

DOOR DISARM:NO

This option causes the areas assigned to a particular access code to disarm automatically when door access is granted to that access code.

NOTE *This option is effective only if the code has been programmed with the capability to disarm (PROFILES, Menu 2).*

REP/PR EXIT:NO

This option causes all door exit events to be printed and reported to the central station. Exit requests are printed and reported as DOOR ACCESS ID 0.

PR DOOR:NO

This option causes all door access events to be printed.

NOTE *If you also select REP DOOR (ACCOUNTS, Menu 9), door access events will be printed and reported to the central station.*

REP DO/DF:NO (report door open/door forced)

Selecting this option causes the system to send a report every time the door sensor is violated without using door access. It will report if the door is forced open or left open.

REP DOOR RST:NO

Select to report DOOR RESTORE events to the central station. This option requires a 9000 receiver upgrade.

REP ACC DEN:NO

Select to report ACCESS DENIED events to the central station. This option requires a 9000 receiver upgrade.

HIDE CODES:NO

If this option is enabled, users cannot see all codes when programming new codes. Codes with programming ability can change secret codes, but they will see "*****" in place of the digits of the code. This feature applies only to codes 2-255. When the Code 0 and Code 1 are used to program codes, the digits of the code(s) will display. (This option is new with the 4734-2, Revision C2 or later.)

5.8 Dialer (Menu 7)

COMP PH

If you will be using the downloading feature, you must enter the phone number that the computer will be connected to. The number entered may be up to 16-digits long.

If a pause is needed, such as after dialing "1" for a long distance number, enter an "A" (**0 1**). If an internal phone system is being used in which you must dial a special digit to establish an outside line (and wait for a second dial tone), enter a "D" (**0 4**) after the digit to establish the outside line. The procedure for entering alphabetic and other characters is explained in Section 4.5 of this manual.

NOTE   *The # and * keys cannot be entered directly. Use **7 3** for # and **8 0** for *.*

EXAMPLE: If you must dial "9" before dialing the outside number of 555-3333, you would enter "9D555-3333," or "6 9 0 4 6 5 6 5 6 5 6 3 6 3 6 3 6 3."

RETRY:NO

If this option is selected the system will try again to send a report 15 minutes after it has failed its maximum number of attempts. If it fails all attempts again, it will not try another time.

LINE 2 EN:NO (Line 2 Enable)

Select this option if you are using two phone lines (requires the use of the Model 4175 Dual Phone Line Monitor).

GROUND ST:NO

Select this option if you are using a ground start telephone network.

LINE MON:NO

Select this option if you will be using the Model 4175 Dual Phone Line Monitor. You can monitor Line 1 only, if you do not have a second phone, but you cannot have both a monitored line and an unmonitored line.

ANSWER RING:YES

Select this option if you wish to have the computer call the panel and download in the same call. If you do not select this option, the communicator will wait until the phone stops ringing, then dial up the computer for maximum security.

STORE OP/CL:NO

If this option is selected, the system will store opening and closing events until the next report is sent. At that time, it will transmit all the events to the central station.

REP ALL O/C:NO

This option causes the system to report all openings and closings.

REP EXC O/C:NO (Report Openings/Closings at "Exceptional" Times)

When this option is selected, the system will report openings and closings only if they occur outside of specified time windows.

REP OT/CT:NO

Selecting this option causes the system to send an Open Trouble or Close Trouble Report to the central station, if you fail to arm or disarm during a specified time window.

AUTO DUMP CS:NO

Select **NO**. This option is not available. Currently, the 5540 Downloading Software must be used to dump event memory to the central station (see Sections 3.5 and 6 of this manual).

UP/DOWNLOAD:YES

Select **YES** to enable remote uploading and downloading. When the panel receives a signal for downloading it will dial the computer phone number and use the account number that is programmed for Account #4.

FAIL ATTM:5

Enter the number of attempts (1-15) that the communicator will try to dial out before it gives a dialer-failed signal.

TOTAL ATTM: 10

Enter the overall number of attempts (1-15) that the communicator will try to dial out using all phone numbers. Select **0** for both FAIL ATTM and TOTAL ATTM for a local-only system.

RINGS:1

This option is used in conjunction with the downloading feature. You would program the number of times (1-15) that your phone will ring before the communicator will dial out or answer for downloading information. If you do not wish to use this feature, enter **0**. If you also selected ANSWER and REP, ALL O/C, the panel will answer after four fewer rings (than the programmed number) if the system is armed (but see the note below).

NOTE   *The panel will never answer unless it detects at least two rings.*

LOW AC:4h

For this option, program the number of hours (1-15) that the AC power must be OFF before a Low-AC Report is generated.

DTMF L1:NO

If this option is selected, Line 1 will use Touch-Tone® dialing. If you do not select this option, the phone line will use rotary type dialing only.

NOTE   *If you have selected DTMF L1, the dialer will alternate between Touch-Tone® and rotary dialing on subsequent attempts.*

DTMF L2:NO

If this option is selected, Line 2 will use Touch-Tone® dialing.

DTMF ONLY:NO

If this option is selected, Touch-Tone® dialing will be used any time the system is dialing out.

ALT ANS BYP:NO

If this option is selected, an alternate method of answering machine bypass is used. To contact the panel, dial the panel and hang up after hearing one ring. Redial the panel immediately (within 30 seconds) and the panel will answer on the first ring. Use this option in situations where the default answering machine bypass will not work.

DTMF RX:NO

This option is for future expansion. Select **NO** at this time.

5.9 Zone Options (Menu 8)

ZONE:#1

Select the zone for which you want to reprogram the options.

DAY TRBL#1:NO

If this option is selected, the zone will be supervised only while the zone is disarmed. Day trouble loop response is always .062 seconds. Day Troubles will not restore, until silenced from a touchpad. Typical day trouble zones are window foils or emergency exits. If you select DAY TRBL for a zone, you must also select N.C. for that zone. Do NOT pick both 24HR TRBL and DAY TRBL.

24HR TRBL#1:NO

Select this option for any zone that will be supervised 24-hours a day, such as a fire zone (all supervised zones require 15 K ohm EOL).

24-hour trouble loop response is always 10 seconds. A 24-hour trouble will restore as soon as the loop is restored. Do NOT pick both 24HR TRBL and DAY TRBL.

N.C.#1:NO

Select this option if the zone will be using normally closed contacts (all N.C. zones require a 15 K ohm EOL).

N.O.#1:YES

Select this option when the zone will be using normally open contacts.

NO EOL:NO

Select **NO** if you are using an end-of-line (EOL) resistor. Select **YES** if you are not using an EOL resistor.

SPEED#1:06s

This option determines the speed at which the zone will respond to an alarm condition. Select the number shown next to the desired zone response speed in the following table.

Table 8: Loop Response Times

Selection #	Loop Response Time
0	0.010 seconds
1	0.062 seconds
2	1 second
3	10 seconds

24HR#1:NO

Select this option if the zone will be monitored for alarm conditions 24-hours a day (for example, if it is a fire, emergency or tamper zone).

EXIT#1:NO

Select this option if the zone will have an exit delay time or if it is an interior zone that is in the exit corridor.

ENTRY1#:NO

The system has two separate entry delay times. Select this option if the zone will be controlled by Entry Delay #1.

ENTRY2#:NO

Select this option if the zone will be controlled by Entry Delay #2.

INTERIOR:NO

Interior zones can be bypassed as a group using the **INT** key. Select this option if the zone will be an interior zone.

BYPASS#1:NO

Select this option if you want to be able to bypass (shunt) the zone. If you do not select this option for a particular zone, you will not be able to bypass that zone.

NOTE *Fire zones must NOT be bypassable.*

CHIME#1:NO

This option enables the chime function for a particular zone. When the chime function is enabled, the **CHM** key can be used to turn a door chime on and off when the system is disarmed.

AREA#1:1

Key in the number of the area to which you want to assign the zone. A zone can be assigned to only one of eight areas.

TYPE#1:FIRE

Enter the number corresponding to the desired zone type in the following table.

Table 9: Zone Types

Selection #	Zone Type	Selection #	Zone Type
0	HOLDUP	8	WATER
1	FIRE	9	HEAT
2	EMERGENCY	10	COLD
3	PANIC	11	LOCAL
4	BURGLARY	12	UNUSED
5	TAMPER	13	DOORBELL
6	SUPERVISORY (formerly GAS)	14	UNUSED
7	UNDEFINED	15	UNUSED

NOTE *1. Undefined, Water, Heat, Cold, and Local zones will display as Auxiliary on the LCD. If Local is selected, the panel will not dial out.*
2. Do not select the "Unused" (zone type 14 or 15) zone type. It is intended for future use by the factory. Use option 12 "Unused" if you need to program a zone that does not cause an alarm.
3. Option 6 was changed from "Gas" to "Supervisory" with Revision C of the 4734-2 control software.
4. When programmed as zone type Unused or Door Bell and 24-hour zone, the zone will not affect the ready light. This allows Door Bell zones to be not ready when the system is armed. Unused zones may be used as inputs to programmable I/O without affecting the system.

