

R E G E N C Y

by .

R E G E N C Y
Model 4724 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 to 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.

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Section 1: Introduction

The Model 4724 Control Expander is a UL Listed, plug-on unit that provides greatly enhanced software features, event storage memory, and user-friendly operation for the Model 4720 Control/Communicator. The 4724 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 144 zones.

The 4724 supports the Model 4181 (PL513) Power Line Control Interface, which controls X-10 Modules at various locations. These X-10 Modules make it possible to automatically turn lamps and other appliances on and off at preprogrammed times or as the result of system status.

The Model 4724 hardware is powered by the 4720 hardware and supports the same expansion devices as the 4720. The 4724 can be added to existing 4720 (or 4721) installations.

1.1 Features

- Support of up to 128 expansion zones that have all the same options as internal zones.
- Each touchpad panic zone is a separate zone, adding 45 more zones.
- Ability to report up to 256 user codes (or cards), which are programmable to allow control of selected functions.
- Secondary user code (Code 2) option allows codes to be enabled temporarily for system users, such as guests and baby-sitters.
- High-security code option that requires selected system 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 activate 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: UL Requirements

1. The RINGBACK @ CLOSE option must be selected for all commercial burglary applications.
2. The audible alarm must be placed where it can be heard by all partitions. A fire audible alarm device shall be installed indoors in accordance with NFPA 74 and 72 Proprietary Protective Signaling Systems. This may result in separate audible alarms, for fire and burglary alarm signals.

NOTE An indoor/outdoor signaling device can be used if it gives different signals for fire and burglary alarms.

3. For commercial burglary alarm units, the audible device must be installed where the audible test (BELL TEST @ ARM) can be heard by all system users in all partitions. If off premises transmissions are used, the audible device can be installed inside the protected premises.
4. For commercial burglary alarm units, the control panel and the audible device power supply must be protected by a 24 hour tamper switch and a lined housing, or they must be enclosed in a protected area that is armed 24 hours a day. The tamper switches or protected area must be programmed as “not bypassable.”
5. For UL approved installations, the Regency Supervised Siren Module must be wired to the 4724. To warn of a fire, the module provides a UL temporal-three siren that uses three distinctive, repeating short beeps. The module converts the panel’s non-supervised, steady fire cadence to a supervised, temporal-three fire cadence. This module also provides a distinctive supervised burglary (police) siren. See Figure 1 for details on wiring the module to the 4724. For additional information, see the *Regency Supervised Siren Module Installation Instructions* (P/N 466-1584).
6. The 4724 is intended to be used for coverage under one management, one ownership, and one address divided into separately armed, partitions (zones) of coverage.

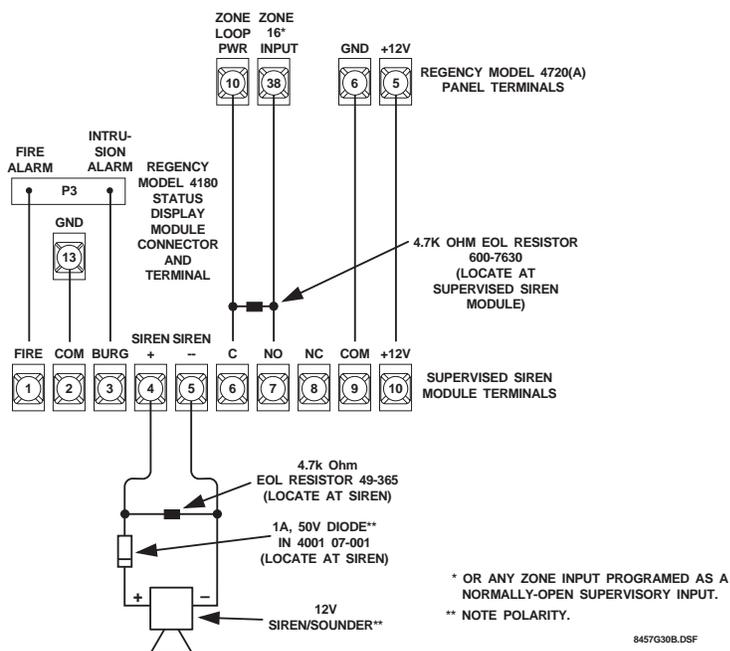


Figure 1: Connecting the Supervised Siren Module to the 4724

Section 3: Installation

NOTE 1. The 4724 is for use with the 4720 Revision M (and earlier) circuit boards; the 4724-2 is for use with the 4720 Revision N (or later) circuit boards. When referring to both the 4724 and the 4724-2, this section of the manual uses the convention “4724/4724-2.”

2. Maximum current draw for the 4724/4724-2 is 50 mA.

3. The Model 4724N is a 4720 and a 4724-2 (shipped together) that have been partially installed at the factory.

3.1 Installation of 4724

Figure 2 shows the placement of the 4724/4724-2 board in relation to the 4720.

1. **Very important!** Remove power from the 4720 by disconnecting the AC power and battery.
2. **(Skip this step if you are installing a 4724 N)** Carefully remove the 4720 control microprocessor chip from its socket by inserting a flat-blade screwdriver under each end of the microprocessor and slowly prying it out.

If you are installing a 4724-2 board that has a socket for this chip, press the chip into the socket, notch facing downward. Observe proper polarity (it is the opposite of the other large ICs).

3. **(Skip this step if you are installing a 4724 N)** Insert the socket adapter into the 4720 control microprocessor socket. Pin 1 (marked on the adapter) goes into the upper left hand corner of the socket. Make sure all pins are aligned. Press the 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.

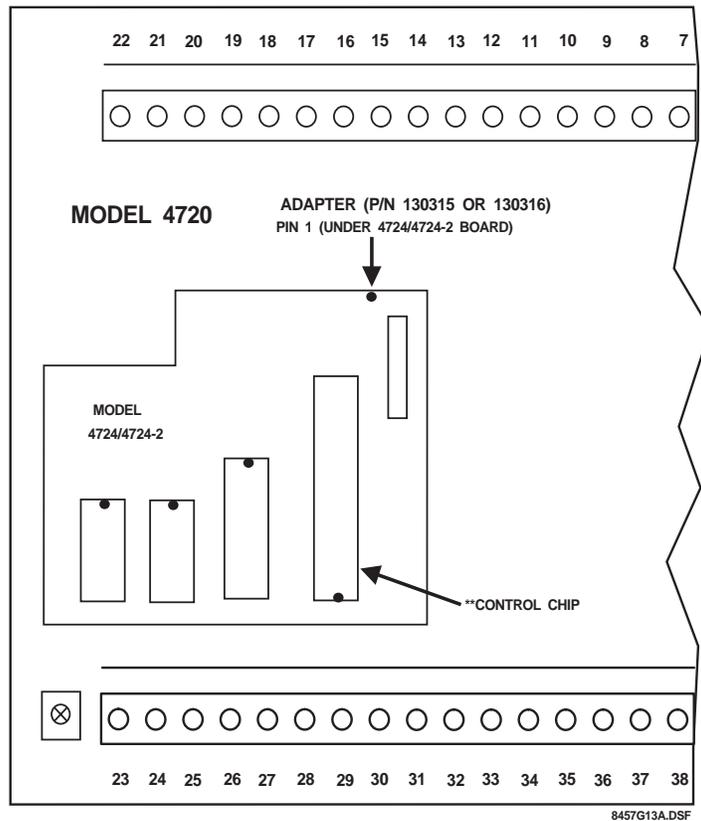
If an earth ground wire was attached at this screw, move the wire to another mounting screw.

5. Place the 4724/4724-2 circuit board over the pins on the socket adapter. The plastic mounting bar should extend down over the mounting hole. Carefully press the 4724/4724-2 onto the socket adapter, making sure the pins align with the rear entry connector. The 4724/4724-2 will rest level on the 4720 with the mounting hole aligned with the hole in the mounting bar.
6. Fasten the 4724/4724-2 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. If you are expanding a Revision L (or earlier) 4720 board, you must remove the Model 4793 Dialer Chip from the Model 4720 board and replace it with the Model 4725 dialer chip.

NOTE Be sure to observe proper polarity when replacing the dialer chip.

8. Reconnect power to the 4720 and turn on. “TIME 00:00” is the normal power-up display.

NOTE The 4791 EEPROM (electrically erasable programmable read-only memory) chip on the 4720 is not used by the 4724/4724-2 and can be removed if desired. The 4724/4724-2 has its own EEPROM.



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<p>*IF YOU ARE UPGRADING A 4720 REV. M (OR EARLIER) BOARD</p> <p>Use 4724 Control Expander Use 130315 Adapter</p>	<p>*IF YOU ARE UPGRADING A 4720 REV. N (OR LATER) BOARD</p> <p>Use 4724-2 Control Expander Use 130316 Adapter</p>
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****NOTES**

1. 4720 revision number on board itself
2. 4724 uses 50747 series control chip
3. 4724-2 uses 600-9384 series control chip.

Figure 2: Model 4724 Installation

3.2 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 4724 system than they do with a 4720 only. The instructions below describe the differences (or refer to additional sources of information).

3.2.1 Current Zone Expander 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.

3.2.2 Older Zone Expander Models

The following information about obsolete zone expander models is retained for installers who need to troubleshoot or repair an existing system.

Model 4110 Serial Zone Expander

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

Model 4125 Multiplexed Zone Expander

The 4125 is enhanced by the 4724 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 they must be programmed as “NO EOL:YES.”

Zones can 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 can be used for up to 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 (actual zone # = # of zones on Expander 1 + # of internal zones).

Model 4130 RF Zone Expander

4130 zones must be programmed as normally open on the 4724. The transmitters are then individually programmed as normally open or closed.

