



**Security
Systems**

Specifications & Instructions

for the


Safewatch® Plus

and

Entrepreneur

CONTROL and OPERATING PANELS

Introduction

The ADT Safewatch Plus and Entrepreneur security systems incorporate today's most desired operational features including dual reporting, EEPROM memory, advanced lightning/transient protection and ease of user operation, all in an attractively priced package, complete with operating panel. The control is pre-programmed with two delay zones, one instant interior zone, and three instant perimeter zones. In addition, three emergency zones are accessible through the operating panel. One high current output is assignable to provide +12VDC upon any or all Burglar, Fire, Police, or Medical alarms, or it may be assigned to one selectable non-alarm condition. In addition, an optional Z729 Siren Driver/Output Expander may be added to provide a built-in two channel, high powered siren driver and 10 assignable low current outputs which may be used to trigger other devices.

Non-volatile EEPROM (electrically erasable programmable read only memory), allows the control to be easily programmed from the operating panel, eliminating the need to burn PROMS. The EEPROM maintains its data even with power disconnected. A "Watchdog" circuit monitors the microprocessor and assures the operational integrity of the system. An optional MPI230 hand held Chip Duplicator allows the entire memory contents to be copied from one control to another, reducing installation time.

The operating panel features separate status indicators for each of the six hardwire zones, "Ready" and "Armed" LEDs, an "Alarm" LED which illuminates simultaneously with the alarmed hardwire zone for easy identification, and a "Trouble" LED which lights when installer attention is required. The control may also be armed/disarmed with a momentary or shunt type key switch.

This product has been carefully inspected to comply with rigid quality control standards before shipment to you. You'll find that with reasonable care it will provide years of reliable performance. Proper installation and regular maintenance by the installing company and frequent testing by the user are essential to assure continuous satisfactory operation of any alarm system. It is recommended that the installing company offer a maintenance program and instruct the user with the correct procedure for proper use and testing of the system.

LIMITATIONS

The Safewatch Plus/Entrepreneur is designed as part of a system designated to warn against unauthorized entry or of other emergency situations. However, it is not a guarantee of protection against the occurrence of those events. Any alarm system is subject to compromise or failure to warn for various reasons: Unauthorized access can be gained through unprotected points or by disarming or bypassing protected points. Sensing devices are power driven and will not operate without power. Telephone lines over which alarm signals are transmitted may be out of service or rendered inoperable by an intruder. Smoke detectors have limitations and cannot detect all types of fires, nor will they sense smoke or fire which is out of the effective range of the detector.

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***ff* SPECIAL NOTE referencing use of the word "Fire" in this manual.**

Use of this control for fire detection and/or annunciation may not be permitted by certain states, counties, municipalities, or local jurisdiction. It is the responsibility of the installing alarm company to check with their local A.H.J. (Authority having jurisdiction) or State Fire Marshal's office prior to using this control for fire.

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Installation and Wiring

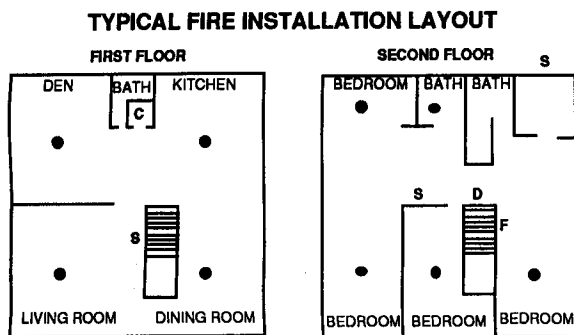
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PLANNING THE INSTALLATION

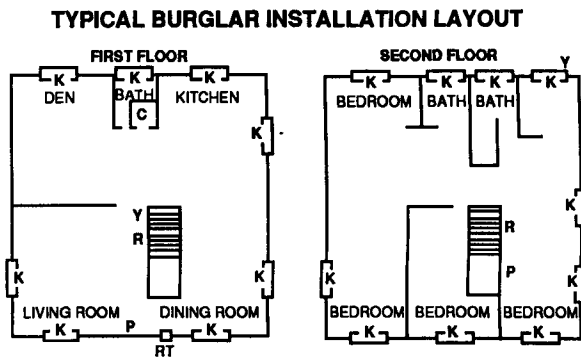
The first step in any multi-zone security system installation is planning the job.

1. Read through this entire manual to familiarize yourself with all system features and procedures before actually beginning the installation. Section 5 contains information regarding U.L. and N.F.P.A. requirements.
2. Perform a physical survey of the installation site.
3. Discuss the installation requirements and applications with the customer.
4. Compare the installation requirements and applications with the factory default settings (see Function Map, pages A-C) to determine what, if any, customized programming will be needed to meet the specific installation requirements.
5. We recommend that the system be bench tested prior to installation.

Figure 1 details a typical burglar installation layout.
This may be used as a guide in planning the specific installation



Note: Alternate locations may be required for the devices indicated.



Note: All perimeter openings below 18' should be provided with protection.

LEGEND:

C - Control

S - Siren (Steady Output)

Y - Siren (Yelp Output)

D - Smoke Detector

● - Thermostat

F - Fire Trouble Remote

K - Contact

R - Remote On/Off

P - Panic Button

RT - Remote On/Off with Tamper

FIGURE 1 TYPICAL INSTALLATION LAYOUT

PARTS DIAGRAM & DESCRIPTIONS

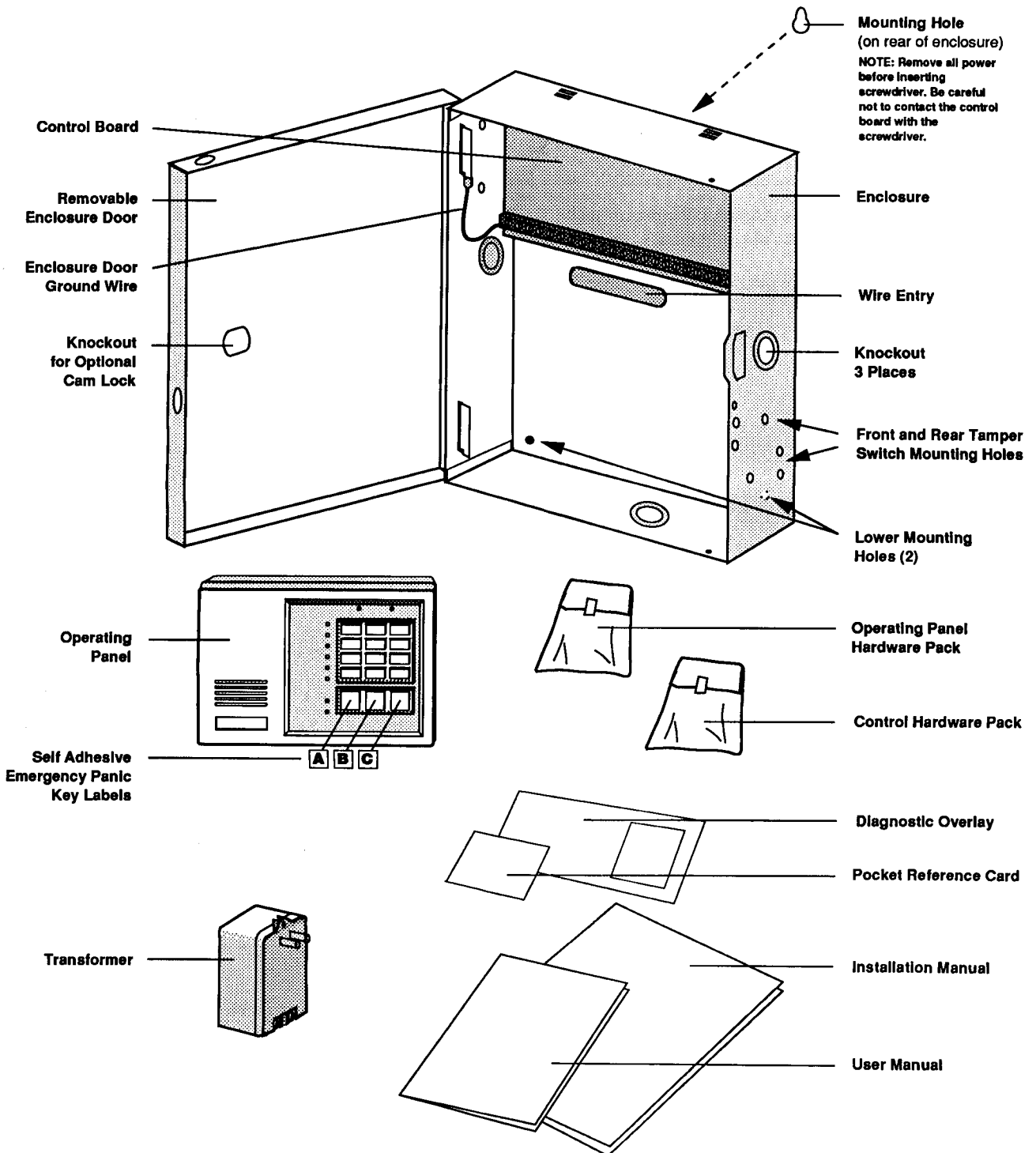


FIGURE 2 Safewatch Plus/Entrepreneur PARTS LIST

MOUNTING AND WIRING PREPARATION

1. Remove all packing material and compare the system components with those in Figure 2, page 2 to familiarize yourself with the part names as this manual will refer to them periodically.
2. Select a proper mounting location. The control must be mounted in a secure, dry location capable of maintaining an ambient temperature inside the control box of 32 to 122 degrees Fahrenheit (0 to +50 degrees Celsius).
3. Remove package components from the enclosure and set aside until pre-wiring is completed.
4. Remove control box knockouts that best suit your wiring needs. Note that each knockout is a "dual" size. The "inside" knockout is for 1/2" conduit and the "outside" is for 3/4" conduit.
5. Mount the control using the upper center slotted hole and two lower mounting holes.
6. Proceed to pull all necessary wiring for the power transformer, detection loops, control stations, siren outputs, etc.
7. Once all field wiring has been brought into the enclosure, it should be terminated as per the instructions on the following pages.

WIRING

EARTH GROUND

In order for the control's lightning and transient protection to be effective, the control must be connected to an earth ground. Finding a proper ground path may effect selection of the control mounting location as it is important to run the ground wire as short as possible.

An ideal ground for a security system is a "UNIFIED EARTH GROUND", whereby the power line, telephone, and security system ground rods are bonded together. This type of ground eliminates a common problem during lightning strikes known as "STEP VOLTAGE BLOWOUT". Step voltage is a measurable voltage potential between different earth ground stakes during a lightning strike, which results in a destructive current flow path through the security equipment.

Ground wires should be run the shortest and straightest path between the equipment and the ground rod. Avoid sharp 90 degree turns as they can cause undesired inductance in the earth ground path. This inductance blocks the lightning path to earth ground causing the lightning current to run through the security equipment. Follow the steps below to earth ground the control:

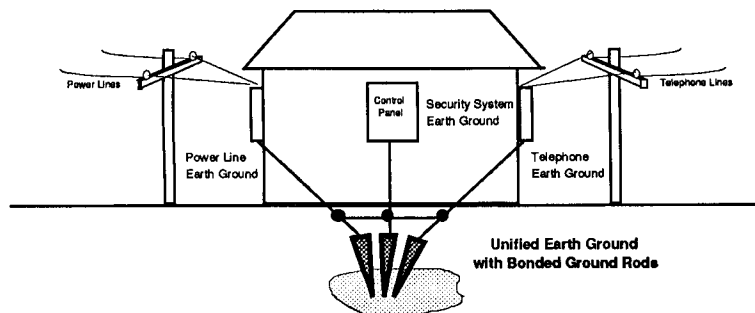
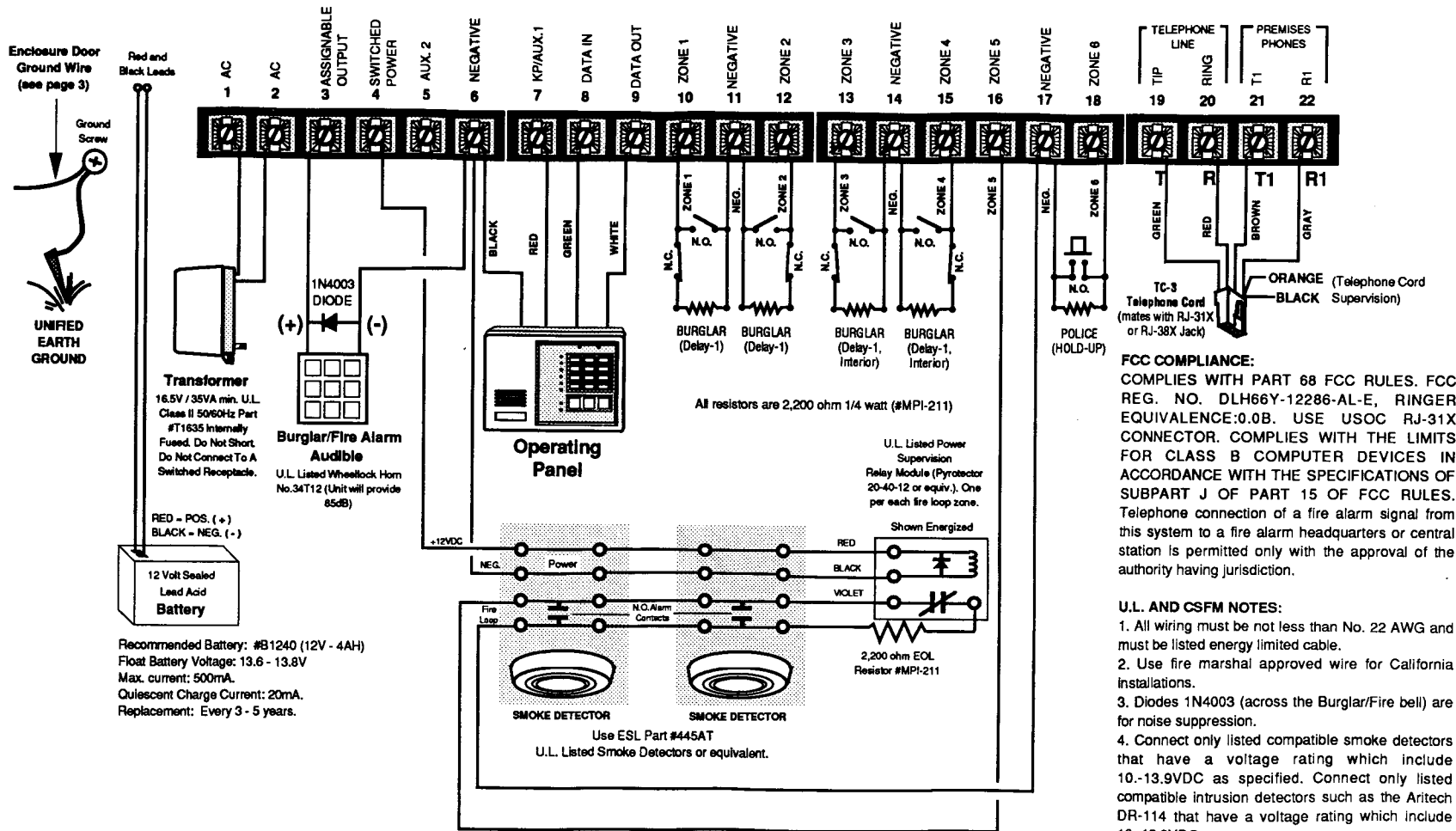


FIGURE 3 UNIFIED EARTH GROUND

1. Crimp the Ground Wire Lug to the control end of a minimum 14 gauge solid ground wire.
2. Remove the lower left control board mounting screw, insert it through the Ground Wire Lug, and replace the screw, securing the ground wire.
3. Run the earth ground wire and attach to a bonded earth ground following these guidelines:
 - A. Keep wire runs short. No 90 degree or sharp turns.
 - B. Use a minimum radius of 8 inches for bends.
 - C. Run ground wires separate from other wires.
 - D. Use 8 foot copper clad ground rods.
 - E. Route toward earth and never away.
 - F. Never run parallel to metal without properly bonding to the metal.
4. The enclosure door must be mutually grounded. Connect the female plug on the end of the green ground jumper wire (which is attached to the lower left control board mounting screw) to the bottom of the upper enclosure door hinge (see Figure 2, page 2).

NOTE: Refer to Section 5 for U.L. Listed System requirements



Lightning Protection:

The control panel must be properly earth grounded in order for lightning/transient protection to be effective. The ground connection should be made to a dedicated metal stake as close to the control as possible.

Testing:

This system should be tested weekly. All switches, contacts, and accessories must be U.L. Listed devices. This equipment should be installed in accordance with the National Fire Protection Association's standard No. 74 (National Fire Protection Association, Batterymarch Park, Quincy MA 02269). Control panel specifications subject to change without notice.