LOCATION#1

For this option, enter a 16-character location description of Zone 1, such as BEDROOM or GARAGE. See Section 4.5 of this manual for instructions on entering text.

SIL. ALM#1:NO (silent alarm)

When this option is selected, alarm conditions will not be annunciated audibly, but will be reported to the central station.

NOTE   *Holdup zones must be selected as SIL. ARM.*

REP.DLY#1:NO

Select this option to create a delay between the time that an alarm condition is sensed by the zone and the time that the system reports the alarm. The delay time is programmed in TIMERS (Menu 13).

BELL DLY#1:NO

If this option is selected, there will be no bell output unless the dialer fails.

NO SHUTDOWN#1:NO

If this option is selected, the bell will not shut down until the panel is disarmed.

ZONE:#2

Select the next zone to program. The options will repeat for all 80 zones.

5.10   Accounts (Menu 9)

ACCOUNT:#1(1-4)

Select which account (1-4) you wish to reprogram.

PHONE NUMBER#1:

Enter Phone #1, up to 16-digits. Enter "A" (**01**) for a pause, "D" (**04**) for a second dial tone. Press **6** before each digit of the phone number. (See Section 5.8 of this manual for an example.)

ACCT #1:000000

Enter the digits for the account number (6-digits maximum).

REP ALRM#1:YES

Select this option if you want alarms to be reported to Phone #1.

REP TRBL#1:YES

Select this option if you want trouble conditions to be reported to Phone #1.

REP BYPS#1:NO

Select this option if you want bypass (shunted) to be reported to Phone #1.

REP RSTR#1:NO

Select this option if you want restorals to be reported to Phone #1. Restores will report only to the same numbers that the alarm or bypass reported to.

REP OPRST#1:NO (report open reset, Phone #1)

Select this option if you want the system to report to Phone #1 when the system is disarmed from an alarm condition. If you will select the next option (REP OP/CL#1) for Phone #1, you must also select REP OPRST#1.

REP OP/CL#1:NO

Select this option if you want the system to send Normal and Exceptional Open and Close Reports to Phone #1.

REP DOOR#1:YES

Select this option if you want door access information to be reported to Phone #1.

REP TEST #1:YES

Select this option if you want test signals to be reported to Phone #1. (Event memory reports if selected will also report to TEST accounts.)

MUST REP#1:YES

If this option is selected, the system MUST report to Phone #1. If this option is not selected, Phone #1 will only be used as a backup if an event cannot be reported to another number.

NOTE *The MUST REPORT numbers must be the lower numbers (before the backups). Your choices are: 1, 1&2, 1&2&3, 1&2&3&4.*

FORMAT#1:SIA8

Select the digit shown in the table below next to the format that Account #1 will use. The compatible Regency receivers and/or line cards are shown in parentheses.

Table 10: Reporting Formats

Selection	Format and Compatible Receiver
0	SIA8 (9004, 9004I)
1	FSK1 (8520, 9002, 9032)
2	FSK2 (9002, 9032)
3	BFSK 1400 HZ (9002, 9032)
4	BFSK 2300 Hz (9002, 9032)
5	SIA20 (9004I)
6	SK4+2 (9002, 9032)

NOTE *1. SIA8 and SIA20 are the only formats that can report event memory and ID numbers higher than 99. Also Door Restore and Access Denied Reports are only supported with SIA formats.*
2. Do not select SIA20 unless the receiver has a 9004I card. The 9004 card can only accept SIA8.

ATTEMPTS #1:1

Enter the number of attempts (1-15) that the communicator will try to report to this account number before switching to the next number (typically one attempt).

LISTEN IN#1:0

Enter, in seconds, the length of time the central station can listen in to the site on this account number (20 - 255 seconds; 0 if not used).

Select this option to allow the central station to listen in to the site on this account number.

NOTE *The Listen-in feature is not recognized by UL.*

L ALM/TST#1:NO

Select this option to enable the listen-in function only with alarms and tests on this number.

LN 1 ONLY#1:NO

Select this option if you wish to use Phone Line #1 ONLY with Phone #1. You would typically do this only if using a direct line or if using a WATTS line.

LN 2 ONLY #1:NO

Select this option if you wish to use Phone Line #2 ONLY with Phone #1.

DIRECT LN#1:NO

Select this option if you will be connecting the system directly to a Model 9000 Digital Alarm Receiver without using the switched telephone network. You must also select a SIA (Security Industry Association) format. This requires a Model 9103 Line Card.

PHONE NUMBER#2

Enter Phone #2. Repeat the above steps for Account/Phone #2, #3, and #4.

NOTE　*Account #4 will be sent to the downloading computer. Model 4150 analog reports will be sent to Phone #4 using Account #4. Account #4 must be a SIA format when using the 4150.*

5.11　Intercom (Menu 10)

Skip this menu if you are NOT using the Model 4140/4640 Intercom/Telephone Controller.

TIMEOUT:30s

Enter (in seconds) the amount of time the intercom function will be active.

LONG DIST:YES

When this option is selected, the telephone function may be used for long distance calls.

PHONE TIME:NO

Select this option if you want the phone feature to have a limited length for calls. The phone time-out will be the same length selected for intercom time-out.

ONE WAY LI:NO

Select this option if you will be using the one-way listen-in feature, which allows central station personnel to listen to the installation without being heard. If you select **NO**, it will be possible for people at the installation to hear the central station personnel.

NOTE　*Listen-in to duress or holdup will automatically be one-way, regardless of how this option is programmed.*

DTMF DIAL:YES

Select this option if you will be using Touch-Tone® dialing with the telephone feature.

NEED D TONE:NO

Select this option if you wish the phone feature to wait for a dial tone before dialing.

MEM D ONLY:NO

If you select this option, only the two memory phone numbers can be dialed.

RING:12345678

Select the intercom/telephone stations (1-8) where the telephone will ring when there is an incoming call, by toggling the digits 1 through 8 ON (digit displayed) and OFF.

LISTEN:12345678

Select the intercom/telephone stations (1-8) that will be audible at the central station during listen-in. The listen-in feature will be ONE WAY during holdup alarms.

QUIET:-----

Select the intercom/telephone stations (1-8) at which you do not want key beeps or alarm or trouble sounds to be annunciated. Alarm and trouble sounds will still be annunciated by accessory speakers and bells.

NOTE   *To use this option, you must have the Model 4140 with software revision 900212 or later.*

MEM PH#1

Enter the telephone number for Memory Dial Location #1 (up to 12-digits).

MEM PH#2

Enter the telephone number for Memory Dial Location #2 (up to 12-digits).

5.12 Window Groups (Menu 11)

Any of the 32 available time windows may be assigned, in any combination, to any of the 32 available window groups. The end-user can program only the time windows themselves. Window group assignments must be set up by the installer.

#0:0------+0

In this step and the next three steps, you'll assign time windows to Window Group #0. First select time windows in the range 0 - 7, by toggling the digits 0 through 7. (The time windows were programmed in TIME WINDOWS, Menu 0.)

#0:------+8

Using the digits 0 through 7, select time windows in the range 8 (0 + 8) through 15 (7 + 8).

#0:------+16

Using the digits 0 through 7, select time windows in the range 16 (0 + 16) through 23 (7 + 16).

#0:------+24

Using the digits 0 through 7, select time windows in the range 24 (0 + 24) through 31 (7 + 24).

#1:------+0

Assign time window to Window Group #1 following the same procedure as in the previous four steps.

5.13 Messages (Menu 12)

These messages have been placed in the EEPROM chip as default values. Section 4.5 of this manual explains how to enter text and other characters, if you wish to change the messages. The table below shows the factory programmed messages.

System Messages #57 and #58 are the normal display on all the touchpads. These two messages, one for line one and one for line two of the display, can be customized to fit the installation. Normally the macros to display time and date are used, but any message can be displayed if desired.

NOTE   *For all options including the system messages, pressing the **CHM** key will restore the factory-programmed default for that option.*

Table 11: Factory Programmed Messages

Message #	Factory Programmed Message	Message #	Factory Programmed Message
1	BYPASSED	30	MON
2	NOT READY	31	TUE
3	READY	32	WED
4	TROUBLE	33	THU
5	LOW BATTERY	34	FRI
6	SILENCED	35	SAT
7	OPEN	36	REPORTING
8	SERVICE	37	LISTENING
9	WALK TEST	38	UP/DOWNLOAD
10	DATE	39	ZONE
11	TIME	40	PAPER
12	INTERCOM	41	_____ (NOT USED)
13	PHONE	42	DATA LOST
14	DOOR	43	FAILED
15	ARMED	44	BATTERY
16	CODE2	45	AC
17	BYPASS (for DOOR or ZONE BYPASS)	46	LINE 1
18	COMPLETE	47	LINE 2
19	PERIMETER	48	HOLDUP
20	RESTRICTED	49	FIRE
21	TRY AGAIN	50	EMERGENCY
22	ENTER	51	PANIC
23	CODE	52	INTRUSION
24	SEC TO	53	TAMPER
25	EXIT	54	GAS
26	ALARM	55	AUXILIARY
27	DEVICE	56	SYSTEM BUSY
28	STATION	57	DATE: ¥D (See note.)
29	SUN	58	¥T

NOTE   *1. Characters preceded by ¥ are "display macros" (see Section 4.5.2 of this manual). ¥D causes the actual date to be displayed as part of the message. ¥T causes the time to be displayed*

2. When using the 5540 Downloading Software, \ replaces the ¥ character.

5.14 Timers (Menu 13)

SHUTDOWN:90s

Decide the number of seconds that you want the audible alarms to be active. Then divide this number by 10 and enter the result (1-255).