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

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

3.3 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.*

3.3.1 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 4724, the control panel can provide automatic control based on internal status and key commands. The 4181 (PL513) allows the 4724 to support up to 32 of the X-10 Modules. The 4181 also provides the 4724 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 4724, as shown in Figure 3. The maximum length of the cable is 20 feet. The 4181 is optically isolated from the power line.

WARNING! **The modular connectors on both the 4724/4724-2 and the 4181 must NOT be connected to a phone line or anything other than each other. The X-10 Modules can be distributed throughout the building.**

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

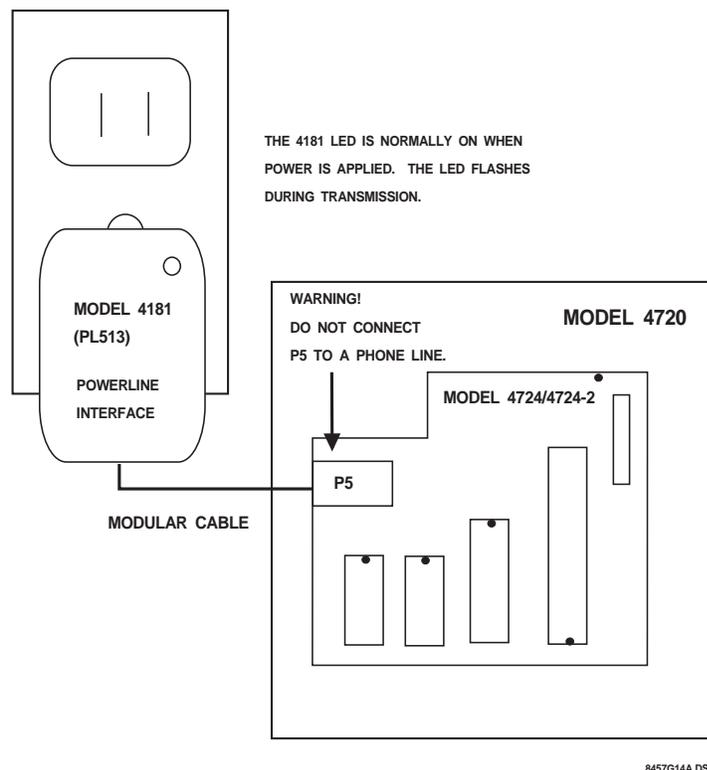


Figure 3: Model 4181 Connections

3.3.2 Suppliers of X-10 Modules

X-10 compatible modules can be obtained from Interactive Technologies, Inc. by contacting ITI's Order Entry Department at 800-777-4841.

3.4 Software Updates

If you are installing the 4724 on to a Revision L (or earlier) 4720 board and you want to print zone numbers greater than 99 or use the Answering Machine Bypass feature, you will need to replace the Model 4720 Dialer Microprocessor Chip (P/N 4793) with the Model 4725 Dialer Chip. To order the 4725 Dialer Chip, contact ITI's Order Entry Department at 800-777-4841.

Section 4: Touchpad Operation

4.1 Touchpad Designations

The 4724 allows the system to use both door/card access (up to 255 cards).

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 a group of areas to which it is granted access. The card will work only at stations assigned to one or more of the same 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 *that are selected* as door stations (not door only) will allow *codes* to arm and disarm, if appropriately programmed. You can arm or disarm the system by pressing the **DOOR** key and entering the appropriate code (usually Code 0 or Code 1).

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

NOTE *Any station can access X-10 Modules or Model 4150 relays.*

Alarms and touchpad troubles are annunciated by location. Panic keys report as separate zones for each station. Duress alarms caused by entering the duress prefix also have a separate zone ID for each touchpad Table 1, "Panic Key Zones," lists the zone reported for each touchpad.

The zone numbers can be found from Table 1 or through the following formula:

$$\text{Zone} = (\text{Station ID \#}) \times 4 + 145 + \text{Keynumber}$$

Keynumber **1** is for "POL," **2** for "AUX," and **3** for "FIRE." The station ID is set for 0-15, using the DIP switches on the back of each touchpad.

Table 1: Panic Key Zones

Zone Generated by Key								
Station	0	1	2	3	4	5	6	7
Duress Code	145	149	153	157	161	165	169	173
Keys	Police	146	150	154	158	162	166	170
	Aux	147	151	155	159	163	167	171
	Fire	148	152	156	160	164	168	172
Station	8	9	10	11	12	13	14	15
Duress Code	177	181	185	189	193	197	201	205
Keys	Police	178	182	186	190	194	198	202
	Aux	179	183	187	191	195	199	203
	Fire	180	184	188	192	196	200	204

When a 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 8.5 of this manual).

4.2 Touchpad Functions

The Model 4724 Control Expander provides the following additional touchpad functions:

4.2.1 Display Alarms

Press the **MEM** key to display alarms.

4.2.2 Display Troubles and Supervisories

Press the **STAT** key to display troubles or supervisories.

4.2.3 Toggle X-10s

To toggle X-10 Modules on and off, press a number from 11-42, then * or **CODE 2**, followed by either "1" for on or "0" for off.

- Numbers 11-26 activate modules 1-16 from House Code 1.
- Numbers from 27-42 activate modules 1-16 from House Code 2.

The house codes for each section are programmed into the EEPROM (electrically erasable programmable read-only memory). The display shows the actual house code and module address activated.

4.2.4 Display Events

To display the event memory, press **1 MEM**. The events will be displayed starting with the oldest event and continuing to the newest event. The event is displayed along with the date and time it occurred.

After pressing **1 MEM**, you must 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**.

NOTE *If you are using software revisions A-G, you cannot enter the year when viewing events.*

4.2.5 Clear Events

1. To clear the event memory, press **1 0 TEST** and enter a code with Program mode access.
2. Press **1** to erase the memory, press **0** to quit, or press the **TEST** key to continue.

4.2.6 Zone Display

Press **1 STAT** to display all zone locations assigned to the same areas as the touchpad.

4.2.7 Touchpad Display

Press **2 STAT** to view the location of the touchpad you are currently using.

4.2.8 Software Revision

Press **4 STAT** to view the 4724 software revision date.

Section 5: Area Control

An area is a part of a building that is being treated as a subsection of the total system. The Model 4724 allows an installation to be divided into up to eight areas. There are two possible levels of system operation using areas: split and simple system arming.

5.1 Levels of Area Control

5.1.1 Simple System

Area programming is used to divide system door access into separate areas. Codes and touchpads for each area are programmed to determine who will to gain access at the touchpad. Arming and other functions operate at all stations and apply to the entire system, not to individual areas.

5.1.2 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 that 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 that 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 that area.

5.1.3 Auto Open/Close in a Multi-Area System

When programming the system for split arming, there are several interrelated software options that must be enabled in order for the system to function properly:

1. SPLIT ARM, System Menu (Menu 4)
Must be enabled (select **YES**) for split arm systems.
2. Area O/C Area Options (Menu 14)
You must select each area (1-8) that will use auto open/close.

When you program these options as described above, the selections you made for Default mode (in System Options, Menu 4) and Auto O/C (Area Options, Menu 14) will operate as programmed.

WARNING! If you do not program Auto Open/Close areas as described here, the areas will not follow the programmed time windows and will disarm if the system enters Default mode.

5.2 Area Assignments

Each zone can be assigned to any one of the eight areas. Any number of zones can be assigned to a particular area. This allows the installer to assign zones to areas after the system has been wired, regardless of the type of hardware used in each zone. Chime zones only sound at touchpads in the same area. Entry and exit zones are activated by area also. There are separate entry/exit timers for each area.

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

Each touchpad can be assigned to one or more areas and 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.

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

Section 6: Dumping Event Memory to Central Station

The 4724'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 4724's event memory can be uploaded using a procedure similar to the one used to upload programmed options. The procedure is explained in Section 9.3 of this manual.

Section 7: Using the 4724 Built-In Programmer

The 4724 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 4724's built-in programmer can be accessed using any 4660 series touchpad. Figure 4 (Section 7.6 of this manual) is a diagram of the built-in programmer's menu structure.

7.1 Entering Program Mode

To go into Program mode, press **1 1 TEST** followed by a valid code.

Code 0 (installer's code) is granted access to all system options. Other codes are granted access to 4 of the program areas 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.

NOTE *The factory programmed value for Code 0 (the installer's code) is "1234."*

Press the number of the menu that includes the options you wish to program. Press the **TEST** key. 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.

To exit the current menu, press the **MUTE** key once. To leave Program mode at any time, press **MUTE** twice, until you no longer see the scrolling key prompts.

NOTE *Do NOT follow the above procedure to program new secret codes for Code 0 and Code 1. Instead, press **7 TEST** (see Section 7.6 of this manual).*

7.2 Stepping Through the Program

By pressing the **TEST** key, 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 what 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.

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 what 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.

7.3 Programming the Options

For some options, the available choices are numbered and appear on the bottom line of the line display.

1. To program an option, type in the number of the desired choice. The top line of the touchpad display will show the new value.
2. For yes/no options, Press **0** for NO and **1** for YES.
3. Press the **TEST** key. The display will advance to the next option.

7.4 Correcting Errors

NOTE *If you have not touched the **TEST** key, you can correct an error by pressing **CLR**.*

The LCD will show 0 or the first choice. Type in the correct data, then press the **TEST** key.

If you begin to program the wrong option, and you have not yet pressed the **TEST** key, 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 of any option.*

7.5 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 momentarily show the option name, followed by numbered groups of symbols.

7.5.1 General Form

To enter text or characters, follow the procedure below, referring to Table 2.

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.