FIGURE 4 SUGGESTED U.L. HOUSEHOLD BURGLAR ALARM AND/OR (FIRE ff) ALARM HOOKUP

TERM.	FUNCTION	DESCRIPTION
1	AC INPUT	Connect 16.5 VAC 35 VA U.L. Class II transformer (Part #T-1635) using 18 gauge minimum, 2 conductor wire. Do not exceed 50 feet. Do not plug in until all wiring is complete.
2	AC INPUT	
3	ASSIGNABLE OUTPUT (+)	(+)12VDC for powering devices upon alarm or other conditions as defined by Functions 182-186. See page 11. †
4	SWITCHED POWER (+)	(+)12VDC for powering smoke detectors. Operating panel key #7 temporarily interrupts this output to reset detectors. †
5	AUXILIARY POWER 2 (+)	(+)12VDC for powering motion detectors and other accessories. This output is fused commonly with Assignable Output (terminal 3) at 2.5 Amps (F1) and must be considered when calculating total current drain. †
6	COMMON NEGATIVE	Negative termination for devices powered by terminals 3, 4, 5, and 7. (Same as terminals 11, 14, and 17).
7	KEYPAD/AUXILIARY POWER 1 (+)	(+)12VDC for powering operating panels, motion detectors, and other accessories. This output is fused commonly with Switched Power at 2.5 Amps (F2) and must be considered when calculating total current drain. †
8	OPERATING PANEL DATA IN	Connect operating panel green leads to this terminal.
9	OPERATING PANEL DATA OUT	Connect operating panel white leads to this terminal.
10	ZONE 1 LOOP (+)	Each loop requires a 2,200 Ω end-of-line resistor (Part # MPI-211). Closed or open circuit contacts may be connected to each loop. A common negative is shared between each group of two (2) zones. The need for end-of-line resistors may be eliminated on all Burglar defined zones through programming (Function 175) if desired.
11	ZONE 1 AND 2 COMMON (-)	
12	ZONE 2 LOOP (+)	
13	ZONE 3 LOOP (+)	
14	ZONE 3 AND 4 COMMON (-)	
15	ZONE 4 LOOP (+)	
16	ZONE 5 LOOP (+)	
17	ZONE 5 AND 6 COMMON (-)	
18	ZONE 6 LOOP (+)	
19	INCOMING TELEPHONE LINE (T) "TIP"	Green wire from RJ-31X direct connect telephone cord.
20	INCOMING TELEPHONE LINE (R) "RING"	Red wire from RJ-31X direct connect telephone cord.
21	HOUSE PHONE CONNECTION (T1)	Brown wire from RJ-31X direct connect telephone cord.
22	HOUSE PHONE CONNECTION (R1)	Gray wire from RJ-31X direct connect telephone cord.

† Terminals 3 and 5 are fused at 2.5 Amps (fuse F1). Terminals 4 and 7 are fused at 2.5 Amps (fuse F2). Combined alarm condition current should not exceed 1.5 Amps. Maximum combined continuous current drain should not exceed the limits as indicated in Table 10, page 42.

TABLE 1 CONTROL BOARD TERMINAL DESCRIPTIONS

NOTE: Refer to Section 5 for U.L. Listed System requirements

STANDBY BATTERY and TRANSFORMER

The control is powered by a 16.5 volt 35VA U.L. listed Class II plug-in transformer (part # T1635/supplied). Follow the wiring instructions as indicated in Table 1 and Figure 4 and 5.

A 12 Volt, 4 Amp hour minimum sealed lead acid rechargeable battery (part #B1240/not supplied) must be installed to provide primary power back up. The float charge voltage for the battery is set for 13.8 Volts at 400 milliamps (mA) maximum, while the system is delivering its rated continuous output current. Current in excess of 400 mA can be delivered to the battery if the system is delivering less than the rated power. The battery charging current is limited through a 5 Ohm resistor.

The battery automatically takes over and provides power in the event of an AC power outage. If the AC fails for an extended period and the battery voltage drops below 11.2 volts, the low battery detector will activate and cause the control station prealarm to beep, the "Trouble" LED to light and the digital communicator to report to the central station (if so programmed). The beep can be silenced by pressing the " * " key.

If, during a loss of AC power, the battery voltage should drop below 7.5 Volts, the microprocessor will shut down, but there will still be auxiliary equipment current drain on the battery. An MPI -266 Low Battery Cutoff Module may be added to disconnect the battery and protect it against deep discharge.

- ☐ Place the battery in the enclosure. Make sure that the AC transformer is disconnected.
- ☐ Connect the black battery wire to the black battery terminal marked "-".
- ☐ Connect the red battery lead to the red battery terminal marked "+" after wiring of the control is complete.

NOTE: A reverse current diode provides some protection to the electronics if the power leads are accidentally reversed.

DO NOT LEAVE THE LEADS REVERSED. OVERHEATING OF RESISTOR R85 WILL RESULT.

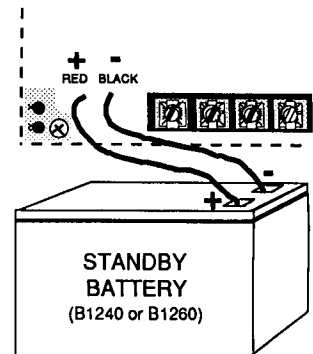


FIGURE 5

HARDWIRE ZONE INPUTS (TERMINALS 10 - 18)

The system provides six(6) individually programmable class "B" end-of-line resistor supervised detection zones. If desired, the Burglar zones may be converted from class "B" E.O.L. resistor supervised to non-supervised closed circuit only. Each hardwired zone may be configured as a Burglar, 24 hr. Auxiliary "A" (Fire ff), 24 hr. Auxiliary "B" (Police), 24 hr. Auxiliary "C" (Emergency), or communicator report only zone. In addition, a single zone may be programmed to allow system key switch operation. Each of the six zones may be further defined with various options and sub- options. The Zone Planning Guide on page D assists in planning each zone.

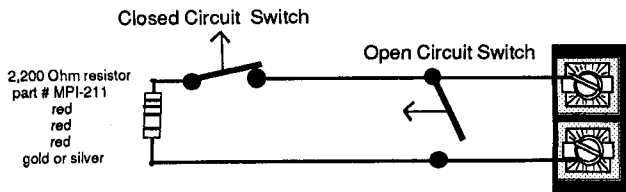
☐ CLASS "B" END-OF-LINE RESISTOR SUPERVISED ZONES **

In order to function properly as a class "B" supervised circuit, a zone must have a 2,200 Ohm 1/4 watt resistor installed in series at its furthest most remote end from the control. This configuration allows both open and closed circuit contacts to be used on the same loop and provides a high degree of protection against compromise or tampering (see Figure 6). The control constantly measures the resistance on a class "B" zone and is able to determine by a proper reading of approximately 2,200 Ohms, that a zone is secure and intact. It can respond differently to a high resistance (loop open) versus a low resistance (loop short). For example, a class "B" Fire(ff) zone reacts with a supervisory/trouble condition when opened and an alarm when shorted. Supervisory/trouble is a programmable sub-option for each of the other five zone types. There is even a choice of whether a trouble condition should occur upon an open or short (non-Fire zones only). For more information see "Supervisory/Trouble Sub-Option", page 24. The system comes equipped with six 2,200 ohm 1/4 watt resistors, one for each zone. The resistors are color coded red • red • red and either a gold or silver fourth band.

❑ **NON-SUPERVISED CLOSED CIRCUIT LOOP (NO E.O.L. RESISTOR SUPERVISION)**

If end-of-line resistor supervision of all burglar loops is not desired, conventional closed circuit loops may be connected directly to all Burglar zone input terminals by first programming Function 175 with a value of 1.

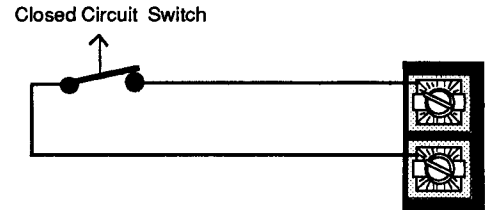
❑ **HARDWARE ZONE WIRING PROCEDURE**



Any loop short or open will greatly change circuit resistance and violate the zone. The resistor must be placed at the end of the loop.

FIGURE 6

E.O.L. RESISTOR SUPERVISED LOOP



Only Burglar defined zones may be wired non-supervised and Function 175 must be programmed with a value of "1". All Burglar defined zones will then become non-supervised loops.

FIGURE 7

NON-SUPERVISED CLOSED CIRCUIT LOOP

Figure 8 is an example of how each of the detection zones might be configured in a typical installation. For ease of explanation, zones 1-6 are shown in their factory default programming configuration. They may of course be re-programmed to suit the specific needs of each installation. At this point it is only necessary to decide what each zone will be used for and make the necessary connections. Programming the actual zone definitions and responses will be explained in Section 3.

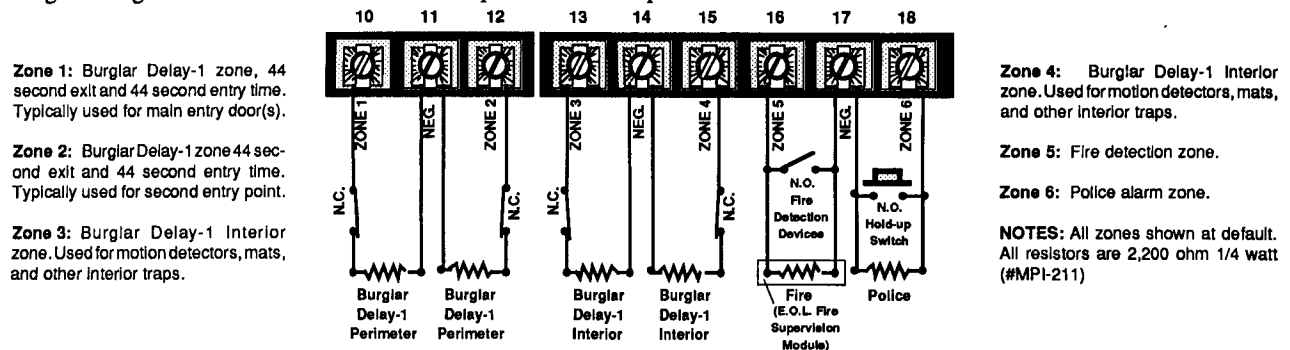


FIGURE 8

TYPICAL ZONE WIRING EXAMPLE

1. Decide whether Burglar defined zones are to be wired as an end-of-line resistor supervised circuit or a non-supervised closed circuit only.
2. Connect all alarm sensors to the zone wiring as per the instructions provided by the individual sensor manufacturer and Figures 4, 6 and 7.
3. Connect each zone wire to the appropriately labeled terminals as per Figure 8. Each zone has an input terminal and a common (negative) return. Please note that a negative terminal is shared by two zones and that all negatives are common to each other.
4. If end-of-line resistor supervision is not required on Burglar defined zones, Program Function 175 for with a value of "1".
5. If 12 volt D.C. powered detection devices such as motion sensors are being installed, refer to section "12VDC Outputs".
6. Define each zone utilizing the "Zone Planning Guide" and program the zone definition value into the corresponding Function (see Section 3).

□ 24 HOUR AUXILIARY ZONES

Zones defined as 24 hour Auxiliary "A", Auxiliary "B" or Auxiliary "C" zones MUST be wired as E.O.L. resistor supervised loops. These loops are commonly used for Fire (ff), Police or Emergency inputs however they may also be used for other devices requiring 24 hr. supervision. A 24 hour Auxiliary "A" defined zone provides an alarm upon a loop short utilizing open circuit sensors and provides a supervisory/trouble upon an open or break in the loop. Auxiliary "B" and Auxiliary "C" defined zones can also be programmed with the supervisory/trouble sub-option.

□ 24 hr. COMMUNICATOR REPORT ZONES

Communicator report only zones MUST be wired as E.O.L. resistor supervised loops. When activated they provide no keypad indication or panel outputs and are therefore intended for simply reporting conditions from temperature sensors, water sensors, etc.

□ KEY SWITCH ZONE

A single zone may be programmed to allow the system to be armed/disarmed with one or more momentary or maintained (shunt) contact key switch(s).

When the momentary key switch is held closed for one second, the pre-alarm will beep to indicate that the key change was acknowledged. When the key switch closure is released, the control will arm/disarm. If program Function 152 is enabled, holding the key switch closed will change the interior on/off mode once each second, then after the interior status is displayed, release the key switch to arm the system. A key switch defined zone MUST be wired as an E.O.L. resistor supervised loop. If programmed with the supervisory/trouble definition, a tamper switch may be wired to disable the key switch arm/disarm capability if the zone is violated.

If a zone is programmed for maintained key switch usage, the control stations will be disabled from either arming or disarming the control. Only that key switch defined zone may be used to arm or disarm.

NOTE: Do not define a maintained key switch zone for supervisory/trouble conditioning.

OPERATING PANEL WIRING (TERMINALS 6, 7, 8, 9)

The operating panels connect to the control terminals using only a four conductor cable. Four conductor, 22 gauge solid (or larger) jacketed cable is satisfactory for this hook-up, however, stranded wire provides additional resistance to bending and breakage. A shielded cable with the control end connected to earth ground provides additional protection from lightning. Connect the four control station wires as indicated in Table 2 below.

The total number of operating panels that may be used per system varies, depending upon the total current drain from terminal 4 (Switched Smoke Power), terminal 5 (Auxiliary 2 Power), terminal 7 (Keypad/Auxiliary 1 Power), and connector J15. To determine the maximum number of operating panels per system, add the total continuous current drains upon terminals 3, 4, 5, 7, and J15 and add 50mA for each operating panel to be used. This total should not exceed the limits as indicated in Table 10, page 42.

OPERATING PANEL WIRE COLOR	FUNCTION	CONTROL TERMINAL
BLACK	NEGATIVE	6
RED	POSITIVE (+12VDC)	7
GREEN	DATA IN (REMOTE)	8
WHITE	DATA OUT(REMOTE)	9

TABLE 2 SAFEWATCH PLUS OPERATING PANEL WIRING

OPERATING PANEL MOUNTING

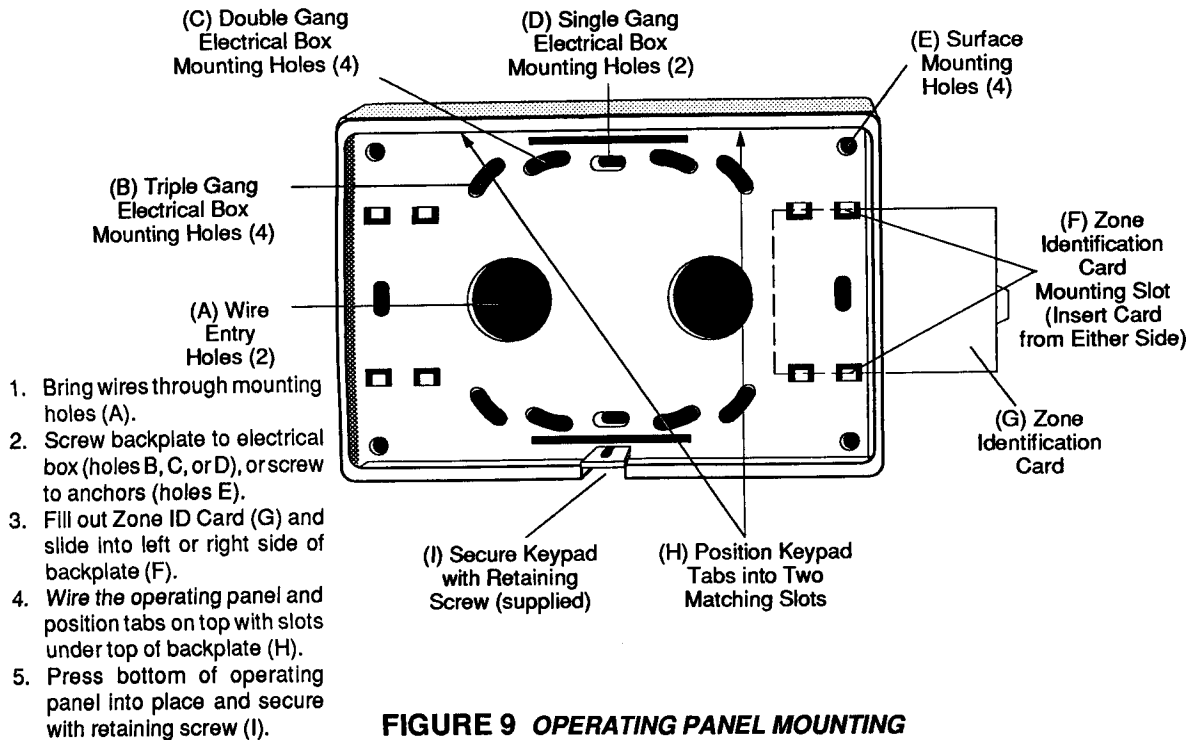


FIGURE 9 OPERATING PANEL MOUNTING

☐ TROUBLESHOOTING

If a operating panel is incorrectly wired, the following symptoms will appear:

Red Wire removed or cut: No operating panel LED's. Sounder pulses rapidly. Operating panel will not accept key entries.

Black Wire removed or cut: All operating panel LED's flash rapidly. Sounder pulses rapidly. Operating panel will not accept key entries.

Green Wire removed or cut: Trouble LED lights steady. Operating panel will not accept key entries.

White Wire removed or cut or Green/White Wires reversed: Operating panel LED's scroll from bottom to top.

CONTROL BOARD FUSES

☐ FUSE F1

Fuse F1 is a 5mm x 20mm, 2.5 Amp, standard acting fuse. It is used to protect the Auxiliary 2 (terminal 5) output and the Assignable Output (terminal 3). If this fuse should ever blow, the control stations' "Trouble" LED will light. Upon pressing and holding the "2" Key for three seconds, the Zone 2 LED ("Low battery/Blown fuse") will light. The communicator will report a "Low battery/Blown fuse" condition to the central station (if so programmed).

☐ FUSE F2

Fuse F2 is a 5mm x 20mm, 2.5 Amp, standard acting fuse. It is used to protect the Keypad Power/Auxiliary 1 output (terminal 7) and Switched Power (terminal 4). If this fuse should ever blow, the control stations will become inactive but the communicator, if programmed, will report a "Low battery/Blown fuse" condition to the central station.

☐ BATTERY LEAD FUSE

A 4 Amp "pigtail" fuse is provided in the positive battery lead to protect the battery. If this fuse should blow, the printed circuit board must be returned to the factory for repair.