EXIT:30s

Enter (in seconds) the length of the exit delay (1-255).

ENTRY1:30s

Enter (in seconds) the length of the entry delay for zones controlled by Entry Delay #1 (1-255).

ENTRY2:60s

Enter (in seconds) the length of the entry delay for zones controlled by Entry Delay #2 (1-255).

SWINGER BYP:4h

Enter (in hours) the length of the swinger window (1-24 hours). If the SWINGER BYPS option has been selected (SYSTEM, Menu 5), a swinger bypass (shunt) will occur on the fifth trip when a zone has caused four alarms within this time period.

RF SUPRV:24h

Enter the supervision interval in hours (2-24 hours).

> EXAMPLE: If you enter **3**, the system will check for supervisory transmissions from the RF transmitters every three hours.

DOOR STRK:6s

In this step, you'll program the length of time that the doorstrike stays activated (1-15 seconds). Some older touchpads (4433, 4420) use .8 second units, so the duration of the door strike will be .8* the time programmed.

NOTE *This time period is the maximum length of time the doorstrike will remain activated, allowing someone to open the door. If a door contact is connected to the touchpad, the doorstrike will turn off one second after someone opens the door. If no door contact is connected to the touchpad, the doorstrike will remain activated for the programmed length of time, regardless of whether the door has been opened during that time.*

DOOR OPEN:60s

Enter (in seconds) the maximum time that the door can remain open before the system will send a Door Left Open Report (1-255 seconds).

REP DELAY:15s

Enter (in seconds) the amount of delay that you wish to have between the time that an alarm condition is sensed and when the system will actually report the alarm (1-255 seconds). Delayed reporting is selectable by zone in Zone Options (Menu 8).

SMOKE RST:2s

Enter the number of seconds the smoke detector power is turned off after the smoke detector has been reset (1-15 seconds).

MENU TIME:10s

For this option, you enter the area arm menu time (0-255 seconds).

In a split arming system, the user goes into the AREA Menu (Menu 16) by entering an access code. The LCD shows a continuous display of key prompts to help the user arm and disarm individual areas. If a key is not pressed during the time period you have programmed in the MENU TIME option, the system exits the AREA Menu.

ARM DELAY:0m

Enter (in minutes) the length of the delay (0-255 minutes) before Auto Close occurs (see TIME WINDOWS, Menu 0). (The delay is added at the end of the auto close time period.) If you select 0, there will be no delay.

LOG 4150:0h

Enter the number of hours between automatic printouts of the 4150 sensor readings (0-255). To disable the automatic printout function, enter **0**.

AUTO TEST:NO

If you will be using one of the test features below, you MUST select this option.

TEST DAY:SUN

This option allows you to select which day of the week the system will send a Test Report to the central station. Enter the number next to the appropriate day in the table below. Only one day may be selected. To send a test every day, select **8**.

Table 12: Test Day Choices

Selection	Day		Selection	Day
0	Sunday		5	Friday
1	Monday		6	Saturday
2	Tuesday		7	None
3	Wednesday		8	Daily
4	Thursday			

TEST TIME:00:00

Enter (in military time) the time of day that you wish to send a Test Report to the central station.

LINE FRQ:60

Enter the power line frequency to be used to keep system time (requires the Model 4181 Power Line Interface). To disable POWER LINE SYNC, enter **0**.

NOTE *Standard power line frequencies are 60 Hz in the United States, 50 Hz in Europe.*

TIME CALB.

This option is used to calibrate real time. It has been preprogrammed at the factory to within one minute per year.

Normally you do not need to adjust the clock. However, it is possible that conditions at an installation could cause the clock to drift. If the clock is off by more than two seconds in one week, use the TIME CALB. option of the built-in programmer (Menu 13) to adjust. (TIME CALB. is not in the menu for the 5540 Downloading Software.)

1. To calibrate TIME CALB., you must know how many seconds per day (or week) the clock gains or loses. (If you know the seconds per week, divide by 7 to get the seconds per day.)

2. Multiply the per day number of seconds that the clock gains or loses by 6.07 to get the adjustment factor.

3. If the clock is fast (gains time), subtract the adjustment factor from the current value of TIME CALB.

4. If the clock is slow (loses time), add the adjustment factor to TIME CALB.

5. If the resulting number is:
    ■ less than zero, add 256 to get the new value for TIME CALB.;
    ■ greater than 255, subtract 256 to get the new value for TIME CALB.

CENTURY:00

Enter the century (**1 9** or **2 0**).

SERVICE ON: 00/00

On this date, the "SERVICE" message (System Message #8) will appear. The message is cleared by entering and exiting a program mode (such as Set Time).

5.15 Key Options (Menu 14)

STATION:#1

Select the touchpad for which you wish to program options.

NOTE *Station #0 options are not used. Begin programming with Station #1.*

LOCATION#1

Enter the location text for Touchpad #1. Touchpad locations are used to annunciate panic key alarms. The procedure for entering text is explained in Section 4.5 of this manual.

ARS#1:_ _ ___

Select the areas to be accessed by Touchpad #1.

NOTE *When a panic key is pressed on a touchpad, all areas controlled by that touchpad go into alarm.*

INTERCOM#1:NO

This option enables the intercom function for Touchpad #1

NOTE *Do NOT select DOOR on an intercom station, as this would disable the* **TEL** *key.*

DOOR#1:NO

When this option is selected, door access is gained by entering a secret code on Touchpad #1.

NOTE *On some touchpad models, DOOR and INTERCOM are not available together. It is possible to select* **NO** *for both options.*

HIGH SEC#1:NO

When this option is selected, the High Security Code must be entered in addition to the secret code to gain door access.

DOOR ONLY#1:NO

When this option is selected, Touchpad #0 can be used only for door access, not for other functions such as arming and disarming.

STATION:#2

Select the next touchpad for which options are to be programmed (up to 15 touchpads)

5.16 Key Zones (Menu 15)

STATION:#0

Select the touchpad for which you want to program the panic key zones (0-15 touchpads).

NOTE　*Station #0 options are not used. Begin programming with Station #1.*

KEY:UNUSED

Select the panic key to program. Although the display shows "KEY:UNUSED," there is no "UNUSED" key. You must select a panic key. Select **1** for the POL, **2** for the AUX key, and **3** for the FIRE key.

TYPE:

Select a zone type for the key you specified in the last step. Enter the number shown next to the appropriate zone type in the following table.

Table 13: Zone Types

Selection #	Zone Type
0	HOLDUP
1	FIRE
2	EMERGENCY
3	PANIC
4	BURGLARY
5	TAMPER

Selection #	Zone Type
6	SUPERVISORY (formerly GAS)
7	UNDEFINED
8	WATER
9	HEAT
10	COLD

Selection #	Zone Type
11	LOCAL
12	UNUSED
13	DOORBELL
14	UNUSED
15	UNUSED

NOTE　*1. Undefined, Water, Heat, Cold, and Local zones will display as Auxiliary on the LCD. If Local is selected, the panel will not dial out.*
2. Do not select the "Unused" (option 14 or 15) zone type. It is intended for future use by the factory. Use option 12 "Unused" if you need to program a zone that does not cause an alarm.
3. Option 6 was changed from "Gas" to "Supervisory" with Revision C of the 4734-2 control software.

SIL.ALM:NO

If you select this option, alarms activated by this panic key will be reported to the central station, but no audible alarm will sound.

REP DLY:NO

If you select this option, alarms activated by this panic key will be reported after a programmed delay time. The delay time is programmed in TIMERS (Menu 13).

BELL DLY:NO

Select this option to create a delay between the time an alarm condition is sensed by a zone of the specified type and the time the alarm bell is sounded.

NO SHUTD#1:NO

If this option is selected, the bell will not shut down until the panel is disarmed. The display now advances to the next touchpad panic zone.

5.17 Area Options (Menu 16)

SPLIT ARM:NO

This option must be selected in order for the area control features to operate.

AUTO CLOSE:NO

Selecting this option causes the system to arm itself automatically if the panel is not armed at the end of any time window in the Auto Close Window Group (CL WIN GRP).

NOTE *UL installations must NOT select this option.*

AUTO OPEN:NO

Selecting this option causes the system to disarm itself automatically if the panel is not disarmed at the end of any time window in the Auto Open Window Group (OP WIN GRP).

EXAMPLE: Suppose you select Window Group #1, to which you've assigned the time windows shown below, for OP WIN GRP.