- Pressing the **STAT** key will erase the last character you typed.
 - Pressing the **BYPS** key will move the cursor to the right, entering a blank space after the last character you typed.
 - Pressing the **CLR** key will erase the text and place the cursor at the beginning of Line 1.
4. If you select the wrong group of letters when you press the first digit, press **MUTE** or **CLR** return to Step 2.

7.5.2 Hints for Use with the General Form

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., **TEST 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 into the keypad: type **7 3** for "#" and **8 0** for "*."

Table 2: Text and Characters

Second Digit →	...0	...1	...2	...3	...4	...5	...6	...7	...8	...9
First Digit ↓										
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.

7.5.3 Display Macros

There are several “macro” message characters that activate special displays that can 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 **28** on the touchpad.

Table 3: Display Macros, Defined

Macro	Function	Display	Width
\T	TIME	DAY HH:MM AM	9 + day field
\M	24 HR 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, READY12345678	(N/A)

Example:

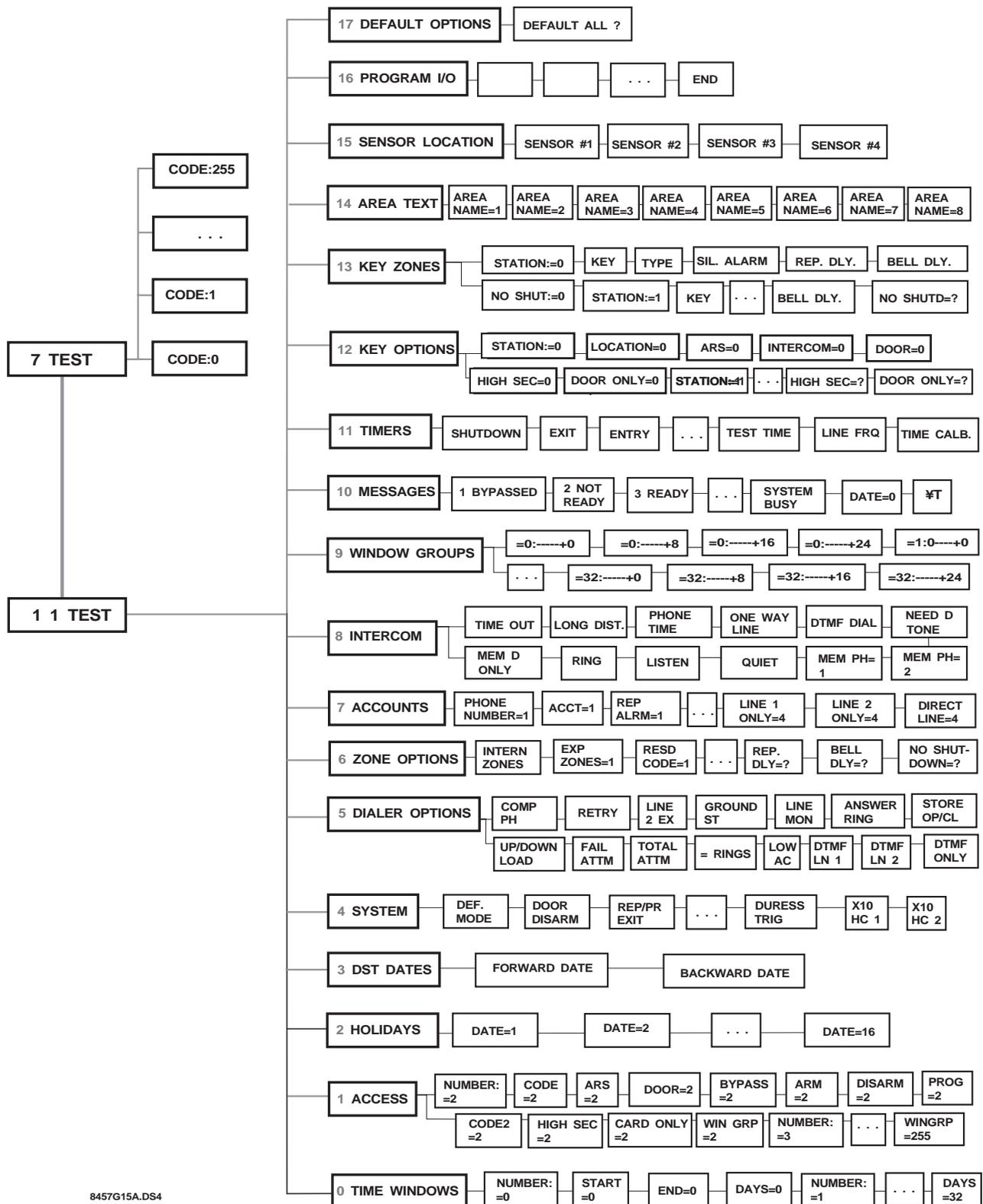
- To display ARMED with the armed areas on Line 1 of the LCD, enter **ARMED:\A** for System Message #57.
- To display DATE with the current date on Line 2, enter **DATE:\D** for System Message #58.

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

7.6 Programming Secret Codes

To access the Secret Codes Menu, press **7 TEST**, then enter Code 0. This menu is useful if you only want to change secret codes, without going through all the options in the Access Menu.

To reprogram Code 0 (installer's code) or Code 1 (main user's code), you must use this menu. These two codes cannot be changed in the Access Menu.



8457G15A.DS4

Figure 4: Built-In Programmer Menu Structure

Section 8: Programming Options Description

This section explains the options that can be programmed for the 4000 Series system when the Model 4724 Control Expander is installed. The options are listed here 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.

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

For example: If you select **NO** for the auto test option, the daily test, test day and test time options will not function.

NOTE *A. Before you begin programming, read through all options, locate your 4724 Programming Record (P/N 466-1495), and write down all selections you plan to make for all options. The procedure for using the built-in programmer is explained in Section 7 of this manual. Instructions for using the Model 5540 Downloading Software are in Section 9 of this manual.*

B. After installing the 4724, you must reprogram all the options, even if the options were previously programmed. This is because the 4720 EEPROM (electrically erasable programmable read-only memory), on which the options were originally programmed, is no longer used.

C. When the 4724 is installed, options can be programmed using the 4724'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 4724.

8.1 Time Windows (Menu 0)

The 4724 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 (Access, Menu 1).

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 2).

For auto-arming, there is a programmable delay period that 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 11).

These features replace the Normal/Special and Closed Days option previously used with the 4720. Time windows can be programmed by the user to provide optimum system flexibility.

NUMBER:#0

Select the time window to program.

START#0:00:00

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

Examples: "15:00" is "3:00 PM" in military time.

END#0:00:00

Type in the ending time for the window.

Example:

A time window could be "18:59-00:00."

NOTE *Time windows may cross midnight.*

DAYS#0:SMTWTFSH

Toggle between the digits 0-7, turning them on and off as necessary, to select the days the window will be active.

Examples:

1. If you want Time Window #0, which has been programmed to last from 7:00 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.
2. If you want Time Window #3, which has been programmed to last from 8:00 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.

NOTE *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.*

8.2 Access (Menu 1)

Access options and secret codes can be programmed by the user.

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

The secret codes for Code 0 and Code 1 are programmed in Test mode (see Section 7.6 of this manual).

NUMBER:#2

Select the access code you want to program options for. Enter the identifying number (Code 2, Code 3, etc.), not the secret code.

CODE#2:000000

Program the secret code for this access code. The code can be from four- to six-digits in length. If you will be using the high security code, it must be entered as the secret code for Access Code 255.

NOTE *Do not begin any codes with the same two digits that are used for the duress trigger. The duress trigger is programmed under System (Menu 4).*

ARS#2:12345678

Select the areas that this code may gain access by toggling the digits 1 through 8 on and off.

DOOR#2:YES

If this option is selected, this code will be able to gain access to doors (within the areas selected in the previous option).

Press **0** for NO or **1** for YES.

NOTE *The 4724 is not UL Listed for door access control.*

BYPASS#2:YES

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

ARM#2:YES

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

DISARM#2:YES

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

PROGRAM#2:YES

This option enables the code to be used to program the secret codes for user codes 2-255 and the user-programmable options (Time Windows, Holidays, Access options) and daylight savings time adjust dates.

CODE2#2:NO

When this option is selected, the code becomes a restricted code, for use by guests, baby-sitters, and other temporary system 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#2:NO

When this option is selected, the code becomes a high security code, which will require the high security code for door access. The high security code (Code 255) is entered on the touchpad after the primary code.

CARD ONLY#2:NO

The Card Only option allows a person to gain access to a door only by a card, not by a touchpad.

WIN GRP#2:32

Select the time window group (programmed in Window Groups, Menu 9) during which each access code can be used.

- To make it possible to use a particular code all the time, select “always” (**3 2**).
- To make it impossible to use a particular code at any time (for example, because the card has been lost) select “never” (**3 3**).

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 PM on Saturdays (Time Windows, Menu 0). Then, suppose you have assigned Windows #1 and #2 to Window Group #4 (Window Groups, Menu 9).

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 PM on Saturdays, then select **Error!** for the WIN GRP option. Any group can be assigned to any code and to more than one code. A code can be assigned to only one window group.

8.3 Holidays (Menu 2)

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

Example: The New Year's Day holiday would be entered as "0101."

DATE#1:01/01

Type 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

Type in the month and day you want to assign as the second holiday. Use leading zeros before single-digit data.

8.4 Daylight Savings Time (DST) Dates (Menu 3)

The daylight savings time (DST) adjustment dates can be programmed by the user. Adjustments occur at 2:00 AM on the specified date.

FWD DATE:00/00

Type in the month and day when you want the time to automatically be set one hour forward for the spring daylight savings time adjustment.

