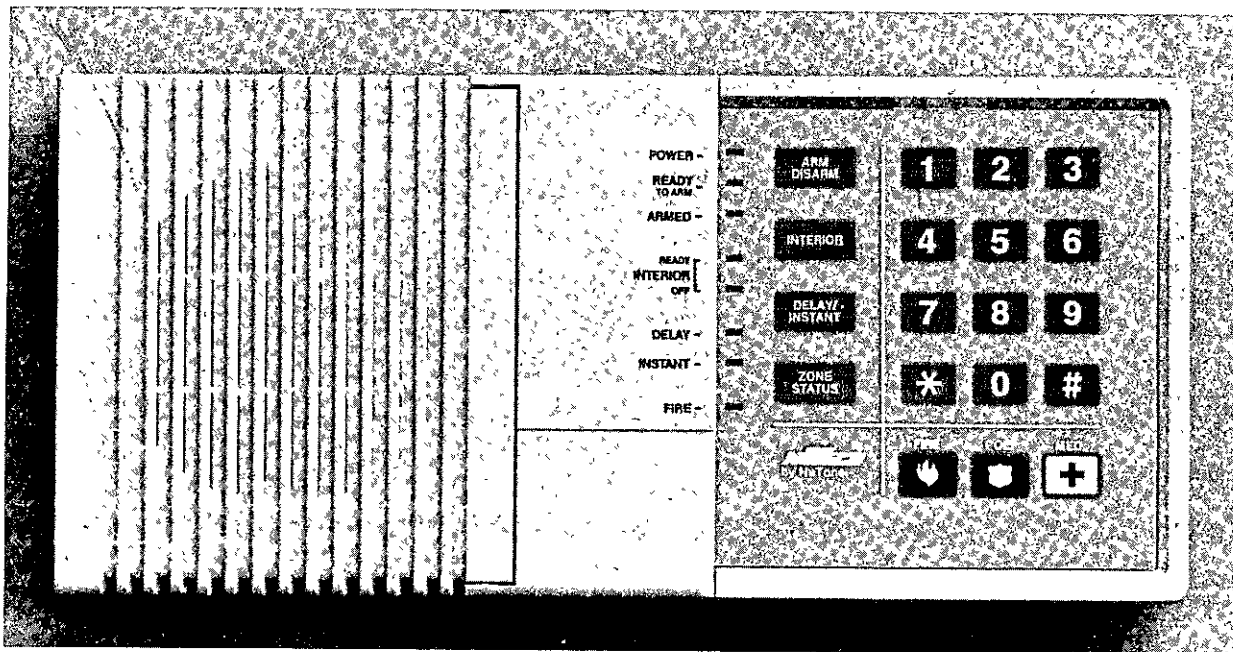


# Model SX-2900

## Installation Instructions

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**NUTONE**  
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# Introduction

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The SX-2900 Security Control Communicator System represents the latest technological advances in the security electronics industry. It has been designed to minimize operator confusion through the use of a simple, yet powerful, Keypad Command Center.

The SX-2900 System utilizes a microprocessor design combining all control and communications electronics on two (2) printed circuit boards. This design enables the SX-2900 System to deliver superior, competitive performance. All program options are stored in a NON-VOLATILE EEPROM (Electrically Erasable Programmable Read Only Memory), which maintains its data even with

power disconnected. This EEPROM may be reprogrammed over and over for changing the system characteristics. The microprocessor is constantly monitored by a "WATCHDOG TIMER", which maintains the operational integrity of the system.

Proper installation and regular maintenance by the installing company and frequent testing by the user is essential to insure continuous satisfactory operation of any alarm security system. The installing company is also responsible for offering a maintenance program and acquainting the user with the correct procedure for use and testing of the security system.

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## Special Note For California State Fire Marshal Installations

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Some equipment and assemblies referenced in this manual are not listed and therefore should not be used in California State Fire Marshal (CSFM) installation. For CSFM installations, all equipment and assemblies must be CSFM approved and installed by a skilled security professional in accordance with the NFPA Standard 74,

available from the:

National Fire Prevention Association,  
Batterymarch Park, Quincy, MA 02269

Testing of this system should be performed at least once a week as prescribed by the installer.

# Specifications

## Application

The SX-2900 is a multi-zone self-contained, keypad programmable security control system that has a built-in digital communicator. The control/communicator and its accessories are designed to detect, control, and communicate alarm and other activities for commercial or residential applications.

## Specifications

- Six two-wire zones, each supervised with a 2200 ohm end-of-line resistor
- Three keypad-activated zones
- Attractive control system
  - Built-in keypad with user friendly features
  - Four (4) button, user-ease control
  - Built-in speaker for audible system signaling (85 db alarm)
  - Eight LEDs provide total system and zone status
  - Twenty-two button keypad with tactile and audible feedback
  - Recessed rough-in housing (Model SX-2900R)

- Up to three additional keypads may be used with the system
  - 4-wire keypad, user-friendly, full feature (Model SX-3132)

Control station dimensions: 10-1/2" wide x 4-3/4" high x 7/8" deep.

- Color (control station and keypads): Bone white with gray labeling
- Digital communicator
  - Transmits to all major receivers, including: Adcor, Ademco, Franklin, Osborne Hoffman, Radionics, SESCO, Silent Knight, Varitech and Vertex
  - Transmission formats include slow, fast, Radionics superfast and Radionics BFSK®
  - Account codes may be either three (3) or four (4) digits
  - Alarm codes may be either one (1) or two (2) digits
  - Hexidecimal reporting
  - DPDT line seizure
  - True dial tone detection
  - Secondary dial tone detection
  - Pulse or Touchtone® dialing
  - Primary & secondary phone numbers: Up to 26 digits each
- Heavy duty 1.5 Amp power supply
  - Regulated at 13.8 volts DC
  - 300 milliamps for powering auxiliary devices
  - 1.2 amp-hour sealed lead-acid battery (must be ordered separately)
  - Battery float-charge circuit at 13.8 VDC
  - Automatic system shutdown below 7.5 volts
  - 18 volt, 35 VA U.L. listed class 2 transformer
  - Fused outputs provided for: SMOKE DETECTORS, FIRE and AUXILIARY POWER

- One (1) general-purpose 5-Amp SPDT relay

- Control/Communicator mounts in a recessed rough-in housing (Model SX-2900R)
  - Housing assembly dimensions: 9 1/4" x 4 1/4" (235mm x 108mm)
- Operating ambient temperature range: 32 to 122 degrees F (0 to 50 degrees C)

## Features

- Comes factory ready with a basic program. No programming required to bench test.
- All functions keypad programmable
- Nine (9) user codes available
- Fire Power reset from keypads
- EEPROM memory does not lose programmed features or arm/disarm status, during total power loss
- Watchdog microprocessor monitoring
- 24-Hour System status monitoring
- Continuous low battery monitoring
- Continuous monitoring of fuses for auxiliary and fire power
- Six-stage lightning/transient protection
- Zones programmable for: BURGLARY, FIRE, POLICE, MEDICAL, and COMMUNICATOR trip
  - Single zone programmable for keyswitch arm & disarm function, with tamper
  - Burglar zones programmable for: INSTANT, DELAY, INTERIOR, DAY SUPERVISORY, SILENT, PRIORITY (nonshuntable)
  - Two separate entrance timers available
  - Programmable loop response times
  - Latching or auto resetting DAY SUPERVISORY
  - Shunt by zone from keypad
- Optional bell test on arming
- Auxiliary light output
- Door strike output timed or toggled (on/off)
- Option to upload memory contents to IBM PC or compatible computers for diagnostic purposes
- Digital communicator
  - Report by zone
  - Single or two line extended reporting
  - Two (2) account codes
  - Split reporting
  - Opening and closing reports by user code
  - Closing ringback
  - Zone restoral and system restoral
  - Programmable abort
  - Supervisory/trouble reporting
  - Programmable delay before dialing
  - Programmable dial attempts and delay between attempts
  - Programmable test reporting for intervals of: 12 hours, 24 hours, and up to 7 days
  - Shunt by zone reporting
  - AC failure and AC restoral reporting
  - Low battery and battery restoral reporting
  - Memory error reporting
  - Listen-in capabilities.

®BFSK is a registered trademark of Radionics Inc.  
®Touchtone is a registered trademark of AT&T.

# Specifications (Cont.)

## Accessories

- **Programmer.** Handheld, uploads/downloads systems parameters to and from the control. It features an easy-to-read LCD screen, rugged travel case and all necessary hardware.
- **Intercom Module.** Powered from the SX-2900 and used with the Remote Controls to provide inside and door answering functions at the remote control.
- **Deluxe Digital Remote Control.** A microprocessor-based digital remote control with membrane keypad and a speaker for siren and/or optional intercom function.  
Includes: remote control, mounting backplate, mounting hardware and custom zone labels.
- **Digital Remote Control.** A microprocessor-based digital remote control with membrane keypad.  
Includes: remote control, mounting backplate, mounting hardware and custom zone labels.
- **Keypad.** User-friendly, full feature keypad.  
Compliments the SX-2900 Control Panel.
- **Four-wire keypad Interface Module.** Plugs into the SX-2900 Control Panel. Must be used when one or more keypads are added to the system

## System Overview

### General

The system is ready to use from the factory. It is shipped pre-programmed with factory basic (default) settings of five burglar zones, one fire zone, and three dedicated keypad zones. The system can be reprogrammed from the keypad to meet a variety of needs. Each zone is individually programmable for burglar, fire, police, medical or communicator trip. A single zone may be programmed for keyswitch arm/disarm function with tamper. Separate timers and programmable for alarm cutoffs, entrance and exit timers (2 entrance timers), loop response time and

access on time. The built-in digital communicator is programmable for most popular receiver formats.

The Control Station "Commands" the system through the use of "command" keys followed by one of nine programmable "user authorization" codes. Each code can be from 1 to 5 digits in length and may be assigned a specific level of security. The system allows the option of single, 2 digit, or full code arming with the full code required for disarming. User authorization code 9 may be programmed for a specified number of uses.

### Factory Default Settings and Options Summary

Table 1 provides a list of the pre-defined (default) settings as supplied from the factory. If the default settings do not meet your installation requirements, they can be easily reprogrammed from the Control Station.

**NOTE: At any time the system may be returned to the factory default program. This can be helpful for initial bench testing or training. See the OPERATION AND TEST section of this booklet for the procedure to return to the factory default settings.**

USER AUTHORIZATION CODE 1	2-4-5	EXIT TIME	60 SECONDS
USER AUTHORIZATION CODE 2	NOT ACTIVE	ENTRANCE TIME (DELAY 1)	30 SECONDS
USER AUTHORIZATION CODE 3	NOT ACTIVE	ENTRANCE TIME (DELAY 2)	45 SECONDS
USER AUTHORIZATION CODE 4	NOT ACTIVE	FIRE ALARM CUTOFF TIME	NO CUTOFF
USER AUTHORIZATION CODE 5	NOT ACTIVE	BURGLAR ALARM CUTOFF TIME	10 MINUTES
USER AUTHORIZATION CODE 6	NOT ACTIVE	POLICE ALARM CUTOFF TIME	10 MINUTES
USER AUTHORIZATION CODE 7	NOT ACTIVE	MEDICAL ALARM CUTOFF TIME	10 MINUTES
USER AUTHORIZATION CODE 8	NOT ACTIVE	SLOW LOOP RESPONSE TIME	320 MILLISECONDS
USER AUTHORIZATION CODE 9	NOT ACTIVE	FAST LOOP RESPONSE TIME	80 MILLISECONDS
PROGRAM AUTHORIZATION CODE	9-8-7-6-5	ACCESS ON TIME	5 SECONDS
CONFIGURATION DIGIT CODES 1-9	3	BATTERY TEST TIME	24 HOURS
ZONE DEFINITIONS:		DIGITAL COMMUNICATOR	DISABLED
1 BURGLAR (Delay 1) PERIMETER -SLOW LOOP RESPONSE		DIAL ATTEMPTS	8
2 BURGLAR (Delay 2) PERIMETER -SLOW LOOP RESPONSE		TRANSMISSION FORMAT	0 (AUTOBAUD)
3 BURGLAR INSTANT (Interior) -SLOW LOOP RESPONSE		DATA FORMAT	SINGLE-LINE REPORTING (Non-Extended)
4 BURGLAR INSTANT (Perimeter) -SLOW LOOP RESPONSE		DIAL METHOD	PULSE (ROTARY)
5 BURGLAR INSTANT (Perimeter) -SLOW LOOP RESPONSE		ACCOUNT CODE	888
6 FIRE -SLOW LOOP RESPONSE		ZONE 1 REPORTING CODE	3
		ZONE 2 REPORTING CODE	3
		ZONE 3 REPORTING CODE	3
		ZONE 4 REPORTING CODE	3
		ZONE 5 REPORTING CODE	3
		ZONE 6 REPORTING CODE	1
		KEYPAD FIRE CODE	1
		KEYPAD POLICE CODE	2
		KEYPAD MEDICAL CODE	NOT PROGRAMMED

**TABLE 1**  
**FACTORY PRE-DEFINED (DEFAULT) SETTINGS**

## Programmable Zone Options

The system has six (6) end-of-line resistor supervised zones. Each may be wired with a combination of normally open and normally closed devices. Multiple zones may be programmed for burglar, fire, police, medical and communicator trip. Any one zone may be programmed as a momentary key zone, but only one key zone may exist per system. Sub options exist for each zone. The ZONE PLANNING GUIDE, page 33, provides a table for assisting in zone planning. The zone options and sub-options are given in Table 2.