Time Window #3— Monday-Friday, 7:59-8:00 AM

Time Window #4— Monday-Friday, 1:59-2:00 PM

Time Window #5— Saturday, 9:59-10:00 AM

Time Window #6— Saturday, 10:59-11:00 AM

On Monday through Friday, if no one has disarmed the system by 8:00 AM, the system will disarm automatically at 8:00 AM (end of Window #3). If someone arms the system later in the morning (before leaving the office for lunch, for example) and no one disarms it by 2:00 PM, the system will disarm automatically at 2:00 PM (end of Window #4).

On Saturday, if no one has disarmed the system by 10:00 AM (end of Window #5), the system will disarm automatically. If the system has not been disarmed manually by 11:00 AM (end of Window #6), it will disarm automatically at that time.

NOTE *When programming auto open/close time windows, the start time must be one (1) minute before the end time.*

AUTO NO FRC:NO (4)

When selected, Auto Close will cause alarms on any Not Ready Zones.

AUTO OC:--------

Enter areas that will Auto Open or Auto Close.

AREA NAME#1:

Select a name for each area being used (16 characters maximum). Area names are displayed when accessing area arming and with the zone status to show which area the zone is in. (Areas were programmed in ZONE OPTIONS, Menu 8.) The factory programmed default names are A1 - A8.

OP WIN GRP #1

Select the window group number (programmed in Menu 11) that will control opening this area. Use **#32** for always, **#33** for never.

CL WIN GRP #1

Select the window group number that will control closing this area.

5.17.1   Open/Close Groups

Open and Close Window Groups are available for each area. It is possible for eight areas to arm and disarm at different times. It is also possible for one or more areas to Auto-Arm and one or more areas to report OPEN/CLOSE TROUBLE on the same system. Each area can be programmed as auto arm, auto disarm, or open/close trouble.

5.17.2   Exception Reporting

This mode controls reporting of open/close activity. Exception reporting applies when an area is assigned a time window group which includes inactive periods (not always inside a window) and Report Exception open/close is selected. When the arming occurs within an active period of the close window group, the arming does not report to the central station. When the arming occurs outside the windows, the arming is reported to the central station. Likewise, open reporting is controlled by the open window group.

5.17.3   Open/Close Trouble

This mode causes trouble reports to be sent when Manual Opening or Closing does not occur during the specified open and close window groups. The report is sent at the end of an active period of the window group. Open Trouble (system still open) is sent when the system is not closed (armed) at the end of a close window period. Close Trouble (system still closed) is sent when the system is not opened (disarmed) at the end of a open window period.

Open/Close Trouble and Exception Open/Close may be combined by selecting both.

5.17.4   Auto Open/Close

This mode causes an area to automatically arm or disarm at the end of an active period in a time window group. Auto Open/Close is selected as an option for each area. If, at the end of a close window period the area is not armed, the area is then automatically armed.

Auto Open/Close may be combined with Exception Open/Close Operation. Auto Open/Close disables Open/Close Trouble Reports for the area.

5.18 Sensor Locations (Menu 17)

SENSOR#1:

Enter a location description for each of the four sensors used with the 4150 Auxiliary Control (16 characters maximum).

5.19 Programmable I/O Statements (Menu 18)

The 4734's programmable I/O capability allows you to configure auxiliary output devices to act as indicators of internal status conditions or to respond to the internal conditions in some way.

NOTE *It is easier to program the I/O statements using the Model 5540 Downloading Software (Section 6.5.2 of this manual). Because it may sometimes be useful to program them with the built-in programmer, the procedure is explained below. Section 6.5.1 of this manual explains the logical operators and provides more information about how I/O statements are used.*

The programmable I/O statements in the built-in programmer work by GETting data from the 4734 memory, saving it in a temporary location (STACK), then PUTting it into a 4734 output buffer. The 4734 has room for a maximum of 127 GET and PUT statements. The factory programmed default program is shown in Section 5.19.5 *of this manual*.

Each program step consists of a combination of GET, PUT, and sometimes other types of statements, (the net effect of which is 1) to place a bit (or group of eight bits) on top of the stack and 2) to take a bit off of the stack, so the stack is empty when the program reaches the END statement. The step may contain an even number of GET and PUT statements, as in the following example:

EXAMPLE: In a non-split system (only one area), the following two-statement step will cause X-10 Module #1 to turn on if Area #1 is armed (the lamp or appliance controlled by X-10 Module #1 would then turn on):

GET1@B0.0

PUT1@9D.0

The first statement GETs a status bit from the 4734 memory address that shows the armed status of Area #1. (If the status bit = 0, Area #1 is not armed. If the status bit = 1, Area #1 is armed.)

The second statement PUTs the bit into the 4734 memory address that determines whether the X-10 module will turn ON or OFF. (If the bit = 0, the X-10 module will turn OFF. If the bit = 1, the X-10 module will turn ON.)

To generate an output that represents a specific combination of conditions, you program the system to GET data from different locations, perform a logical or arithmetic operation on the data, then PUT the result on the desired output port.

In this case, there may be more than one GET statement associated with one PUT statement. However, the various bits (or 8-bit groups) obtained in the GET statements are combined into one bit (or 8-bit group) as a result of the operations performed on them. Therefore, only one PUT statement is required to empty the stack (see statements 25-28 in the default program, Table 16).

The 4734 can store up to 32 pieces of data on the stack before performing any operations. Each operation is performed on the last one or two pieces of data that were put on top of the stack, either by a GET statement or as the result of a previous operation.

5.19.1 Stepping Through The I/O Program

When you enter PROGRAMMABLE I/O STATEMENTS (Menu 18), Line 1 of the display will show the first step of the current I/O program. A typical display is: 1 GET 1 @B0.0. The number on the left is the statement number. The command is shown next, followed by the 4734 memory location from which the system is GETting the data.

Line 2 will show the appropriate key prompts.

To advance to the next statement, press the **TEST** key. To go back to the previous statement, press the **STAT** key. The last statement of the program is always END.

5.19.2 Program Operations

The 21 program operations are listed in the following table, along with the functions they perform.

Of the 21 operations, five require additional data. These five operations are listed below:

- 9:GET1,
- 10:GET8,
- 11:GETC,
- 12:PUT1, and
- 13:PUT8.

To select an operation, enter the number shown beside the operation on the display, then press **TEST**. After you select one of these operations, the display will prompt you for the information to be entered. If an address is requested, look it up in Table 15.

Table 14: Programmable I/O Statement Operations

Operation	What It Does	Screen Prompt That Follows	Additional Information Needed
1:AND	Performs the AND operation on the top two items on the stack, then leaves the result (which will determine whether or not an output will be generated) on top of the stack.	Next statement in program.	None
2:OR	Performs the OR operation on the top two items on the stack, then leaves the result on top of the stack.	Next statement in program.	None
3:XOR	Performs the XOR operation on the top two items on the stack, then leaves the result on top of the stack.	Next statement in program.	None
4:ADD	Adds together the top two items on the stack, then leaves the resulting sum on top of the stack. Used for numerical data only.	Next statement in program.	None
5:SUB	Subtracts the top item on the stack from the item below it. Used for numerical data only.	Next statement in program.	None
6:NOT	Changes the effect of the top item on the stack—that is, if the top item would have generated an output, the result of the NOT operation (which will now be placed on top of the stack) will not generate an output, and vice versa.	Next statement in program.	None
7:NEG	Takes the top item on the stack and converts it to the negative of its value. Used for numerical data only.	Next statement in program.	None
8:EQU	Compares the top two items on the stack and leaves the result on top of the stack. An output will be generated only if the two items are the same.	Next statement in program.	None
9:GET1	Takes a single status bit from the 4734's memory and places it on top of the stack.	$@0000	The address of the group of eight status bits in the 4734's memory.
		BIT #(0-7):0	The single bit to get.