BACK DATE:00/00

Type in the month and day when you want the time to automatically be set one hour back for the fall daylight savings time adjustment.

NOTE *To disable holidays or DST dates, enter 00/00 for the date.*

8.5 System (Menu 4)

8.5.1 DEF. MODE:FORCE (Default Mode)

This option is used to determine what the system will do when it times out of the Program mode. This would occur after power has been lost, then restored to the panel, if no one is present to control the system. Type in the number shown beside the desired selection in Table 4.

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 the Default Time mode.

NOTE *For Revision H (or later) of the 4724: To ensure that your Default mode selection takes effect, you must select areas using the Auto Open/Close option in the Area Options Menu (Menu 16). See Section 5.1.3 of this manual for more information about programming auto open/close areas.*

Table 4: Default Mode Selection

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 unit will also generate a Close Report.
3	The unit 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.

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 (Access, Menu 1).*

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 (see Section 5.7 of this manual), door access events will be printed and reported to the central station.*

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 system users. When the dialer is disabled there is no battery or AC detection.

PRINTER:NO

Select this option if you are using a Model 5255 On-Site Printer or 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/Speakerphone.

AUX CONTROL:NO

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

SPLIT ARM:NO

This option must be selected in order for the Area Control features to operate.

NOTE *With Revision H (or later) of the 4724, this option must also be selected if the system uses auto open/close areas. See Section 5.1 of this manual if you need more information.*

ARM MENU (Revision H)

This causes the Interactive Arm Menu, which is 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 4724 will generate a "CF" (Forced Closing) Report.

NOTE *Since force arming may automatically cause zones to be bypassed, the Auto Bypass 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 this option is selected, the interior zones will automatically be enabled when the panel is armed. The system will not arm, unless the interior zones are ready. If the interior zones are subsequently turned off by the user, a Forced Close Report will be generated.

EXIT BEEPS:NO

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

SIL NGHT TRB:NO (Silent Night Trouble)

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

KEY BEEP 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 automatically bypasses any zone that generates four alarms within a specified time period (programmed in Timers, Menu 11).

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 unbyypass 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 unbyypass a zone without first entering an access code, even if the panel is disarmed.

ACCESS WINDW:NO

If this option is selected all access codes are restricted to the time windows that have been assigned to them (Access, Menu 1). Selecting **NO** disables all time restrictions.

If you will be using access windows, see Section 8.1 of this manual. The access windows restrict all functions that require an access code to certain times and days.

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 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 Report or Close Trouble Report to the central station if the user fails to arm or disarm during a specified time window.

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.

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.)

AUTO DUMP CS:NO

Select **NO**. This option is not available. The 5540 Downloading Software must be used to dump event memory to the central station (see Section 6 and Section 9 of this manual).

SPLIT BYPS:NO

Codes 2 through 144 can bypass only their corresponding zones. (Code 2 can bypass only Zone 2; Code 3 can bypass only Zone 3, etc.)

NOTE *Exception: Code 0 and Code 1 can bypass all zones regardless of how this option is programmed.*

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.

NOTE *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 can 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. For more information on this topic, please see the *Model 4720 Installation Manual* (P/N 150476).

NOTE *A. Touchpads must be supervised to be fully functional.
B. 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 is restored, instead of waiting for the shutdown time.

DURESS:NO

This option allows the use of the Duress feature of the 4724. 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.

NOTE *The digits entered cannot be the same as the beginning digits of any access code.*

HIDE CODES:NO

If this option is enabled, system 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 Code 2 through Code 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 4724-2, Revision J2 [or later].)

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:NO

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

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 *A. UL installations must NOT select the above option.
B. If you are using auto open/close in a multi-area system, see Section 5.1.3 of this manual for more information.*

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).

NOTE *For both AUTO CLOSE and AUTO OPEN, there must be at least a one-minute break between the end of one Auto Close (Open) Time Window and the beginning of the next one. Otherwise, the system will not arm (disarm), until the end of the second time window.*

If you are using auto open/close in a multi-area system, see Sections 5.1 and 11.1 of this manual for more information.

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, 7:00-8:00 AM

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

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

Time Window #6— Saturday, 10:00-11:00 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 Time 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 Time Window #4).

Time Window #5) the system will NOT disarm automatically, because another time window (Time Window #6) in the open window group follows immediately. If the system has not been disarmed manually by 11:00 AM (end of Time Window #6), it will disarm automatically at that time.

AUTO NO FRC:NO (4)

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

OP WIN GRP:32

This option makes it possible to have more than one opening period in a day using Revision A-G software. See Menu 14 for Revision H information.

NOTE *Revision A-G: Select the window group during which the system can be disarmed. At the end of this time period, the system will automatically disarm (open)*

1) if it has not already been disarmed by a user and

2) if AUTO OPEN has been enabled (see Section 5.4 of this manual).

Revision H: The option is retained here for programmable I/O compatibility. This option is not used on Revision H software. It is replaced by a similar option for each area in Menu 14. OP WIN GRP controls bit OPGRP in the programmable I/O. CL WIN GRP controls CLGRP.

CL WIN GRP:32

This option makes it possible to have more than one closing period in a day using Revision A-G software. See Menu 14 for Revision H information.

NOTE *Revision A-G: For this option, select the window group during which the system can be armed. At the end of this time period, the system will automatically arm (close), if it is not already armed by a user and if Auto Close is enabled (see Sections 5.1 and 11.1 of this manual). If arm the delay is programmed to be greater than 0, the arm delay begins at the end of the close window group.*

Revision H: The option is retained here for programmable I/O compatibility. This option is not used on Revision H software. It is replaced by a similar option for each area in Menu 14. OP WIN GRP controls bit OPGRP in the programmable I/O. CL WIN GRP controls CLGRP.

AREAS:-----

Choose areas that can auto open/close.

NOTE *In Revision H, the above item is moved to Menu 14, Area options.*

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 letters in Table 5.

The house code you select should be different from those of any other X-10 Modules that are 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 5: 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.)

HOLDUP RSTR:NO

Select **YES** to have holdup zones send restores to the central monitoring station.

SEP RESTORES:NO

Select **YES** to separate trouble and alarm restores. Select **NO** to send any restore to the central monitoring station

FIRE PRIORITY:NO

Select **YES** to have fire alarms sent first to the central monitoring station.

8.6 Dialer (Menu 5)

COMP PH

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

If a pause is needed, such as after dialing “1” for a long distance number, enter “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 “D” (**0 4**) after the digit to establish the outside line. The procedure for entering alphabetic and other characters is explained in Section 7.5 of this manual.

NOTE *The # and * keys can be used: type **73** for “#” and **80** for “*.”*

Example:

If you must dial “9” before being able to dial 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.

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:10

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 Sand REP. ALL O/C, the armed panel will answer after fewer rings, four fewer than the programmed number (see note below).

NOTE *The panel will not answer until 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.

8.7 Zone Options (Menu 6)

INTERN ZONES:16

Enter the number of internal zones used (internal zones are those that are built into the Model 4720 panel). This will let the system know where to start the expansion zones.

EXP ZONES#1:0

Enter the number of zones used on Expander #1.

RESD CODE#1:0123

Follow this step only if you are using an obsolete Silent Knight RF Zone Expander. 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. (For more information, see the section on expansion zones in the *4720 Installation Manual* (P/N 150476).)

NOTE *Skip this step if you are NOT using an obsolete Silent Knight RF zone expander.*

EXP ZONES#2:0

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

RESID CODE#2:0223

Follow this step only if you are using an obsolete Silent Knight RF Zone Expander. If Zone Expander #2 is an RF zone expander, enter its residence code.

NOTE *Skip this step if you are NOT using an obsolete Silent Knight RF zone expander.*

ZONE:#1

Select the zone you want to reprogram.

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.

24HR TRBL#1:NO

Select this option for any zone that will be supervised 24 hours a day, such as a fire zones (all supervised zones require a 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. If you select DAY TRBL for a zone, you must also select N.C. for that zone.

NOTE *Do NOT pick both 24 HR TRBL and DAY TRBL*

N.C.#1:NO

Select this option if the zone will be using normally closed contacts.

NOTE *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

Use this option if necessary per instructions in the *4115 Serial Zone Expander Installation Manual* (P/N 150648). Also select this option for N.O. or N.C. 4126 (or 4125) zones not using an end-of-line (EOL) resistor.

SPEED#1:06s

This option determines the speed at which the zone will respond to an alarm or trouble condition. Select the number shown next to the desired zone response speed in Table 6. Select also for N.O. or N.C. 4126 (or 4125) zones not using an end-of-line resistor.

Table 6: Loop Response Times

Selection	Loop Response Time
0	0.01 second
1	0.06 second
2	1.00 second
3	10.0 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#1:NO

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

ENTRY2#1: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.

NOTE *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

Type 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 Table 7.

Table 7: Zone Types

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

NOTE ¹ These zones will be displayed as *AUXILIARY* on the LCD. If *LOCAL* is selected, the panel will not dial out.

² 12 (Unused) can be selected to create a zone that does not cause an alarm. Do NOT select 14 or 15 as zone type. They are there to allow additional zone types to be made available in the future.

³ Zone type 6 was changed from "Gas" to "Supervisory" with Revision J of the 4724-2 control software.

LOCATION#1

For this option, enter the location description of Zone #1, such as "bedroom." You may use any description that you want, but the description must not be more than 16-characters in length (including spaces). See Section 7.5 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 ALM*.

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 11).

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 that you will program for options. The options will repeat for all 144 zones.