Zone Type	Options	Sub Options
Burglar	Instant Entrance Delay 1 Entrance Delay 2 Interior Perimeter Silent Perimeter Priority (non-shuntable)	Slow or Fast Loop Response Time Supervisory/Trouble
Fire		Slow or Fast Loop Response Time
Police		Slow or Fast Loop Response Time Silent or Audible Supervisory/Trouble
Medical		Slow or Fast Loop Response Time Supervisory/Trouble
Communicator		Slow or Fast Loop Response Time Supervisory/Trouble
Key (Momentary Only)		Supervisory/Trouble Shuntable

**Table 2 Programmable Zone Options**

## Control Station Zones

Three auxiliary zones (FIRE, POLICE and MEDICAL) may be activated from the control station by pressing, and holding, for one second the appropriate keypad digit. When a keypad alarm is activated, the control station begins beeping and an LED illuminates or flashes to annunciate the type of alarm activated. Police may be programmed for either silent or audible alarm. The digit communicator may be programmed to transmit a code for each alarm type. It is possible to disable any one or all of these control station auxiliary zones by programming. See CONTROL STATION DESCRIPTION.

Alternate control station alarm activation combinations are:

Key **1** and **7** for FIRE.

Keys **3** and **9** for MEDICAL.

Keys **6** and **8** or **1** and **3** for POLICE.

## Timer Options

The system has many timers which may be programmed to provide the desired system performance. Table 1 listed the factory default values for each timer. Table 3 gives the programming range for each timer.

BURGLAR ALARM CUTOFF	1-255 MINUTES OR NO CUTOFF
POLICE ALARM CUTOFF	1-255 MINUTES OR NO CUTOFF
FIRE ALARM CUTOFF	1-255 MINUTES OR NO CUTOFF
MEDICAL ALARM CUTOFF	1-255 MINUTES OR NO CUTOFF
EXIT TIME	1-255 SECONDS
ENTRANCE DELAY 1	1-255 SECONDS
ENTRANCE DELAY 2	1-255 SECONDS
SLOW LOOP RESPONSE	1-255 x 40 MILLISECONDS
FAST LOOP RESPONSE	1-255 x 40 MILLISECONDS
ACCESS ON TIME	1-255 SECONDS OR ON/OFF
BATTERY TEST TIME	12 HRS. OR 1 TO 7 DAYS

**NOTE: For C.S.F.M. installations, the following minimum and maximums are required:**

FIRE ALARM CUTOFF	NEVER CUTOFF
BURGLAR ALARM CUTOFF	4 MINUTES MINIMUM
BURGLAR ALARM CUTOFF	15 MINUTES MAXIMUM
EXIT TIME	60 SECONDS MAXIMUM
ENTRANCE DELAY 1	45 SECONDS MAXIMUM
ENTRANCE DELAY 2	45 SECONDS MAXIMUM
LOOP RESPONSE TIME	1 SECOND MAXIMUM
TIME BETWEEN DIAL ATTEMPTS	45 SECONDS MAXIMUM

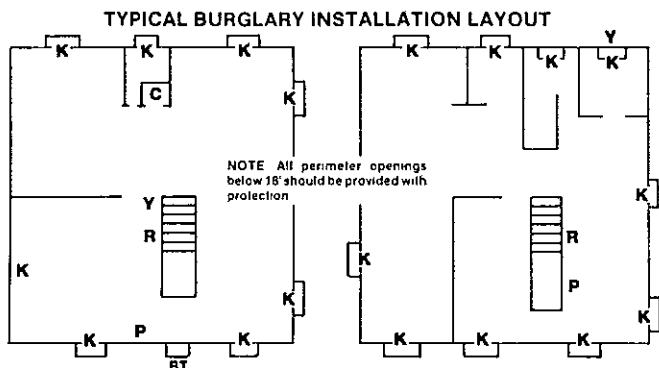
**Table 3 Timer Options**

# Installation

## Planning the Installation

The first step in the installation of any multi-zone system is planning the job. Figure 1 provides a typical burglary installation layout. This may be used as a guide in planning the specific installation for your system.

Figure 1



### LEGEND:

C-Control  
S-Siren (Steady Output)  
Y-Siren (Yelp Output)  
D-Smoke Detector  
F-Fire Trouble Remote  
K-Contacts  
R-Remote on/off  
P-Panic Button  
RT-Remote on/off w/Tamper

**NOTE:** Installation of fire detection equipment in all rooms and areas of the household is suggested for early warning fire detection.

A smoke detector should be installed in each separate sleeping area (the vicinity of, but outside of the bedroom), and heat or smoke detectors in living rooms, dining rooms, bedrooms, kitchens, hallways, attics, furnace rooms, closets, utility and storage rooms, basements and attached garages.

**PREPARATION AND EDUCATION ARE OF PRIME IMPORTANCE IN FIRE PREVENTION. ESTABLISH A HOUSEHOLD EMERGENCY EVACUATION PLAN IN THE EVENT OF FIRE.**

1. Evaluate all possible escape routes from your home and have a floor plan drawn.
2. Select two exit routes from each room.
3. Rooms on the second floor should have a rope ladder. (Be sure it will reach the ground.)
4. Draw a rough sketch of your escape plan so that everyone is familiar with it.
5. Practice your escape plan to assure that everyone knows what to do.
6. Establish a meeting place outside where your family is to report.
7. Advise the local fire authority that you have installed a fire alarm system.

## Selecting a Mounting Location

The control system must be mounted in a secure, dry location with an ambient temperature of 32 to 122 degrees Fahrenheit (0 to +50 Celsius). Since most of the control system will be recessed into the wall, special precautions must be followed in selecting the mounting location. Make a complete survey of the building structure. Look closely at the plumbing pipes, electrical wiring, heat and air ductwork, and other such equipment which might be concealed within the walls of the building.

Interior walls are the recommended location for mounting the control station. The recommended height: 4 ft. 6" to 6 ft. above the floor. Make certain that enough area is available for the control station as to avoid wall switches, boxes and wiring. The rough-in requires an opening of 5 5/8" wide x 3 3/8" high x 3" deep.

Refer to the installation instructions packaged with the rough-in (Model: SX-2900R) for additional information on installing the rough-in unit.

## Terminal Description & Hook-Ups

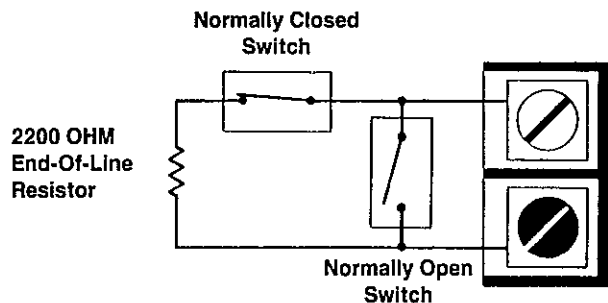
This section describes all of the terminals and connectors which are necessary to install the system. In order to become familiar with the system and its capabilities, we recommend that the system be bench tested prior to final installation. This usually consists of connecting the appropriate accessories, together with the control and then testing the system for a period of time.

**NOTE:** For bench testing, the end-of-line resistor may be placed directly across each zone input.

### Zone Inputs—Terminal J2—1 thru 9

The system provides six (6) end-of-line (EOL) resistor supervised protective zones. These zones may be connected to door switches, window switches, motion detectors, fire detectors, or other devices throughout the premise. Areas or individual detection devices may be divided up into zones so that violated detection devices may be easily found.

Normally open and normally closed contact devices may be wired into an end-of-line resistor supervised zone as in Figure 2.



Supervised Protective Zone Hookup

Figure 2

Provided the resistor is installed in series with the loop at the furthest most remote end, any opening or shorting of the loop between the resistor and the control terminals will violate the zone. By utilizing the end-of-line resistor in its intended manner, the overall versatility and security of the installation will be enhanced. Fire defined zones must have the end-of-line resistor installed in the loop after the last fire detection device, in order to detect troubles or breaks in the fire loop.

## Control Station Keypads

The Control Station connects with a 4-wire type cable. Two wires are for power (+12V and negative) and two wires are for data in and data out on a serial data bus. Standard 22 gauge wire is ideal for most cable runs up to 1000 feet. Cable runs up to 3000 feet are possible using twisted pair or shielded cable. Long cable runs should only have one control station per cable run back to the control.

SX-2900	Wire Color	Function	Control Terminal
Pin 1	Black	Negative	J2-1
Pin 2	White	Data Out Remote	J2-2
Pin 3	Green	Data In Remote	J2-3
Pin 4	Red	Positive +12VDC	J2-4

(Model SX-2900AM) allows additional 4-wire control stations to be used.

## AC Transformer—Terminals J1-8 and J1-9

The system is powered by an 18 Volt 35 VA minimum, internally fused, Class II transformer. This transformer is included as part of the complete package with the system.

**CAUTION:** Never short the terminals of the transformer together. This will cause the internal fuse to blow. Never replace with or substitute a transformer of less than minimum stated rating. The transformer must be connected to a 120 VAC 50/60Hz 24-hour power outlet not controlled by a wall switch.

- Step 1. Verify that the master power has been disconnected.
- Step 2. Connect the transformer to terminals J1-8 and J1-9 of the control using 18 gauge minimum, 2 conductor wire (maximum length 50 feet).

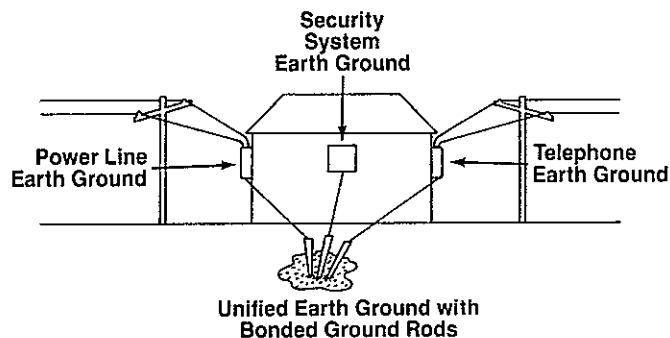
- Step 3. Do not plug the transformer in at this time.

The AC power circuit is protected from transients by spark gaps and MOV transient suppressors. If AC power is lost, the system immediately switches to the standby battery power.

## Unified Earth Ground

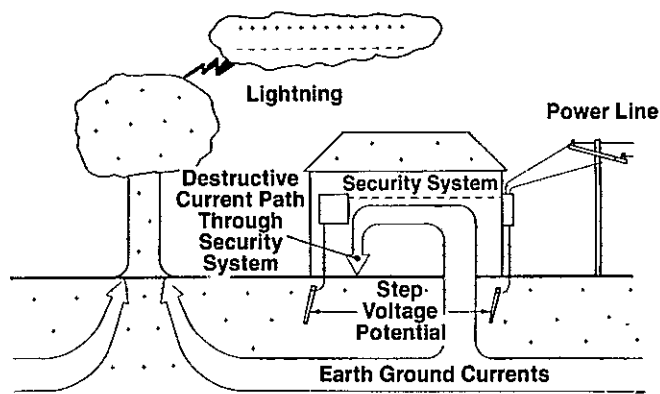
Connect a ground wire from the earth ground screw terminal to a "UNIFIED EARTH GROUND STAKE".

An ideal earth ground for security equipment is a "UNIFIED EARTH GROUND." This is an earth ground system that connects the power line, telephone, and security system grounds to a common earth ground stake. See Figure 3.