Table 14: Programmable I/O Statement Operations

Operation	What It Does	Screen Prompt That Follows	Additional Information Needed
10:GET8	Takes eight status bits that are grouped together from the 4734's memory and place them on top of the stack. **NOTE** *This group of eight bits constitutes a single item on the stack.*	$@0000	The address of the group of eight status bits in the 4734's memory.
11:GETC	Takes a constant number and places it on top of the stack.	VALUE:0	Value of the constant (0-255) to get.
12:PUT1	Retrieves a single status bit from the top of the stack	$@0000	8-bit output address to which the bit is to be transferred.
	and transfers it to a single bit position on an output port or memory location.	BIT #(0-7):0.	Specific location to put the single bit into.
13:PUT8	Retrieves eight status bits that are grouped together from the top of the stack and transfers them to an 8-bit position on an output port or memory location.	$@0000	8-bit output address to which the eight bits are to be transferred.
14:EQU0	True/False if result is zero (conserves statements for common operation).	Next statement in program.	None
15:DCNT	Down Count, value-1 if value > 0 (useful for timers).	Next statement in program.	None
16:Greater than	True/false result of comparison (Y > X).	Next statement in program.	None
17:Less than	True/false result of comparison (Y < X).	Next statement in program.	None
18:2BIN	Converts number from BCD (binary coded decimal) to binary. (Use to convert TSEC, TMIN, THR, MONTH, MDAY to binary number before comparison.)	Next statement in program.	None
19:2BCD	Converts binary number to BCD.	Next statement in program.	None
20:Multiply, *, MUL	Multiplies two number.	Next statement in program.	None
21:2BIT	Converts number (0-7) to bit in byte.	Next statement in program.	None
0:END	Always the last statement in the program. If an END statement is inserted, it becomes the new end of the program.	END	None

Table 15: Status and Port Addresses

Names	Address.Point	Operations	Functions
AARMED[1-8] AACAREA ACHIME[1-8] ACODE2[1-8]	@$B0-7.0 @$564.0-7 @$B0-7.3 @$B0-7.4	GET1 GET1 GET1 GET1	Area armed Last group of area granted door access Area chime activated Area Code2 activated
AENTRY[1-8] AEXIT[1-8] AINST[1-8] ALMAREA 0-.7	@$B8-F.1 @$B8-F.0 @$B0-7.2 @$79.0-7	GET1 GET1 GET1 GET1,GET8	Area entry activated Area exit activated Area instant activated Area in alarm
AREADY[1-8] ABYPASS[1-8] ATROUBLE[1-8] AUDALM	@$B0-7.1 @$B0-7.5 @$B0-7.6 @$27.7	GET1 GET1 GET1 GET1	Area zones ready Area zones bypassed Area zone trouble Audible alarm
AUDAREA.0-.7 AUXALM AUXRLY.0-.7 AZONES[1-10].0-.7	@$78.0-7 @$26.1 @$6D.0-7 @$372-$37B.0-7	GET1,GET8 GET1 GET1,GET8 GET1,GET8	Area audible alarm Aux. alarm activated 4150 relay status Armed zones
BYPASS DACT DOOR80.0-.7 DOOROPEN[0-15]	@$25.5 @$68.2 @$18.0-7 @$3E1-$3F0.2	GET1 GET1 GET1,GET8 GET1	Global zones bypassed Dialer active Toggle with 1-8 door Touchpad door open
DOORRLY[0-15] DOORSUPR[0-15] DOORBYPS[0-15] DURESS	@$3E1-$3F0.7 @$3E1-$3F0.1 @$56D-$57C.0 @$26.6	GET1,PUT1 GET1 GET1,PUT1 GET1	4433/4420 touchpad relay status Touchpad door trouble Touchpad door bypass Duress alarm
EMER EXEC EXTBELL FIRE	@$2A.1 @$3F.0 @$29.3 @$28.0	GET1 GET1 GET1 GET1	Emergency alarm IF/THEN control bit External bell active Fire alarm
HLDAY HZNC[1-10].0-.7 HDEBO[1-10].0-.7 ICALL	@$2A.0 @$2BC-$2C5.0-7 @$2A4-$2AD.0-7 @$564	GET1 GET1,GET8 GET1,GET8 GET8	Holiday Zone high threshold trip Debounced high threshold trip Station # for intercom call
ICOM INTBELL INTRU IRDY IZONES[1-10].0-.7	@$6C.0 @$29.2 @$28.2 @$24.0 @$37C-$385.0-7	GET1 GET1 GET1 GET1 GET1,GET8	Intercom active Internal bell active Intrusion alarm Zones all ready Interior bypassed zones
KEYSUPR[0-15] LISTEN LOWBAT[1-10].0-.7 LZNC[1-10].0-.7	@$3E1-$3F0.0 @$68.3 @$368-$371.0-7 @$2B2-$2BB.0-7	GET1 GET1 GET1,GET8 GET1,GET8	Touchpad supervision Listen in active Zones low battery Zones low threshold trip
LDEBO[1-10].0-.7 MDAY MONTH P1SEC	@$29A-$2A3.0-7 @$7 @$6 @$5.4	GET1,GET8 GET8 GET8 GET1	Debounced low threshold trip Day of month (1-31) Month (1-12) One-second pulse
P500MS PAPOUT PASS1 PASS10	@$5.3 @$69.0 @$74.5 @$74.6	GET1 GET1 GET1 GET1	Half-second pulse Printer out of paper True for one pass of I/O prog. each sec. True for one pass of I/O prog. each 10 sec.
PASS60 PHONE REPORT RLY[1]	@$74.7 @$6C.1 @$27.1 @$8E.0-7	GET1 GET1 GET1 GET1/PUT1,8	True for one pass of I/O prog. each min. 4140 Phone Mode Reporting 4180 outputs Unit #1, P2
RLY[2] RLY[3] RLY[4] SCR[1-8]	@$8F.0-7 @$90.0-7 @$91.0-7 @$408-$40F.0-7	GET1/PUT1,8 GET1/PUT1,8 GET1/PUT1,8 GET1/PUT1,8	4180 outputs Unit 1, P3 4180 outputs Unit 2, P2 4180 outputs Unit 2, P3 Scratch locations*

NOTE   1. Some addresses in this table are different from the 4724 addresses.
2. Scratch locations can be used as counters or as places to save temporary results in a program, if needed.

Table 15: Status and Port Addresses

Names	Address.Point	Operations	Functions
SILENC	@$28.3	GET1	Silenced trouble
SMKPWR	@$EE.7	GET1	Smoke power on
SPECL	@$28.1	GET1	Special alarm
SYSTR	@$28.5	GET1	System trouble
TEE[1-8]	@$2D-$34	GET8	Area entry/exit/arm timer
TER15	@$EE.4	GET1/PUT1	Output on 4720 Terminal 15
TER16	@$EE.3	GET1/PUT1	Output on 4720 Terminal 16
TER18	@$12.2	GET1/PUT1	Output on 4720 Terminal 18
TEST	@$27.6	GET1	Bell Test Mode
THR	@$2	GET8	Hour of day (0-$23)
TKEY	@$62	GET8	Key input timer
TMIN	@$3	GET8	Minute of day (0-$59)
TOPEN[0-15]	@$3D1-$3E0	GET8	Touchpad door open timer
TREE	@$75.7	GET1	EEPROM trouble
TROUBL	@$26.3	GET1	Any trouble
TRBAT	@$6F.4	GET1	System battery low
TRAC	@$6F.5	GET1	AC power low
TRPL1	@$6F.6	GET1	Phone Line 1 trouble
TRPL2	@$6F.7	GET1	Phone Line 2 trouble
TSEC	@$4	GET8	Second of day (0-$59)
TSHUT	@$F	GET8	Bell shutdown timer
TSMOKE	@$56A	GET8	Smoke power off timer
TWKDAY	@$1	GET8	Day of week (0-6)
WALKTEST	@$3C.2	GET1	Walk Test Mode
WARM	@$12.6	GET1	System reset (trouble)
WINSTAT[1-4].0-.7	@$A6-$A9.0-7	GET1,GET8	Time window status
X10[1]	@$9D.0-7	GET1/PUT 1,8	X-10 output for House Code 1, #1-8
X10[2]	@$9E.0-7	GET1/PUT 1,8	X-10 output for House Code 1, #9-16
X10[3]	@$9F.0-7	GET1/PUT 1,8	X-10 output for House Code 2, #1-8
X10[4]	@$A0.0-7	GET1/PUT 1,8	X-10 output for House Code 2, #9-16
ZALM[1-10].0-.7	@$27C-$285.0-7	GET1, GET8	Zones in alarm
ZMEM[1-18].0-.7	@$2C6-$2D7.0-7	GET1, GET8	Zone alarm memory
ZONETR	@$24.1	GET1	Global zones in trouble
ZBYPASS[1-10].0-.7	@$272-$27B.0-7	GET1, GET8	Zones bypasses
ZTR[1-10].0-.7	@$268-$271.0-7	GET1, GET8	Zones in trouble

NOTE *1. Some addresses in this table are different from the 4724 addresses.*
2. Scratch locations can be used as counters or as places to save temporary results in a program, if needed.

5.19.3 Changing The Program

Inserting a New Statement

1. To insert a new statement before the current statement, press **CLR**.

2. Line 1 will show "SELECT OP:END." Line 2 will show the 14 available operations (see Table 14). Press the number that goes with the desired operation, then press **TEST**.

3. The display will either advance to the statement that was current before you inserted the new one or request more data if needed to perform the operation.

4. Press **MUTE** if you wish to exit the SELECT OP menu without adding a new statement.

Shown below are three examples of programmable I/O statements that can be used on the 4734 to obtain customized status outputs.

EXAMPLE 1:   The following statement will cause Terminal 15 on the 4720 to produce an active low output whenever there is a fire alarm in any area.

GET1 @$28.0, PUT1 @$EE.4

EXAMPLE 2:   The following statement will cause Terminal 16 on the 4720 to produce an active low output whenever there is an intrusion alarm in any area.

GET1 @$28.2, PUT1 @$EE.3

EXAMPLE 3:   The following statement will cause the X-10 Module Address #1 from the first house code to be activated whenever Area #1 (or a non-area system) is in entry or exit delay. The module could then be used to activate entry lighting. The unit will be deactivated when the entry/exit delay ends or the area is disarmed.