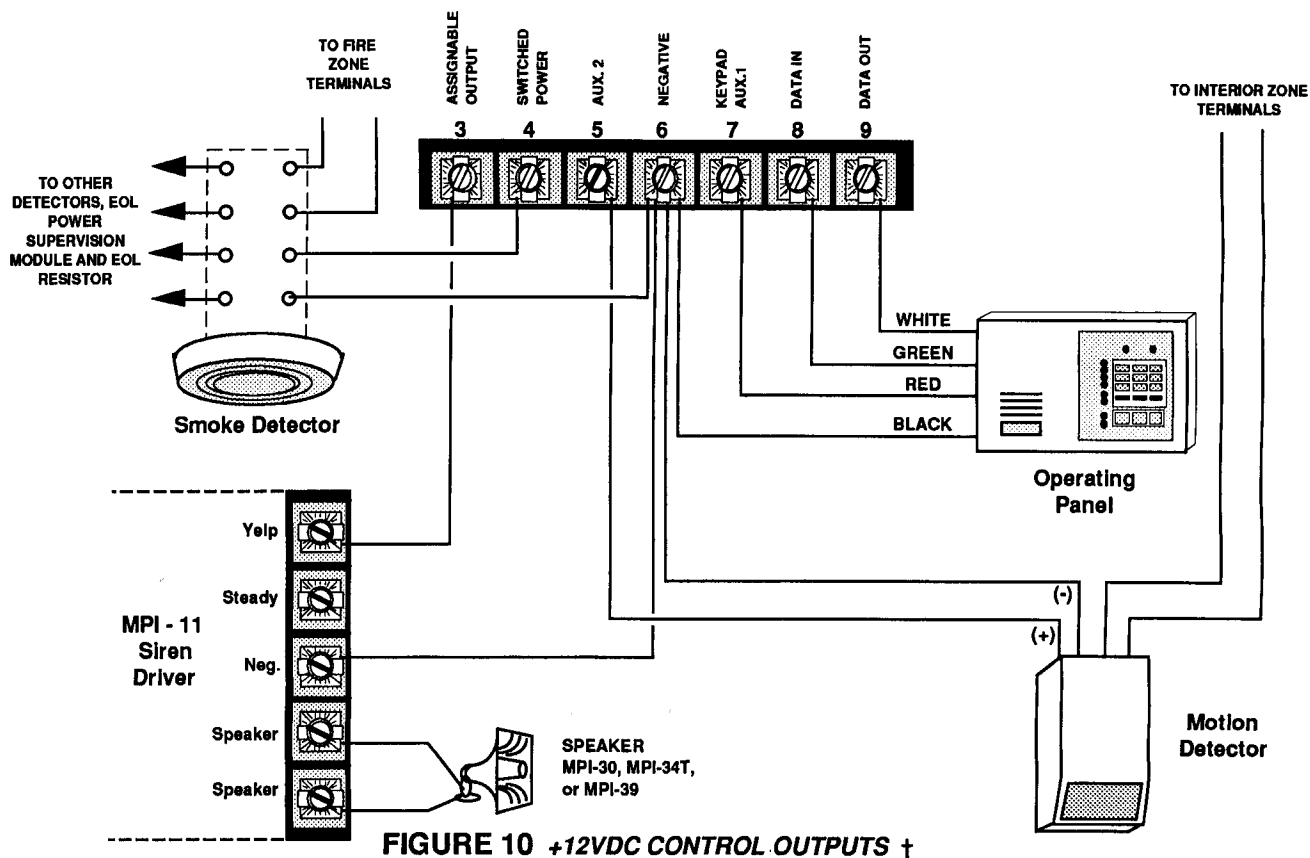


FIGURE 10 +12VDC CONTROL OUTPUTS †

12 VDC OUTPUTS

The control is supplied with one Assignable output, two Auxiliary Power outputs, and one Switched Power output.

□ SWITCHED POWER (Terminal 4)

Provides (+)12volts DC power for smoke detectors (see ff note on page i). The power from this output is momentarily interrupted to reset smoke detectors from the operating panel using the "7" key. To do this, press key "7" and hold for three seconds. The "Ready" and "Armed" LEDs will flash alternately to indicate that a code is required to access this function. Enter a valid User Code (code must be entered within 8 seconds or the control will exit this mode). The control will perform a battery test and interrupt Smoke Power. Each time the control does an automatic 24 hour test, power from this output will be removed for 5 seconds. For this reason, Switched Power should not be used to power any device that will trigger an alarm upon interruption and restoral of power. This output is fused at 2.5 amperes by fuse F2 which is also used to fuse the Keypad Power/Auxiliary 1 output (terminal 7). Do not exceed the current drain limitations as indicated in Table 10, page 42. See Figure 10 for a hook-up example.

□ AUXILIARY 2 (Terminal 5)

Used to provide (+)12 volts DC power for motion detectors and other devices requiring uninterruptable power. This output is protected by a 2.5 ampere fuse (F1) which is also used to fuse the Assignable Output (terminal 3). Do not exceed the current drain limitations as indicated in Table 10, page 42. See Figure 10 for a hook-up example.

□ KEYPAD POWER/AUXILIARY 1 (TERMINAL 7)

Used to supply (+)12 volts DC power for operating panels. This output is fused at 2.5 amperes by fuse F2 which is also used to fuse the Switched Power output (terminal 4). This output may also be used to supply auxiliary power for motion detectors and other devices provided the total current draw does not exceed the limits as set by Table 10, page 42. See Figure 10 for a hook-up example.

† Maximum continuous current drain from terminals 3, 4, 5, 7 and connector J15 should not exceed the limits as specified in Table 10, page 42. Maximum current drain under alarm conditions should not exceed 1.5 Amps. When replacing fuses, always use 5 x 20 mm, 2.5 Ampere standard acting fuses. For U.L. installations, use only U.L. listed audible devices and wire as indicated in Figure 4.

□ ASSIGNABLE OUTPUT (Terminal 3)

Assignable through programming (Function 182) to provide a (+) 12volt DC output upon any or all designated alarm conditions. If this output is not used for output upon alarms, it may be assigned to any ONE of the following other conditions: Switched Power reset (key 7)/24 hour automatic tests, access activation, supervisory/trouble conditions, or entrance pre-alarms and chime (key 6). If used to provide output upon alarms, it then must be defined as to the type of alarm condition(s) that will activate this output. This may include Burglar, Fire *ff* (Auxiliary "A"), Police (Auxiliary "B") or Medical (Auxiliary "C") alarms (or any combination) as selected through programming Functions 183-186. Sirens, bells, or other output devices may be connected directly to the Assignable Output (terminal 3) of the control provided they do not exceed the current drain limitations as indicated in Table 10, page 42. It may be desired to use this output for non-alarm conditions when using the optional Z729 Siren Driver/Output Expander **. This output is protected by a 2.5 ampere fuse (F1) which is also used to fuse the Auxiliary 2 output (terminal 5). See Figure 10, page 10 for a hook-up example.

□ ADDITIONAL OUTPUTS

Value Programmed (Function 182)	+12VDC Output from Terminal 3 upon:		
0	Alarm Condition(s) as determined by Functions 183-186	Value of "1" Programmed In Function:	The Following "Alarm Conditions" Provide +12VDC Output:
1	Sw. Power reset (Key 7)/Auto Tests	183	Burglary
2	Activation of Access	184	Fire <i>ff</i> (Auxiliary "A")
3	Supervisory/Trouble Conditions	185	Police (Auxiliary "B")
4	Entrance pre-alarms and Chime	186	Emergency (Auxiliary "C")

TABLE 3 ASSIGNABLE OUTPUT (Terminal 3) DEFINITION

Additional alarm outputs and various other function outputs may be accessed by plugging in an optional Z729 Siren Driver/Output Expander, and/or the optional Z229A Output Expansion Module into connector J15 at the top of the control board.

The Z729 Siren Driver/Output Expander provides a built-in two channel high power siren driver, additional access to common(-) and Auxiliary 1(+), and 10 other outputs to include: individual output for each type of alarm (Burglar, Auxiliary "A", "B", and "C"), plus "Armed", "Ready", "Violation", "Pre-Alarm", "Lamp" and "Access". Each output provides 40 milliamps maximum current at 12 Volts DC and may be used to trigger low current relay boards such as the MPI-206SP Relay Board **, or any device that either consumes less than 40 mA or that has a low current trigger input. A 12 pin plug in type connector with color coded flying leads is supplied to provide access to additional outputs. The built-in siren driver is preconfigured to provide "yelp" output for Burglar and Auxiliary "B" (Police) alarms and steady sound for Auxiliary "A" (Fire *ff*) and Auxiliary "C" (Emergency) alarms.

The Z229A Output Expansion Module may be used in one of two ways.

1. It may be plugged into the Z729 to provide 10 additional outputs as follows: "Zones 1-6 Alarm Status", "Supervisory/Trouble", "Fail to Communicate", "Smoke Reset", "Listen-in", plus 7 other outputs to include: "Zones 1-6 Ready Status", and "Ground Start".
2. It may be used exclusively to provide the same 10 outputs as the Z729 plus the first 10 outputs as listed in number 1 above.

□ OPERATING PANEL ACTIVATED EMERGENCY ZONES

The control is provided with three emergency zones. Each zone is activated by pressing its designated emergency key on the operating panel and holding pressed for three seconds. From left to right they are used to activate Fire *ff* (Auxiliary "A"), Police (Auxiliary "B") and Emergency (Auxiliary "C") alarms. To report the conditions to the central station, program Functions 55-57 (Tel. No. 1) and/or 98-100 (Tel. No. 2). To disable a emergency zone from operation, program a value of "1" into Function 187 (disable Fire emergency key), 188 (disable Police emergency key), and/or 189 (disable Medical emergency key). To activate the Assignable Output (terminal 3), Function 182 (Assignable Output Definition) must be programmed with a value of "0" (activates upon Alarm conditions) and at least one of Functions 184-186 must be programmed with a value of "1" to address the type of alarm that will cause the Assignable Output to activate (see Table 3 above).

TELEPHONE LINE CONNECTION (TERMINALS 19 - 22)

Terminal 19 and 20 are the inputs for the incoming telephone line. Terminals 21 and 22 are outputs which go to the house phones. The telephone line runs through a line seizure relay within the control. Whenever the control is idle, this relay completes the connection. When the control needs to communicate with the central station, this relay disconnects the house phones from the system, leaving only the communicator connected to the incoming lines. This prevents communication interruption caused by picking up of a house telephone within the protected premises. For proper installation and to meet FCC requirements, an approved USOC RJ-31X or RJ-38X "Telephone Jack" and a mating 8 pin modular "Direct connect cord" must be installed. The purpose for this is to provide an isolation and disconnection point between the local telephone system and the control's Digital communicator for telephone company troubleshooting. An RJ-38X jack is a standard RJ-31X jack with a jumper installed between terminals 2 and 3 to allow a tamper loop for supervising the connection (See Figure 4, page 4). When ordering either jack the telephone company will need the following information:

1. Required Jack: USOC RJ-31X OR RJ-38X.
2. The telephone number of the line that jack is to be installed on.
3. Requested location at which jack is to be installed.
4. Digital communicator FCC Registration number: DLH66Y-12286-AL-E
5. Ringer Equivalence: 0.0B

NOTE: The Ringer Equivalence Number (REN) is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most cases, but not all areas, the sum of the RENs of all devices connected to one line should not exceed 5.0. To be certain of the number of devices that you can connect to a line in your area as determined by the REN, contact your local telephone company.

6. Equipment manufacturer: ADT Security Systems, Inc.

NOTE: Refer to the inside back cover of this manual for FCC Compliance and additional telephone company information.

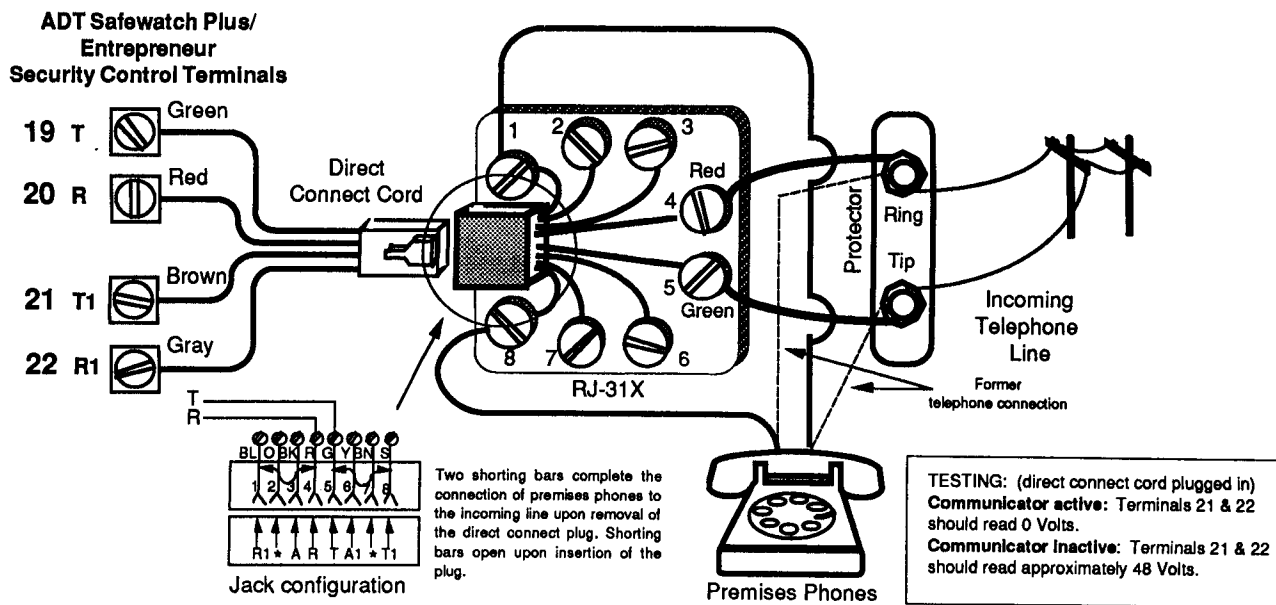


FIGURE 11 TELEPHONE SYSTEM CONNECTION

Operating the System

2

POWERING UP THE CONTROL

Before powering up the control, make certain that all connections are complete. This section assumes that the preceeding sections have been read completely, that all wiring is complete, and the system is ready to be powered-up.

PROCEDURE

First, verify that the AC transformer and battery are plugged in and connected. The control will also power up with DC power only but the "Trouble" LED will light to indicate an "AC Failure" condition. The control stations will now display system status and emit a 2 second tone. If a control station does not power-up properly, pressing the " * " key will reset the operating panel microprocessor and allow it to begin working properly.

□ WATCHDOG MONITOR

The watchdog monitor is a circuit that constantly monitors the operation of the microprocessor and keeps it working properly. For example, if the control does not power-up properly, or if an internal problem occurs, the watchdog monitor will perform a restart of the microprocessor. A ROM and EEPROM check is then automatically made and the system returns to the same operating condition that it was in with the following exceptions:

1. If the system is armed, the control will ignore all burglar defined zones for fifteen (15) seconds (or as programmed in Function 154) once the watchdog restarts the microprocessor.
2. If the system is in alarm, the alarm output will cease and the control will re-arm.
3. If the system is communicating, the communication will be lost with the exception of alarm reports. Alarms are stored in non-volatile memory and will be re-transmitted.
4. The automatic communicator test clock will be reset to zero. If the system is programmed for test reporting, the test report will be sent when the system resets; thus notifying the central station of an out of sequence test. The test time reporting code is optional and is disabled from the factory.

□ AUTOMATIC SYSTEM DIAGNOSTICS UPON POWER-UP

Each time power is applied to the control, power-up diagnostics check the Read Only Memory (ROM) and the Electrically Erasable Programmable Read Only Memory (EEPROM). The EEPROM check is also made each time the control is armed/disarmed and during automatic communicator tests. The ROM check consists of compiling a checksum of all the ROM bits and comparing the results with the checksum produced when the ROM was manufactured. A difference in the ROM will lock up the microprocessor and cause the operating panel LEDs to scroll, from top and bottom to center. If this should occur, the microprocessor is defective and the control board must be returned to the factory for replacement. The EEPROM check consists of compiling a checksum of all the bits in the EEPROM and comparing this with the checksum generated when the EEPROM was last programmed. A difference in the checksums will result in a memory error. This condition will be annunciated by a continuous beeping at the the control stations and an illuminated "Trouble" LED. Pressing the "2" key and holding for three seconds will cause the Zone 5 ("Memory Error") LED to illuminate. The beeping of the operating panels may be silenced by pressing the " * " key. When an error has been detected, the Function Map should be read to determine the location of the change in information. The lighted "Trouble" LED on the control station will clear upon proper exiting of the programming mode.

PROCESSING OF ALARMS FOLLOWING TOTAL POWER LOSS

If a total power loss occurs (both AC and Battery) while the control is armed, the control will ignore all burglar defined zones for fifteen (15) seconds once the power is restored. The delay is to allow time for devices such as motion detectors, glass break sensors, etc., to power-up and stabilize. This time may be increased to 181 seconds (Function 154) if necessary to accomodate detectors which require longer stabilization time. This time is also started whenever the microprocessor is reset by the watchdog circuit. If a total power loss occurs while the digital communicator is transmitting, any hardwire activated zone alarms which have been stored in the EEPROM will be reported upon power restoral.

NOTE: Emergency alarms as well as supervisory/trouble, opening/closings, restorals, cancels, and test reports are not stored in EEPROM and therefore, will be lost in the event of total power loss.

THE OPERATING PANEL

The operating panel was designed with ease of user operation in mind. A red “Armed” LED blinks upon exit delay and lights steady when the control arms. A green “Ready” LED lights steady if all hardwire zones are secure (even if faulted zones are shunted) and goes out if one or more zones are faulted. Each hardwire zone has a corresponding zone status indicator. If the green “Ready” LED is off, the corresponding faulted zone LED(s) will light. If a zone is shunted, the corresponding zone LED will blink, even if shunted by turning the interior defined zones off (see “Interior ON/OFF”). A separate “Alarm” LED illuminates simultaneously with the alarmed zone LED to provide alarm memory identification. A “Trouble” LED lights if service is required (a blown fuse, communication failure, EEPROM error, etc.). (See “Defining ‘Trouble’ Conditions”, page 16). Arming and disarming is accomplished by entering a four digit code. Up to six *User Authorization Codes* may be programmed. Each code may include any digit sequence from 0001 - 9999. User Authorization Code one is the *Master User Authorization Code*. This code is also used to provide access to *User Level Programming*. Any code may be further defined as a *High Security Arm/Disarm Code*. When the system is armed with a High Security Arm/Disarm Code, the system cannot be disarmed by a non-high security code.