**Figure 3**  
**Unified Earth Ground**

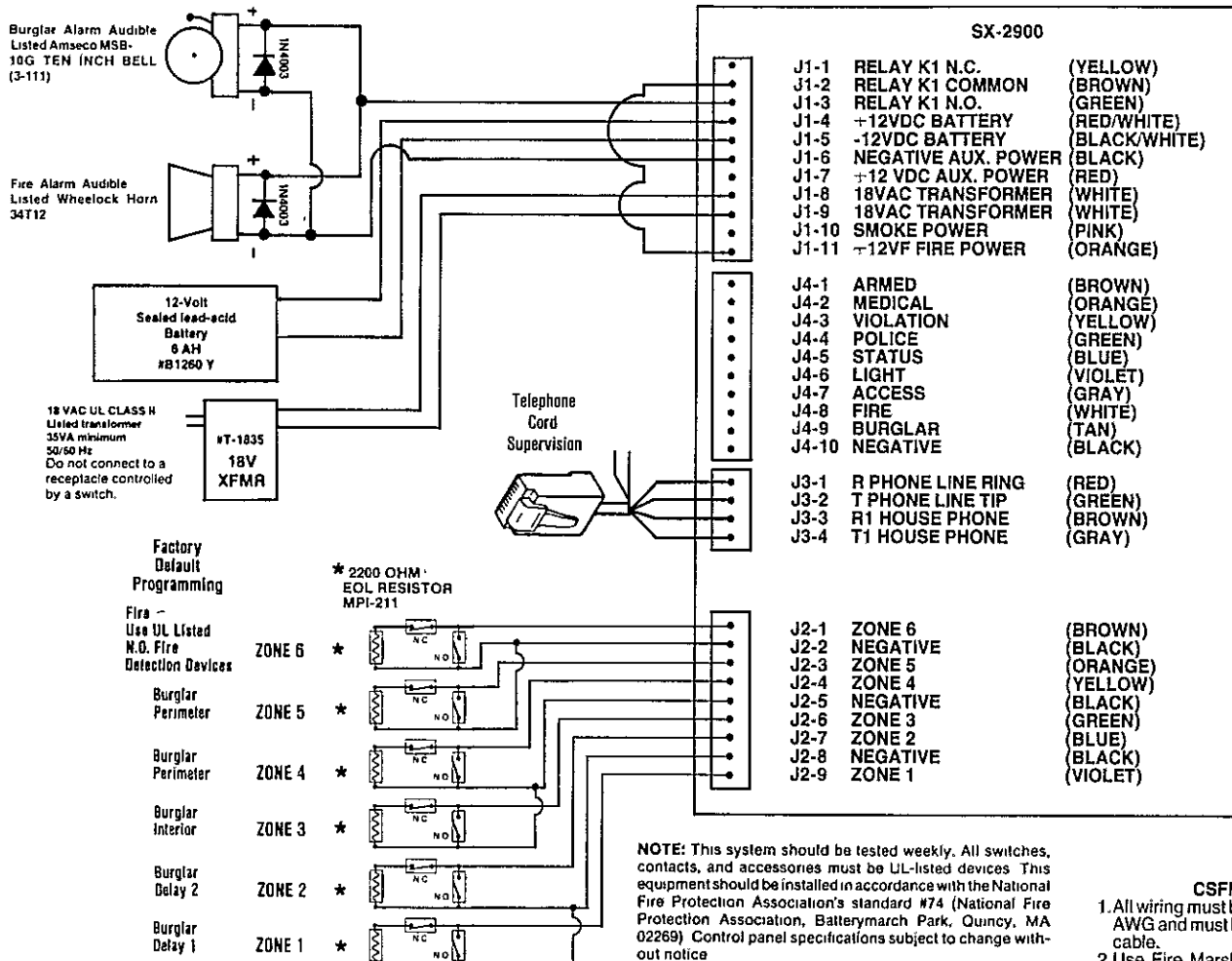
Grounds which are connected far from the earth ground stake often have numerous 90 degree turns which cause an undesired inductance in the earth ground path. This inductance blocks the lightning path to the earth ground causing the lightning current to run through the security equipment. When running ground wires never run the wire so that it runs toward earth then away from the earth. Run ground wires toward or parallel to earth, but never away from earth. Simply stated: NEVER run a ground wire up a wall.



**Lightning Step Voltage Blowout**  
**Figure 4**

A "UNIFIED EARTH GROUND" eliminates a common problem in security systems during lightning strikes known as "STEP VOLTAGE BLOWOUT." "STEP VOLTAGE" is a voltage potential between different earth ground stakes during a lightning strike. The voltage potential results in a destructive current flow path through the security equipment. See Figure 4.

# Installation (Cont.)



**NOTE FUSES:** Use only fast blow type 1 AG fuse of the appropriate voltage and amperage rating.  
**NOTE:** Float-charge voltage 13.6 to 13.8 Volts  
 Maximum charge-current 400 milliamps  
 Quiescent charge-current 20 milliamps. Replace every 3 to 5 years.

U.L. Listed Pyrotector Smoke Detectors, Head 305942 and Base R2942, or equiv.

**NOTE:** For Fire Alarm only hook up. Zones 2 thru 6 may be reprogrammed to a fire type zone function.

Hookup when Zone 6 is defined as Fire

**NOTE:** Not applicable to household burglar installations.

**LIGHTNING PROTECTION NOTE**  
 The control panel must be 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. DO NOT use conduit, gas pipe, or telephone-equipment grounds. Refer to Figure 5, Unified Earth Ground Hookup.

Telephone connection of a fire alarm signal from this system to a fire alarm headquarters or central station is permitted only with the approval of the local authority having jurisdiction.

**NOTE:** Depress the Program Switch momentarily prior to Function Programming.

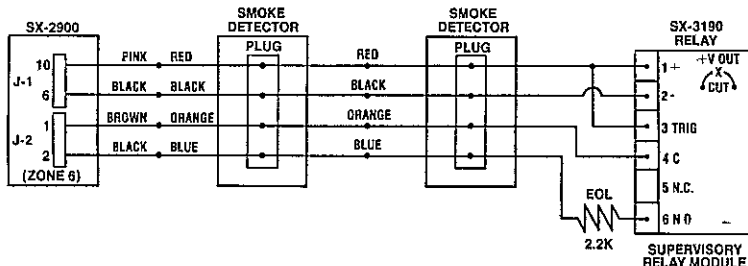
## CSFM NOTES

1. All wiring must be not less than No. 22 AWG and must be listed energy limited cable.
2. Use Fire Marshal approved wire for California installations.
3. Diodes IN4003 (across the Burglar bell and Fire horn) are for noise suppression.
4. Smoke detectors and motion detectors must operate over a voltage range of eleven (11) to fourteen (14) volts.
5. Alarm sounding devices must be installed so that they are clearly heard in all sleeping areas and must operate over a voltage supply range of eleven (11) and fourteen (14) volts.
6. Rating of K1 relay contacts: 5A at 28 VDC.
7. Maximum continuous current drain from terminals J1-7, 10, 11 and connectors J4 BD2 and J4 (combined) should not exceed the limits per Table 2-1. The alarm-condition (combined) current drain should not exceed.

Complies with Part 68 FCC Rules. Ringer Equivalence: 0.0 B. Use USOC RJ-31X or RJ-38X connector.

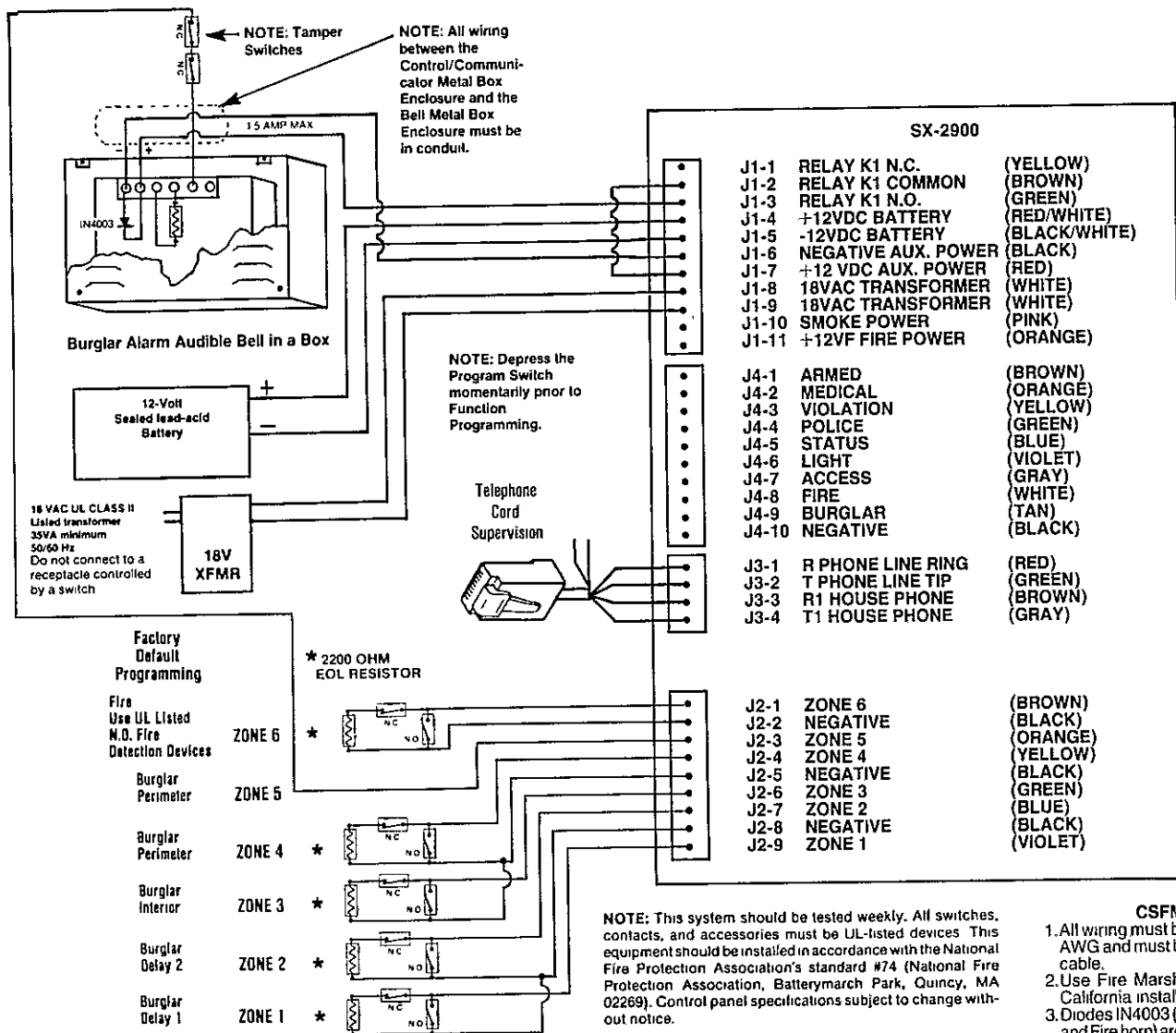
Complies with the limits for class B computer devices in accordance with the specifications of subpart J of part 15 of FCC rules.

Complies with CSFM Rules for Fire Alarm Installations.



## Suggested Household Burglar Alarm and/or Household Fire Alarm Hookup





**NOTE:** This system should be tested weekly. All switches, contacts, and accessories must be UL-listed devices. This equipment should be installed in accordance with the National Fire Protection Association's standard #74 (National Fire Protection Association, Batterymarch Park, Quincy, MA 02269). Control panel specifications subject to change without notice.

#### LIGHTNING PROTECTION NOTE

The control panel must be 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. DO NOT use conduit, gas pipe, or telephone-equipment grounds. Refer to Figure 5, Unified Earth Ground Hookup. Telephone connection of a fire alarm signal from this system to a fire alarm headquarters or central station is permitted only with the approval of the local authority having jurisdiction.

**NOTE FUSES:** Use only fast blow type 1 AG fuse of the appropriate voltage and amperage rating. **NOTE:** Float-charge voltage 13.6 to 13.8 Volts Maximum charge-current 400 milliamps Quiescent charge-current 20 milliamps. Replace every 3 to 5 years.

**NOTE:** The Alarm Bell metal box should be electrically insulated from the building and the Unified Earth Ground.

#### CSFM NOTES

1. All wiring must be not less than No. 22 AWG and must be listed energy limited cable.
2. Use Fire Marshal approved wire for California installations.
3. Diodes IN4003 (across the Burglar bell and Fire horn) are for noise suppression.
4. Smoke detectors and motion detectors must operate over a voltage range of eleven (11) to fourteen (14) volts.
5. Alarm sounding devices must be installed so that they are clearly heard in all sleeping areas and must operate over a voltage supply range of eleven (11) and fourteen (14) volts.
6. Rating of K1 relay contacts: 5A at 28 VDC.
7. Maximum continuous current drain from terminals J1-7, 10, 11 and connectors J4 BD2 and J4 (combined) should not exceed the limits per Table 2-1. The alarm-condition (combined) current drain should not exceed.

Complies with Part 68 FCC Rules. Finger Equivalence: 0.0 B. Use USOC RJ-31X or RJ-38X connector.

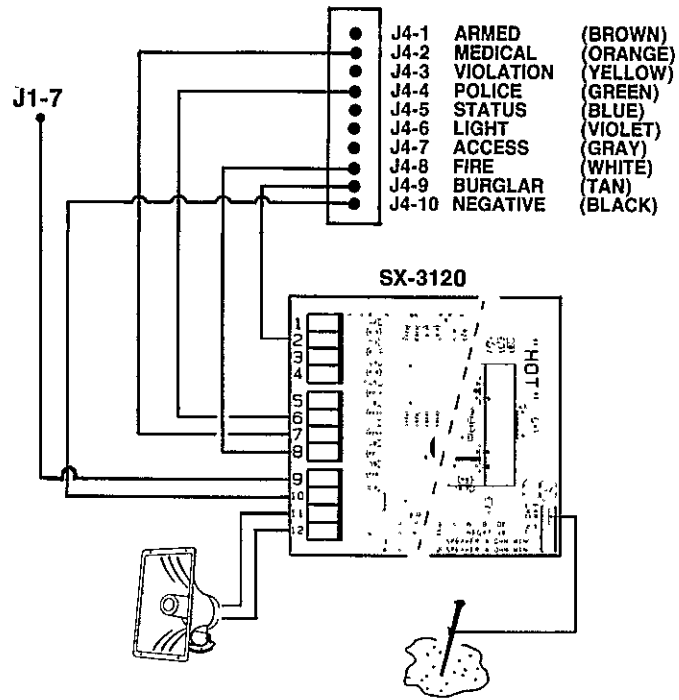
Complies with the limits for class B computer devices in accordance with the specifications of subpart J of part 15 of FCC rules.

Complies with CSFM Rules for Fire Alarm Installations.