GET1 @$B8.1, GET1 @$B8.0, OR, PUT1 @$9D.0

EXAMPLE 4:   The following example demonstrates using the if/then/else logic in I/O statements. The flag, EXEC, controls execution of statements. When the flag is on (set to 1), statements following are executed normally. When the EXEC flag is off (set to 0) statements following are not executed.

These statements will turn on the X-10 module when Entry mode in Area #1 is activated. When Entry is not activated, the X-10 module follows Time Window #0.

EXEC = AENTRY[1]

X10[1].0 = 1

EXEC = NOT EXEC

X10[1].0 = WINSTAT[1].0

EXEC = 1.

5.19.4 Leaving The I/O Program

Exiting the Programmable I/O Statements Menu

1. Press **MUTE**. The display will show SAVE:NO.
2. To exit without saving the changes, just press **TEST**.
3. If you wish to save the changes to the EEPROM, press **1** for "SAVE TEST" then press **TEST**.

5.19.5 Factory Programmed Default I/O Program

The following table shows the factory programmed default I/O program, along with an explanation of what it does.

Table 16: Default I/O Program

Statement	Effect
1 GET1 @$B0.0 2 PUT1 @$8E.0 3 GET1 @$B1.0 4 PUT1 @$8E.1 5 GET1 @$B2.0 6 PUT1 @$8E.2 7 GET1 @$B3.3 8 PUT1 @$8E.3 9 GET1 @$B4.0 10 PUT1 @$8E.4 11 GET1 @$B5.0 12 PUT1 @$8E.5 13 GET1 @$B6.0 14 PUT1 @$8E.6 15 GET1 @$E7.0 16 PUT1 @$8E.7	Each pair of GET and PUT statements from 1 - 16 causes the armed status of one area to activate one of the 4180 Status Display Module outputs.
17 GET1 @$28.0 18 PUT1 @$8F.0	Fire alarm condition activates first output on 4180 Unit 1, P3.
19 GET1 @$2A.1 20 PUT1 @$8F.1	Emergency alarm condition activates second output on 4180 Unit 1, P3.
21 GET1 @$28.2 22 PUT1 @$8F.2	Intrusion alarm condition activates third output on 4180 Unit 1, P3.
23 GET1 @$26.6 24 PUT1 @$8F.3	Duress condition activates fourth output on 4180 Unit 1, P3.
25 GET8 @$8E 26 GETC #0 27 EQU 28 PUT1 @$8F.4	GETs the armed status of all eight outputs on 4180 Unit 1, P2 (8 areas) Generates an 8-bit binary constant with a value of 0. Match between all eight outputs of 4180 and 8-bit constant of 0 (i.e., all eight areas disarmed) activates fifth output on 4180 Unit #1, P3.
29 GET1 @$27.7 30 GETC #0 31 EQU 32 NOT 33 PUT1 @$8F.5	Get the number of the current alarm type Get the value 0 Compare alarm condition with 0 Turn on the output if alarm condition is not 0
34 GET1 @$26.1 35 PUT1 @$8F.6	Auxiliary alarm activates seventh output on 4180, Unit 1, P3.
36 GET1 @$26.3 37 PUT1 @$8F.7	Any trouble condition activates eighth output on 4180, Unit 1, P3.
38 GET8 @$027C 39 PUT8 @$90	Alarm condition on any of Zones 1 - 8 activates corresponding 1 of 8 outputs on 4180 Unit 2, P2.
40 GET8 @$027D 41 PUT8 @$91	Alarm condition on any of Zones 9 - 16 activates corresponding 1 of 8 outputs on 4180 Unit 2, P3.
42 GET8 @$A6 43 PUT8 @$9D 44 GET8 @$A7 45 PUT8 @$9E 46 GET8 @$A8 47 PUT8 @$9F 48 GET8 @$A9 49 PUT8 @$A0	\ Statements 42 and 43 cause time windows 0 - 7 to / activate X-10 modules 1-8 of House Code 1. . . . \ Statements 48 and 49 cause time windows 24-31 / to activate X-10 modules 9-16 of House Code 2.
50 END	

5.20 Default Options (Menu 19)

DEFAULT ALL?

If you select this option, all options will return to their factory-programmed default values.

WARNING!   **Selecting this option resets all options to their factory default values.**

Section 6: Using the Model 5540 Downloading Software

The Model 5540 Downloading Software allows you to use a computer at a remote location to reprogram options and perform other functions for a particular installation. For more specific information, see the *Model 5540 Downloading Software Operation Manual* (P/N 150481).

NOTE   *Software revision 3.3 is required for downloading.*

Initial Download

During factory programming, the ANSWER RING option was selected (DIALER, Menu 7). Once the panel is installed, the downloading computer can call it to download new program data or request status information from the panel. After 10 rings (the factory programmed value for the # RINGS option), the panel will answer the call and downloading will begin.

Subsequent Downloads

If the ANSWER RING option is still enabled, the computer can call the panel as described above. Downloading can also be initiated from a touchpad at the installation location, by pressing **4 TEST** followed by Code 0 or Code 1.

During uploading or downloading, the touchpad LCD will display "UP/DOWNLOAD." During the downloading of options to the EEPROM, the LCD will also display address numbers. Downloading of all options takes approximately 12 minutes. Downloading cannot take place while the system is in alarm.

WARNING!   **During downloading, the system will NOT respond to alarms.**

6.1 Starting and Ending

If you have just powered up the computer, enter the word "**MODEM**" first. If this has been done since the computer was turned on, enter the word "**PANEL**" at the DOS prompt. Then enter your user name and password when the prompts direct you to do so. The Panel Interface Menu will appear.

To exit the Model 5540 downloading program, press **ESC** as many times as necessary, until you see a prompt asking you if you want to leave the program.

6.2 Viewing Status

Status mode is used to view the status of the 4734 and to control functions as you would from an on-site touchpad. The Status mode for the 4734 is different from that of the 4720 in that it displays actual touchpad data on the remote computer. Therefore, the Status mode has access to any status or function that is available on a standard touchpad.

1.   Select Request Status on the Panel Interface Menu.

2.   Initiate an upload, either by dialing the panel from the computer or by having someone press **4 TEST** on a touchpad at the account location.

3.   The computer screen will begin to show the current touchpad display. The lower part of the screen shows a simulation on the touchpad. Press the appropriate keys to accomplish the desired functions.

4. As computer keys are pressed, they are buffered and shown after the "Keys:" heading at the top of the status window. The keystrokes are not actually sent to the panel, until **ENTER** is pressed on the keyboard. After the keystrokes have been sent, the "Keys:" area is blank. The display will take up to four seconds to respond to the keys sent to the panel because of the relatively slow transmission rate.

EXAMPLES:

Zone status: Press **N** and **ENTER** to display Not Ready Zones. The zones are displayed along with their location text and area one at a time.

Set time: Press **9 T** then enter a valid programming code (such as Code 0). Press **ENTER**. The display will show the set time display. Enter the digits for the time, then press **T** to enter the data.

Built-in programmer: Press**1 1 T** then enter Code 0. Press the **ENTER** key. The display will show the main menu for the built-in programmer. The programmer is operated just like it is from a touchpad. A special feature of the downloading software allows you to program zone locations and system messages directly.

When the display is in the program menu for a text option (the bottom line scrolls groups of symbols—as described in Section 4.5 of this manual), press the **F1** function key on the computer. The display F1:ASCII will change from black to red. Now type in the letters you want to program and press the **ENTER** key. The letters will be entered directly into the display. Press F1 again to return to the Normal Key Mode. (F1:ASCII must be off to emulate the **TEST** key and other functions).

When the **ESC** key is pressed to terminate Status Mode, the system will return to normal operation.

6.3 Uploading Event Memory

When the Panel Interface Menu appears, select **M** to upload event memory from a particular account and save it on a disk at the central station.

Enter the account number when prompted to do so. The letter "E" will appear, followed by the account number, on four different lines of the Up/Downloads column.

Initiate an upload, either by dialing the panel from the computer or by having someone press **4 TEST** on a touchpad at the account location.

Select **C** to save the upload, then enter the account number to be saved. Event information will be saved in an ASCII file. The name assigned to the file will be the account number with the extension .EVT on the end.

NOTE *The 4734's event memory is NOT cleared when the information is uploaded.*

6.4 Programming Procedure

See Section 6.5 of this manual for instructions on programming auxiliary device outputs using the 5540 software.

6.4.1   Reprogramming the Options

1. When the Panel Interface Menu appears, press **A** to reprogram any of the options. You will be prompted for an account number to edit.

2. On the Edit Account Menu, select the type of options you wish to program.

3. When you finish programming the options on one of these menus, press **ESC** to get back to the Edit Account Menu, then choose another set of options to program. After you have reprogrammed all the options you wish, press **ESC** again. Then follow the screen prompts to save and download the new data.

4. After you have entered the subscriber's phone number, the number will appear on the

screen, followed by "Press ESC to terminate, Waiting for Answer..."

Several seconds will elapse before the call goes through and the screen indicates that downloading is taking place.