OPERATING PANEL POWER-UP and SUPERVISION

Upon installation and power-up, each operating panel should be initialized with the control by manually pressing the “ * ” key. If a operating panel data wire is then tampered with, mis-wired, or broken, or if a control station is disconnected from the main control, the “Trouble” LED on any remaining operating panels will light. Pressing the “2” key (on an active control station) and holding for three seconds will cause the “Zone 3” (supervisory) LED to light. The digital communicator can also be programmed to report this condition to the central station. If the faulted operating panel still has power connected, the operating panel LEDs will scroll from bottom to top for local identification.

USER OPERATION

□ ARMING/DISARMING

Performed by simply entering an authorized four digit user code. Upon arming, the operating panel sounder will beep during the programmable exit delay time (Function 13). Upon entering the premises through a delay defined zone, the control station sounder will emit a steady pre-alarm tone during the programmed entrance delay time (Functions 11 and 12). The entrance and/or exit delay announcement may be disabled if desired by programming odd numbered time values. The arm/disarm codes are also used to reset all Auxiliary (Fire, Police, and Medical) alarms and the operating panel activated zone. User codes (Functions 1-6) are programmable through User Level Programming only.

□ ALARM STATUS

If an alarm occurs, the “Alarm” LED will light and remain lighted until manually reset. If the alarm was triggered through a hardwired zone, the corresponding zone LED(s) will also light. For example, if an alarm occurs on Burglar Zone 4, then the “Alarm” LED and the “Zone 4” LED will illuminate. Upon disarming the control, these LEDs will remain lighted. Simply pressing the “ * ” key will turn the “Alarm” LED off. If the alarm was triggered through one of the control station activated zones, the red “Alarm” LED will light but no individual Zone LED will light, indicating that a non-hardwired zone alarm has occurred. Entering a valid user code will clear the alarm. Alarm memory information may be recalled even after resetting the alarm (see “Alarm Memory Retrieval”, page 18).

□ MANUALLY RESETTING ALARMS

Burglar alarms:

The alarm may be reset by entering a valid user code. The communicator will continue to report the condition to the central station (if programmed) unless programmed to abort upon disarming (Function 41). The “Alarm” LED will remain lighted until reset by pressing the “ * ” key.

Fire ff (Auxiliary “A”) alarms:

Entering a valid User Code will silence the operating panel sounder, the red “Alarm” LED will go out and output from the Assignable Output (terminal 3) and the Z729 Siren Driver/Output Expander will cease. The communicator will continue to report the condition to the central station (if programmed). Note: Pressing the “*” key alone will silence the operating panel sounder only. If the alarm was activated through a hardwired zone, the corresponding zone indicator will remain lighted and the following 120 second procedure will take place: 60 seconds after having entered the code, the control will remove power from the Switched Power terminal (Terminal

4) for 30 seconds to reset any latched detectors. It will then re-sample all Fire zones (except the one that activated the alarm) and annunciate any state changes detected. 30 seconds after power has been restored to terminal 4 (the end of the 120 second period), the control will re-sample the Fire zone that activated the alarm. If the zone is no longer faulted, the alarmed zone LED(s) will go out and the communicator will transmit a restoral report. If the zone is still in alarm, the 120 second procedure will be repeated until the zone can be restored to operation. Note: If a successful restoral signal is not communicated, the alarmed "Zone" LED will remain lighted.

Police (Auxiliary "B") alarms:

Pressing the " * " key will silence the operating panel sander. The Police (Auxiliary "B") alarm, which may be provided through the Assignable Output (terminal 3) and/or the Z729 Siren Driver/Output Expander will not be reset by pressing this key. Entering a valid user code will reset the alarm.

Emergency (Auxiliary "C") alarms:

Pressing the " * " key will silence the operating panel sander. The Medical (Auxiliary "C") alarm, which may be provided through the Assignable Output (terminal 3) and/or the Z729 Siren Driver/Output Expander, will also cease. The "Alarm" LED will remain lighted and the communicator (if programmed) will continue to report to the central station. Entering a user code will clear the alarm.

❑ OPERATING PANEL ACTIVATED EMERGENCY ZONE OPERATION

The control is provided with three operating panel activated zones. Each zone is predefined for the type of alarm which it can initiate and is activated by momentarily pressing it's designated emergency key. The left most key is predefined to initiate an Fire ff (Auxiliary "A") alarm, the center key can initiate an Police (Auxiliary "B") alarm and the right key an Medical (Auxiliary "C") alarm. Self-adhesive labels are included with the control station for labeling these keys with symbols to indicate Fire, Police, and Medical conditions. Any or all operating panel zones may be disabled through programming (Functions 187-189). The Assignable Output (terminal 3) may be programmed to provide +12VDC upon activation and the communicator may also be programmed to report (refer to "Operating Panel Activated Emergency Zones", page 11 for more information).

When a operating panel zone is activated, the operating panel beeps and the "Alarm" LED lights. The operating panel may be silenced by pressing the " * " key. If the Fire or Medical zone is activated, pressing the " * " key will also silence the Assignable Output (terminal 3) and the output from the optional Z729 Siren Driver/Output Expander, if so assigned. The alarm may be reset by entering a valid user code. The emergency zones may be programmed to report the alarm to the central station. Police alarms may be programmed to be visually and audibly "silent" at the operating panel when activated.

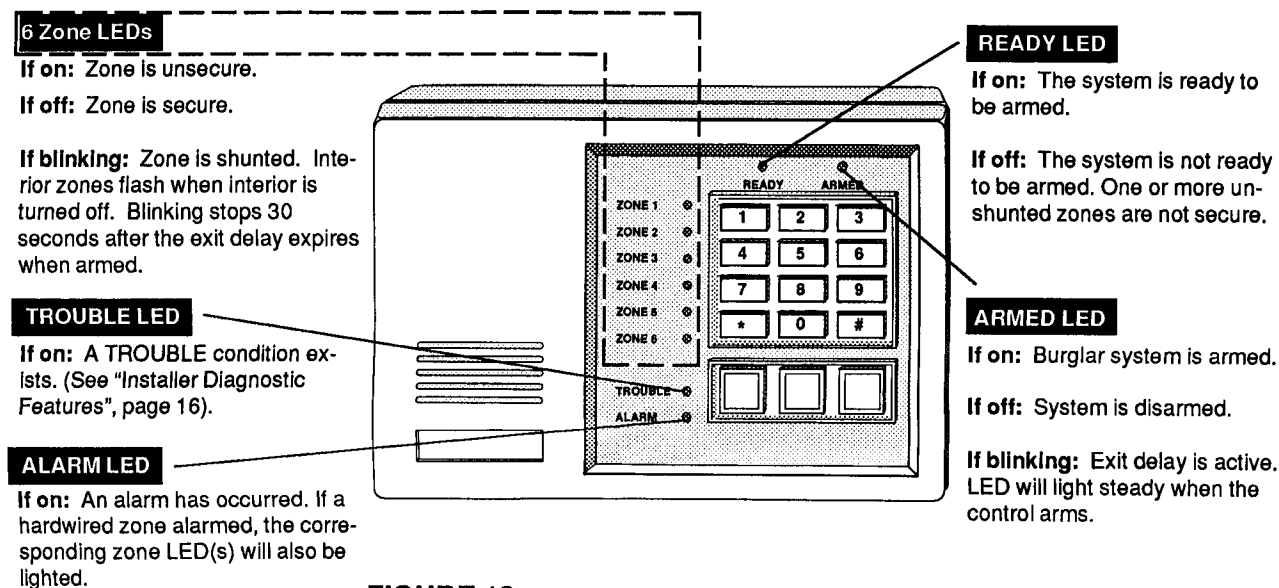


FIGURE 12 A900R OPERATING PANEL LEDs

❑ ZONE SHUNTING (BYPASSING)

Hardwire Burglar zones may be manually bypassed using the " # " (SHUNT) key. (See page 17 for operating instructions). Fire, Police and Medical (Auxiliary "A", "B", and "C") zones may be defined with the sub-option to allow them to be shuntable also. The control must be disarmed before shunts can be enabled. When zones are shunted, the appropriate "Zone 1-6" LED(s) will blink continuously. Pressing " # " followed by "9" or "0" will remove all shunts (no code entry required). When the control is armed, the shunted zone LEDs will only blink for the first 30 seconds after the exit delay expires then go out. Zone shunting capability can be disabled through programming (Function 161).

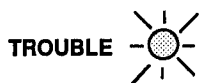
NOTE: Refer to Section 5 for U.L. Listed System requirements

INSTALLER DIAGNOSTIC FEATURES

Certain operating panel keys provide access to special features designed primarily for use by the installer. However, the installer may at his or her discretion, explain certain available features to the user when necessary. Table 5, page 17 lists these features. Diagnostic information is obtained through the operating panel by pressing specific keys. Information is displayed through combinations of illuminated LEDs. Features accessed through keys 4, 6, 7, 8, and “*” may be disabled through installer programming. The Diagnostic Overlay template (supplied) aids in defining specific trouble conditions, alarm memory conditions, and zone definition.

□ IDENTIFYING “TROUBLE” CONDITIONS (KEY 2)

If a trouble condition exists, a “Trouble” LED will illuminate on the operating panels. Pressing and holding the number “2” key for three seconds will cause one or more of the zone LEDs to light. Each zone LED corresponds to a specific “Trouble” condition. This procedure is simple enough to be performed by the user and communicated to the installer over the telephone for diagnosis. Table 4 explains the indicated conditions.



If the “Trouble” LED is lighted, press and hold the “2” key for three seconds. The operating panels will beep three times and one or more zone LEDs will light to indicate the nature of the “Trouble” condition as explained below:

LIGHTED LED	INDICATED CONDITION/CORRECTIVE ACTION REQUIRED
ZONE 1	AC Power Failure. Check transformer terminals 1 and 2 for presence of 16.5 VAC (no load) power.
ZONE 2	Low Battery/Blown Fuse. Check fuses F1 and F2 and condition of standby battery.
ZONE 3	Supervisory/Trouble. A supervisory defined zone is shorted or open (depending upon programming of Function 169-174).
ZONE 4	Fail to communicate. The control attempted to communicate with the central station but failed. Press the “*” key to silence the operating panel sounder. See Function 35, page 29 for more information.
ZONE 5	Memory Error. Program information stored in the EEPROM has changed. See “Powering Up The Control”.
ZONE 6	Missing Keypad. A operating panel data wire has been removed from the control.
	<i>The following conditions do not require the “Trouble” LED to be lighted. Press the “2” key and hold for three seconds in the same manner as above to obtain the following ON or OFF LED indications:</i>
ALARM	Chime on. The Chime (Monitor) feature is active.
READY	Interior OFF. The interior defined zones are turned OFF (bypassed). They may be reinstated by pressing and holding the number “4” key for three seconds. Turning the interior off may also automatically disable the entrance delay, if so programmed (Function 157).
ARMED	Delay OFF. The Entrance Delay assigned to Entrance Delay 1 and 2 defined zones has been turned OFF simultaneously with the interior. This is a selectable programming option (see Function 157).

TABLE 4 TROUBLE DEFINITION

KEY NUMBER	FEATURE PROVIDED
2	Trouble Status: If a problem exists within the system, a dedicated operating panel LED labeled "Trouble" will light. Pressing and holding this key for three seconds will cause one or more control station LED's to light to further define the trouble. This function exits automatically after 8 seconds of no key entries. See page 16.
3	Alarm Memory: Pressing and holding this key for three seconds will obtain a display identifying the zone that triggered the last alarm condition (see page 18). Upon entry of this mode, the operating panels will beep three times. The control automatically exits this mode after eight seconds. Programming Function 009 clears Alarm Memory.
4	Interior ON/OFF: All Interior defined zones may be shunted simultaneously with this key. Press key "4" and hold for three seconds. The "Ready" and "Armed" LEDs will flash alternately to indicate that a code is required to access this function. Enter a valid User Code (code must be entered within 8 seconds or the control will exit this mode). The corresponding Interior defined Zone LEDs will then blink to indicate that they are shunted. These LEDs will continue to flash until the system is armed (at the expiration of the exit delay). (See also "Zone Shunting", page 15). These zones are returned to operation by repeating the process. The operating panels beep three times whenever this feature is turned on or off to notify the user of system acceptance. The entrance delay may also be automatically disabled whenever the interior is turned off depending upon programming of Function 157. The interior and delay on/off status may be verified by pressing and holding the "2" key for three seconds. If the interior is selected off, the green "Ready" LED will light. If the Delay is off, the red "Armed" LED will also light. Upon disarming the system, the interior zones may be automatically defaulted to on or off (along with the delay if so programmed) depending upon programming of Function 160. The Interior on/off key may be disabled through installer programming (Function 162) if desired.
6	Chime: Pressing and holding the number "6" key for three seconds will activate the Chime (Monitor) feature. The operating panels will beep three times to signify that the Chime has been turned on. When enabled, the operating panels will beep twice whenever a non-interior Burglar defined zone is violated (with the control disarmed). This is commonly used as a door chime on commercial applications and to indicate that children have opened a door or window on residential applications. The Chime is turned OFF by repeating the process. The operating panels will beep twice to signify that the Chime has been turned OFF. The Chime feature may be disabled through programming (Function 163) if desired.
7	Low Battery Reset: This key is used to instruct the control to restore to normal (extinguish the TROUBLE LED) after a low battery condition has been corrected and to cause a restoration signal report. The output from Switched Power (terminal 4) is temporarily interrupted for five seconds during this process. Press key "7" and hold for three seconds. The "Ready" and "Armed" LEDs will flash alternately to indicate that a code is required to access this function. Enter a valid User Code (code must be entered within 8 seconds or the control will exit this mode). This feature may be disabled through programming (Function 164).
8	Test: Used to test burglar defined zones while the control is disarmed. Press and hold key "8" for three seconds. The operating panel will beep three times and once per minute thereafter. Each time a burglar zone is violated, the operating panel sounder will beep and the corresponding zone LED will light and remain lighted until manually exiting this mode. This allows for a "tally" of zones tested. Test mode is exited by pressing key "8" once again and holding for three seconds or by pressing the "*" key. The test feature may be disabled through programming (Function 165). Note: 24 hour zones remain active during the test mode.
9	Program: Used to enter the programming mode. See Section 3 for more information.
0	Access: Press and hold for three seconds then enter an assigned user code to provide an output for Access (door release, etc.). To enable this feature a user code must be assigned a Configuration Digit of 2, 3, 5, or 7 (Functions 22-27). The output may be obtained through the Assignable Output or optional Z729 Siren Driver/Output expander.
*	Reset: Used to clear improper key entries and to reset certain alarms (see page 14-15).
#	Zone Shunting: Zones may be shunted (bypassed) easily by using the "#" key. Press key "#" followed by the zone number (1-6) of the zone to be shunted. The "Ready" and "Armed" LEDs will flash alternately to indicate that a code is required to access this function. Enter a valid User Code (code must be entered within 8 seconds or the control will exit this mode). The LED(s) which correspond to the shunted zone(s) will flash. These LEDs will continue to flash until the system is armed (at the expiration of the exit delay). Repeating the procedure of for an already shunted zone number will remove the shunt. Pressing "#" then "9" or "0" will remove all shunts (no code entry required). The shunting feature may be disabled through installer programming (Function 161) if desired. See page 15 for more information.

TABLE 5 SPECIAL CONTROL STATION FEATURES

□ ALARM MEMORY RETRIEVAL (KEY 3)

When an alarm condition occurs, the control stores a record of the alarm in memory. This information may be retrieved even after the alarm has been reset and the operating panel "Alarm" LED has been extinguished. To obtain a display indicating the most recent alarm, press and hold the "3" key for three seconds and observe the lighted LEDs. Use the Diagnostic Overlay card (supplied) to determine the type of alarm and the hardwire zone(s) (if applicable) that activated. The display will return to the normal status mode after eight seconds. Alarm memory conditions are displayed as follows:

Burglar alarm - The "Armed" LED will light. If the alarm was activated through a hardwire zone, the appropriate zone LED(s) will also light.

Fire (Auxiliary "A") Alarm - The "Alarm" LED will light. If the alarm was activated through a hardwire zone, the appropriate zone LED(s) will also light.

Police (Auxiliary "B") Alarm - The "Ready" LED will light. If the alarm was activated through a hardwire zone, the appropriate zone LED(s) will also light.

Medical (Auxiliary "C") Alarm - The "Trouble" LED will light. If the alarm was activated through a hardwire zone, the appropriate zone LED(s) will also light.

When another alarm condition occurs, the memory will be erased and replaced by the current information.

Programming the Control

3

All programming is stored in nonvolatile “EEPROM” memory. The control is shipped with a factory (default) program already installed. All programming options are referred to as Functions. The *Program Function Map* is a list of all *Functions* complete with their factory default values.

User Level Programming provides access to Functions 1-9, which primarily pertain to the everyday operation by the end user. The *Master User Authorization Code* (User Code 1) is required to enter the user level programming mode. This code also functions as a normal user code to arm/disarm and reset alarms. This code can only be changed through user level programming.

Installer Level Programming provides access to all installer level programming Functions (10-199) and user level programming Functions 7-9.

All Functions are listed in numerical order in the *Program Function Map*, complete with their factory default values and space provided to enter new information.

Both levels of programming may be entered locally from any control station. To reduce on the job installation time, the program may be copied and transferred from other A900 controls with an optional hand held MPI230 Chip Duplicator (Part No. 487107). The system may be easily returned to factory default at any time (see “Restoring the Factory Default Program”, page 21).

INSTALLER LEVEL PROGRAMMING

INSTALLER PROGRAM AUTHORIZATION CODE

To enter the programming mode, press the “9” key and **hold for three seconds**. The operating panel will beep three times to signify acceptance. Now enter the Installer Program Authorization Code (96321 at default). All operating panel LEDs will blink continuously.