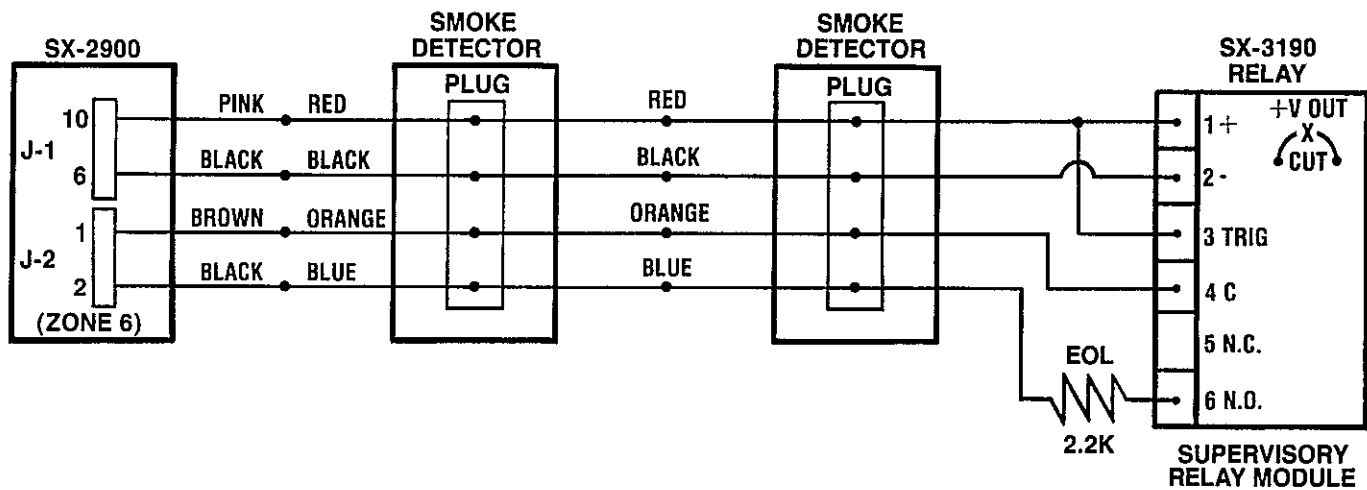
**Suggested Commercial Grade A Local Burglar Alarm  
Grade A Police Station Connected Burglar Alarm,  
Grade B or C Central Station Burglar Alarm Hookup.**

## Installation (Cont.)

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# Smoke Detector Wiring Diagram For Power and End-of-Line Supervision



## Installation (Cont.)

### Earth Ground Do's and Don'ts

- DO:**
1. Use a minimum 14 gauge solid wire.
  2. Keep the run as short as possible.
  3. Keep the minimum wire bend radius at least 8 inches.
  4. Run the earth ground wire by itself.
  5. Use 8 foot copper clad ground rods.
  6. Bond the ground rods with new separate clamps and wire.
- DON'T:**
1. Introduce inductance into the earth ground wire by:
    - A. Running with other wires.
    - B. Coiling the wire.
    - C. Running the wire in conduit.
  2. Run the wire away from the earth.
  3. Run parallel to metal without properly bonding to the metal.
  4. Disturb the clamps installed by the Power Company or Telephone Company.


### Battery—Red and Black Leads

The system was designed to operate with a 12 Volt 1.9 amp/hr. rechargeable sealed lead acid battery as a primary power back up. The power supply within the system provides a 13.8 Volt float charge to the battery through the red and black power leads. A reverse current diode will provide some protection to the electronics if the power leads are accidentally reversed. **DO NOT LEAVE THE LEADS REVERSED. OVERHEATING OF RESISTOR WILL RESULT.**

### Battery Installation


Place the battery in the battery holder. Connect the black wire to the black terminal marked “—”. Connect the red lead to the red terminal marked “+”.

### Low Battery Monitoring

The system performs a test on the battery at each communicator/battery test time. If the voltage falls below 11.2 Volts, the power LED will flash and the prealarm will sound. The prealarm can be silenced with the  key. The LED will flash until the battery is retested and passes the test. If the digital communicator is so programmed, it will report the low battery condition to the central station.

### Battery Charging/Power Shutdown

The float charge voltage for the system 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.

If AC fails for an extended period and the battery voltage drops below 11.2 volts, the low battery detector will activate and cause the prealarm to beep, blink the power LED and the digital communicator will report to the central station if so programmed. The beep can be silenced with the  key. If the voltage drops below 7.5 Volts, the microprocessor will shut down, but there will still be auxiliary equipment current drain on the battery.

### Alarm/Function Outputs (Connector J-4)

Outputs of the system are present at connector J-4 on the control board. See pages 8 and 9. An unpluggable lead connector is provided to plug into connector J-4.

The function of each output is shown in Table 4. Outputs

J4-8 and J4-9 are capable of triggering relay K1 or auxiliary devices which require less than 50 milliamps at 12 Volts DC. More than one of these outputs can be connected to the same low current trigger terminal.

**CAUTION: J-4 outputs cannot drive a device which requires more than 50 milliamps directly. Damage to the control will result. High current devices must be switched through relays such as K1.**

Terminal	Function	Description
J4-10 (Black)	Negative	Common power supply negative.
J4-7 (Gray)	Access Output	Provides a positive output when an ACCESS code is entered at the keypad. Program Function 20 sets the amount of time that this output is active.
J4-6 (Violet)	Lamp Output	Provides a 2 minute output when any keypad key is pressed, entry or exit delay begins, AC power fails, or when any type of alarm occurs.
J4-5 (Blue)	Status	Output for remote burglar zone ready indicator.
J4-3 (Yellow)	Violation	Output upon activation of burglar, fire, police or medical alarm. May be used for a strobe or auxiliary indicator. This output stays active until the system is reset or disarmed.
J4-1 (Brown)	Armed	Output for remote burglar armed status indicator. If closing reports are being transmitted to the central station, this output becomes active after the closing kissoff from the central station, which allows a remote indication of ring back.
J4-2 (Orange)	Medical	Alarm output upon activation of either a keypad or hardwired medical alarm.
J4-4 (Green)	Police	Alarm output upon activation of either a keypad or hardwired police alarm.
J4-8 (White)	Fire	Alarm output upon activation of either a keypad or hardwired fire alarm.
J4-9 (Tan)	Burglar	Alarm output upon activation of any burglar defined zone.

Table 4 — Connector J4 Description

### Auxiliary Relay K1—Terminals J1-1, -2, -3

Auxiliary relay K1 is a general purpose 5 Amp contact relay which may be triggered by 12 Volt DC applied to terminal for relay K1. The relay allows the low current outputs of connector J-4 to activate high current loads such as sirens, bells, strobe, door strikes, etc.

## Power Supply Outputs

### Auxiliary Power (Terminal J1-7 is positive and J1-6 is negative.)

12 Volts DC for powering motion detectors, relay boards and other accessories. Fuse F1 protects this output at 1.5 amps. Should this fuse ever blow, the power LED will blink and the control station will beep. If the communicator is programmed for low battery/fuse reporting, a signal will be transmitted to the Central Station.

### Fire Power (Terminal J1-11 is positive and J1-6 is negative.)

12 Volts DC for powering Fire Alarm audible devices. Fuse F2 protects this output at 2.5 Amps. Should this fuse ever blow, the power LED will blink and the control station will beep. If the communicator is programmed for low battery/fuse reporting, a signal will be transmitted to the Central Station.

### Smoke Power (Terminal J1-10 is positive and J1-6 is negative.)

12 Volts DC for powering smoke detectors. Smoke detectors can be reset (unlatched) by the keypad with command 7. Each time the control does an automatic load test on the battery, smoke power will be removed for 5 seconds. Fuse F2 protects this output at 2.5 amps. A power supervision module is required.

**NOTE: Do not attach motion detectors or other burglar sensors to terminals J1-6 and J1-10.**

**NOTE: Maximum continuous combined current drain from connectors J-1, J6 and J7 should not exceed the limits as specified. Alarm condition current drain should not exceed the recommended limits. When replacing fuses, always use the proper current and voltage rating. A blinking power LED may be reset by performing a manual battery test (command 7) if the battery is recharged.**

## Telephone Connections—J3

Telephone Line—Terminal J3-2T, (Green wire from the telephone line)

Terminal J3-1, R (Red wire from the telephone line)

House Line—Terminal J3-4, T1 (Gray wire from the telephone line)

Terminal J3-3, R1 (Brown wire from the telephone line)

Terminals J3-2 and J3-1 are the telephone line connection to the system. Terminals J3-4 and J3-3 connect to all the house telephones. See Figure 5. When the communicator activates, all the house telephones will be disconnected to prevent someone from picking up and blocking the communicator from calling out.

**NOTE: When the RJ31-X or RJ38-X jack is properly wired, the systems' terminals should read 48 volts when the communicator is inactive and 0 volts when the communicator is active. Telephone company information may be found in the back of this booklet.**

### Telephone Jack

In order to get a communicator jack installed, the telephone company will need the following information:

1. Phone number to which the communicator will be connected.
2. Jack type: USOC RJ-31X or RJ-38X.
3. Desired location of the jack.
4. FCC registration number: DLH66Y-12286-AL-E.
5. Ringer equivalence: 0.0B.
6. Manufacturer: NuTech Inc.

Line seizure means that when the communicator activates, all the house telephones will be disconnected to prevent someone from picking up and blocking the communicator from calling out.

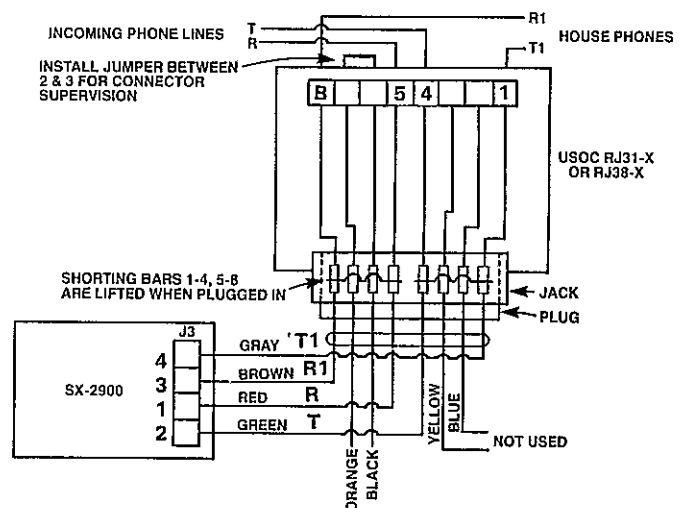


Figure 5—Telephone Hookup Diagram

# Installation (Cont.)

## Wiring the Zone Loops

As previously stated, the system is equipped with inputs for six protective zones. It is important to know that any of the six zones can be reprogrammed, by you, to perform functions that suit your needs. You could, for example, have five interior zones and only one perimeter burglar zone if desired. Before wiring your system, study the following example which is based on the factory default programming.

### Typical Building Example

What follows is a brief discussion of each of the six zones as defined by the factory programmed default codes.

#### Zone 1

Defined as Burglar Delay 1, with an exit time of 60 seconds and an entrance delay of 30 seconds. This will be our main entry or "front door." If the control is armed in the instant mode, this and all burglar zones will be instant.

#### Zone 2

Defined as Burglar Delay 2 with an entrance time of 45 seconds, otherwise same as Zone 1. This zone will be our "garage entrance."

#### Zone 3

Defined as "Interior." We've shown a motion detector on this zone. The interior may be turned off from the keypad allowing movement in the house while the system is armed.

#### Zone 4

Defined as "Burglar Perimeter." This is a window on a loop from an older system which did not have an end-of-line resistor. We have added a resistor to configure the loop as "normally closed" only.

#### Zone 5

Defined as "Burglar Perimeter." Note that we show N/C and N/O switches on the same loop. This can be particularly convenient when, you'd like to have several N/C magnetic switches on the same circuit with a N/O tamper switch.

#### Zone 6

Defined as "Fire." We have added an E.O.L. resistor to last smoke detector on the loop. This gives E.O.L. supervision to that zone.

## Points To Remember

1. Wiring for each of the six zones are from cable assembly J2 pins 1-9. Zone 1 connects to pins 8 and 9 (black and violet wires). Zone 2 connects to pins 7 and 8 (blue and black wires). Notice that pin 8 (black) was used for both zone 1 and 2. Each zone loop has a separate wire input, but shares a common negative return with another zone.
2. If you elect not to use a zone then close that zone with a 2200 Ohm EOL resistor.
3. Many other zone use options are programmable by you. For example, factory default programming does not include any police, medical or keyswitch zones.

**NOTE: All zones must incorporate a 2200 ohm series load. Refer to Figure 6.**

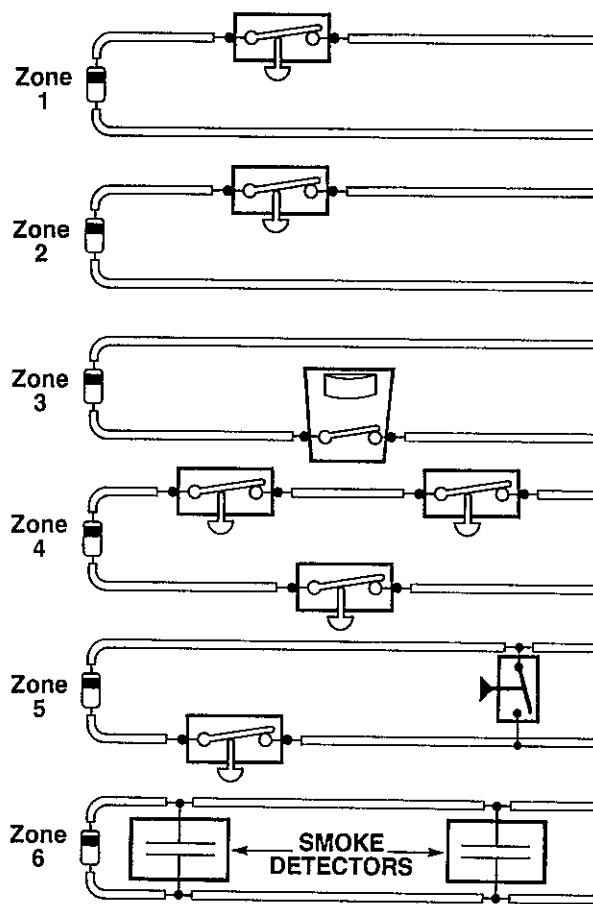


Figure 6 Typical Zone Wiring

# Control Station Description

## Introduction

The Control Station is a total "Command Center." Eight multi-function LEDs indicate system status, zone status, alarm memory, and also provide a "window" into the more advanced features of the system. A door on the keypad lifts up to reveal an inside label. This label provides a space for marking each zone description and also lists the various commands and LED functions.