8.8 Accounts (Menu 7)

ACCOUNT:#1(1-4)

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

PHONE NUMBER#1:

Enter Phone #1, up to 16-digits. Enter "A" (01) for a pause. Enter "D" (04) for a second dial tone. Press 6 before each digit of the phone number. (See Section 8.5 of this manual for an example.)

ACCT#1:000000

Enter the digits for the account number (six-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 bypassed (shunted) zones to be reported to Phone #1.

REP RSTR#1

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 Reports and Exceptional Open Until 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 and event memory information to be reported to Phone #1.

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

From Table 8, select the digit next to the format that Account #1 will use. The compatible Regency receivers are also below.

Table 8: Reporting Formats

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

NOTE *A. SIA8 and SIA20 are the only formats that can report event memory and zone numbers higher than 99.*

B. Do not select SIA20 unless the receiver has a 9004I card. The 9004 card can only accept SIA8 (formerly SEA8).

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 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 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 (formerly SEIA) format (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.*

8.9 Intercom (Menu 8)

Skip this menu if you are NOT using the Model 4140 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 can 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 is automatically 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 Telephone 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

Toggle the digits 1-8 on and off to select the intercom/telephone stations (1-8) where the telephone will ring when there is an incoming call.

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).

8.10 Window Groups (Menu 9)

Any of the 32 available time windows can be assigned, in any combination, to any of the 32 available window groups. The 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 windows to Window Group #1 following the same procedure as in the previous four options.

8.11 Messages (Menu 10)

These messages have been placed in the EEPROM (electrically erasable programmable read-only memory) chip as default values. Section 7.5 of this manual explains how to enter text and other characters, if you wish to change the messages. Table 9 shows the factory programmed messages.

System messages 57 and 58 are the normal display on all the touchpads. These two messages, one for Line 1 and one for Line 2 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.

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

Table 9: Factory Programmed Messages

Message #	Message	Message #	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	INSTANT	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 (See note.)

NOTE Characters preceded by ¥ are “display macros” (see Section 7.5 of this manual).
¥D causes the actual date to be displayed as part of the message.
¥T causes the time to be displayed.
When using the 5540 Downloading Software, “\” replaces the “¥” character.

8.12 Timers (Menu 11)

SHUTDWN: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 BYPS:4h

Enter (in hours) the length of the swinger window (1-24). If the SWINGER BYPS option has been selected (System, Menu 4), 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 (in hours) the supervision interval (2-24).

Example:

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

DOOR STRK:6 .8s

In this step, you will program the length of time that the doorstrike stays activated (0.8-12 seconds). The display will always show “.8” to indicate that the programmed length of time is 0.8 seconds *times* the number you select. 4660 series touchpads use one second timers.

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.*

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 Types (Menu 6).

SMOKE RST:2s

Enter the number of seconds the smoke detector power is turned on 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 Arm Menu 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 Arm Menu.

ARM DELAY:0m

Enter (in minutes) the length of the delay (0-255) 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 what day of the week the system will send a Test Report to the central station. Enter the number next to the appropriate day in Table 10. Note that only one day can be selected as a test day. However, to send a test every day of the week, select "8" (daily).

Table 10: Test Day Choices

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

TEST TIME:00:00

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

Example: "6:00 PM" is "18:00" in military time.

LINE FRQ:60

Enter the power line frequency 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 USA and 50 Hz in Europe.*

TIME CALB.

This option is used to calibrate real time. It has been preprogrammed at the factory to be 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 RTCAL option of the built-in programmer (Menu 11) to adjust.

NOTE *RTCAL is not in the menu for the 5540 downloading software.*

1. To calibrate RTCAL, 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 second 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 RTCAL.
4. If the clock is slow (loses time), add the adjustment factor to RTCAL.
5. If the resulting number is less than zero, add 256 to get the new value for RTCAL. If the resulting number is greater than 255, subtract 256 to get the new value for RTCAL.

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).

8.13 Key Options (Menu 12)

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 7.5 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 the Door option on an intercom station, as this would disable the TEL key.*

DOOR#1:NO

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

NOTE *On some touchpad models, the Door and Intercom options 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).

8.14 Key Zones (Menu 13)

STATION:#0

Select the touchpad for which the panic key zones are to be programmed (0-15 touchpads).

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

KEY:UNUSED

Select the panic key for which you want to program options. Although the display shows KEY:UNUSED there is no “unused” key. Instead, 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 Table 12.

Table 11: Loop Response Times

Selection #	Loop Response Time
0	0.01 seconds
1	0.06 seconds
2	1.0 second
3	10.0 seconds

Table 12: Zone Types

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

NOTE ¹ These zones will be displayed as *AUXILIARY* on the LCD. If *LOCAL* is selected, the panel will not dial out.

² 12 (*UNUSED*) can be selected to create a zone that does not cause an alarm. Do **NOT** select 14 or 15 as zone type. They are there to allow additional zone types to be made available in the future.

³ Zone Type 6 was changed from "Gas" to "Supervisory" with Revision J of the 4724-2 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 11).

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.

8.15 Area Options (Menu 14)

Revision H Options

AUTO OC:- - - - -

Enter areas that will be either Auto Open or Auto Close. If you use this option, you must also enable the Split Arm feature (System Options, Menu 4). This will ensure proper Default mode operation. See Section 5.1.3 of this manual for more information about programming auto open/close areas.

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 6.) The factory programmed default names are A1 - A8.

OP WIN GRP #1

Select the window group number (programmed in Menu 9) 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.

8.16 Sensor Locations (Menu 15)

SENSOR#1:

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

8.17 Programmable I/O Statements (Menu 16)

The 4724'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.

Sections 8 and 9 of this manual provide you with basic information on how to use the I/O Programming feature. Regency's *4724 I/O Application Programming Manual* provides more in-depth instructions. To order the manual contact ITI's Order Entry at 800-777-4841.

NOTE *It is easier to Program the I/O statements using the Model 5540 Downloading Software (Section 9.5.2 of this manual). Because it may sometimes be useful to program them with may built-in programmer, the procedure is explained below. Section 9.5.1 of this manual explains 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 4724 memory, saving it in a temporary location (STACK), then PUTting it into a 4724 output buffer. The 4724 has room for a maximum of 127 GET and PUT statements. The factory programmed default program is shown in Section 8.17 of this manual.

Each program step consists of a combination of GET, PUT, and sometimes other types of statements, the net effect is ...

- to place a bit (or group of eight bits) on top of the stack and
- to take a bit of the stack, so the stack is empty when it reaches the END statement.

The step may contain an even number of GET and PUT statements, as the following example demonstrates.

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 is 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 4724 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 4724 memory address that determines whether the X-10 Module will turn on or off. (If the bit =0, the X-10 Module will be turned off. If the bit = 1 the X-10 Module will turn on.)

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

In this case, there can 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 15, "Default I/O Program," located later in this section).

The 4724 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.

8.17.1 Stepping Through the I/O Program

When you enter programmable I/O statements (Menu 16), 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 4724 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**.

8.17.2 Program Operations

The 21 program operations are listed in Table 13, along with the functions they perform.

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

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

To select an operation, key is the number shown beside the operation on the display, then press the **TEST** key. 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 14, "Status and Port Addresses," located later in this section.

Table 13: Programmable Statement Options

Operation	What it does...	Screen Prompt	Additional Info Needed
1:AND	Performs the AND operation on 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 resulting sum on the 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 the 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.	Next statement in program	None.
8:EQU	Takes eight status bits that are grouped together from the 4724's memory and place them on top of the stack. NOTE <i>This group of eight bits constitutes a single item on the stack.</i>	Next statement in program	None.
9:GET1	Takes a single status bit from the 4724's memory and places it on top of the stack.	\$@0000	The address of the group of eight status bits in the 4724's memory.
		BIT#(0-7):0	The single bit to get.
10:GET8	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.	\$@0000	The address of the group of eight status bits in the 4724'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 and...	\$@0000	None 8-bit output address to which the bit is to be transferred.
	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 bit is 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.

Table 13: Programmable Statement Options

Operation	What it does...	Screen Prompt	Additional Info Needed
16:Greater than	True/false result of comparison.	Next statement in program	None.
17:Less than	True/false result of comparison.	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 numbers.	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 14: Status and Port Addresses

Name	Address.Point	Operations	Functions
AARMED[1-8]	@\$BO-7.0	GET1	Area armed
ACCAREA	@\$616.	GET1	Last group of areas granted door access
ACHIME[1-8]	@\$B0-7.3	GET1	Area chime activated
ACODE2[1-8]	@\$BO-7.4	GET1	Area CODE2 activated
AENTRY[1-8]	@\$B8-F.1	GET1	Area entry activated
AEXIT[1-8]	@\$B8-F.0	GET1	Area exit activated
AINST[1-8]	@\$B0-7.2	GET1	Area instant activated
ALMAREA.0-.7	@\$79.0-7	GET1, GET8	Area in alarm
AREADY[1-8]	@\$BO-7.1	GET1	Area zones ready
ABYPASS[1-8]	@\$BO-7.5	GET1	Area zones bypassed
ATROUBLE[1-8]	@\$BO-7.6	GET1	Area zone trouble
AUDALM	@\$27.7	GET1	Audible alarm
AUDAREA.0-.7	@\$78.0-7	GET1, GET8	Area audible alarm
AUXALM	@\$26.1	GET1	Aux. alarm activated
AUXRLY.0-.7	@\$6D.0-7	GET1, GET8	4150 relay status
AZONES[1-18].0-.7	@\$40a-\$41B.0-7	GET1, GET8	Armed zones
BYPASS	@\$25.5	GET1	Global zones bypassed
CLGRP	@\$1A.5	GET1	Close time window group
DACT	@\$68.2	GET1	Dialer active
DOOR80.0-.7	@\$18.0-7	GET1, GET8	Toggle with 1-8 door
DOOROPEN [0-15]	@\$491-\$4A0.2	GET1	Touchpad door open
DOORRLY [0-15]	@\$491.7 -4A0.7	GET1, PUT1	4660C/4433/4420 touchpad relay status
DOORSUPR[0-15]	@\$491-\$4A0.1	GET1	Touchpad door trouble
DURESS	@\$26.6	GET1	Duress alarm
EMER	@\$2A.1	GET1	Emergency alarm
EXEC	@\$3F.0	GET1	IF/THEN control bit
EXTBELL	@\$29.3	GET1	External bell active
FIRE	@\$28.0	GET1	Fire alarm
HLDAY	@\$2A.0	GET1	Holiday
HZNC[1-18].0-.7	@\$2FC-\$30D.0-7	GET1, GET8	Zone high threshold trip
ICALL	@\$617.	GET8	Station # for intercom call
ICOM	@\$6C.0	GET1	Intercom active
INTBELL	@\$29.2	GET1	Internal bell active
INTRU	@\$28.2	GET1	Intrusion alarm
IRDY	@\$24.0	GET1	Zones all ready