NOTE: If the first four digits of the Installer Program Authorization Code are programmed the same as any User Authorization Code (Functions 1-6), the Installer Program Code will be inoperative.

THREE MINUTE PROGRAMMING TIMER

A three minute timer is started upon entry into the programming mode. If no keys are pressed for a duration of three minutes while in the programming mode, the operating panel will emit a two second error tone and the control will return to the normal operation mode.

PROGRAM FUNCTIONS

All programming options are called Functions. Each contains a specific value, which serves as an instruction to the control. Programming changes are accomplished by entering new values into chosen functions. The allowable *range* of a value contained in each function varies according to the specific type and purpose. For instance, most of the timer related functions (entry/exit, alarm cutoff, etc.) deal with either seconds or minutes and have a range of 1-255. Functions that are associated with the digital communicator such as the account number and telephone number have a range of 1-15. Many functions are questions requiring a simple yes or no response. Since the microprocessor accepts only numbers, answers to these type functions must be in the form of a “0” for No or a “1” for Yes. The Program Function Map and Programming Functions and Descriptions sections provide additional information about each function as well as the allowable range of values.

THE " # " (FIND) AND " * " (STORE) KEYS

Two special keys are used while in the programming mode. They are the " # " (FIND) and " * " (STORE) keys. While in the programming mode, any program function may be accessed by pressing the desired function number using the numeric keys and then pressing the FIND key. This key also serves as a (NEXT) key. When pressed without first pressing any of the number keys, the " # " key will advance programming to the (NEXT) consecutive function.

Example: Pressing 4 + 5 and then FIND jumps to program Function 45 and displays its current value.

4 → 5 → #

After "finding" a program function, the value (data) which it contains will be displayed on the LEDs. The value may be changed by pressing the desired new value using the keys 0 - 9 and then pressing the STORE key. This key also serves as a (QUIT) key. When pressed without first pressing any of the number keys, the " * " key will automatically exit the programming mode.

Example: Pressing 7 + 3 and then STORE changes the current program Function value to a value of 73.

7 → 3 → *

READING THE VALUE OF A FUNCTION

While in the programming mode the operating panels display the value that is stored within each Function. Values are displayed in combinations of lighted LEDs on the control station. Using the Diagnostic Overlay card (supplied), read the values printed next to each lighted LED ("Key 3" side of card). The value for the currently displayed Function is determined by adding these values (see example below).

Value represented by each lighted LED
(1,2,4,8,16,32,64, and 128 respectively)

Observe the
lighted LEDs

In this example:

Lighted LEDs	Value represented
Zone 1	1
Zone 4	8
TROUBLE	64
Total Value	73

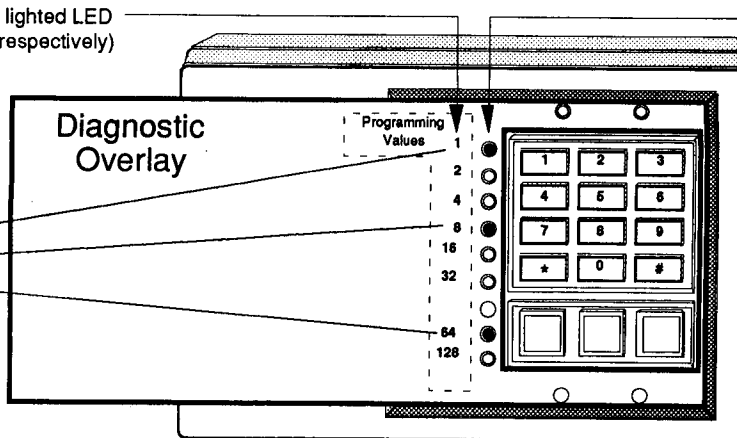


FIGURE 13 READING THE VALUE OF A FUNCTION

ZONE PLANNING GUIDE

Zones are programmed by selecting the desired zone type and definitions using the Zone Planning Guide (page D) as a worksheet. Each definition has a specific numeric value. After all selections are made, the individual values are added together and the total equals the value that should be programmed into the function for that zone.

INSTALLER ON/OFF PREMISES REPORT

Once the communicator has been programmed to report to the central station, it will be capable of informing the central station whenever an installer is servicing the account. After following the normal procedures for entering the Installer Level Programming mode, the communicator will transmit a "Installer On Premises" report to the central station. When the control receives verification of a successful transmission (kiss off tone), the control will then enter the programming mode and the operating panel LEDs will flash alternately as the control waits for programming entries to be made. (NOTE: If the communicator fails to reach the central station after one attempt, the control will enter program mode and the communication attempts will resume after program mode has been entered). After programming is complete and the program mode has been exited (pressing the "*" key twice), entering " 9 9 * " will instruct the communicator to transmit a "Installer Off Premises" report.

PROGRAM FUNCTION MAP

Provides a list of each Function, its factory default value, and a blank space to write in any changes that may be desired. The map may be removed from the book and left inside the control for future references.

EXITING THE PROGRAMMING MODE

Pressing the “ * ” key twice exits programming mode.

INSTALLER LEVEL PROGRAMMING EXAMPLE

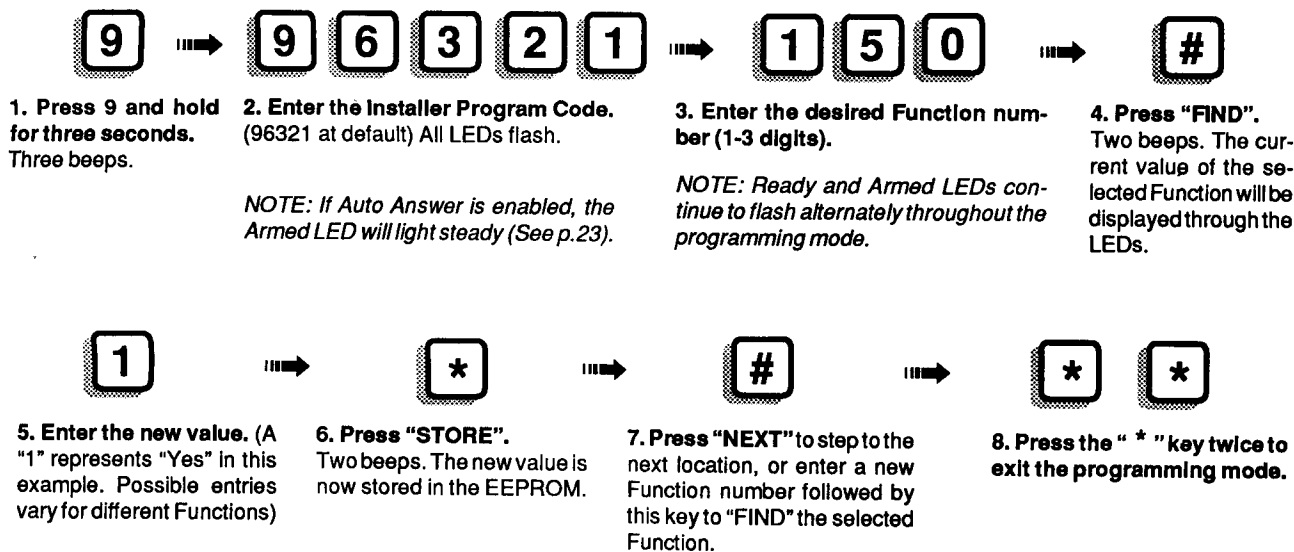


FIGURE 14 INSTALLER LEVEL PROGRAMMING EXAMPLE

RESTORING THE FACTORY DEFAULT PROGRAM

The control’s factory default program may be easily restored at any time. Restoring the factory defaults automatically resets all installer level and user level program functions to the original default (factory pre-programmed) values. Restoring the default settings provides a quick means of erasing any bench testing programming prior to final installation. If the Master User Code is forgotten and restoring the entire program to default values is not desired, it may be restored individually through program Function 177. Refer to the Function Map for a complete listing of the default values. After completing the installation and powering up the system, always perform the following procedures to assure that the correct default values are contained in the control’s EEPROM before programming.

1. Enter the installer level programming mode by following steps 1 and 2 in the example above. The operating panel LEDs will flash indicating entry into the programming mode.
2. Enter Function 180 and press the “ # ” (FIND) key.
3. Enter a value of “1” and press the “ * ” (STORE) key. The first LED (Zone 1) should now be lighted.
4. Press the “ * ” (STORE) key twice to exit the programming mode. There will be a 5 - 10 second delay while the control restores the factory default values. During this time the control will not respond to other commands. After approximately 5 - 10 seconds, the factory default values will be restored and the control will return to normal operation.

NOTE: Refer to Section 5 for U.L. Listed System requirements

USER LEVEL PROGRAMMING

User level programming provides access to programming functions which primarily pertain to the everyday operation by the user. Programming is performed in the same manner as with installer level programming with the following exceptions:

1. Access to user level programming is authorized by entering the Master User Authorization Code (User Code 1) rather than the Installer Program Authorization Code.
2. Programming is limited to Functions 1-9 only.
3. The “#” key will step to the “Next” digit of a multiple digit function (such as a user code) for reading the value of a function but this key will not advance programming to the “Next” Function. For example, after entering Function 002 (User Authorization Code 2), the first digit of the code will immediately be displayed. Pressing the “#” key will advance to digit 2. This digit is now displayed and the value can be determined. Repeat the process two more times to view digits 3 and 4. If pressed once more, user level programming is automatically exited.
4. Program mode is exited automatically after entering a new value.
5. The six user authorization codes (Functions 001-006) are accessible only through this level of programming.

MASTER USER AUTHORIZATION CODE

Along with performing normal Arm/Disarm functions, the Master User Authorization Code (Function 001) is also used to permit access to the user level of programming. This code is 1234 at factory default and may be changed to any other four digit code through user level programming. Do not use the same four digit code sequence as the first four digits of the Installer Program Authorization Code as this will make the Installer code inoperative. To enter the user level, press the 9 key and hold for three seconds. The control stations will beep three times to signify acceptance. Now enter the Master Program Authorization Code. All operating panel LEDs will blink continuously. NOTE: The control will exit the programming mode automatically if no key entries are made for three minutes.

USER LEVEL PROGRAMMING FORMAT

Perform user level programming in the same manner as explained earlier for installer level programming, substituting the Master User Authorization Code for the Installer Program Authorization Code. Only Functions 1-9 are accessible in the user level. Program mode is exited automatically after entering the new Function value.

USER LEVEL PROGRAMMING EXAMPLE

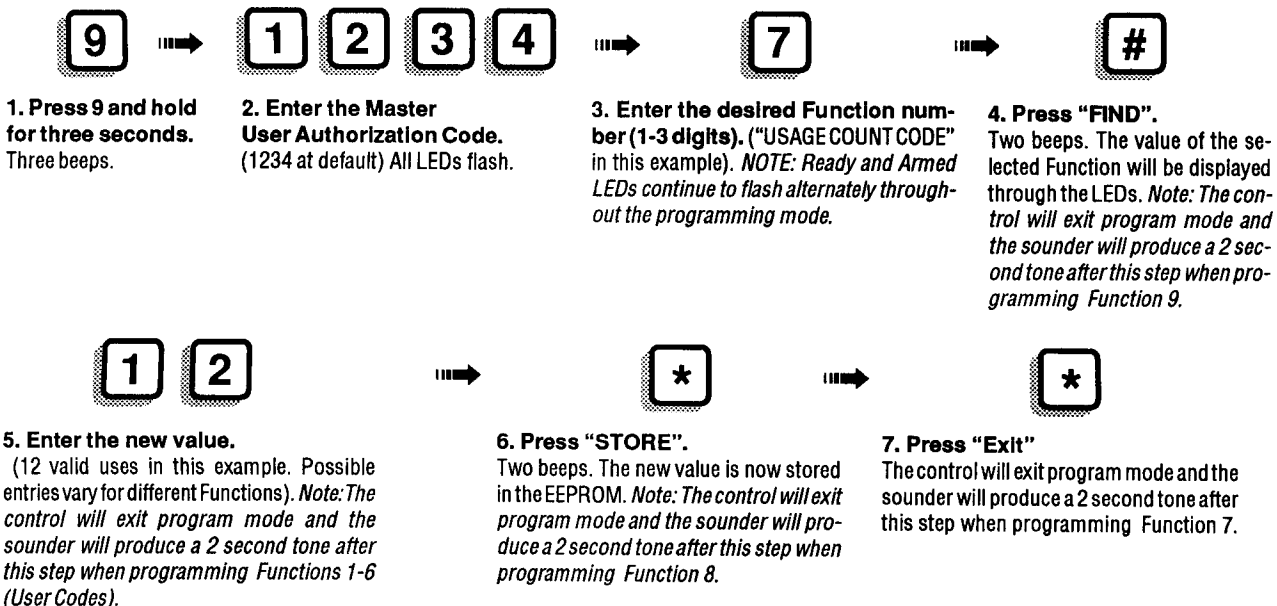


FIGURE 15 USER LEVEL PROGRAMMING EXAMPLE

SPECIAL PROGRAMMABLE FEATURES

SILENCE EXIT DELAY BEEP

The exit beep is silenced automatically when the system is armed with the interior off. This exit beep may be totally disabled by programming in an odd value when programming exit time (Function 13).

FORCE ARMING (See Program Function Descriptions, Function 178)

Z729 SIREN DRIVER/OUTPUT EXPANDER

The optional Z729 Siren Driver/Output Expander plugs directly into connector J15 at the top edge of the control board to provide a built-in two channel high power siren driver plus outputs for Burglar, Fire Police and Medical alarms plus Access, Pre-alarm, Ready (loop status), Armed, Violation and Lamp (to trigger line carrier house lamp switching devices upon pre-alarms, power failures, etc.). Additional access is provided to the control's common negative termination and Auxiliary 2 (+12VDC).

SUPERVISORY/TROUBLE ZONE SUB-OPTION

Supervisory/Trouble is a programmable zone sub-option which allows Burglar, Police, Medical, Communicator report only, and Keyswitch defined zones to react to either an open loop or shorted loop as a trouble instead of an alarm. A choice must be made as to whether to respond to trouble on a loop open or shorted condition. Trouble on loop open is the factory default when a zone is assigned the supervisory/trouble option. Upon detection of a supervisory condition the operating panel will beep continuously, the "Trouble" LED will light steady and the communicator will report the condition to the central station receiver (if so programmed). Pressing the "*" key will silence the sounder and reset the "Trouble" LED. Supervisory/trouble zones must be configured as end-of-line resistor supervised loops (see Figure 6, page 7). If any burglar defined zones are to be programmed with the supervisory/trouble option, Function 175 (Eliminate Burglar Zone EOL Supervision) must be programmed with a "0" (disabled).

SHUNTABLE 24 HOUR FIRE, POLICE, MEDICAL, COMMUNICATOR, AND KEYSWITCH ZONES

The Fire ff, Police, Medical, Communicator Report Only, and Keyswitch defined zones may be programmed as shuntable by adding a value of "32" to their base zone definition. Shunting may be performed manually utilizing the "*" key. Shunting of these zones may be valuable for servicing or in the event of a false alarming detection device.

NOTE: When a Fire ff zone is shunted, the operating panel will beep and display a supervisory/trouble condition. If the communicator is enabled and a code is programmed for supervisory/trouble reporting, a report will be transmitted. The operating panel can be silenced but the trouble condition will continue to be displayed until the shunt is removed and the zone secured.

PRIORITY (NON-SHUNTABLE) BURGLAR ZONES

For a higher level of security, all burglar zones can be individually programmed as non-shuntable. This is accomplished by adding "32" to the zone definition value when defining the zone.

HIGH SECURITY ARM/DISARM CODE

One or more of the user authorization codes may be programmed as a High Security Arm/Disarm Code by assigning a configuration digit of "4". Whenever the control is armed by a High Security Code, it can only be disarmed by that code or another High Security designated code. All other user codes are inoperable when the control is armed by a High Security Arm/Disarm Code.

DIGITAL COMMUNICATOR

The control has a built in communicator that can dial two (2) different 16 digit telephone numbers using either rotary or touchtone ® dialing. The report codes for all zones and transmitted conditions are preprogrammed for each telephone number. By programming both telephone numbers identically and selecting the same reporting options, each telephone number can back-up the other if unsuccessful. Certain conditions may also be “split” between two different telephone numbers by programming selected report options for each telephone number. Dual reporting of alarm and/or non alarm conditions, whereby signals are transmitted to both central stations is also possible (Functions 37 and 38).

□ TELEPHONE LINE SEIZURE

When the communicator is triggered, it seizes the telephone line, thereby disconnecting the house phones. Dial tone detection is then enabled. Once detected, rotary or touchtone ® dialing sequence begins, depending on programming of Function 48 and 91. If a dial tone is not detected within 10 seconds, the communicator hangs-up for the time set in Function 40 (factory default 2 seconds) and re-enables dial tone detection. If a dial tone is not detected within 10 seconds, the communicator will begin its dialing process anyway.

ADT MODIFIED 4/2 SIGNALING FORMAT

The communicator is preprogrammed to transmit in ADT Modified 4/2 format. All of the communicator's reporting codes are pre-programmed to specific ADT codes. The communicator programming functions are used to enable/disable functions only. Neither the reporting format nor the reporting codes can be changed. Upon receiving a transmission, the central station receiver will:

1. Identify the subscriber from the received Subscriber I.D. Number (three digit Account Code).
2. Identify the situation by interpreting a digit sent by the subscriber's communicator. A digit value of 1-6 indicates that the report pertains to a specific zone (1-6 respectively). A digit value of "12" indicates that the signal was manually activated through the operating panel emergency keys. A "13" or "14" indicates a Closing (system armed) and Opening (system disarmed) respectively. A "15" indicates a system status report transmission.