The commands include: ARM, disarm, display zone STATUS, display ALARM MEMORY, turn INTERIOR zones on or off, switch to DELAY or INSTANT mode, activate loop TEST, enter PROGRAM mode, RESET keypad, activate ACCESS, and SHUNT (bypass) zones. The system requires only four wires to take advantage of its many features.

## Control Station Wiring Hookup

### Preparation

1. Insert three (3) provided retaining clips into backplate.
2. Locate rough-in box at convenient operating height — normally, 48" to 60" from the floor.
3. Install the rough-in box in chosen location.
4. Align backplate with rough-in box and mark mounting hole locations.
5. Drill  $\frac{3}{16}$ " pilot holes for anchors in four locations.
6. Insert Anchors into pilot holes and mount backplate to rough-in box and wall.
7. Affix Zone ID labels as required.

### Completing Installation

1. Attach keypad to backplate by sliding keypad's tabs into slots in top of backplate.
2. Using the three (3) provided screws, secure keypad to backplate through bottom holes and retaining clips.

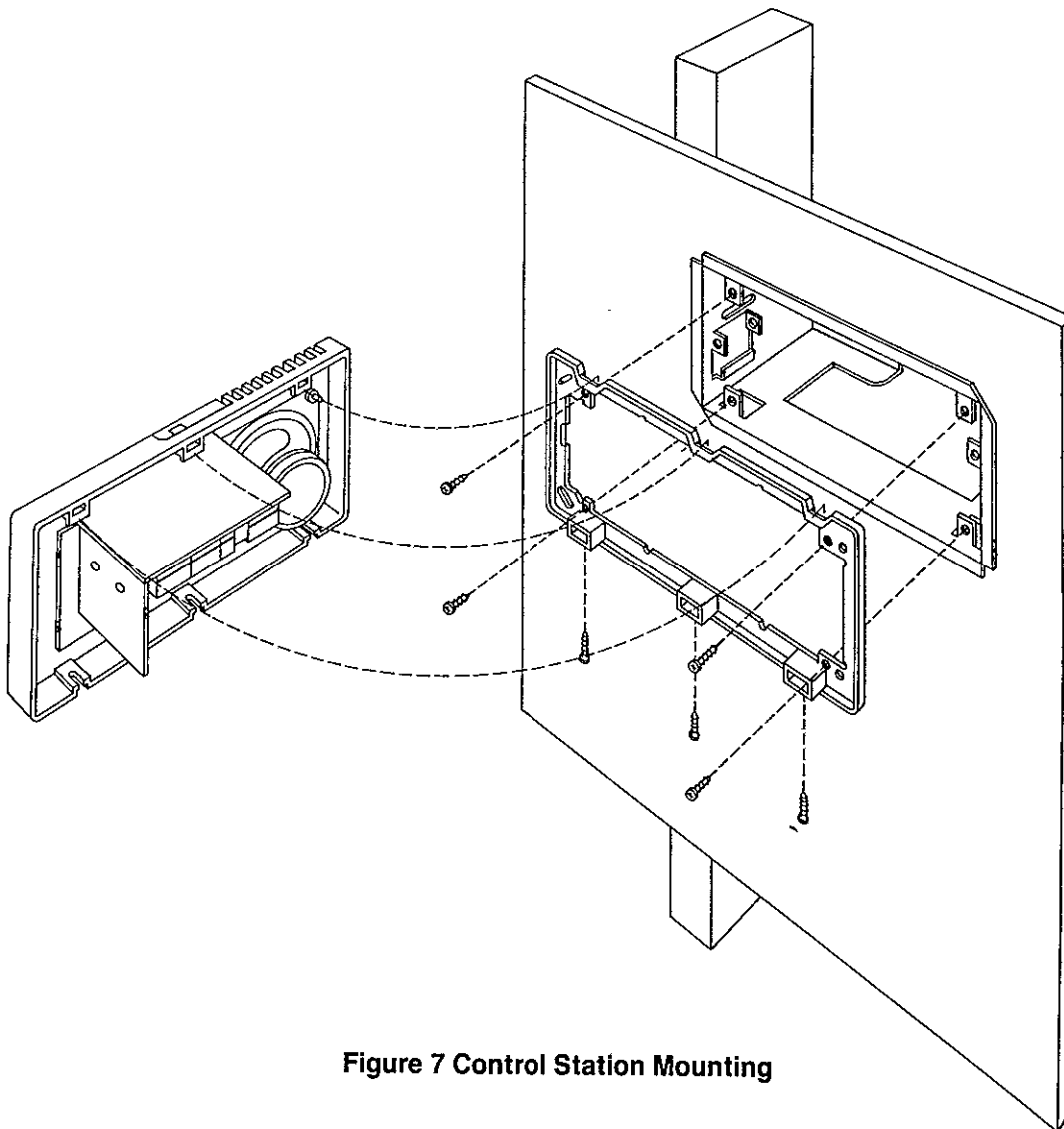


Figure 7 Control Station Mounting

# Control Station Description (Cont.)

## Control Station LED's

The Control Station has eight (8) LED's to indicate the status and program values of the system. The eight (8) LED display is capable of displaying 3 "pages" or modes of LED status. See Figure 8.

"Page 1" is the normal LED function described when the hinged door is closed. When any of the LED's are blinking on page 1, the description may be found on the inside label of the unit by opening the hinged door.

"Page 2" is the zone status and zone shunted display accessed thru keypad command digit 2 and described with the hinged door open. An LED illuminated indicates a zone is violated. A blinking LED indicates that the zone is shunted.

"Page 3" is the alarm memory accessed thru keypad command digit 3 and described with the hinged door open. An LED illuminated indicates the zone(s) which triggered an alarm. All zones triggered will be displayed.

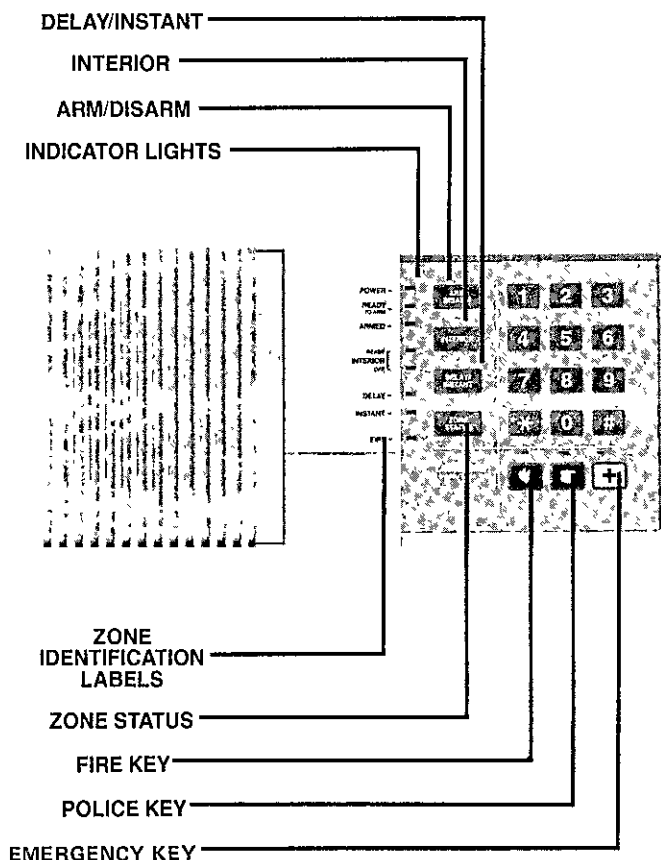


Figure 8  
Control Station LEDs

POWER LED...ON	= AC power is supplied to the Control station.
BLINKING	= Low battery or blown auxiliary or fire fuse.
READY LED...ON	= Burglar system ready to be armed. All zones are secure.
BLINKING	= One or more zones have been manually shunted.
ARMED LED...ON	= Burglar system is turned on or armed.
BLINKING	= Alarm memory. The system has been triggered. Alarm memory information may be accessed by keypad command 3.
INTERIOR...ON	= All interior defined burglar zones are working.
BLINKING	= Fail to communicate. The digital communicator was unable to reach the central station.
INTERIOR...OFF	= All interior defined burglar zones are not working.
BLINKING	= Aux 1/Police alarm has been activated.
DELAY LED...ON	= All delay defined burglar zones have the entrance timer working.
BLINKING	= An EEPROM memory error has been detected.
INSTANT LED ON	= All delay defined burglar zones have no entrance time and will activate the burglar alarm instantly.
BLINKING	= Aux 2/Medical alarm has been activated.
FIRE LED...ON	= The Fire alarm system has been activated.
BLINKING	= Supervisory/Trouble. A zone defined with a supervisory option or a fire zone is in a trouble condition. The zone in the supervisory/trouble condition may be viewed with the keypad command 2 (Zone Status).

TABLE 5  
Control Station Indicator Lights

## Program Switch

The program switch, which allows entry into installer function programming, is located on the SX-2900 Keypad. Momentarily depressing the program switch starts a 3-minute timer, allowing entry to installer level programming. See page 42 of this booklet for the location of the program switch. Each time a key is depressed in the program mode, the 3-minute timer is restarted. The control station will beep as long as the program switch is held closed.



## Keypad Commands

The thorough understanding of the keypad is necessary for successful operation of the system. The following COMMAND examples use the factory default USER AUTHORIZATION code (245). Commands 1, 2, 3, and 0 will work while the burglar system is armed.

**FORMAT:** Press a Command key followed by a USER AUTHORIZATION code. For example, to "Command" the system to display ZONE STATUS, press [2] [2] [4] [5].

**Command 1: ARM/DISARM.** This command will ARM/DISARM burglar zones and acknowledge (reset) Fire, Police, or Medical alarms.

**FORMAT:** 1-USER AUTHORIZATION code.

**ARM:** Press [1] [2] [4] [5].

**DISARM:** Press [1] [2] [4] [5].

**Command 2: Turn INTERIOR zones ON or OFF.** All zones defined as interior may be turned OFF (shunted) prior to arming by using this command.

**FORMAT:** 4-USER AUTHORIZATION code.

**INTERIOR OFF:** Press [1] [2] [4] [5].

**INTERIOR ON:** Press [1] [2] [4] [5].

**NOTE:** The INTERIOR and the DELAY/INSTANT modes both revert back to default (INTERIOR ON and DELAY active) when the system is disarmed. The default setting for these two modes may be modified by programming a value into program FUNCTION 65. This is explained in Programming on page 26.

**Command 3: DELAY or INSTANT.** This command will switch between DELAY and INSTANT modes before arming. "INSTANT" means no entrance delay time for any burglar delay zone. "DELAY" means delay zones have entrance delay time. All burglar "delay" and "interior" zones have exit delay regardless of mode.

**FORMAT:** 5-USER AUTHORIZATION code.

**INSTANT:** Press [1] [2] [4] [5].

**DELAY:** Press [1] [2] [4] [5].

**Command 4: ZONE STATUS.** This command may be used to check the status of zones. Lighted LEDs indicate zone(s) violated (not secure). Blinking LEDs indicate zone(s) shunted. Dark LEDs indicate zone(s) normal (secure).

This command latches for 8 seconds. The latch time can be extended 8 seconds by pressing any key except the [X] or indefinitely (if the system is disarmed) by entering the [X] then [0]. The [X] key will restore normal operation.

**FORMAT:** 2-USER AUTHORIZATION code.  
**Display ZONE STATUS:** Press [1] [2] [4] [5].

## Control Station Zones

The system has three 24 hour keypad activated auxiliary zones: FIRE, POLICE, and MEDICAL. The zones are independent of the "hardwire" zones and can be activated at any time. It is not necessary for the system to be armed.

The three auxiliary zones may be activated from the keypad by pressing the proper switch. When the panic button is pressed and held, the system goes into alarm. The control station begins beeping and an LED lights to annunciate the type of alarm activated. The digital communicator may be programmed to transmit a separate code for each alarm type. The combinations are:

**FIRE-**Fire LED on the control station lights, control station sounder beeps, J-4 pin 8 (Fire Output) activates for the fire cutoff time (program function 23). Keypad fire may be disabled with programming function 66.

**POLICE-**Control station sounder beeps, J-4 pin 4 activates for the police cutoff time (program function 24). The police sounder and LED may be deactivated with programming function 71. Keypad police may be disabled with programming function 67.

**MEDICAL-**Control station sounder beeps once each second, J-4 pin 2 activates for the medical cutoff time (programming function 25). Keypad medical may be disabled with programming function 68.

Fire and Medical alarm conditions may be silenced by pressing the [X] key and may be reset using the arm/disarm code. Police alarm may only be silenced by resetting, using the arm/disarm code.

## Keypad Time Restrictions

There are two timers to prevent tampering or accidental changing of the programmed data base within the system. One is an 8 second timer and the other is a 3 minute timer.