6.4.2   Printing the Options

To print the data from a particular options menu, go to the menu and press **F3**.

6.4.3   Verifying The Selections

To make sure the correct data has been downloaded to the subscriber's panel, you may wish to have the panel send the data back, so you can review it.

On the 4734 Panel menu, select **E** then follow the prompts to upload the data from the 4734 to your computer. To view the uploaded data, select **B** on the 4734 Panel menu. To save the uploaded data, select **C** on the menu.

CAUTION!   *Before editing or modifying an upload, you must SAVE it.*

6.5 Programming the I/O Statements

6.5.1   What The I/O Statements Do

NOTE   *It is easier to program the I/O statements using the Model 5540 Downloading Software. Because it may sometimes be useful to program them with the built-in programmer, the procedure is explained in Section 5.19 of this manual.*

The 4734's programmable I/O capability allows you to configure auxiliary output devices to act as indicators of internal status conditioners to respond to the internal conditions in some way. The following figure shows the I/O programming software in relation to the programmable output devices.
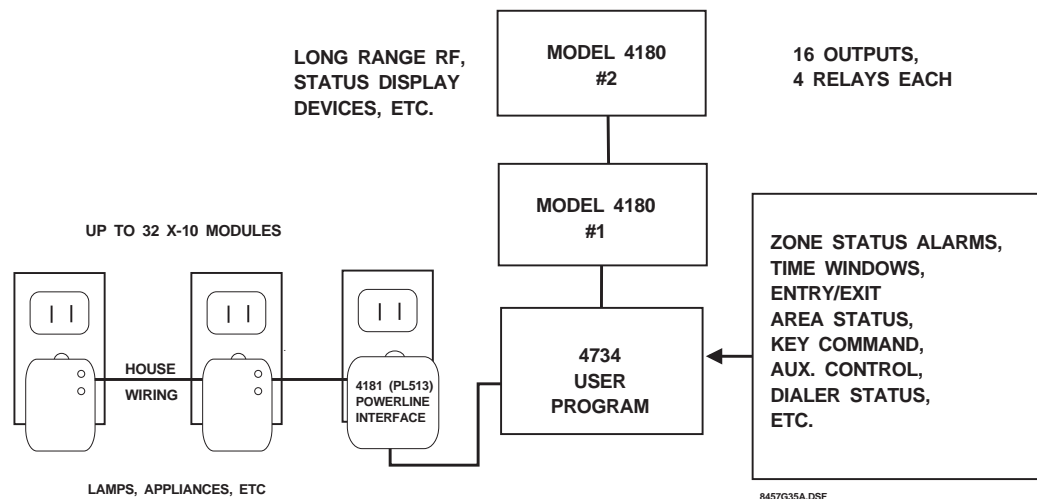
Figure 5: Auxiliary Devices

Outputs are generated on three types of devices:

1. Model 4720 panel Terminals 15, 16, and 18: Terminals 15 and 16 are open collector outputs that switch low when activated (negative voltage; -12 VDC, 50 mA maximum). Terminal 18 switches high when activated (positive voltage; +12VDC, 20 mA maximum). The following figure shows how each of these terminals would be connected to an output device.

NOTE *The default I/O program sets Terminal 15 as a common FIRE alarm output and Terminal 16 as a common INTRUSION alarm output.*
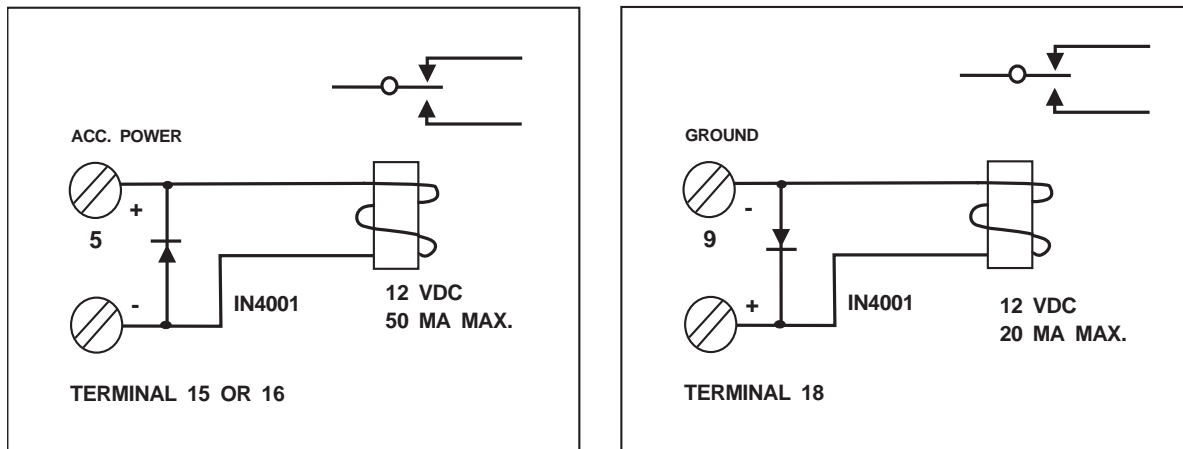
8457G17A.DS4

Figure 6: Connections to Terminals 15, 16, and 18

2. Model 4180 Status Display Module: Two modules can be daisy-chained to provide up to 32 outputs. Each module has four relays, which can be activated by any of the 16 outputs. The top three sections of Table 20 (Section 6.5.2 of this manual) show which relay label identifies each output.

3. X-10 compatible modules: The 4734, with the Model 4181 Power Line Interface, can control up to 32 X-10 modules. These modules, which come in many forms, can be used to control lights or appliances. Table 20 (Section 6.5.2 of this manual) shows the correlation of X-10 label to X-10 module.

    EXAMPLE: If one of the 4180 Status Display Module's relays were connected to an LED, you could program the system to light the LED if the printer ran out of paper.

You can also program a device to produce an output when a specific combination of conditions exists. This is done by performing logical operations, as shown in Table 17. (The 5540 software and built-in programmer are also capable of using arithmetic operators. These operators are included in Table 18.)

Table 17: Logical Operators

Operator	"ON" Output Is Generated When...
A AND B	Both Condition A and Condition B are in effect (for example, Area #1 is armed and Area #2 is armed).
A OR B	Either A or B or both is in effect.
A XOR B	Either A or B is in effect, but not both.
NOT (A)	The specified condition is not in effect.
A = B	A and B are in the same state (in effect or not in effect).
EQZ (A)	When A is zero (uses less memory than (A = 0)).
A > B	If A is greater than B.
A < B	If A is less than B.

Table 18: Arithmetic Operators

Operator	Numerical Output* Generated is the Result of:	Operator
A + B	A + B	A + B
A - B	A - B	A - B
A * B	A * B	A * B
DWN(A)	(Down Count) Value - 1 if value is greater than 0 (useful for timers).	DWN(A)
BIN(A)	Conversion of number from BCD (binary coded decimal) to binary. Use to convert TSEC, TMIN, THR, MONTH, MDAY to binary before comparison.)	BIN(A)
BCD(A)	Conversion of binary number to BCD.	BCD(A)
BIT(A)	Conversion of number (0-7) to bit in byte.	BIT(A)

EXAMPLE 1: You could write a program that would cause an X-10 module to turn on an air conditioner if one signal from the Model 4150 Auxiliary Control Module indicated that the high temperature trip point had been exceeded (Condition A), another 4150 signal indicated that the high humidity trip point had been exceeded (Condition B), or if both signals had been received.

EXAMPLE 2: The system could be programmed to activate a relay on the Model 4180 Status Display Module that would turn on an LED if Area #1 and Area #2 were both armed or both disarmed (A = B).

6.5.2   I/O Programming Procedure-5540 Software

To program the I/O statements using the 5540 software, go to the Programmable I/O Menu (selection L of the Edit Accounts Menu). The inputs and outputs are programmed through a series of control statements that you enter into this menu. These statements take the form: 1 OUTPUT = STATUS.

The OUTPUT label refers to the device on which an output is generated. Output labels are assigned using the names shown in Tables 19 and 20. The STATUS label refers to the internal condition or combination of conditions that cause the output to be generated. STATUS labels are assigned using the names shown in Table 21.

Some labels include a number in brackets [ ], which specifies one of several similar outputs or sets of outputs; or one of several components of the installation (e.g., zones), or sets of components, on which an internal condition can exist (e.g., armed or disarmed).

Some labels can be used to access eight data bits at a time. Labels of this type are identified in the Data Type column of Tables 19 and 21 by the word BITS. To access only one of the eight bits, key in a "." (period character) after the label, followed by a digit from 0 to 7.

Lables of data type NUMBER take the form (LABEL = NUMBER).

EXAMPLE 1: 1 RLY[1] = ALMAREA

The output label RLY[1] refers to the first group of eight outputs on the first 4180 module. The status label ALMAREA indicates that all eight areas in alarm status bits are to be accessed.