Table 14: Status and Port Addresses

Name	Address.Point	Operations	Functions
IZONES[1 -18].0-7	@\$41C-\$42D.0-7	GET1, GET8	Interior bypassed zones
KEYSUPR[0-15]	@\$491-\$4A0.0	GET1	Touchpad supervision
LISTEN	@\$68.3	GET1	Listen in active
LOWBAT[1-18].0-7	@\$3F8-\$409.0-7	GET1	Zones low battery
LZNC[1-18].0-7	@\$2EA-\$2FB.0-7	GET1, GET8	Zones low threshold trip
MDAY	@\$7	GET8	Day of month (1-31)
MONTH	@\$6	GET8	Month (1-12)
OPGRP	@\$1A.4	GET1	Open time window group
P1SEC	@\$5.4	GET1	One-second pulse
P500MS	@\$5.3	GET1	Half-second pulse
PAPOUT	@\$69.0	GET1	Printer out of paper
PASS1	@\$74.5	GET1	True for one pass of I/O prog. each sec.
PASS10	@\$74.6	GET1	True for one pass of I/O prog. every 10 secs.
PASS60	@\$74.7	GET1	True for one pass of I/O prog. each min.
PHONE	@\$6C.1	GET1	4140 Phone mode
REPORT	@\$27.1	GET1	Reporting
RLY[1]	@\$8E.0-7	GET1/PUT1,8	4180 Outputs Unit 1, P2
RLY[2]	@\$8F.0 7	GET1/PUT1,8	4180 Outputs Unit 1, P3
RLY[3]	@\$90.0-7	GET1/PUT1,8	4184 Outputs Unit 2, P2
RLY[4]	@\$91.0-7	GET1/PUT1,8	4184 Outputs Unit 2, P3
SCR[0-7]	@\$4B8-\$4BF.0-7	GET1/PUT1,8	Scratch locations (See note)
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	GET/PUT1	Output on 4720 Term 15
TER16	@\$EE.3	GET/PUT1	Output on 4720 Term 16
TER18	@\$12.2	GET/PUT1	Output on 4720 Term 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]	@\$481-\$490	GET8	Touchpad door open timer
TREE	@\$75.7	GET1	EEPROM trouble
TROUBL	@\$26.3	GET1	Any trouble
TSEC	@\$4	GET8	Second of day (0-\$59)

Table 14: Status and Port Addresses

Name	Address.Point	Operations	Functions
TSHUT	@\$F	GET8	Bell shutdown timer
TSMOKE	@\$C	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
WGRPSTAT[1-4].0-7	@\$60A.0-7 - 60D.0-7	GET1, GET8	Window group status
X10[1]	@\$9D.0-7	GET/PUT1,8	X-10 output for House Code 1, 1-8
X10[2]	@\$9E.0-7	GET/PUT1,8	X-10 output for House Code 1, 9-16
X10[3]	@\$9F.0-7	GET/PUT1,8	X-10 output for House Code 2, 1-8
X10[4]	@\$A0.0-7	GET/PUT1,8	X-10 output for House Code 2, 9-16
ZALM[1-18].0-7	@\$28C-\$29D.0-7	GET1, GET8	X-10 output for House Code 2, 9-16
ZMEN[1-18].0-7	@\$30E-\$31F.0-7	GET1, GET8	Zone alarm memory
ZONETR	@\$24.1	GET1	Global zones in trouble
ZBYPASS[1-18].0-7	@\$27A-\$28B.0-7	GET1, GET8	Zones bypassed
ZTR[1-18].0-7	@\$268-\$279.0-7	GET1, GET8	Zones in trouble

NOTE Scratch locations can be used as counters or as places to save temporary results in a program.

8.17.3 Changing the Program

Inserting a New Statement

- To insert a new statement before the current statement press the **CLR** key.
- Line 1 will show the SELECT OP:END. Line 2 will show the 21 available operations (see Table 15, Default I/O Program). Press the number that goes with the desired operation, then press the **TEST** key.
- 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.
- Press the **MUTE** key 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 4724 to obtain customized status outputs.

Examples:

- The following statement will cause Terminal 15 on the 4720 to produce an active low output whenever there is a fire area alarm in any area:
GET1 @\$28.0, PUT1 @\$\$E. 4

- 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 @\$\$E.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

4. The following example demonstrates using 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 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.

8.17.4 Leaving the I/O Program

To exit the Programmable/Statements Menu, follow the following procedure:

- Press the **MUTE** key. The display will show SAVE:NO.
- To exit without saving the changes, just press the **TEST** key.
- If you wish to save the changes to the EEPROM (electrically erasable programmable read-only memory), press **1** for “SAVE TEST,” then press the **TEST** key.

8.17.5 Factory Programmed Default I/O Program

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

Table 15: Default I/O Program

Number	Statement	Effect	
1	GET1 @\$B0.0	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.	
2	PUT1 @\$8E.0		
3	GET1 @\$B1.0		
4	PUT1 @\$8E.1		
5	GET1 @\$B2.0		
6	PUT1 @\$8E.2		
7	GET1 @\$B3.0		
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 @\$B7.0		
16	PUT1 @\$8E.7		
17	GET1 @\$28.0	Fire alarm condition activates the first output on 4180 Unit 1, P3.	
18	PUT1 @\$8F.0		
19	GET1 @\$2A.1	Emergency alarm condition activates the second output on 4180 Unit 1, P3.	
20	PUT1 @\$8F.1		
21	GET1 @\$28.2	Intrusion alarm condition activates the third output on 4180 Unit 1, P3.	
22	PUT1 @\$8F.2		
23	GET1 @\$26.6	Duress alarm condition activates the fourth output on 4180 Unit 1, P3.	
24	PUT1 @\$8F.3		
25	GET8 @\$8E	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, P3.	
26	GETC 0		
27	EQU		
28	PUT1 @\$8F.4		
29	GET1 @\$27.7	Get the number of the current alarm type. Get the value 0 (zero). Compare the alarm condition with 0. Turn on the output if alarm condition is not 0.	
30	GETC 0		
31	EQU		
32	NOT		
33	PUT1 @\$8F.50		
34	GET1 @\$26.1	Auxiliary alarm activates the seventh output on 4180, Unit 1, P3.	
35	PUT1 @\$8F.6		
36	GET1 @\$26.3	Any trouble condition activates the eighth output on 4180, Unit 1, P3.	
37	PUT1 @\$8F.1		
38	GET8 @\$028C	Alarm condition on any of zones 1-8 activates the corresponding 1 of 8 output on 4180, Unit 2, P2.	
39	PUT8 @\$90		
40	GET8 @\$028D	Alarm condition on any of zones 9-16 activates the corresponding 1 of 8 output on 4180, Unit 2, P3.	
41	PUT8 @\$91		
42	GET8 @\$A6	\ 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	
43	PUT8 @\$9D		
44	GET8 @\$A7		
45	PUT8 @\$9E		
46	GET8 @\$A8		
47	PUT8 @\$9F		
48	GET8 @\$A9		
49	PUT8 @\$A0		
50	END		

8.18 Default Options (Menu 17)

DEFAULT ALL?

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

WARNING! This will return all options to their factory-programmed default values.

8.19 Code 0 and Code 1

NOTE *The secret codes for Codes 0 (installer's code) and Code 1 (main user's code) are programmed in a separate menu and are NOT part of the 1 1 TEST menu structure. See Section 7.6 of this manual for instructions on programming these codes.*

Section 9: 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 Section Manual* (P/N 150481) of the *Model 4720 Installation Manual* (P/N 150476).

NOTE *Software Revision 3.1 is required of downloading.*

- **Initial Downloads**—During factory programming, the Answer Ring option was selected (Dialer, Menu 5). 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 (electrically erasable programmable read-only memory) 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.

9.1 Starting and Ending

1. If you have just powered up the computer, enter the word **MODEM** at the DOS prompt. OR- If this has been done since the computer was turned on, enter the word **PANEL** at the DOS prompt.
2. Then enter your user name and password when the prompts direct you to do so.
3. The Panel Interface Menu will appear on the screen.
4. 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.

9.2 Viewing Status

Status mode is used to view the status of the 4724 and to control as you would from an on-site touchpad. The Status mode for the 4724 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 **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 of the touchpad. Press the appropriate keys to accomplish the desired functions.

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 the **ENTER** key 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.

Examples:

Zone status: Press **N** and the **ENTER** key to display *not* ready zones. The zones are displayed along with their location text and area one at a time.