First Digit	Indication
1	Zone 1
2	Zone 2
3	Zone 3
4	Zone 4
5	Zone 5
6	Zone 6
7-11	— NOT USED —
12 (C)	MANUAL
13 (D)	ARMED (CLOSING)
14 (E)	DISARMED (OPENING)
15 (F)	SYSTEM STATUS

3. Further define the situation by interpreting a second digit sent by the subscriber's communicator. For instance if the control was reporting a Low Battery condition, it would first receive the subscriber's account code (as indicated in No. 1 above). Next it would receive a "15" to indicate that the control is going to report System Status information. Then it receive a "5" to further define the condition as a Low Battery condition. See the example below:

228	15[F]	5
<i>Account Code</i>	<i>First Reporting Digit</i>	<i>Second Reporting Digit</i>
	<i>(System Status)</i>	<i>(Low Battery)</i>

The following tables indicate the reporting digits which the communicator sends to the ADT central station and how each is interpreted.

❑ If the 1st Reporting Digit = 1 - 6 (digits 7-11 not used) or 12:

A digit of 1-6 corresponds directly to the number of the zone (1-6) which is reporting information to the central station receiver. A "12" indicates that the transmission is concerning a manually activated zone (i.e.: an operating panel emergency Fire, Police, or Medical zone).

The Second Reporting Digit will indicate:

Digit	Indication
1	Police or Hold-up
2	Supervisory
3	Fire Alarm
4	Fire Alarm Trouble

The Second Reporting Digit (continued):

Digit	Indication
5	Burglar Alarm
6	Medical Alarm
7	— Not Used —
8	Police or Hold-up Restore
9	Supervisory Restore
10 (A)	Fire Alarm Restore
11 (B)	Fire Alarm Trouble Restore
12 (C)	Burglar Alarm Restore
13 (D)	MED RSTR Medical Alarm Restore
14 (E)	— Not Used —
15 (F)	Zone Bypassed

❑ If the 1st Reporting Digit = 13 or 14:

A 13 indicates an Closing report (the system has been armed). A 14 indicates a Opening report (the system has been disarmed).

The Second Reporting Digit will indicate:

Digit	Indication
1-6	Corresponds directly to the number of the User Code (1-6) which was used to arm/disarm (close/open) the control
7	Indicates that the opening/closing was per formed through a Keyswitch.

If the 1st Reporting Digit = 15:

A 15 indicates the control is reporting System Status information.

The Second Reporting Digit will indicate:

Digit	Indication
1	Installer On Premises (The Installer Programming Mode has been entered).
2	Installer Off Premises (The Installer Programming Mode has been exited and the installer has entered the code " 9 9 * ").
3	AC Power Failure.
4	AC Power Restored.
5	Low Battery or Fuse Blown detected.
6	Low Battery or Fuse Blown condition restored
7	TELCO Trouble.
8	TELCO Trouble Restore.
9	Missing Keypad. An operating panel data wire has been cut or disconnected.
10 (A)	An operating panel has been restored to operation.
11 (B)	— NOT USED —
12 (C)	— NOT USED —
13 (D)	The control has detected an EEPROM error.
14 (E)	An Upload/Download session has taken place.
15 (F)	Automatic Communicator Test Report.

PROGRAM FUNCTION DESCRIPTIONS

Each programming Function is assigned a number from 1 to 199. These correspond directly to the numbers listed on the Program Function Map. A description of each function is provided in this section. Select those that are to be programmed, and write the values to be programmed onto the Program Function map. The pre-programmed (factory default) values are indicated in brackets [] on the Function map. If a Function is to be left at its default value, no programming will be required.

NOTE: Functions 1-6 may ONLY be accessed through user level programming. Functions 22 - 199 can ONLY be accessed through Installer level programming. Functions 7 - 21 may be accessed from either user or Installer level programming.

1 - MASTER USER AUTHORIZATION CODE

This is a dual purpose code. It may be used for arming/disarming and other day to day operation as determined by the assigned Configuration Digit, programmed through installer level (Function 22). It also functions as a programming authorization code to provide access to the user level of programming. This code is 1234 at factory default and may be changed at any time through user level programming. This code **MUST** be four digits in length. Digits may repeat within the code. This function is **NOT** accessible through installer level programming.

WARNING: Do not program a user code with the same digits as the first four digits of the Installer Program Authorization Code. This will cause the Installer Program Authorization Code to become inoperable.

2-6 - USER AUTHORIZATION CODES 2 - 6

User authorization codes are used to arm/disarm the control and provide other day to day operations as determined by the assigned Configuration Digit (Function 23-27). Each code **MUST** be four digits in length. Digits may repeat anywhere within the code. User codes 2-6 may only be programmed through user level programming. **SEE WARNING NOTE ABOVE.**

7 - USAGE COUNT CODE 6

User authorization code 6 performs the same function as user codes 2 - 5 except that the number of times that it can be used is controlled by Function 7. After the usage count expires, the code becomes inactive until a new usage count value is programmed into Function 7. Code 6 may also be programmed to be permanently active by selecting a value of 255 for Function 7.

8 - TIME UNTIL THE NEXT COMMUNICATOR TEST REPORT

This Function is used to select the offset time before the first automatic communicator test is reported to the central station after the control is powered up. A value of "1" must be programmed in Functions 64 & 107 in order for the communicator test to occur. The test report, if enabled, will be reported after the selected time expires and then routinely every 12 hours, 1 to 7 days, or even days from 16 to 30 as specified by Function 20. Valid range is 0 - 15. Default = 0.

9 - CLEAR ALARM MEMORY

Entering this location will automatically clear the alarm memory. No value is required nor may be programmed in this location. If this location is entered through the Installer level, the " * " (STORE) key must be pressed to accept the entry.

INSTALLER LEVEL PROGRAMMING ONLY BEYOND THIS POINT

10 - DELETE CODES

Entering this location followed by pressing the numeric keys (1 to 6) corresponding to a user authorization code, deletes the corresponding user code. Entering "0" deletes the installer program code (Function 180).

11 - ENTRANCE DELAY #1 TIME

Allowable time in seconds for entering through an "entry delay 1" defined zone and disarming the system without causing an alarm condition. Valid range is 1 to 255 seconds. An odd value will disable the control station prealarm sounder. Default is 44. **U.L. allows a maximum of 45 seconds.**

NOTE: Refer to Section 5 for U.L. Listed System requirements

12 - ENTRANCE DELAY #2 TIME

Allowable time in seconds for entering through an "entry delay 2" defined zone and disarming the system without causing an alarm condition. Valid range is 1 to 255 seconds. An odd value will disable the control station prealarm sounder. Default is 10. **U.L. allows a maximum of 45 seconds.**

13 - EXIT DELAY TIME

Allowable time in seconds for exiting through a delay or interior defined zone without causing an alarm. Valid range is 1-255 seconds. An odd value will disable the control station prealarm sounder. Default is 44. **U.L. allows a maximum of 60 seconds.**

14 - ACCESS ON TIME

Amount of time that the Access output will be active when an Access code is entered. In order for the control to provide access output, the Assignable Output must be programmed to produce +12 VDC upon Access activation (Function 182) or the Z729 Siren Driver/Output Expander must be used. Valid range for Function 14 is 1 to 255 seconds. Default is 5. A value of "0" will allow the access to switch on/off each time the code is entered.

15 - DELAY BURGLAR ALARM OUTPUT

Time in seconds that may be programmed to delay Burglar alarm output. Outputs may be obtained from the optional Z729 Siren Driver/Output Expander and the Assignable Output (terminal 3). Valid range is 0 to 255 seconds. Default is 0 seconds. **U.L. Note: Shall be programmed for "0" seconds.**

16 - BURGLAR ALARM CUTOFF TIME

Time in minutes that the Burglar alarm output will be active before automatic cutoff. Burglar alarm outputs may be obtained through the optional Z729 Siren Driver/Output Expander and the Assignable Output (if programmed). Valid range is 0 to 255 minutes. A value of "0" or "255" eliminates automatic cut-off. Default is 4 minutes. **U.L. requires a minimum burglar alarm time of 4 minutes for household and allows a maximum of 15 minutes.**

17 - FIRE ff (AUXILIARY "A") CUT-OFF TIME

Time in minutes that the Fire alarm output will be active before automatic cutoff. Fire alarm outputs may be obtained through the optional Z729 Siren Driver/Output Expander and the Assignable Output (if programmed). Valid range is 0 to 255 minutes. A value of "0" or "255" eliminates automatic cut-off. Default is 4 (no cut-off). **U.L. allows no automatic cutoff.**

18 - POLICE (AUXILIARY "B") CUTOFF TIME

Time in minutes that the Police alarm output will be active before automatic cutoff. Police alarm outputs may be obtained through the optional Z729 Siren Driver/Output Expander and the Assignable Output (if programmed). Valid range is 0 to 255 minutes. A value of "0" or "255" eliminates automatic cut-off. **U.L. allows 4 minutes minimum.**
A value of "0" or "255" eliminates automatic cut-off. Default is 4 minutes.

19 - MEDICAL (AUXILIARY "C") CUTOFF TIME

Time in minutes that the Medical alarm outputs will be active before automatic cutoff. Medical alarm outputs may be obtained through the optional Z729 Siren Driver/Output Expander and the Assignable Output (if programmed). Valid range is 0 to 255 minutes. A value of "0" or "255" eliminates automatic cut-off. Default is 4 minutes.

20 - TIME BETWEEN COMMUNICATOR TESTS

This Function specifies the time between each automatic communicator test report. This report may be programmed for every 12 hours, 1 to 7 days or even amounts between 16 and 30 days. A value of "0" represents 12 hours. Values of "1-7" represent days. Values of "8-15" represent X2 days (example: 8 = 16 days, 15 = 30 days). Default is 15 (30 days). **U.L. requires an automatic test to be performed at least once every 24 hours on commercial installations.**

21 - RESERVED FOR FUTURE USE

22-27 - CONFIGURATION DIGITS FOR CODES 1 - 6

Each user authorization code is assigned a security level called a "Configuration Digit" (programming Function 22 through 27) which defines the operations that the code is authorized to perform. Select the appropriate configuration digit for each code desired and enter the values into the function map. Table 6 describes the configuration digits and describes the usage allowed by each.

DIGIT	DESCRIPTION
1	User code will Arm and Disarm the control.
2	User code will activate access output. †
3	User code will Arm/Disarm the control. "0" (held 3 seconds) followed by user code will activate the access output. †
4	High Security Arm/Disarm. When the control is armed by a High Security code, only that code or another High Security code can disarm the control.
5	User code will Arm and Disarm the control and activate access output simultaneously. †
6	Special Arm/Disarm. Same as configuration digit 1 with one exception. If the communicator is programmed for opening/closing reports, no report will transmit when this code is used to arm or disarm the control. Warning: If the control is armed by another code and a closing report is sent, the central station WILL NOT receive an opening. If the control is later disarmed by a code which has a configuration digit "6".
7	User code will Arm and Disarm the control and activate access output simultaneously. Pressing "0" and holding for three seconds followed by the entry of a valid user code will activate access independently. †
8	NOT USED
9	User code will Arm and Disarm the control and transmit the duress code to central station receiver simultaneously.

TABLE 6 CONFIGURATION DIGITS**28-33 - ZONE 1-6 DEFINITION**

These locations are used to define the 6 hardwired zones. Refer to the Zone Planning Guide (page D) and select the desired zone types by entering values of selected zone options and sub-options into the spaces provided. Add the values assigned to each zone and enter the totals for each zone into the respective Functions 28-33. **IMPORTANT: Power to the control must be temporarily removed and restored after making programming changes to the definition of one or more zones.**

34 - COMMUNICATOR DISABLE AND DELAY

This function is used to activate or deactivate the communicator. If a value of "0" is entered the communicator will remain inactive. Any value of 1 to 255 will allow the communicator to enable after a delay of the same number in seconds. **U.L. requires that the communicator be enabled for either Local or Police Station Connected Burglar Alarm installations.**

35 - DIAL ATTEMPTS BEFORE SHUTDOWN (TELEPHONE NUMBER 1)

This Function sets the number of times that the communicator will attempt to dial the central station receiver using telephone number 1 before automatically shutting down if unsuccessful. Valid range is 1-15. **DO NOT PROGRAM WITH A VALUE OF "0"**. If the communicator is unsuccessful, the control stations will begin beeping and the "Trouble" LED will light to indicate a "Failure to Communicate" condition. Pressing the "*" key will silence the control station sounder. The "Trouble" LED will remain lighted until the communicator successfully establishes contact with the central station receiver and receives a handshake. The "Trouble" LED can also be reset by entering the program mode. The fail to communicate warning may be totally disabled for either telephone numbers by programming an odd value (1,3, etc.) for the dial attempts. **NOTE: U.L. requires 5 dial attempts minimum, 10 dial attempts maximum. An even value (6, 8, etc.) shall be selected to enable the Fail to Communicate.**

† NOTE: The Access output may be provided from the optional Z729 Siren Driver/Output Expander or through the Assignable Output (if programmed). See page 10 and 11.

NOTE: Refer to Section 5 for U.L. Listed System requirements

36 - DIAL ATTEMPTS BEFORE SHUTDOWN (TELEPHONE NUMBER 2)

This function sets the number of times that the communicator will attempt to dial the central station receiver using telephone number 2 before automatically shutting down if unsuccessful. Valid range is 1-15. See Function 35 for additional information. **NOTE: U.L. requires 5 dial attempts minimum, 10 dial attempts maximum.** An even value (6, 8, etc.) shall be selected to enable the Fail to Communicate. **DO NOT PROGRAM WITH A VALUE OF "0".**

37 - DUAL REPORT OF ALARMS

Enabling this feature permits reporting of selected alarm conditions to two central stations. For example, if Keypad Panic conditions are desired to be reported to two central stations, reporting codes for both "Keypad Panic/ Telephone Number 1" (Function 55) and "Keypad Panic/ Telephone Number 2" (Function 98) must be programmed, and a value of "1" must be programmed in Function 37 to enable Dual Reporting. If this option is not selected, the communicator will use telephone number 2 only as a back-up if communication through telephone number 1 was unsuccessful. A value of "1" in Function 37 instructs the communicator to report all alarm conditions (that are programmed to report) to the central station by dialing each telephone number. All Zone 1-6 alarms, Keypad Panic, Duress, Cancel, Zone Restore, and Supervisory/Trouble conditions are considered "Alarm" conditions. Default is "0".

38 - DUAL REPORT OF NON-ALARMS

Enabling this feature permits reporting of selected non-alarm conditions to two central stations. For example, if low battery conditions are desired to be reported to two central stations, reporting codes for both "Low Battery/Telephone Number 1" (Function 62) and "Low Battery/Telephone Number 2" (Function 105) must be programmed, and a value of "1" must be programmed in Function 38 to enable Dual Reporting. If this option is not selected, the communicator will use telephone number 2 only as a back-up if communication through telephone number 1 was unsuccessful. A value of "1" in Function 38 instructs the communicator to report all non-alarm conditions (that are programmed to report) to the central station by dialing each telephone number. Non-alarm conditions include Opening, Closing, Shunted Zone, Low Battery, Battery Restore, AC Failure, AC Restore, Memory Error, and Automatic Test conditions. Default is "0".

39 - COMMUNICATOR ON-HOOK TIME

Time in seconds that the communicator will place the telephone line on-hook if no dial tone is detected. The line seizure relay remains closed during this period. Valid range is 1-255. Default is "3".

40 - TIME BETWEEN DIAL ATTEMPTS

Time in seconds between dial attempts if previous dial attempt was unsuccessful. The telephone line seizure relay releases the line during this time. Valid range is 1-255. Default is "2". **U.L. requires no more than 45 seconds for U.L. certified accounts.**

41 - RESERVED FOR FUTURE USE (EXITS TO PROGRAMMING ENTRY MODE)

Entry into these locations will command the system to return to the point where programming mode was initially entered with all LEDs flashing.

42 - DISABLE DIALER TEST ON POWER-UP

If test reporting (Function 64 and 107) is selected through programming, a value of "0" allows the communicator to dial the central station with a test report whenever the system is powered-up or reset by the watchdog timer. A value of "1" disables this feature preventing a dialer test on power-up. Valid range is 0-1. Default is "0".

43 - RESERVED FOR FUTURE USE**44 - RESERVED FOR FUTURE USE —EXITS TO PROGRAMMING ENTRY MODE (SEE FUNCTION 41)****45-47 - ACCOUNT NUMBER (TELEPHONE NUMBER 1)**

Functions 45 to 47 store the three digit account number. Each digit of the account number is stored in a separate function beginning with function 45=digit 1, 46=digit 2 and 47=digit 3. A 10 must be programmed to represent the number 0. Valid range is 0-15. Default is 15.

48 - TOUCHTONE® DIALING (TELEPHONE NUMBER 1)

A value of "1" enables the communicator to dial using touchtone®. A value of "0" enables rotary (pulse) dialing. Valid range is 0-1. Default is "0" (rotary dialing).

49-54 - ZONES 1 - 6 REPORTING (TELEPHONE NUMBER 1)

A value of "1" programmed into each location enables the reporting capability for each zone respectively (Function 49 corresponds to zone 1, 50 to zone 2 etc.). Valid range is 0-5. A value of 0 disables reporting of the assigned zone. Default is "1".

55 - KEYPAD FIRE ff (TELEPHONE NUMBER 1)

A value of "1" enables reporting of keypad Fire zone alarms. A value of "0" disables reporting. Default is "1".

56 - KEYPAD POLICE (TELEPHONE NUMBER 1)

A value of "1" enables reporting of keypad Police zone alarms. A value of "0" disables reporting. Default is "1".

57 - KEYPAD MEDICAL (TELEPHONE NUMBER 1)

A value of "1" enables reporting of keypad Medical zone alarms. A value of "0" disables reporting. Default is "1".

58 - DURESS REPORTING (TELEPHONE NUMBER 1)

A value of "1" enables reporting of duress when a duress arm/disarm code is entered at the operating panel. A value of "0" disables reporting. Default is "0".