EXAMPLE 2: 1 RLY[4].7 = AZONES[10].5

The output label RLY[4].7 refers to the eighth output (.7) on the second group of outputs on the second 4180 module ([4]). The status label AZONES[10].5 refers to the armed status of the sixth zone (.5) of the zone group to which [10] has been assigned (zones 73-80)—in other words, Zone 78. Table 22 shows which zones are assigned to each bracketed number.

EXAMPLE 3: 1 TER16 = (THR = 1) or (THR = 2)

The output label TER16 refers to Terminal 16 of the 4720. (THR = 1) refers to the hour that begins at 1:00 AM and ends at 1:59 AM. (THR = 2) refers to the hour that begins at 2:00 AM and ends at 2:59 AM. If the current time falls within either of these two intervals, the LED connected to Terminal 16 will light. Because these two time periods happen to be consecutive, the LED will remain on continuously from 1:00 AM to 2:59 AM; it will not go off between the two time intervals.

Table 19: Programmable I/O Output Labels (Read/Write)[1]

Label[2]	Data Type	Function
RLY[1-4]	BITS	4180 status relays
TER16	BIT	Output on Terminal 16
TER15	BIT	Output on Terminal 15
TER18	BIT	Output on Terminal 18
X10[1-4]	BITS	X-10 output bits
SCR[1-9]	NUMBER, BITS	User scratch area

NOTE   [1] *An output can be generated (written on the left side of the statement) as a result of an internal condition or its own status can be read (right side of statement) to generate an output on some other device.*
[2] *In this column, the number of brackets [ ] indicates how many devices or components of this type are available.*

Table 20: Output Designations

Label	Output
RLY[1] RLY[2] RLY[3] RLY[4]	Outputs on 4180 Module 1, Connector P2 Outputs on 4180 Module 1, Connector P3 Outputs on 4180 Module 2, Connector P2 Outputs on 4180 Module 2, Connector P3
RLY[1].0 RLY[1].1 ... RLY[1].7	Outputs on 4180 Module 1, Connector P2, Pin 8 Outputs on 4180 Module 1, Connector P2, Pin 7 Outputs on 4180 Module 1, Connector P2, Pin 1
RLY[2].0 RLY[2].1 ... RLY[2].7	Outputs on 4180 Module 1, Connector P3, Pin 8 Outputs on 4180 Module 1, Connector P3, Pin 7 Outputs on 4180 Module 1, Connector P3, Pin 1
TER15 TER16 TER18	Active low output sink on Terminal 15 of the 4720 panel (50 mA) Active low output sink on Terminal 16 of the 4720 panel (50 mA) High output source on Terminal 18 of the 4720 panel (20 mA)- supplies 12 V_{DC} when turned on
X10[1] X10[1].0 X10^{1}.1 ... X10[2] X10[3] X10[4]	Outputs to X-10 Modules 1-8 of House Code 1 Outputs to X-10 Module 1 of House Code 1 Outputs to X-10 Module 2 of House Code 1 Outputs to X-10 Modules 9-16 of House Code 1 Outputs to X-10 Modules 1-8 of House Code 2 Outputs to X-10 Modules 9-16 of House Code 2
NOTE	*On connectors P2 and P3 of the 4180, the designation .0 refers to Pin 8 and the designation .7 refers to Pin 1.*

Table 21: Programmable I/O Status Labels (Read Only)[1]

Label[2]	Data Type	Function
AARMED[1-8] ACCAREA.0-7 ACHIME[1-8] ACODE2[1-8] AENTRY[1-8] AEXIT[1-8] AINST[1-9] ALMAREA.0-7	BIT BIT BIT BIT BIT BIT BIT BITS	Area[n] armed Area last accessed for door Area[n] in Chime Mode Area[n] in Code2 Mode Area[n] in entry delay Area[n] in exit delay Area[n] in Instant Mode Areas in alarm
ALMTYP AREADY[1-8] ATROUBL[1-8] AUDALM.0-7 AUDAREA.0-7 AUXALM AUXRLY.0-7 AZONES[1-10]	NUMBER BIT BIT BIT BITS BIT BITS BITS	Current alarm type Area[n] ready Area[n] zone trouble Areas with any not silent alarm Areas using audio Auxiliary alarm type Aux. control relay status Zones that are armed
ABYPASS[1-8] BYPASS CENT CHIMEON DACT DOOR80 DOOROPEN[0-15] DOORRLY[0-15] DOORBSUPR[0-15]	BIT BIT NUMBER BIT BIT BITS BIT BIT BIT	Area[n] has bypassed zones(s) Zones bypassed in system Century Chime tone on Dialer active Toggled by pressing 16-23 Door Door is open Door relay control Touchpad door trouble
DOORBYPS[0-15] DURESS EMER EXTBELL EXEC FIRE HLDAY HZNC[1-10] HDEBO[1-10]	BIT BIT BIT BIT BIT BIT BIT BITS BITS	Door relay bypass Duress alarm Emergency alarm External bell output IF Controls Program Fire alarm Holiday Zone inputs above high limit Debounced zone inputs high
ICALL ICOM INTRU INTBELL IRDY ITR IZONES[1-10]	NUMBER BIT BIT BIT BIT BIT BITS	Station number for intercom call Intercom active Intrusion alarm Internal bell output on Zones all ready Zone in trouble Zones that are interior bypassed
KEYSUPR[0-15] LISTEN LOWBAT[1-10] LZNC[1-10] LDEBO[1-10] MDAY MONTH	BIT BIT BITS BITS BITS NUMBER NUMBER	Touchpad supervise trouble Listen-in active Zones with low battery Zone inputs below limit Debounced zones below limit Day of month Month
ORGKID P1SEC P500MS PAPOUT PASS1 PASS10	NUMBER BIT BIT BIT BIT BIT	Touchpad using phone/intercom Pulse at one per second Pulse at two per second Printer paper out True for one pass of I/O prog. each second. True for one pass of I/O prog. every 10 second.
PASS60 PHONE READY REPORT SILENC SMKPWR SPECL SYSTR	BIT BIT BIT BIT BIT BIT BIT BIT	True for one pass of I/O prog. each minute Phone mode active Zones ready Dialer reporting Trouble silenced Smoke power on Special alarm System trouble

NOTE [1] *A status condition can only be read (on the right side of statement), so that the information can be used to determine whether or not an output will be generated. Status conditions cannot be altered by programmable I/O statements.*
[2] *In this column, the number in brackets [ ] indicates how many devices or components of this type are available*

Table 21: Programmable I/O Status Labels (Read Only)[1]

Label[2]	Data Type	Function
TEE[1-8]	NUMBER	Area[n] entry/exit/arm timer
TEST	BIT	Bell test
THR	NUMBER	Hour of day
TMIN	NUMBER	Minute of day
TOPEN[0-15]	NUMBER	Door timer
TREE	BIT	EEPROM trouble
TROUBL	BIT	Any trouble
TRBAT	BIT	Main Battery trouble
TRAC	BIT	Main AC trouble
TRPL1	BIT	Phone Line 1 trouble
TRPL2	BIT	Phone Line 2 trouble
TSEC	NUMBER	Second of day
TSHUT	NUMBER	Time left until shutdown (seconds)
TSMOKE	NUMBER	Time until smoke on (seconds)
TWKDAY	NUMBER	Day of week
WARM	BIT	Watchdog reset occurred
WALKTEST	BIT	Walk Test Mode
WINSTAT[1-4]	BITS	Time window status bits
YEAR	NUMBER	Year
ZALM[1-10]	BITS	Zones in alarm or entry
ZBYPASS[1-10]	BITS	Bypassed zones
ZMEM[1-8]	BITS	Alarm memory zones (and panic zones)
ZTR[1-10]	BITS	Zones in trouble

NOTE [1] *A status condition can only be read (on the right side of statement), so that the information can be used to determine whether or not an output will be generated. Status conditions cannot be altered by programmable I/O statements.*
[2] *In this column, the number in brackets [ ] indicates how many devices or components of this type are available*

Table 22: Zone Groups

Bracketed Number [N]	Zones	Bracketed Number [N]	Zones
[1]	1-8	[10]	73-80
[2]	9-16	[11]	81-88
[3]	17-24	[12]	89-96
[4]	25-32	[13]	97-104
[5]	33-40	[14]	105-112
[6]	41-48	[15]	113-120
[7]	49-56	[16]	121-128
[8]	57-64	[17]	129-136
[9]	65-72	[18]	137-144

Shown below are three examples of programmable I/O statements that can be used on the 4734 to obtain customized status outputs.

EXAMPLE 1: The following statment will cause Terminal 15 on the 4720 to produce an active low output whenever there is a fire alarm in any area.

TER15 = FIRE

EXAMPLE 2: The following statement will cause Terminal 16 on the 4720 to produce an active low output whenever there is an intrusion alarm in any area.

TER16 = INTRU

EXAMPLE 3: The following statement will cause the X-10 Module Address #1 from the first house code to be activated whenever Area #1 (or a non-area system) is in entry or exit delay. The module could then be used to activate entry lighting. The unit will be deactivated when the entry/exit delay end or the area is disarmed.

X10[1].0 = (AEXIT[1] or AENTRY[1])

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Index