Set time:

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

ESC programmer:

1. Press **1 TEST**, then enter Code 0.
2. 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 7.5 of this manual), press the **F1** function key on the computer.
3. The display F1:ASCII will change from black to red.
4. Now type in the letters you want to program and press the **ENTER** key. The letters will be entered directly into the display.
5. Press **F1** again to return to the Normal Key mode. F1:ASCII must be off to emulate the **TEST** key and other functions.
6. When the **C** key is pressed to terminate Status mode, the system will return to normal operation.

9.3 Uploading Event Memory

1. 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.
2. 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.
3. Initiate an upload, either by dialing the panel from the computer or by having someone press **4 TEST** on a touchpad at the account section
4. Select **C** to save the upload, then enter the account number to be saved.

NOTE *Event information will be saved under a file name consisting of the account number with the extension “.EVT” on the end.*

NOTE *The 4724's event memory is NOT cleared when the information is uploaded.*

9.4 Programming Procedure

Figure 4 (located after Section 7.6 of this manual) is a diagram of 5540 menu structure. For instructions on programming auxiliary device outputs using the 5540 software, see Section 9.5 of this manual.

9.4.1 Reprogramming the Options

1. When the Panel Interface Menu appears, press the **A** key 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.
4. After you have reprogrammed all the options, press **ESC** again. Then follow the screen prompts to save and download the new data.
5. 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.

9.4.2 Printing the Options

To print the data from a particular options menu, go to the menu and press the **0** key.

9.4.3 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.

1. On the 4724 panel menu, select **E**, then follow the prompts to upload the data from the 4724 to your computer.
2. To view the uploaded data, select **B** on the 4724 panel menu.
3. To save the uploaded data, select **C** on the menu.

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

9.5 Programming the I/O Statements

9.5.1 What the I/O Statements Do

NOTE *It is easier to program I/O statements using the Model 5440 Downloading Software. Because it may sometimes be useful to program have program them with the built-in programmer, the procedure is explained in Section 8.17 of this manual.*

The 4724'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. Figure 5 shows the I/O programming software in relation to the programmable output devices.

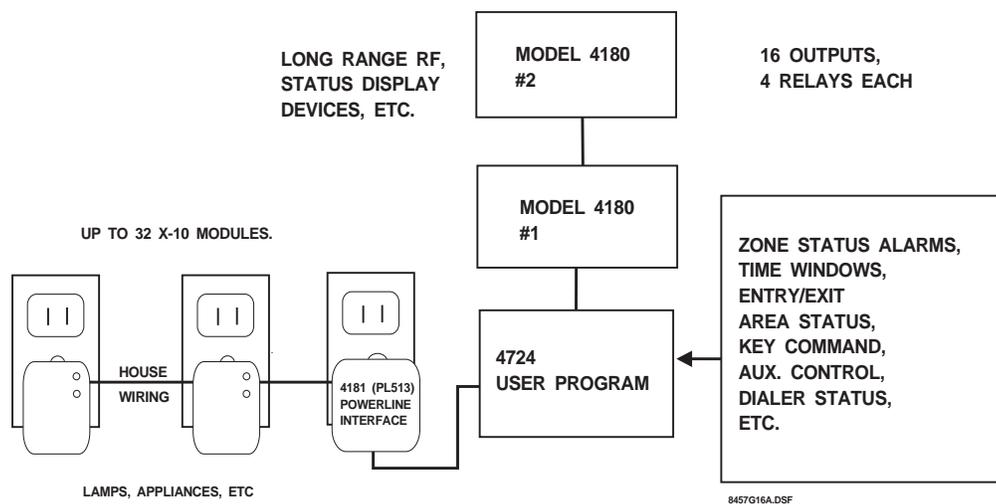


Figure 5: Auxiliary Devices

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 sink current when activated (negative voltage, -12 VDC, 50 mA maximum). Terminal 18 functions as a current source when activated (positive voltage; +12 VDC, 20 mA maximum). Figure 6 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.*

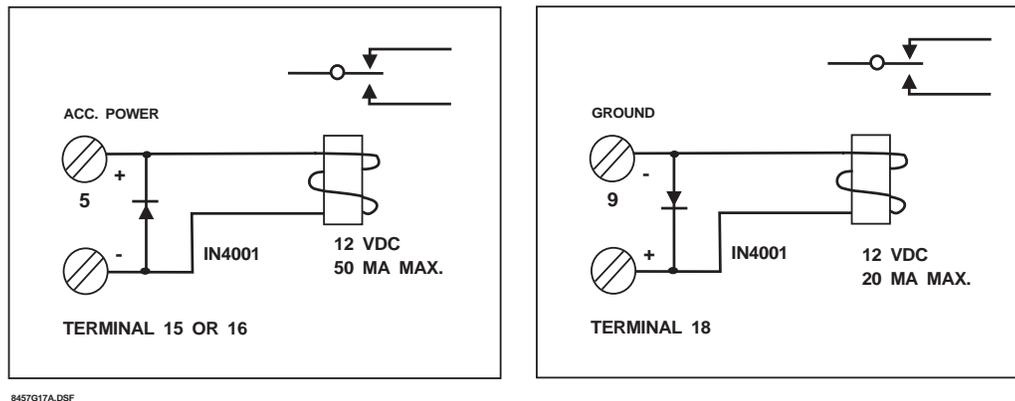


Figure 6: Connections to Terminals 15, 16, and 18

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 16, "Output Designations," (Section 9.5 of this manual) show which relay label identifies each output
3. **X-10-Compatible Modules.** The 4724 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. The fourth section of Table 19 (later in this section) shows which X-10 label refers to each X-10 Module.

Example:

If one of the 4180 Status Display Relays were connected to a 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 16.

The 5540 software and built-in programmer are also capable of using arithmetic operators. These operators are included in the "Arithmetic Operators" table below:

Table 16: 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 17: Arithmetic Operators

Operator	Numerical Output Generated the Result of...
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).
BIN(A)	Conversion of number from BCD (binary code decimal) to binary. (Use to convert TSEC, TMIN, THR, MONTH, MDAY to binary before comparison.).
BCD (A)	Conversion of binary number to BCD.
BIT(A)	Conversion of number (0-7) to bit in byte.

Examples:

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 indicates the high temperature trip point is exceeded (Condition A), another 4150 signal indicates the high humidity trip point is exceeded (Condition B), or it both signals are received.
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).

9.5.2 I/O Programming Procedure-5540 Software

To program the I/O using the 5540 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 of...

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 16 and 17.

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 20, "Programmable I/O Status Labels (Read Only)."

Some labels include a number in brackets []. This specifies one of the following:

- 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 reset Tables 18 and 19 by the word BITS. To access only one of the eight bits, type in a . (period character) after the label, followed by a digit from **0** to **7**.

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

Examples:

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.

2. **1 RLY[4].7 = AZONES[18].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[18].5 refers to the armed status of the sixth zone (.5) of the zone group to which [18] has been assigned (Zones 137 - 144)—in other words, Zone 142. Table 19, “Output Designations,” shows which zones are assigned to each bracketed number.
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 18: Programmable I/O Output Labels (Read/Write)¹

Label ²	Data Type	Function
RLY [4]	BITS	4180 Status Relays
TER16	BIT	Output on Terminal 16
TER15	BIT	Output on Terminal 15
TER18	BIT	Output on Terminal 18
X10[4]	BITS	X-10 output bits
SCR[8]	NUMBER, BITS	User scratch area
<p>NOTE 1. An output can be generated (written-left side of if as a result) in 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 in brackets [] indicates how many devices or components of this type available.</p>		

Table 19: Output Designations

Label	Function
RLY[1]	Outputs on 4180 Module 1, Connector P2
RLY[2]	Outputs on 4180 Module 1, Connector P3
RL [3]	Outputs on 4180 Module 2, Connector P2
RLY[4]	Outputs on 4180 Module 2, Connector P3
RLY[1].0	Outputs on 4180 Module 2, Connector P2, Pin 8
RLY[1].1	Outputs on 4180 Module 2, Connector P2, Pin 7
...	
RLY[1].7	Outputs on 4810 Module 1, Connector P2, Pin 1
RLY[2].0	Outputs on 4180 Module 1, Connector P3, Pin 8
RLY[2].1	Outputs on 4180 Module 1, Connector P3, Pin 7

Table 19: Output Designations

Label	Function
...	
RLY[2].7	Output on 4180 Module 1, Connector P3, Pin 1
TER15	Active low output sink on Terminal 15 of the 4720 panel (50 mA)
TER16	Active low output sink on Terminal 15 of the 4720 panel (50 mA)
TER18	High output source on Terminal 18 of the 4720 panel (20 mA)- supplies 12 VDC when turned on
X10[1]	Outputs to X-10 Modules 1-8 of House Code 1
X10[1].0	Outputs to X-10 Modules 1 of House Code 1
X10[1].1	Outputs to X-10 Modules 2 of House Code 1
...	
X10[2]	Outputs to X-10 Modules 9-16 of House Code 1
X10[3]	Outputs to X-10 Modules 1-8 of House Code 2
X10[4]	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 20: Programmable I/O Status Labels (Read-Only) ¹

Label ²	Data Type	Function
AARMED[8]	BIT	Area[n] armed
ACCAREA[8]	BIT	Window group status
ACHIME[8]	BIT	Area[n] in Chime mode
ACODE2[8]	BIT	Area[n] in Code2 mode
AENTRY[8]	BIT	Area[n] in entry delay
AEXIT[8]	BIT	Area[n] in exit delay
AINST[8]	BIT	Area[n] instant mode
ALMAREA	BITS	Areas in alarm
ALMTYP	NUMBER	Current alarm type
AREADY	BIT	Area[n] ready
ATROUBLE[8]	BIT	Area[n] zone trouble
AUDALM	BIT	Any alarm not silent
AUDAREA	BITS	Areas using audio
AUXALM	BIT	Auxiliary alarm type
AUXRLY	BITS	Auxiliary control relay status
AZONES[18]	BITS	Zones that are armed