59 - SUPERVISORY REPORTING (TELEPHONE NUMBER 1)

A value of "1" enables supervisory reporting of when a zone programmed for supervisory is activated. A value of "0" disables reporting.

60 - OPENING/CLOSING REPORT (TELEPHONE NUMBER 1)

A value of "1" enables open/close reporting upon arming/disarming the control. A value of "0" disables reporting. Default is "0".

61 - SHUNT (BYPASS) REPORTING (TELEPHONE NUMBER 1)

A value of "1" instructs the control to report shunted (bypassed) zones to the central station. Shunted 24 hour zones are reported when they are shunted. Shunted burglar zones are reported only if the control has been armed with the shunts intact. Restorals are transmitted whenever the shunts are removed (burglar zone shunts are removed automatically whenever the control is disarmed). A value of "0" disables reporting. Default is "0".

62 - LOW BATTERY OR FUSE BLOWN/RESTORE REPORTING (TELEPHONE NUMBER 1)

A value of "1" enables reporting of low battery (while AC is not present) or blown fuse conditions. The code is also transmitted upon restoration of DC power. A value of "0" disables reporting. Default is "1".

63 - AC FAILURE/RESTORE REPORTING (TELEPHONE NUMBER 1)

A value of "1" enables reporting of AC power loss when interrupted for more than approximately 5 minutes. The code is also transmitted upon restoration of AC power. A value of "0" disables reporting. Default is "0".

64 - COMMUNICATOR TEST REPORTING (TELEPHONE NUMBER 1)

A value of "1" enables communicator test reporting. Time between tests is set in Function 20. A value of "0" disables reporting. Default is "1".

65 - EEPROM MEMORY ERROR REPORTING (TELEPHONE NUMBER 1)

A value of "1" enables EEPROM memory error reporting. A value of "0" disables reporting. Default is "0".

66 - RESERVED FOR FUTURE USE**67 - MISSING OPERATING PANEL REPORTING (TELEPHONE NUMBER 1)**

A value of "1" enables missing keypad reporting (operating panel data wire broken or the operating panel itself is missing). A value of "0" disables reporting. Default is "1". NOTE: If this function is used, the restoral signal must be manually sent after a missing operating panel has been reported. See Function 197 for instructions.

68-83 - TELEPHONE NUMBER 1

Enter the number to be dialed for telephone number 1 in Functions 68 through 83. Valid range is 0-15. A value of "0" or 10 represents dialing digit "0". A value of "11" represents "*" and 12 represents "#", when using Touchtone® dialing. A value of "13" instructs the communicator to pause for three seconds before dialing the next digit. A value of "14" instructs the communicator to wait 10 seconds for a second dial tone. A value of 15 must be programmed in the location following the last dialing digit to signify end of dialing. Defaults are 15.

NOTE: Refer to Section 5 for U.L. Listed System requirements

84-85 - RESERVED FOR FUTURE USE—EXITS TO PROGRAMMING ENTRY MODE (SEE FUNCTION 41)**86 - COPY ACCOUNT CODE AND REPORTING OPTIONS TO TELEPHONE NUMBER 2**

Entry into this location will command the system to copy all of the values in Functions 45-47 and 49-67 and duplicate them into Functions 88-90 and 92-110 respectively. **No values may be programmed into this location.**

87 - RESERVED FOR FUTURE USE—EXITS TO PROGRAMMING ENTRY MODE (SEE FUNCTION 41)**88-90 - ACCOUNT NUMBER (TELEPHONE NUMBER 2)**

Functions 88 to 90 store the account code. Valid range is 0-15. Please refer to Functions 45-47 for additional important information.

91 - TOUCHTONE ® DIALING (TELEPHONE NUMBER 2)

A value of "1" enables the communicator to dial using touchtone ®. A value of "0" enables rotary (pulse) dialing. Default is "0".

92-97 - ZONES 1 - 6 REPORTING (TELEPHONE NUMBER 2)

A value of "1" programmed into each location enables the reporting capability for each zone respectively (Function 92 corresponds to zone 1, 93 to zone 2 etc.). Valid range is 0-5. A value of 0 disables reporting of the assigned zone. Defaults are "1".

98 - KEYPAD FIRE ff (TELEPHONE NUMBER 2)

A value of "1" enables reporting of keypad Fire zone alarms. A value of "0" disables reporting. Default is "1".

99 - KEYPAD POLICE (TELEPHONE NUMBER 2)

A value of "1" enables reporting of keypad Police zone alarms. A value of "0" disables reporting. Default is "1".

100 - KEYPAD MEDICAL (TELEPHONE NUMBER 2)

A value of "1" enables reporting of keypad Medical zone alarms. A value of "0" disables reporting. Default is "1".

101 - DURESS REPORTING (TELEPHONE NUMBER 2)

A value of "1" enables reporting of duress when a duress arm/disarm code is entered at the keypad. A value of "0" disables reporting. Default is "0".

102 - SUPERVISORY REPORTING (TELEPHONE NUMBER 2)

A value of "1" enables supervisory reporting of when a zone programmed for supervisory is activated. A value of "0" disables reporting. Default is "1".

103 - OPENING/CLOSING REPORT (TELEPHONE NUMBER 2)

A value of "1" enables open/close reporting upon arming/disarming the control. A value of "0" disables reporting. Default is "0".

104 - SHUNT REPORTING (TELEPHONE NUMBER 2)

A value of "1" enables armed with shunt reporting when the control is armed with a shunted zone. A value of "0" disables reporting. Default is "0".

105 - LOW BATTERY OR FUSE BLOWN/RESTORE REPORTING (TELEPHONE NUMBER 2)

A value of "1" enables reporting of low battery (while AC is not present) or blown fuse conditions. The code is also transmitted upon restoration of DC power. A value of "0" disables reporting. Default is "1".

106 - AC FAILURE/RESTORE REPORTING (TELEPHONE NUMBER 2)

A value of "1" enables reporting of AC power loss when interrupted for more than approximately 5 minutes. The code is also transmitted upon restoration of AC power. A value of "0" disables reporting. Default is "0".

107 - COMMUNICATOR TEST REPORTING (TELEPHONE NUMBER 2)

A value of "1" enables communicator test reporting. Time between tests is set in Function 20. A value of "0" disables reporting. Default is "1".

108 - EEPROM MEMORY ERROR REPORTING (TELEPHONE NUMBER 2)

A value of "1" enables of EEPROM memory error reporting. A value of "0" disables reporting. Default is "0".

109 - RESERVED FOR FUTURE USE

110 - MISSING OPERATING PANEL REPORTING (TELEPHONE NUMBER 2)

A value of "1" enables missing keypad reporting (operating panel data wire broken or the operating panel itself is missing). A value of "0" disables reporting. Default is "1". (See Function 67 for additional information).

111-126 - TELEPHONE NUMBER 2

Program the number to be dialed for telephone number 2 in the same manner as programmed in Functions 68 through 83.

127 - RESERVED FOR FUTURE USE (EXITS TO PROGRAMMING ENTRY MODE - SEE FUNCTION 41)

128-144 - RESERVED FOR FUTURE USE

145 - TWO DIGIT ARMING

A value of "1" in this location will command the system to arm whenever the first two digits of a user authorization code are entered from a control station. The full code will still be required to disarm. Default is "0". **U.L. Note: Not to be programmed in U.L. Listed Systems.**

146 - ENABLE FORCE ARMING

A value of "1" in this location enables force arming. Force arming allows the control to arm even while a zone is faulted. When a user attempts to arm the system with a faulted zone, the control station will emit a 2 second error tone indicating that the control refused to arm. If the code is re-entered within 8 seconds after the tone quits, the control will "force arm" and the faulted zone(s) will be either temporarily or permanently bypassed, depending on the selection of Function 147. If the code is not re-entered within 8 seconds another error tone sounds to indicate that the allowed re-entry time has expired. Default is "0". **U.L. Note: This Function shall be disabled in U.L. Listed Systems.**

147 - TEMPORARY OR PERMANENT FORCE ARMING

A value of "0" in this Function selects "temporary" force arming which allows a zone that has been force armed to automatically be placed back into service when and if restored. A value of "1" selects "permanent" force arming whereby the zone will remain bypassed until the system is disarmed. Default is "0". **U.L. Note: This Function shall be disabled in U.L. Listed Systems.**

148 - BURGLAR ALARM REPORTS UNTIL LOCKOUT

This function may be programmed to limit the maximum number of successful communicator burglar alarms (from 1 to 15) that may be reported during an armed cycle or timed period. When this value is reached, the communicator will not report another burglar alarm until the system is disarmed and reset or until the 24 hour based automatic test timer expires. This prevents a "runaway" condition which can be caused by a faulty zone or detector. Default is "7". **NOTE: This function effects ONLY burglar defined zone alarms and only locks out after the number of SUCCESSFUL reports. It has no effect on Functions 35 & 36. This Function will not work if Function 159 is also selected.**

149 - PULSING BURGLAR ALARM OUTPUT

A value of "1" instructs the Burglar alarm output to repeatedly pulse, one second on and one second off whenever a Burglar alarm is activated. This applies to outputs derived from the Assignable output (terminal 3) and the optional Z729 Siren Driver/Output Expander. A value of "0" programs the output to be steady. Default is "1". **U.L. Note: Shall be programmed to "1" for Pulsing Burglar Alarm in U.L. Listed Systems.**

150 - PULSING FIRE *ff* ALARM OUTPUT

A value of "1" instructs the Fire alarm output to repeatedly pulse, one second on and one second off whenever an Fire alarm is activated. This applies to outputs derived from the Assignable output (terminal 3) and the optional Z729 Siren Driver/Output Expander. A value of "0" programs the output to be steady. Default is "0". **U.L. Note: Shall be programmed to "0" for Steady Fire Alarm in U.L. Listed Systems.**

151 - BURGLAR LOOP AUDIBLE LOCKOUT

A value of "1" instructs the Burglar alarm output to function only once per arm/disarm cycle. This applies to outputs derived from the Assignable output (terminal 3) and the optional Z729 Siren Driver/Output Expander. The communicator, if enabled will continue to send reports as each zone is violated. Default is "0". **U.L. Note: This Function shall be disabled in U.L. Listed Systems.**

152 - MECHANICAL KEYSWITCH MODE CHANGE

A value of "1" in this location allows key switch change of Interior ON/OFF from a key defined zone (see "Key Switch Zone", page 8). Default is "0".

153 - AUTOMATIC INTERIOR OFF

A value of "1" in this location commands the system to automatically switch the interior defined zones off at the expiration of the exit delay if no delay zones are violated during the exit time. This eliminates the user from having to manually turn interior off if staying in the building. The entrance delay will also be switched off at this time, if Function 157 ("Entrance delay off when interior off") is enabled. Default is "0".

154 - EXTEND BURGLAR LOOP DETECTOR STABILIZATION TIME

Following a total power loss (while the system is armed) the control will ignore all burglar defined zones for 15 seconds to allow detectors time to stabilize. Entering a value of "1" in this location extends this time to 181 seconds. A "0" will provide 15 seconds. See page 13 for more information. Default is "0".

155 - DISABLE INTERIOR FOLLOWER

The control automatically ignores all interior defined zones upon entry through a delay defined zone. This allows the motion detectors to be placed between the entry delay door and the operating panel. A value of "1" assigned to this Function disables the interior follower feature allowing all interior defined zones to remain instant during the entrance delay period. Default is "0".

156 - INTERIOR ON/OFF (KEY 4) AVAILABLE WHEN CONTROL IS ARMED

A value of "1" in this location will allow the interior on/off selection through key 4 to be operable even if the system is armed. A value of "0" will allow changes to interior on/off status only when the system is disarmed. Turning the interior on/off may also toggle the entrance delay on/off, depending upon programming of Function 157. Default is "0".

157 - ENTRANCE DELAY OFF WHEN INTERIOR OFF

A value of "1" in this location instructs the control to disable the entrance delay whenever the interior defined zones are turned off. A value of "0" disables this feature, leaving the entrance delay intact. The Interior may be turned off manually by pressing and holding key 4. The Interior may be automatically turned off after the expiration of the exit delay if no delay zones are violated by enabling Function 153. Default is "0".

158 - SIREN /BELL TEST UPON ARMING

A value of "1" in this location enables a one second test of the Burglar alarm whenever the control is armed. The Assignable Output (terminal 3) must also be programmed to activate upon a Burglar alarm condition as set by Function 182 and 183 unless output is being achieved through the optional Z729 Siren Driver/Output Expander. The communicator will not report this alarm. Default is "0".

159 - RESET TEST TIMER AFTER SUCCESSFUL REPORT

A value of "1" in this location causes the automatic test timer to reset after receiving a valid kiss-off signal from the central station receiver. The automatic test will occur 24 hrs after the last successful transmission or as set in Function 20. Default is "0".

160 - INTERIOR DEFAULT UPON DISARM

A value of "1" in this location instructs the control to turn the interior off each time the control is disarmed. The entrance delay will also turn off if Function 157 is programmed with a value of "1". Default is "0". **U.L. Note: Shall be programmed to "0" in U.L. Listed Systems.**

161 - DISABLE KEYPAD SHUNTING

A value of "1" in this location disables the ability to manually shunt zones from the operating panels. Default is "0".

162 - DISABLE KEYPAD CHANGE OF INTERIOR ON/OFF (KEY 4)

A value of "1" in this location disables the ability to turn the interior zones on or off from the operating panels. Default is "0".

163 - DISABLE KEYPAD CHANGE OF ZONE CHIME ON/OFF (KEY 6)

A value of "1" in this location disables the ability to turn the zone chime on or off from the operating panels. Default is "0".

164 - DISABLE KEYPAD SWITCHED POWER INTERRUPT (KEY 7)

A value of "1" in this location disables the ability to reset a low battery condition and interrupt Switched Power from the operating panels. Default is "0".

165 - DISABLE KEYPAD PERFORMED ZONE WALK TEST (KEY 8)

A value of "1" in this location disables the ability to perform a zone walk test from the operating panels. Default is "0".

166 - SILENT KEYPAD ON BURGLAR ACTIVATION

A value of "1" in this location instructs all control stations to be silent during a burglar alarm activation. **NOTE:** If this Function is enabled, a "Fail to Communicate" condition will not annunciate the control station sounder. Default is "0". **U.L. Note: U.L. Listed Systems shall have an audible alarm output upon alarm.**

167 - DISABLE OPERATING PANEL AUDIBLE OR VISUAL INDICATION ON POLICE ACTIVATION

A value of "1" in this location instructs the operating panels not to display visual or audible notification of a Police (Auxiliary "B") activation whether activated from the operating panels zone or a hardwired Police (Auxiliary "B") zone. Default is "1".

168 - START ENTRANCE DELAY 1 UPON KEYPAD ENTRIES

A value of "1" in this location instructs the control to begin entrance delay 1 when a keypad key is pressed while armed. This feature provides additional protection against operating panel tampering for higher levels of security. Default is "0".

169-174 SUPERVISORY/TROUBLE DETECTION ON OPEN OR SHORT? (ZONES 1 - 6)

Any of the 6 hardwire zones may be defined for supervisory/trouble detection by programming of the zone definitions (Functions 28 - 33). Functions 169 through 174 define whether a trouble condition will be detected due to a short or open in the corresponding zone. A value of "0" instructs the control to detect trouble from a loop open and a value of "1" from a loop short. Functions 169 through 174 correspond directly to zones 1 thru 6 respectively (Function 169 = zone 1, 170 = zone 2, etc.). Defaults are "0". **U.L. Note: Fire zones shall be programmed for Supervisory/Trouble on an open circuit condition in U.L. Listed Systems.**

175 - ELIMINATE BURGLAR ZONE EOLR SUPERVISION

A value of "1" programmed in this location will eliminate the need for end-of-line resistors on all burglar defined hardwired zones. The zones will then be unsupervised closed circuit loops. Default is "0".

176 - RESERVED FOR FUTURE USE - EXITS TO PROGRAMMING MODE (SEE FUNCTION 41)

177 - RESTORE USER CODE 1 DEFAULT VALUE

Entering this location will restore the Master User Authorization Code to its default value (1234). No values may be entered in this location. Because the Master User Authorization Code is required in order to program User Authorization Codes 2-6, this Function will permit the Master Code to be returned to default without having to default the entire memory contents.

178 - "FAST" LOOP RESPONSE TIME 1

Time in milliseconds that a loop violation must be maintained before a fault will be recognized on any hardwired zone defined as "Fast Response". The value programmed is automatically multiplied by 40 milliseconds by the control and the resulting value is the loop response time. A value of "2" will equal 80 milliseconds loop response, value of "10" = 400 milliseconds, etc. Default is "2" (80ms).

NOTE: 80 milliseconds should be the minimum time programmed and U.L. requires that loop response not exceed one second (a value of 25).

179 - "SLOW" LOOP RESPONSE TIME 2

Time in milliseconds that a loop violation must be maintained before a fault will be recognized on any hardwired zone defined as "Slow Response". Program in the same manner as Function 178. Default is "8" (320 ms).

180 - RESTORE FACTORY DEFAULTS (NEW EEPROM VALUES)

Factory default EEPROM values may be restored by first entering a "1" in this location, and then exiting the program mode. After exiting, the control will restore all factory defaults after approximately 5 seconds. Function 177 allows the Master User Authorization Code to be defaulted by itself without having to default the entire control.

NOTE: This function replaces all installer and user level programming values returning the control to factory default values as shipped and disables all central station communication.

181 - INSTALLER PROGRAM AUTHORIZATION CODE

The installer program authorization code is used to gain entry into the installer level programming mode. This code **MUST** be 5 digits in length. The code at default is 96321.

Section 3

182 - ASSIGNABLE OUTPUT DEFINITION

This Function determines the type of condition that will activate the +12VDC Assignable Output (terminal 3). Select the desired condition from the table below and enter into Function 182. If Function 182 is programmed for output upon Alarm conditions (value of "0"), one or more of Functions 183-186 must be programmed with a value of "1" to determine the type of alarm condition(s) desired.