### The 8 Second Timer

The purpose of the 8 second timer is to automatically reset the keypad 8 seconds after the improper key stroke is entered. The 8 second timer resets each time a key is pressed. A two second error tone will sound, and the keypad will reset whenever the 8 second timer runs out. If an improper digit is entered, the system will ignore the entry and all further entries, even a proper sequence, until the keypad is reset manually with the [X] key or automatically by the 8 second timer.

### The 3 Minute Timer

The purpose of the 3 minute timer is to take the system out of the programming mode automatically 3 minutes after programming has ceased. The system allows 3 minutes between program steps. When the 3 minute timer runs out, a two second tone will sound and the system returns to the normal running mode.

# Power-Up and Operational Test

## General

The following power-up and operation test paragraphs assume that the system has either been installed or that it has been wired for bench test.

## Factory Program at Initial Power-Up


The system comes ready to use from the factory with basic local system program settings. The Control Station or optional handheld programmer may be used to customize or change the programmable functions. See page 23 for programming procedures.

**NOTE:** The factory program may be restored at any time. See page 21 for the procedure to return to the factory program.

## Power-Up

To power-up the system, verify that the AC transformer and battery are plugged in and connected. Connect AC and DC power. The adjacent AC (Power) LED should light. There should be a 2 second constant tone and the following LEDs should light on the SX-2900 Control Station.


- \*Power
- \*Ready
- \*Interior Ready
- \*Delay

If the control does not power-up properly, the watchdog monitor system will automatically perform a new system power-up. If a Control Station does not power-up properly, pressing the  key will reset the control station microprocessor and allow it to begin working properly.

## Power-Up Diagnostics

Each time power is applied to the System, the power-up diagnostics check the Read Only Memory (ROM) and the Electrically Erasable Programmable Read Only Memory (EEPROM).











The ROM check consists of compiling a checksum of all the ROM bits and comparing the result with the check-sum produced when the ROM was manufactured. A difference in the checksum will lockup the microprocessor and cause the control station LEDs to blink in a rotating top-to-bottom fashion. If this should occur, the microprocessor is defective and the control must be sent back 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 LED blinking and an audible beep of the may be silenced by pressing the  key. See page 22 for further details.

**NOTE:** In addition to power-up, EEPROM test is also performed during arming/disarming and at the automatic/manual battery test.

## Testing Burglar Zones

Use the following procedure to test each zone and to become familiar with the performance of the System.


1. Violate zone 1.
  2. The READY LED will be off.
  3. Try to arm the system with the factory user authorization code. Press ARM.
- NOTE: If you make a mistake while pressing keypad digits, press the  key and start over.**
4. The control station will emit a 2 second error tone indicating that the system is not ready to be armed. Zone 1 is not secure.
  5. Use the zone status command to identify the violated zone(s). Press ZONE STATUS.
  6. LED 1 will be on, indicating that Zone 1 is not secure. Zone status display normally latches for eight (8) seconds.
  7. Shunt the violated zone. Enter  . This will extend indefinitely the zone status display provided this action occurred within 8 seconds.
  8. LED 1 will now blink indicating that Zone 1 is shunted.
  9. Press  to return to the normal LED display.
  10. The READY LED will be blinking. A blinking READY LED indicates that a zone(s) is shunted.
  11. Arm the system. Press ARM.
  12. The ARMED LED will be on and the READY LED will be blinking.
  13. The control station will beep rapidly and the ARMED LED will blink indicating alarm memory.
- NOTE: If the digital communicator is enabled, the ARMED LED will not blink until the communicator receives a kissoff signal.**
16. Press the  key to silence the control station only.
  17. The ARMED LED and the READY LED will be blinking.
  18. Disarm the system. Press DISARM.
  19. The ARMED LED will be blinking and the READY LED will be off. All shunts are removed when the system is disarmed.
- NOTE: All shunted zones are restored (shunts removed) when the system is disarmed after the exit delay time expires.**
20. Clear the blinking ALARM MEMORY LED with the  key.
  21. Which zone caused the alarm? Use command 3 to check. Press    . LED 3 is ON, Zone 3 caused the alarm. The alarm memory display latches for eight (8) seconds.
- NOTE: The contents of alarm memory display is retained in EEPROM until another alarm occurs. The EEPROM alarm memory may be cleared with programming function 13.**
22. Which zone(s) are violated? Use command 2 to check. Press ZONE STATUS. LEDs 1 and 3 will be on, indicating they are violated.
  23. Restore violated zones.
  24. READY LED will be on.
  25. Use the above procedure to test other burglar zones.

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




## Testing Fire Zones

Fire zones, when programmed, are 24 hour zones. If the circuit opens, a supervisory trouble signal is generated. If the circuit shorts, a fire alarm is sounded. Test a fire zone (factory zone 6) as follows:

### Fire Supervisory Trouble

1. Open either side of the fire zone. (Zone 6).
2. The control station will beep rapidly.
3. FIRE LED will blink. Supervisory/Fire trouble indication.
4. Press the  key to silence the control station.
5. FIRE LED still blinking.
6. Restore fire zone to normal condition.
7. FIRE LED will be off.

## Fire Alarm

1. Connect a smoke detector or fire sensor (see page 11).
2. Violate the fire sensor or short across the loop.
3. The control station will beep rapidly.
4. Fire alarm output (J4-pin 6) will activate.
5. FIRE LED will be on. Fire alarm indication.
6. Press the  key to silence audible devices.
7. FIRE LED still on.
8. Reset fire alarm with command 1 and a user authorization code. Press ARM/DISARM.
9. The FIRE LED will blink if detectors are latched or if the loop is still shorted. Remove all shorts.
10. To reset latched detectors, reset smoke power with command 7 and a user authorization code. Press    .
11. FIRE LED will be off.

---

## Selected Program Options and Operation

### Exit Beep

The exit beep is disabled when the interior off mode is selected with keypad command 4. The exit beep may be totally disabled by programming an odd exit time value into programming function 17.

### Loop Follower


The loop follower feature bypasses all interior defined zones during entrance delay when entering thru a delay defined zone first. Perimeter defined zones have no exit delay, entrance delay, or loop follower feature. The loop follower option may be disabled with programming function 33.


### Supervisory/Trouble Zone Sub-Option

Supervisory/trouble is a programmable zone sub option which allows burglar, medical, communicator trip and key defined zones to be supervised and to respond specifically to loop opens vs. loop shorts.

Either an alarm or trouble response will be generated depending on the loop conditioning.

In order for the supervisory function to work, the zone loop must be wired properly with an end-of-line resistor as per page 14 and Figure 6.

Open loop supervisory is the factory standard when the sub option is selected. Upon detection of a supervisory condition, the control station beeps and the supervisory (Fire) LED blinks. Press the  key to silence the control

station. The LED will continue to blink for as long as the condition exists. The digital communicator may be programmed to transmit a supervisory report code. (Programming function 111 and 146). When the supervisory condition is cleared, the control station will automatically reset. Supervisory can be programmed to latch with the  required to reset by programming function 30.

### Key Defined Zone

Any one of the hardwire zones 1 thru 6 may be defined as a momentary key zone. When the key zone is violated and held violated for one second, the pre-alarm will beep to indicate the key contact debounce time has expired. When the key zone is released, the control will arm/disarm. If programming function 29 is enabled, holding the key zone violated will change the interior on/off and delay/instant modes once each second. When the desired interior on/off and delay/instant combination is displayed, release the key to arm the system. If a key zone is also defined as a supervisory zone, any supervisory/trouble on the key zone will disable the key zone from arming or disarming the control.

# Selected Program Options and Operations (Cont.)

## User Authorization Code Configuration Digit

Up to 9 user authorization codes may be programmed (programming functions 1 thru 9). A configuration digit is associated with each code (programming functions 54 thru 62) which tells the system how the user authorization codes may be used. Table 6 describes each level of use.

- |   |
|---|
| <p>0- NO ARM/DISARM OR ACCESS ACTIVATION. USED WITH A USER AUTHORIZATION CODE OF "00000" TO ALLOW SINGLE DIGIT KEYPAD COMMANDS 2 THRU 8.</p> <p>1- CODE MAY BE USED TO ARM/DISARM.</p> <p>2- CODE MAY ONLY BE USED TO ACTIVATE THE ACCESS OUTPUT.</p> <p>3- CODE MAY ONLY BE USED TO ARM/DISARM WITH KEYPAD COMMAND 1 OR ACTIVATE THE ACCESS OUTPUT WITH KEYPAD COMMAND 0.</p> <p>4- NOT USED.</p> <p>5- CODE ACTIVATES THE ACCESS OUTPUT, J4-PIN 7 WHEN THE CONTROL IS ARM/ DISARMED USING KEYPAD COMMAND 1. COMMAND 0 DOES NOT WORK WITH THIS CODE CONFIGURATION.</p> <p>6- NOT USED.</p> <p>7- CODE ACTIVATES THE ACCESS OUTPUT WHEN ARMING/DISARMING USING THE KEYPAD COMMAND 1 AND MAY BE USED TO ACTIVATE THE ACCESS OUTPUT USING KEYPAD COMMAND 0.</p> <p>8- USED TO ASSIGN A USER AUTHORIZATION CODE AS A SUBZONE ARM/DISARM CODE. SEE SUBZONING SECTION.</p> <p>9- THE USER AUTHORIZATION CODE ARMS/DISARMS AS NORMAL AND ACTIVATES THE COMMUNICATOR DURESS ALARM (PROGRAMMING FUNCTION 105 AND 140) WHICH SENDS A SILENT SIGNAL TO THE CENTRAL STATION.</p> |
|---|

**TABLE 6 Configuration Digit Values**

## System Subzoning

The System provides the ability to disarm/re-arm individual zones of an armed burglar system without disarming the entire system. A unique code configured for each zone must be entered at the control station to disarm/re-arm each subzone. Any time the main control is disarmed, all subzones are disarmed.

The System is capable of subzoning up to 6 zones. User authorization codes 1 thru 8 correspond to the zone(s) that are to be subzoned. The corresponding configuration digit (programming functions 54-62) for each code must be programmed with a value of 8.

User authorization code 1 subzones zone 1, user authorization code 2 subzones zone 2, etc. User authorization code 9 could be used as the master arm/disarm code if all 6 zones are subzoned. A single user authorization code can subzone only 1 zone. If more than 1 zone is to be subzoned, the separate codes must be used to disarm each zone.

**EXAMPLE:** A warehouse wants to allow delivery men to enter a specific zone to make deliveries after hours. The keypad will be placed with the protected area so entrance/exit delay time is required.

1. Zone 2 was selected for an example. Zone 2 should be defined as a burglar delay zone (programming function 39).
2. Configuration digit for user authorization code 2 is programmed to an 8 (programming function 55).
3. User authorization code 2 is programmed to 4 5 6 7 8 (programming function 2).
4. A remote constant status LED for zone 2 is remoted to the keypad area by using output expansion module and a zone annunciator plate. The LED will blink when the zone is disarmed (shunted).
5. After the system is armed with any code other than user authorization code 2, the subzone 2 may be disarmed/re-armed with user authorization code 2. Since zone 2 is defined as a delay zone, the entry and exit timers will work for Zone 2. If open/closing communicator reports are programmed, the communicator will report by user in extended format.

## Watchdog Monitor

The purpose of the watchdog monitor is to keep the microprocessor operating. It accomplishes this by continuously monitoring an output from the microprocessor which resets a timer. If the output for the microprocessor ceases, then upon time out, the watchdog removes the +5 volts from the microprocessor and effectively goes through a power-up sequence or "resets" the microprocessor. Following reset, a ROM and EEPROM check is made and the system is restored to the same operating condition as was previously set. There are a few exceptions to system restoration which are as follows:

1. If the entry or exit alert is sounding and the entry zone is still violated, the system will shunt the violated zone and re-arm. Entry and exit time is lost.
2. If the system is in alarm and resets, the alarm ceases. All violated zones are auto shunted upon system re-arm.
3. If the system is making a report through the digital communicator, the report is lost.
4. The normal communicator/battery test time is reset to zero. If test reporting is programmed, the test report will be sent when the system is reset; thus notifying the central station of an out of sequence test. An option allows disabling this function (programming function 81).

## Automatic Interior Off

The system may be programmed to automatically bypass (turn off) Interior defined zones depending upon the user activity. This feature simplifies operation by eliminating the need for additional commands when the user wishes to arm only the perimeter zones and still move freely within the interior of the premises. A value of "1" in programming Function 31 enables this feature which then operates as follows:

1. Arm the control by pressing Command 1 plus a user authorization code (Ⓜ Ⓟ Ⓢ).
2. Move around freely but DO NOT violate (open) the delay zone.
3. During the last second of exit delay time, the system will switch to "Interior Off" automatically since no exit was detected.

## Automatic Switch To Instant Mode

This feature is similar in operation to automatic Interior Off in that the Instant Mode may be switched automatically dependant upon the user activity.

A value of "1" in programming Function 32 enables this feature. If no exit is detected following normal arming, the system will switch automatically to "Instant" mode thereby eliminating ALL entrance delay times.

## EEPROM Memory Error

The EEPROM memory check is performed each time the control is powered-up, reset, armed, disarmed, and when the battery is manually or automatically load tested. 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.

## Digital Communicator

### Overview

The system's built-in digital communicator can dial two (2) different 26 digit telephone numbers using either rotary or Touchtone® dialing. The reporting codes for all zones and transmitted conditions are programmable for each telephone number. Thus, each telephone number can back-up the other if unsuccessful, or the reporting of certain zones or conditions may be "split" between each telephone number. All communicator programming is done through the Control Station in the installer programming mode or with the optional Programmer. The data is permanently stored in the EEPROM memory. The communicator is factory programmed with basic default features and formats. Table 7 provides a listing of these factory default settings.