Table 20: Programmable I/O Status Labels (Read-Only) ¹

Label²	Data Type	Function
BYPASS[8]	BIT	Area[n] bypassed zone
BYPASSES	BIT	Zones bypassed
CENT	NUMBER	Century
CLGRP	BIT	Close window group active
DACT	BIT	Dialer active
DOOR80	BITS	Toggle 1-8 door
DOOROPEN	BIT	Touchpad door is open
DOORRLY[16]	BIT	4433/4420 touchpad status
DOORSUPR	BIT	Touchpad door trouble
DURESS	BIT	Duress alarm
EMER	BIT	Emergency alarm
EXTBELL	BIT	External bell output
EXEC	BIT	Executes statements
FIRE	BIT	Fire alarm
HLDAY	BIT	Holiday
HZNC[18]	BITS	Zone inputs above high limit
ICALL	NUMBER	Station number for intercom call
ICOM	BIT	Intercom active
INTBELL	BIT	Internal bell output on
IRDY	BIT	Zones all ready
INTR	BIT	Zone in trouble
IZONES[18]	BITS	Zones that are interior bypassed
KEYSUPR[16]	BIT	Touchpad supervise trouble
LISTEN	BIT	Listen-in active
LOWBAT[18]	BITS	Zones with low battery
LZNC[18]	BITS	Zone inputs below limit
MDAY	NUMBER	Day of month
MONTH	NUMBER	Month
OPGRP	BIT	Open window group active
ORGKID	NUMBER	Touchpad using phone/intercom
P1SEC	BIT	Pulse at one per second
P500MS	BIT	Pulse at two per second
PAPOUT	BIT	Printer paper out
PASS1	BIT	True for one pass of I/O prog, each second
PASS10	BIT	True for one pass of I/O prog, every 10 seconds

Table 20: Programmable I/O Status Labels (Read-Only) ¹

Label ²	Data Type	Function
PASS60	BIT	True for one pass of I/O prog, each minute
PHONE	BIT	Phone mode active
READY	BIT	Zones ready
REPORT	BIT	Dialer reporting
SILENC	BIT	Trouble silenced
SMKPWR	BIT	Smoke power on
SPECL	BIT	Special alarm
SYSTR	BIT	System trouble
TEE[8]	NUMBER	Area[n] entry/exit/arm timer
TEST	BIT	Bell test
THR	NUMBER	Hour of day
TMIN	NUMBER	Minute of day
TOPEN	NUMBER	Second of day
TREE	NUMBER	EEPROM trouble
TROUBL	BIT	Any trouble
TSEC	NUMBER	Second of day
TSHUT	NUMBER	Time left until shutdown (in seconds)
TSMOKE	NUMBER	Time left until smoke-on (in seconds)
TWKDAY	NUMBER	Day of week
WARM	BIT	Watchdog reset occurred
WALKTEST	BIT	Walk test mode
WGRPSTAT[4]	BITS	Status of window groups
WINSTAT[4]	BITS	Time window status bits
YEAR	NUMBER	Year
ZALM[18]	BITS	Zones in alarm or entry
ZBYPASS[18]	BITS	Bypassed zones
ZMEN[18]	BITS	Alarm memory zones
ZTR[18]	BITS	Zones in trouble
<p>NOTE 1. A status condition can only be read (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.</p> <p>2. In this column, the number in brackets [] indicates how many devices or components of this type are available.</p>		

Table 21: 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 4724 to obtain customized status outputs.

Examples:

- 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.
TER15 = FIRE
- 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
- 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.
X10[1].0 = (AEXIT[1] OR AENTRY[1])

Section 10: Walk Test Operation

The 4724 Walk Test mode allows you to test the system without causing Alarm Reports. Follow the procedure below to perform a Walk Test:

- Press **2 TEST** followed by Code 0 or Code 1.
- The display will show either "WALK TEST" or your customized walk test message (see Section 8.9 of this manual).
- 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. Interior zones can be armed or disarmed during the test to verify operation of the interior control key and options.

4. Test the exit all entry zones to verify the delay times you have programmed.
5. View the alarm memory to see that the desired areas have been activated.
6. To exit Walk Test mode, press **MUTE MUTE** (twice) on any touchpad.

NOTE *The system will remain in the same armed/disarmed state after you exit Walk Test mode.*

Section 11: Summary of Revision H Enhancements

11.1 Auto-Arm/Disarm Enhancements

Revision H allows to auto disarm at different times.

11.1.1 Open/Close Groups

The system-wide Open Window Group and Close Window Groups have been replaced by Open and Close Window Groups for each area. It is now 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. It is also possible to fully emulate the previous revision.

11.1.2 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.

11.1.3 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 option) 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 an open window period.

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

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

11.2 Programmable I/O Enhancements

11.2.1 New Programming Tools

A simple time of if/then/else logic has been added to the program. See Section 8.17.2 of this manual for more information.

Some new status flags and outputs and new operations have also been added. See Section 8.17.3 of this manual for descriptions of these features.

11.3 New Options

NOTE *Default settings are underlined.*

Open Window Group (Area)

(0-31, always, never)
(Menu 14: Area Options)

Window groups assigned to area for openings. Used to control auto-open, exception open, and close trouble.

Close Window Group (Area)

(0-31, always, never)
(Menu 14: Area Options)

Window group assigned to area for closings. Used to control auto-close, exception close, and open trouble.

Auto No Force

(yes, no)
(Menu 4: System)

Causes Auto Arm to arm without bypassing Not Ready Zones; normally zones are bypassed if not ready. Not ready zones will go into alarm.

Use Arm (Menu “Yes”)

(yes, no)
(Menu 4: System)

Causes the arm menu to be active for all user open and close operations. In previous versions, system users assigned to one area only did not have access to the menu features. By selecting this option, all system users have access to the menu. This option also applies to non-split arming systems (access is only granted to Area 1 in the menu).

Service Reminder

(mm/dd: 00/00)
(Menu 11: Timers, 10-System Messages:#8)

When selected, a service message (Programmable System Message 8) will appear on a programmed date (at midnight). The service message will continue to be displayed (instead of the default Line 1 message), until a program mode has been entered and exited (any program mode). Setting the date to 0/0 will disable the service reminder.

No Pulse Bell (Menu “Yes”)

(yes, no)
(Menu 4: System)

When selected, fire alarm bells will be steady instead of pulsed. (This is typically used for strobes.)

Ready Display Option **IR**

(Menu 10: Messages)

By placing **IR** in System Message #57 (top line default) or System Message #58 (bottom line default) the system will show the not ready status in two possible formats. Split arm systems will show READY (System Message #3) followed by “12345678” showing the ready areas, not ready areas are shown with a dash in place of the digit (example: “1---45--8”). Non-split arm systems will show READY (System Message #3), NOT READY (System Message #2) or ARMED (System Message 15).

11.4 Operational Changes

Chime and Instant

When Chime or Instant is pressed on multi-area stations, the user is requested to enter a code. When the code is entered the user is granted access to the Arm Menu, which allows Chime and Instant to be controlled for each area (including single area users). Previously, single area users could not activate chime and instant from multi-area stations.

Duress Prefix Alarms

Duress prefix alarms (initiated by pressing the duress code before the user code) now report a separate zone for each touchpad. The zone number is the touchpad (ID * 4) + 145 (that is, the touchpad ID number multiplied by 4, plus 145). Other zones in this region (> 144) are the touchpad panic keys that use a similar formula.

Group Reporting

Each area open/close is reported as two events:

- the user ID event, OPen/CLose nnn and
- the area ID event, Open/Close Group nnn.

In previous versions, when more than one area was opened or closed at the same time, the user ID event would only be sent once followed by multiple group ID reports. Since most open and close operations will involve one area at a time, this will not cause significantly increased report traffic. No automation changes will be required.

Door Event Buffering

Door access events are always buffered into event memory, regardless of printing and reporting options. Previously, events were only stored if reported or printed.

Download When Armed

Downloading when armed is allowed with Revision H. While downloading, zones will be disabled. When downloading is finished, operation will resume normally.

Listen-in

While listen-in is active, trouble beeps and internal speaker tones are disabled automatically.

Auto Interior

Auto interior would cause not ready interior zones to go into alarm, Revision H correctly senses the not ready zones.

Door Bell and Unused Zones

When programmed as zone type Unused or Door Bell and 24 HR 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 can be used as inputs to programmable I/O without affecting the system.

Built-In Programmer

Some menus have been changed to allow jumping to a specific numbered item: these are Menu 7 (Accounts) and Menu 10 (System Messages). This makes it easier to change specific items. Menu 14 (Area Options) includes the new area arming options. Menus 4 and 11 also have new options. Menu 16 (Prog. I/O) allows programming using the new I/O operations.

Arm Delay

The arm delay only causes touchpad beeps during the last five minutes of the delay. Touchpad beeps can be disabled by the Entry/Exit PZT option.

Door Contact

A delay was added to the door open timer when the door is first closed after legal access. In door access applications where the door contact is used, the door frequently closes and then bounces open enough for the contacts to reopen. On older revisions, the bounce open would cause a Door Forced Alarm. On Revision H the door is allowed a three second period after the first contact closure during which the contacts are ignored.

Entry Zones

On older revisions, entry zones which are restored before the end of the entry delay would not report a restore. On Revision H the entry zones will report a restore after the end of the Entry Delay and Alarm Report.

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