Value Programmed (Function 182)	+12VDC Output from Terminal 3 upon:	U.L. Note: Auxillary "C" (Emergency) shall be silent in U.L. Listed Systems.	
0	Alarm Condition(s) as determined by Functions 183-186	Value of "1" Programmed In Function:	The Following "Alarm Conditions" Provide +12VDC Output:
1	Sw. Power reset (Key 7)/Auto Tests	183	Burglary
2	Activation of Access	184	Fire ff (Auxillary "A")
3	Supervisory/Trouble Conditions	185	Police (Auxillary "B")
4	Entrance pre-alarms and Chime	186	Medical (Auxillary "C")

TABLE 8 ASSIGNABLE OUTPUT (terminal 3) DEFINITION

183 - BURGLAR ALARM ACTIVATES ASSIGNABLE OUTPUT (terminal 3)

A value of "1" instructs the control to provide +12VDC from Assignable Output (terminal 3) whenever a Burglar alarm activates. A value of "0" disables this feature. Function 182 must also be programmed with a value of "0" to enable the terminal 3 to respond to Alarm conditions. Default is "1". **U.L. Note: Shall be programmed as "1" in U.L. Listed Systems.**

184 - FIRE ff (AUXILIARY "A") ACTIVATES ASSIGNABLE OUTPUT (terminal 3)

A value of "1" instructs the control to provide +12VDC from the Assignable Output (terminal 3) whenever a Fire (Auxiliary "A") alarm activates. A value of "0" disables this feature. Function 182 must also be programmed with a value of "0" to enable the terminal 3 to respond to Alarm conditions. Default is "1".

185 - POLICE (AUXILIARY "B") ACTIVATES ASSIGNABLE OUTPUT (terminal 3)

A value of "1" instructs the control to provide +12VDC from the Assignable Output (terminal 3) whenever a Police (Auxiliary "B") alarm activates. A value of "0" disables this feature. Function 182 must also be programmed with a value of "0" to enable the terminal 3 to respond to Alarm conditions. Default is "1".

186 - EMERGENCY (AUXILIARY "C") ACTIVATES ASSIGNABLE OUTPUT (terminal 3)

A value of "1" instructs the control to provide +12VDC from the Assignable Output (terminal 3) whenever a Medical (Auxiliary "C") alarm activates. A value of "0" disables this feature. Function 182 must also be programmed with a value of "0" to enable the terminal 3 to respond to Alarm conditions. Default is "1". **U.L. Note: This Function shall be disabled in U.L. Listed Systems.**

187 - DISABLE KEYPAD FIRE ff (AUXILIARY "A")

A value of "1" enables the keypad activated keypad Fire zone. Default is "0" (disabled).

188 - DISABLE KEYPAD POLICE (AUXILIARY "B")

A value of "1" enables the keypad activated Police zone. Default is "0" (disabled).

189 - DISABLE KEYPAD MEDICAL (AUXILIARY "C")

A value of "1" enables the keypad activated Medical zone. Default is "0" (disabled).

190 - BURGLAR SAFETY DELAY

A value of "1" instructs the communicator to wait 45 seconds before transmitting an alarm signal when a burglar alarm has been activated. If a valid User Code is entered within this time frame, the transmission will be aborted. A value of "0" = instant (no delay). Default is "1".

191 - POLICE (AUXILIARY "B") SAFETY DELAY

A value of "1" instructs the communicator to wait 20 seconds before transmitting an alarm signal when a Police (Auxiliary "B") alarm has been activated. If a valid User Code is entered within this time frame, the transmission will be aborted. A value of "0" = instant (no delay). Default is "1".

192 - MEDICAL (AUXILIARY "C") SAFETY DELAY

A value of "1" instructs the communicator to wait 20 seconds before transmitting an alarm signal when a Medical (Auxiliary "C") alarm has been activated. If a valid User Code is entered within this time frame, the transmission will be aborted. A value of "0" = instant (no delay). Default is "1".

193 - COMMUNICATOR SAFETY DELAY

A value of "1" instructs the communicator to wait 20 seconds before transmitting an alarm signal when a Communicator Only Zone alarm has been activated. If a valid User Code is entered within this time frame, the transmission will be aborted. A value of "0" = instant (no delay). Default is "0".

194 - FIRE *ff* (AUXILIARY "A") SAFETY DELAY

A value of "1" instructs the communicator to wait 45 seconds before transmitting an alarm signal when a Fire (Auxiliary "A") alarm has been activated. If a valid User Code is entered within this time frame, the transmission will be aborted. A value of "0" = instant (no delay). Default is "1".

195 - PULSE DIALING 66/33 MAKE BREAK RATIO

When the communicator is transmitting in the rotary (pulse) mode, contact closure to the telephone line is made in a 60/40 ratio. A value of "1" in this location instructs the communicator to make contact 66% of the time and break contact 33% of the time. This 66/33 ratio is necessary in some foreign countries. Default is "0". KEEP THIS FUNCTION PROGRAMMED TO A VALUE OF "0" IN ALL U.S. AND NORTH AMERICAN INSTALLATIONS.

196 - RESERVED FOR FUTURE USE - EXITS TO PROGRAMMING MODE (SEE FUNCTION 41)**197 - MISSING OPERATING RESTORE REPORT**

Enter a value of "1" to cause the communicator to report a "Missing Control Station Restoral" report to the central station upon exiting the programming mode. This function automatically returns to a program value of "0" upon a successful report.

198 - TONE TEST GENERATION FACTORY USE ONLY. NO VALUES MAY BE PROGRAMMED INTO THIS LOCATION.**199 - FACTORY ID FACTORY USE ONLY. NO VALUES MAY BE PROGRAMMED INTO THIS LOCATION.**

Specifications

4

TECHNICAL SPECIFICATIONS

Control Board:

- ☐ Six (6) two wire zones each supervised with a 2,200 ohm end-of line resistor.
- ☐ Three (3) operating panel activated zones.
- ☐ Nominal current drain for control board only: 42 milliamps.
- ☐ Watchdog microprocessor monitoring circuit.
- ☐ Superior 4 stage lightning/transient protection.
- ☐ One assignable high current alarm output.
- ☐ Low voltage detection monitoring @ 11.2 Volts threshold.
- ☐ Automatic system shutdown if voltage falls below 7.5 volts.
- ☐ Operating temperature range inside the enclosure: 32°F to 122°F (0°C to +50°C).

Power Supply:

- ☐ Full 1.5 Amp regulated.
- ☐ Less than 200 millivolts AC ripple.
- ☐ Regulated 13.8 Volts DC 900 milliamps continuous output. (See Table 10 for U.L. and C.S.F.M. limits).
- ☐ Reverse polarity protection on battery inputs.
- ☐ Float charging circuit: 13.8 Volts DC.
- ☐ Fused outputs for: Auxiliary 2 power and Assignable Output (5mm x 20mm standard acting 2.5A); Keypad/Auxiliary 1 power and Switched power (5mm x 20mm standard acting 2.5A).

Recommended Battery:

- ☐ Rechargeable 12 Volt 4 Amp-hour (B1240) or 12 Volt 6 Amp-hour (B1260) sealed lead acid.

Transformer (T1635):

- ☐ U.L listed class II plug-in, 16.5 volt AC, 35 VA secondary, 120 volt 60 Hz primary.

Enclosure:

- ☐ Twenty (20) gauge metal cabinet with knockout for optional cam lock. Dimensions: 9" W x 10" H x 2.875" D (228.6mm x 254mm x 73.02mm).

Digital Communicator:

- ☐ Touchtone® or Rotary (pulse) dialing. Rotary speed: 10pps, (selectable 60% break, 40% make or 66% break, 33% make).
- ☐ FCC Registration number: DLH66Y-12286-AL-E. Ringer equivalence: 0.0B.
- ☐ Primary and secondary phone numbers up to 16 digits.
- ☐ Dual reporting capability.

Operating Panel:

- ☐ Color coded four (4) wire hookup.
- ☐ Twelve button keypad with audible and tactile feedback.
- ☐ Three emergency panic zone keys.
- ☐ Mounts to any standard single or double gang electrical box.
- ☐ Ten (10) LEDs provide total system and zone status.
- ☐ Built-in piezo sounder.
- ☐ Nominal current drain: 20 mA all LEDs off, 60mA all LEDs and piezo sounder on.
- ☐ Up to 7 per system. (See Table 4-1 for U.L. and C.S.F.M. limits).
- ☐ Size: 4.55" H x 6.80" W x .90" D (115.57mm x 172.72mm x 22.86mm).
- ☐ Color: Bone white with gray labeling.

** California State Fire Marshal(CSFM) approval pending.

** Canadian Department of Communications pending.

FEATURES

- ☐ Ready to install with a factory basic program.
- ☐ Programmable directly from the operating panel.
- ☐ Six (6) User Authorization codes.
- ☐ Programmable communicator lockout of burglar defined zones to limit runaway reporting.
- ☐ EEPROM memory retains arm/disarm status, alarm memory, and programming after total power loss.
- ☐ Self-diagnostics with memory error detection and reporting.
- ☐ Six (6) hardwire zones programmable as burglar, 24 hr Fire ff (Auxiliary "A"), Police (Auxiliary "B"), Medical (Auxiliary "C"), and communicator report only.
- ☐ Three keypad activated emergency zones.
- ☐ A single zone may be programmed for keyswitch arm/disarm.
- ☐ Burglar zones may be defined as instant or delay (2 delay timers), interior or perimeter, silent instant, priority (non-shuntable), slow or fast loop response.
- ☐ All hardwire zones may be programmed for supervisory/trouble condition latching or momentary.
- ☐ Zone force arm with full shunt, or restore when zone restores.
- ☐ Zone auto shunt or auto restore after alarm.
- ☐ 24 hour zones may be programmed as shuntable.
- ☐ Programmable Timers: Entry Delay 1 and 2, Exit Delay, Access, Alarm Cut-off, and Delay before audible burglar alarm output.
- ☐ Programmable loop response of 40 msec. to 10 seconds.
- ☐ Eight (8) second invalid or inactive operating panel timeout and 3 minute programming timeout.
- ☐ Continuous monitoring of control panel fuses.
- ☐ Optional siren/bell test upon arming.
- ☐ Optional timed or latched access (door strike) output.
- ☐ Missing operating panel detection with communicator report.
- ☐ Digital Communicator Reporting Capabilities:
 - Report by zone.
 - Hexidecimal reporting.
 - Dual reporting.
 - Openings/Closings by User Code.
 - Shunted zone(s) reported upon arming.
 - Individual zone and or system restore.
 - Supervisory/trouble by zone.
 - Low battery/restoral.
 - AC failure/restoral.
 - Automatic test (up to every 30 days).
 - Delay before dial.
 - ADT safety delay.
 - Dial attempts for telephone number one and two.
 - Telco failure annunciation.

OPTIONAL ACCESSORIES

- ☐ **MPI-230 Chip Duplicator (Part No. 487107):** Low cost handheld duplicator for copying a program from one control to another.
- ☐ **Z729 Siren Driver/Potput Expander ††:** Plugs directly into the control board to provide a two channel high power siren driver and separate 40 mA trigger outputs for Burglar, Fire, Police, Medical, Armed, Ready, Violation, Pre-alarm, Lamp, Access and additional taps for Auxiliary 1 power and common negative termination.
- ☐ **Z229A Output Expansion Module ††:** Expands control to provide additional outputs.
- ☐ **Z232 Relay/Ground Start Module ††:** For use with phone lines that require a momentary ground to obtain dial tone.
- ☐ **MPI-266 Low Battery Cutoff Module ††:** Automatically disconnects battery to prevent deep discharge if battery voltage drops below 7.5 volts.
- ☐ **MPI-11 Siren Driver ††:** High power two channel siren driver.

Touchtone ® is a registered trademark of American Telephone & Telegraph, Inc.

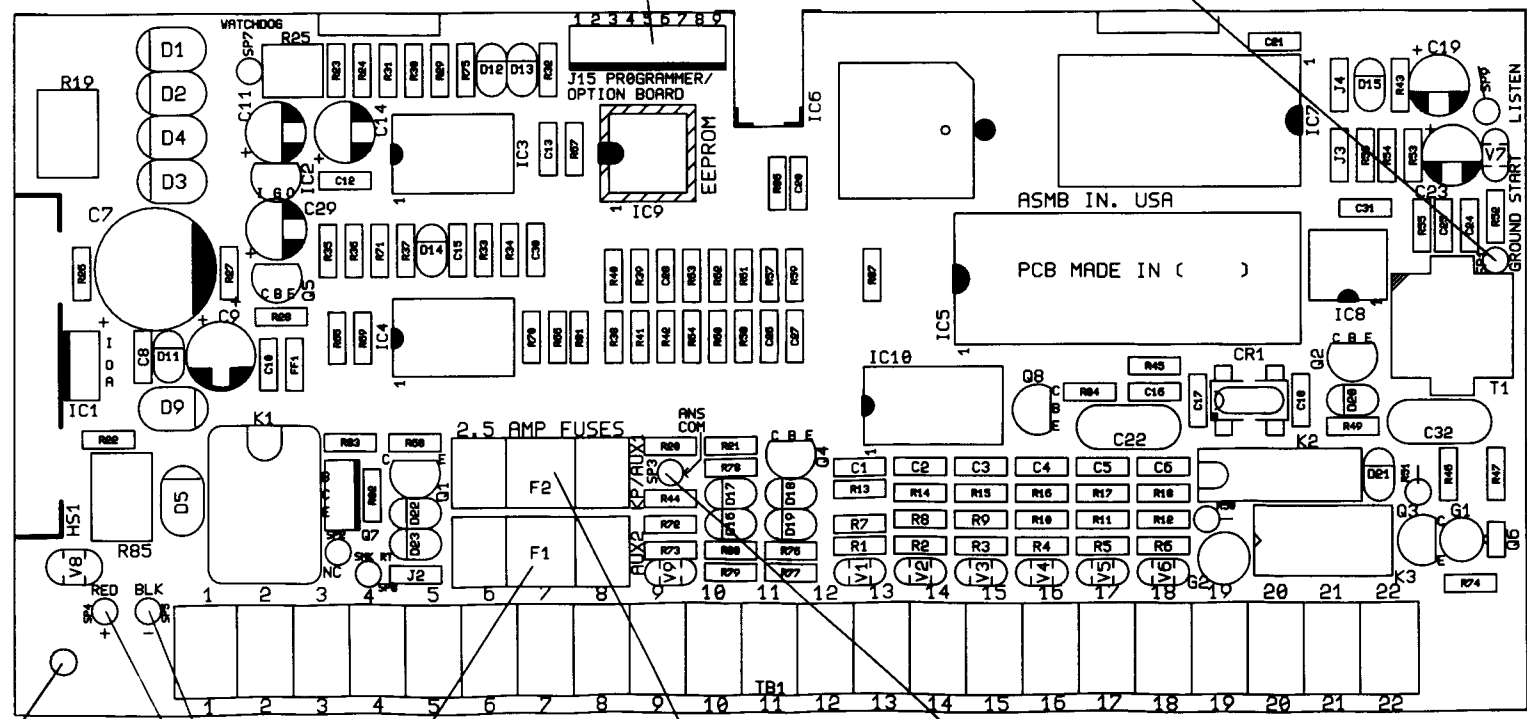
- ☐ Made in USA.

†† Not a U.L. Listed device.

FIGURE 17 CONTROL BOARD COMPONENT LAYOUT

CONNECTOR J15 - Jack for plugging in the optional MPI-230 Chip Duplicator, Z229A Output Expansion Module, or Z729 Siren Driver/Output Expander.

GROUND START - Provides a low current output from +12V to ground (0 volts) when the pulse dial relay is active. The Z232 Ground Start Module trigger connects to this point.



GROUND
Connect enclosure door ground jumper and bonded earth ground to control board screw (See page 3).

BATTERY LEADS - Red (+) and black (-) leads for standby battery connection.

FUSE F1 - 2.5Amp 5mm x 20mm standard acting fuse which protects Aux.2 output (terminal 5) and the Assignable Output (terminal 3).

FUSE F2 - 2.5Amp 5mm x 20mm standard acting fuse which protects Keypad Power/Aux.1 output (terminal 7) and Switched Power (terminal 4).

ACM - Input for an optional Z233 Answer Command Module which allows the Upload/Download feature to work on a phone line which has an answering machine attached.

NOTE: Refer to Section 5 for U.L. Listed System requirements

Section 4

Application	Maximum Current drain (milliamps) with a 4 Ah Battery	Min. Battery Standby Time in hours	Operating Panels
Non U.L. Listed or C S F M Approved **	900	3	7

TABLE 10 CONFIGURATIONS AND CURRENT DRAIN PROVISIONS

NOTE: Maximum combined continuous current drain (standby) refers to terminals 3, 4, 5, 7, and Connector J15. Under Alarm conditions, the combined output current drain should not exceed 1.5 Amps. If alarm current drain is in excess of 1.5 A (1500 mA), drain from the standby battery will result. Outputs are fused at 2.5 A (2500 mA).

Current Drain Information/Control Panel Accessories

This information is provided for reference in order to calculate the total alarm and standby current being drawn off the control. Be sure to read any literature included with devices used as specifications may have changed since this printing. Also, be sure to include all devices which are not listed below. Operating panels draw up to 50 mA. each in standby and alarm conditions. A planning chart is provided on page 50 to aid in calculations. All devices which are connected to terminals 3, 4, 5, 7, and connector J 15 must be included.

Device	Standby Current	Alarm Current
Safewatch Plus/Entrepreneur Operating Panel	50 mA.	50 mA.
Z729 Siren Driver/Output Expander	10 mA. (board only)	Approx. 1.25 A with 1—MPI-30, 30 Watt Speaker (Be sure to include all devices connected to the additional output leads)
MPI-11 Siren Driver	10 mA. (board only)	Approx. 2 A with 1—MPI-30, 30 Watt Speaker
Z229A Output Expansion Module	10 mA. (board only)	(Be sure to include all devices connected to the additional output terminals and leads)

** C.S.F.M. Approval Pending

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