### Communicator Delay Before Dialing (Programming Function 78)

The delay before dialing feature sets the time between the actual alarm input and when the digital communicator starts the dialing sequence. This time can be set from 1 to 255 seconds. "0", which is the factory default value, disables the digital communicator. The delay before dialing gives the user a time period to reset the system and abort a report following an accidental alarm. If programming function 80 is set to "1", all alarms may be

If an EEPROM memory error is detected, the control station will beep, the MEMORY ERROR LED will blink and the digital communicator, if programmed, will send a memory error signal to the central station. The control station beeping may be silenced by pressing the Ⓢ key. All EEPROM functions should be reviewed to determine the location of the function where data has been changed. Upon reviewing the EEPROM data and exiting from the program mode, the EEPROM checksum will be re-calculated and the blinking MEMORY ERROR LED will be reset. If power to the control is switched off while programming, a memory error will occur upon power up and it will be necessary to re-enter, then properly exit the programming mode to clear the error.

### Returning To The Factory Default Program

The system may be returned to the factory default program at any time. This action may be desirable during training on the system or when the program values are unknown. Returning to the factory defaults will cancel both telephone numbers. Using the following procedure to restore the factory default program settings.

**NOTE: All previous programming will be lost.**

1. Disconnect power from the unit.
2. Depress and hold the program switch and then reconnect the power to the unit.
3. Release the program switch. All control station LEDs will be flashing.
4. Press Ⓜ Ⓢ Ⓢ Ⓢ to find programming function 156.
5. Press Ⓜ Ⓢ Ⓢ to store 1 in programming function 156 and return to the running mode.
6. Disconnect power from the unit. Wait 5 seconds. Reconnect power to the unit.
7. The system is now reset to factory default programming.

aborted when the system is disarmed. See page 24 for programming information.

COMMUNICATOR DELAY BEFORE DIALING	0 SECONDS (COMMUNICATOR DISABLED)
DATA FORMAT	3 DIGIT ACCOUNT CODE, 1 DIGIT REPORT CODE, NON-EXTENDED.
TRANSMISSION FORMAT	0 (AUTOBAUD FOR FORMAT 1 OR 2)
COMMUNICATOR DIAL ATTEMPTS	8 TRIES
COMMUNICATOR CODES	TELEPHONE #1 TELEPHONE #2
ACCOUNT CODE	888 888
ZONE 1 REPORT CODE	3 3
ZONE 2 REPORT CODE	3 3
ZONE 3 REPORT CODE	3 3
ZONE 4 REPORT CODE	3 3
ZONE 5 REPORT CODE	3 3
ZONE 6 REPORT CODE	1 1
KEYPAD FIRE REPORT CODE	1 1
KEYPAD POLICE REPORT CODE	2 2
ALL OTHER REPORTING CODES DISABLED	
TELEPHONE #1	NOT PROGRAMMED
TELEPHONE #2	NOT PROGRAMMED

**TABLE 7**  
Factory Default Communicator Settings

## Telephone Line Seizure

When the communicator is triggered, the telephone line is seized, disconnecting the house telephones. Dial tone detection is then enabled. If detected, the dialing sequence immediately begins with either rotary or Touchtone® dialing, depending upon the programming of functions 93 or 128. If no dial tone is detected within 10 seconds, the communicator hangs up for the time set in programming Function 159 (factory default 3 seconds). The telephone line is again picked up and dial tone detection is re-enabled. If no dial tone after 10 seconds, the dialing process will begin anyway.

## Dial Attempts Before Shutdown

If the digital communicator cannot complete its transmission or fails to reach the central station, it will hang up and redial up to the maximum attempts value set in programming function 79. Each new attempt will alternate between telephone numbers 1 and 2. The attempts counter is decremented each time, even if only one of the telephone numbers is programmed. A value of "1 to 255" attempts may be programmed for function 79 (factory default is 8).

## Reporting Codes

The reporting codes for all zones and transmitted conditions are programmable for each telephone number. By programming both telephone numbers with identical codes, each telephone number will serve as a backup for the other if the other is unsuccessful.

When the digital communicator is triggered, telephone #1 attempts to dial and report first. If telephone #1 is not programmed or if the report code for telephone #1 equals "0", telephone #2 is attempted. A value of "0" disables a reporting code and may be used to prevent codes from reporting to specific telephone numbers. This is a new feature called "SPLIT REPORTING". If the report code for both telephone numbers equals "0", no report will be transmitted.

## Split Reporting

Split reporting is enabled by programming different telephone numbers for telephone 1 and 2, then selectively programming only certain reporting codes for each telephone number. This feature is valuable for sending all reports requiring response to one central station receiver (tel #1) and all routine maintenance codes to another central station receiver (tel #2).

Example:	Telephone #1	Telephone #2
Reporting Code	5	0
	(Only telephone #1 is dialed)	
Reporting Code	0	5
	(Only telephone #2 is dialed)	
Reporting Code	5	5
	(Backup telephone #1 & #2)	
Reporting Code	0	0
	(Codes disabled for both #'s)	

**NOTE: The system supports backup reporting and split reporting but cannot send the same report to both telephone numbers. ie: dual reporting.**

**NOTE: When using SPLIT REPORTING use the following procedure. If the Reporting Code for Telephone #1 is disabled (000) and the same Reporting Code for Telephone #2 is enabled (001-015), Function 079 must be programmed with this formula:**

2 (desired number of dial attempts for phone #2)+2

Example: Desired number of dial attempts for Telephone #2=8

Using formula  $2(8)+2=18$

Program Function 079 (Dial Attempts) with 18.

## Communicator Transmission Format

The system communicator is capable of transmitting 5 different formats. Each telephone number may be programmed with a different transmission format. The formats are:

Format

- 0 = Autobaud. Format 1 or 2 is automatically selected based upon the handshake tone from the receiver.
- 1 = 1400 Hz. handshake, 1900 Hz. data, 10 baud. (Ademco, Adcor, Radionics, Silent Knight, and Vertex slow format).
- 2 = 2300 Hz. handshake, 1800 Hz. data, 20 baud. (DCI, Franklin, Sescoa, and Vertex fast format).
- 3 = 1400 Hz. or 2300 Hz. handshake, 1800 Hz. data, 40 baud. (Radionics superfast no parity. For parity, program function 92 and/or 127).
- 4 = 1400 Hz. handshake, 1900 Hz. data, 15 baud. (Silent Knight fast format).
- 5 = Radionics BFSK® (1400 Hz. or 2300 Hz. handshake).

**NOTE: The Osborne Hoffman, Quick Alert Receiver is not compatible with formats 3, 4 & 5.**

## Hexidecimal Reporting

When reporting to a Radionics receiver, zone reporting codes 1 thru 6 should be programmed with a value from "1" to "6" respectively. For proper Radionics receiver printout program the appropriate reporting codes as follows:

- 11 ("B" hexidecimal) for opening report code.
- 12 ("C" hexidecimal) for closing report code.
- 13 ("D" hexidecimal) for cancel report code.
- 14 ("E" hexidecimal) for restoral report code.
- 15 ("F" hexidecimal) for trouble report code.

## Communicator Extended Reporting

The system is capable of several types of extended reporting. The advantages of extended reporting are: individual alarm, restore and cancels by zone, opening/closings by user code, shunt by zone, and supervisory/trouble by zone. The report code is programmed by the installer. The extended code in most cases is automatically added by the system. See page 24 for programming instructions.

---

## Standard Two Line Extended

Standard extended reporting is enabled in programming function 90 for telephone #1 and in function 125 for telephone #2. The following is an example of an "alarm" triggered from zone 6. Zone 6 reporting code (functions 99 & 134) has been programmed with a code "1". The account code (functions 83 & 118) has been programmed as "0987".

1st line	0987	1
	(account code)	(report code)
2nd line	111	6
	(report code 3 times)	(extended code)

The central station will identify this as: Account 987, report code 1 (burglar) from zone 6.

## Single Line Extended

Radionics A+ format or single line extended is enabled with programming function 91 for telephone #1 and function 126 for telephone #2. This is similar to the standard extended with the exception that report codes from 1 to 10 are not extended, while all codes from 11 ("B" hex) to 15 ("F" hex) are extended. When transmitted to a Radionics or compatible equipped central station, the full report will be received and printed on a single line. In order for alarms, restores, etc. to be transmitted properly with this format, zones 1 thru 6 must be programmed as report codes 1 thru 6 respectively. The Appendix outlines a system programmed to report single line extended.

## Extended Format

Another form of extended reporting is 4/2. The first 4 digits transmitted are the account code followed by 2 digits which consist of the report code and the extended

code. The entire report is transmitted and printed on a single line. 4/2 format is enabled with programming function 89 for telephone #1 and function 124 for telephone #2. The system is also capable of reporting 3/2 format. See below for programming instructions.

**NOTE: With opening/closings in extended format, the extended code will identify the user authorization code that was used to arm or disarm the system.**

**When opening or closing using a keyswitch zone, the system will report an extended code of "10".**

## Parity Checksum

This feature is enabled by programming function 92 for telephone #1 and function 127 for telephone #2. It is most commonly used when transmitted to Radionics receivers. Rather than sending each line of data twice for transmission verification, this option sends only one line of the account and report code, followed by a parity digit checksum digit for verification. The system calculates the parity digit automatically by summing the total of the account and report codes. The transmission speed is generally faster and the telephone connect time is less when using this feature.

## Closing With Ringback

The system, if programmed for closing reports, will automatically provide a signal when the central station receives the closing report. After the kissoff has been received from the central station, the control station will beep 6 times, followed by a 2 second error tone. Exit delay will then be restarted and the armed output, J-4 pin 1 will activate. This output may be used to remote an LED.

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



# Programming the SX-2900

## Overview


Programming is the principle means used to configure and tell a computer based system what to do and how to do it. The system stores all programmable options in a nonvolatile EEPROM device. All programmable options are referred to as "functions". There are more than 200 programmable functions available in the system.

## Entering the Programming Mode of Operation

When programming using the Control Station there are two separate programming levels. The USER LEVEL allows the user to program only the first 15 functions. These functions include the user authorization codes, the program authorization code, code nine usage count, time till next automatic test, clear alarm memory, delete a code, and upload data. The INSTALLER LEVEL of programming allows the installer to program all functions. The end user is locked out of programming any functions greater than function 15.

To enter the USER LEVEL of programming, enter the keypad command digit "9" plus the program authorization code. This code is factory programmed as    , and should be changed by programming function 10.


To enter the INSTALLER LEVEL of programming momentarily press the program switch then enter the keypad command digit "9" followed by the user program authorization code. **NOTE: The programming switch is located in the lower left section of the keypad. This switch can not be seen; refer to the illustration on page 42 of this booklet.**

Upon entry into either user or installer level programming, all LED's on the keypad will blink indicating the program mode has been entered. These LED's will continue to blink until the actual programming has begun or until the  key is pressed. A three minute timer is started with each keypress while in the programming mode. If, during three minutes, no key is pressed, the system will automatically return to the normal running mode of operation. For example, suppose the installer, in the midst of programming the control, is temporarily distracted. If he is away from the control for more than three minutes, the system will automatically exit the programming mode and return to the normal running mode.


When the installer manually exits the INSTALLER LEVEL, he may, within three minutes, re-enter the INSTALLER LEVEL provided no other keypad commands have been performed.

It is possible to program a special installer program code (function 16). The installer level of programming may then

# Programming the SX-2900 (Cont.)





be entered at any time by pressing  plus the special installer program code. This special code should be erased (programming function 14, code 0) after the system programming is complete and will be automatically erased when the next automatic battery/communicator test occurs.

## Finding A Function

Finding a particular function may be accomplished by entering the programming mode, followed by entering the desired function number and pressing the FIND key . The FIND key may be pressed again to step forward to the next consecutive function. To skip to a non-consecutive or previous function, enter the new function number then press FIND. Once function 17 or higher is found, it is not possible to skip back to functions 1 thru 15 without exiting the programming mode.

## Reading the Value of a Function



The LEDs will display the contents of the EEPROM memory in binary format for most functions. The binary number stored in each function can be calculated by adding up the value of all illuminated LEDs. See Table 8.

LED#	LED	VALUE
1	( )	1
2	( )	2
3	(  )	4
4	(  )	8
5	(  )	16
6	(  )	32
7	( )	64
8	( )	128
Total		60

Example: LEDs 3, 4, 5 and 6 are lit after accessing function 17 (exit time). The values for each LED are 4, 8, 16 and 32 respectively. Adding these values together gives a total of "60". The value stored for function 17 is 60. Exit time is therefore 60 seconds.


**TABLE 8 Binary LED Values**

## Changing the Value of a Function

The value stored in memory for a particular function is changed by finding the function as described above, then entering the new value and pressing the STORE key . The new value will then be displayed on the LEDs. The STORE key  need not be pressed after entering a new value for functions 1-10 and 16, because the system automatically returns to the normal run mode of operation when all five digits have been entered.

The range of possible entries for each function varies with the function. Some functions require that only a value of "0" or "1" be programmed, while others may be programmed with values of up to "255". It is important to observe this range of values for each function. See next page for the range of values for each function.

## Exiting from the Program Mode

Pressing the STORE key without entering any previous digits 0-9 will result in the system returning to the normal run mode. Pressing the  key twice will exit the program mode at any time.

## How to Use the System Function Map

The function map makes programming of the system simpler. Write the information to be programmed on the function map, and use it while programming the system. See page 35.

Look at the programming function map. The numbers to the left of each column are the programmable function numbers of the system. A brief description of each function is listed beside each function number. For a detailed description of each function, refer to next page "Program Function Descriptions." Write the programming information in the boxes immediately to the right of the descriptions on the function map. When entering the information, note the range of each entry listed to the right of the boxes for each function.

Note the difference between the functions on the map (i.e. functions 1, 11, 13, 26, 83 and 168). The following paragraphs explain the different types of function programming.

### Functions 1-10 and 16

Functions 1-10 and 16 require five digits for each code. Each digit may have a value of between "0" and "9". Decide on the codes to be used, and write them into the appropriate blocks on the map. If a code is less than five digits long, trailing zeros must be added.

**EXAMPLE:** To program user authorization code 1 as "3-2-1", write a "3" in the first block of the code followed by "2", "1", "0" and "0".

### Function 11

This type of function requires that a value of "0" to "255" be entered. Preceding zeros are not required when entering a value into the keypad.

**EXAMPLE:** To program function 11 with a value of "12", write "12" in the blocks beside that function.

### Function 13

This type of function cannot be programmed with a value. These functions are shaded in to show that no value may be entered. These functions perform a specific duty when accessed. For example, when function 13 is accessed, all alarm memory zones are cleared.

### Function 26

This type of function should be programmed with only one of two values: "0" or "1". Both values are shown on the memory map. Circle the desired value.

**EXAMPLE:** If the audible burglar alarm output should be pulsed (one second on, one second off), circle answer "YES" for function 26.

### Functions 83-86 (Account Code 1)

### Functions 18-121 (Account Code 2)

Each digit of the account code is a function. Each function must be programmed with a value. The range of each value is from "0" to "15". If a four digit account code is used, program the first, second, third, and fourth digits in functions 83-86 and 118-121 respectively. If a three digit account code is used, program functions 83 and 118 (thousands digit of the account codes) with a value of "0" and enter the three digit account code in functions 84-86 and 119-121.



EXAMPLE: If a three digit account code of "789" is to be programmed, enter "0" for function 83, "7" for function 84, "8" for function 85 and "9" for function 86.

ACCOUNT CODE:

0	7	8	9
083 Digit 1	084 Digit 2	085 Digit 3	086 Digit 4

## Functions 168-220

Functions 168-220 (excluding 194) are programmed with the telephone numbers to dial. Each digit of the telephone number is programmed as an individual function. Enter a value from "0" to "15" for each digit of the telephone number. The function following the last digit of the telephone number must be programmed with the value "15". Write in "15" following the last digit.

## User Level Program Function Descriptions

### 1 User Authorization Code 1-

First of 9 independent user authorization codes. Each user authorization code may consist of up to five digits. They may be used to arm or disarm the system, as an access code, or as a duress arm/disarm code. If a code of less than 5 digits is desired, the trailing digits must be programmed with a value of "0".

Function 14 may be used to disable any of the user codes or the installer programming code. Function 14 will disable the code by storing a 15 ("F" Hexadecimal) in the first digit of the code.

Range of each digit: 0 to 9

Factory default value: 2-4-5-0-0

### 2 User Authorization Code 2-

Factory default value: 15-15-15-15-15

("FFFFF" Hexadecimal-code is disabled until programmed)

### 3 User Authorization Code 3-

Factory default value: 15-15-15-15-15

(Disabled)

### 4 User Authorization Code 4-

Factory default value: 15-15-15-15-15

(Disabled)

### 5 User Authorization Code 5-

Factory default value: 15-15-15-15-15

(Disabled)

### 6 User Authorization Code 6-

Factory default value: 15-15-15-15-15

(Disabled)

### 7 User Authorization Code 7-

Factory default value: 15-15-15-15-15

(Disabled)

### 8 User Authorization Code 8-

Factory default value: 15-15-15-15-15

(Disabled)

### 9 User Authorization Code 9-

Whereas user authorization codes 1-8 may be used any number of times, code 9 may only be used the number of times specified by programming function 11.

Factory default value: 15-15-15-15-15

(Disabled)

## 10 User Program Authorization Code-

The program authorization code is used to enter the programming mode. One should always use five (5) digits in the program authorization code for better security although shorter codes may actually be entered by the use of trailing "0s".

Factory default value: 9-8-7-6-5

## 11 Code 9 Temporary Usage Count-

This function may be programmed to assign a specific number of times that user code 9 may be used for purposes such as temporary help (maid code). User authorization code 9 is not erased after the specified number of uses, however, function 11 must be programmed with a new value greater than zero before code 9 may be used again. If a value of 255 is programmed, the code may be used indefinitely.

Range: 0 to 245 uses of 255 (indefinite number of uses)

Factory default value: 255 (code 9 used indefinitely)

## 12 Time Till Next Communicator/Battery Test-

This feature may be used to reset the time of day that the next battery test and a test report to the central station (if so programmed) is performed. The test is performed after the programmed time has expired. The test is then performed routinely according to the time programmed for function 35. Programming function 12 in no way affects the value programmed for function 35. When accessed, this function does not display the value stored in memory on the LED's.

Value: 0-Immediate

1-One Hour

2-Two Hours

24-Twenty-Four Hours

Range: 0 to 24 hours

Factory default value: 24 hours

**NOTE: As a safety feature, once the test is performed, the installer program authorization code is deleted.**

## 13 Clear Alarm Memory


Accessing this function clears the alarm memory of the previous violated zones.

## 14 Delete User Authorization Code-

Disable user authorization codes by finding function 14, then entering the function number of the code to be deleted (1-9). Entering a "0" will delete the installer program authorization code.

Range: 0-9

## 15 Upload Data-

This function allows uploading of EEPROM memory data to a remote location via telephone lines. This function requires that a computer with special software be installed at the remote location that is to receive the data. Telephone contact with the remote location must be established before function 15 may be activated. When this function is activated, the telephone line is seized while the data is uploaded. To interrupt the data upload, hold the RESET key  down for 5 seconds or until the system releases the telephone line. Contact NuTech technical services for additional information.

**NOTE: INSTALLER LEVEL OF PROGRAMMING IS REQUIRED TO PROGRAM BEYOND THIS POINT (See "Entering the Programming Mode of Operation" page 24).**

# Programming the SX-2900 (Cont.)

## Installer Level Program Function Descriptions

### 16 Installer Program Authorization Code-

The Installer Program Authorization Code allows the installer a quick means of entering the Installer Programming level without pressing the installer program switch.

Range of each digit: 0 to 9

Factory default value: 15-15-15-15-15

(Disable)

### 17 Exit Time-

Allowable time in seconds for the user to exit through delay and interior zone(s). An even number (20, 40) will cause the control station to beep each second during exit time. An odd number (19, 39) will eliminate the exit beep.

Range: 0 to 255 seconds

Factory default value: 60 seconds

### 18 Entrance 1 Time-

Allowable time in seconds for the user to enter zones defined as "entry delay 1" and disarm the system before an alarm. Entrance delay 1 is assigned when programming the zone definition (Functions 38-45).

Range: 0 to 255 seconds

Factory default value: 30 seconds

### 19 Entrance 2 Time-

Allowable time in seconds for the user to enter zones defined as "entry delay 2" and disarm the system before an alarm. Entrance delay 2 is assigned when programming the zone definition (Functions 38-45).

Range: 0 to 255 seconds

Factory default value: 30 seconds

### 20 Access On Time-

Access output (J4-pin 7) hold time in seconds after a keypad access command. A value of "0" causes the output to toggle (turn on or turn off) each time the access code is used.

Range: 0 to 255 seconds

Factory default value: 5 seconds

### 21 Delay Burglar Alarm Output-

Time in seconds after a burglar zone violation before the burglar output (J4-pin 9) is turned on. U.L. allows a maximum combined total entrance delay and delay burglar alarm output time of 45 seconds.

Range: 0 to 255 seconds

Factory default value: 0 seconds

### 22 Burglar Cutoff Time-

Time in minutes that burglar output (J4-pin 9) will be active before automatic cutoff.

Range: 1 to 255 minutes, 0=255 minutes

Factory default value: 10 minutes

### 23 Fire Cutoff Time-

Time in minutes that fire output (J4-pin 8) will be active before automatic cutoff. A value of "0" or "255" eliminates automatic cutoff.

Range: 1 to 254 minutes, 0 or 255=no cutoff

Factory default value: 255 (no automatic cutoff)

### 24 Police Cutoff Time-

Time in minutes that police output (J4-pin 4) will be active before automatic cutoff. A value of "0" or "255" eliminates automatic cutoff.

Range: 1 to 254 minutes, 0 or 255=no cutoff

Factory default value: 10 minutes

### 25 Medical Cutoff Time-

Time in minutes that medical output (J4-pin 2) will be active before automatic cutoff. A value of "0" or "255" eliminates automatic cutoff.

Range: 1 to 254 minutes, 0 or 255=no cutoff

Factory default value: 10 minutes

### 26 Pulsing Burglar Alarm-

A value of "1", causes burglar alarm output (J4-pin 9) to pulse-one second on, one second off. A value of "0" causes steady burglar alarm output.

Range: 0 or 1

Factory default value: 0 (steady burglar alarm output)

### 27 Pulsing Fire Alarm-

A value of "1", causes fire output (J4-pin 8) to pulse-one second on, one second off. A value of "0" causes steady fire alarm output.

Range: 0 or 1

Factory default value: 0 (steady fire alarm output)

### 28 Burglar Audible Alarm Lockout-

A value of "1", allows only one burglar alarm output (J4-pin 9) cycle during an arm/disarm cycle. The digital communicator will continue to send reports as each zone is violated.

Range: 0 or 1

Factory default value: 0 (multiple alarm outputs allowed in the same arm/disarm cycle)

### 29 Keyswitch Mode Change-

A value of "1" enables a KEY defined zone to change the Interior On/Off and Delay/Instant modes.

Range: 0 or 1

Factory default value: 0 (keyswitch will not change the Interior/Delay modes)

### 30 Day Supervisor Latch-

A value of "1" allows a day supervisory condition to latch (remain on) until cleared by the RESET (⏏) key or the arm/disarm code.

Range: 0 or 1

Factory default value: 0 (no supervisory latch)

### 31 Automatic Interior Off-

A value of "1" enables the system to automatically turn off the interior zone(s) at the expiration of exit delay if no delay zone was violated.

Range: 0 or 1

Factory default value: 0 (No automatic interior off)

### 32 Automatic Instant-

A value of "1" enables the system to automatically convert all delay zones into instant zones at the expiration of exit delay if no delay zone was violated.

Range: 0 or 1

Factory default value: 0 (No automatic change to instant)

### 33 No Interior Follower-

A value of "1" disables the "interior follower" and allows all interior zones to remain instant during the entrance delay time.

Range: 0 or 1

Factory default value: 0 ("interior follower" enabled)

### 34 Siren Test On Arming-

A value of "1" enables a one second burglar alarm output (J4-pin 9) whenever the control is armed. A value of "0" disables this feature.

Value of 1=siren test.

Range: 0 or 1

Factory default value: 0 (no siren test)

### 35 Time Between Battery/Communicator Tests-

This function specifies the amount of time between automatic communicator and battery load tests.

Values that may be entered are as follows:

Value	Time
0	12 hours
1	1 day
2	2 days
3	3 days
4	4 days
5	5 days
6	6 days
7	7 days

Range 0 to 7

Factory default value: 1 day

### 36 Loop Response Time-2 (FAST)

Loop response time is the time a zone must remain violated before the control sees the violation. Longer loop response times help to eliminate false alarms caused by window foil and loose fitting doors. The time is measured in 40 millisecond (0.040 second) increments. A programmed value of "1" equals 40 milliseconds, "2" equals 80 milliseconds,... "255" equals 10,200 milliseconds or 10.2 seconds. A loop response value of 2 should be the minimum value programmed. Fast acting devices such as vibration contacts and some glass breaker detectors may require pulse extenders for proper operation. U.L. requires that the loop response time not exceed one second.

Range: 1 to 255 (40 milliseconds to 10.2 seconds)

Factory default value: 2 (80 milliseconds)

### 37 Loop Response Time-1 (SLOW)

See Function 36.

Range: 1 to 255 (40 milliseconds to 10.2 seconds)

Factory default value: 8 (320 milliseconds)

### 38 Zone 1 Definition-

Each zone may be individually defined for use as a burglar, fire, police, medical, communicator trip or key zone. Refer to Appendix B for calculating the definition for each zone. Enter the value calculated for zone 1 function 38, the value for zone 2 in function 39, etc.

Range: 0 to 255

Factory default value: 64 (Burglar, Entrance Delay 1, Perimeter, Slow loop response).

### 39 Zone 2 Definition-

Refer to function 38.

Factory default value: 72 (Burglar, Entrance Delay 2, Perimeter, Slow loop response).

### 40 Zone 3 Definition-

Refer to function 38.

Factory default value: 81 (Interior, Slow loop response).

### 41 Zone 4 Definition-

Refer to function 38.

Factory default value: 65 (Burglar, Instant, Perimeter, Slow loop response).

### 42 Zone 5 Definition-

Refer to function 38.

Factory default value: 65 (Burglar, Instant, Perimeter, Slow loop response).

### 43 Zone 6 Definition-

Refer to function 38.

Factory default value: 66 (Fire, Slow loop response).

### 44 Not Programmable

### 45 Not Programmable

### 46 Zone 1 Supervisory-

A value of "0" configures the zone for supervisory trouble signals upon loop open.

A value of "1" configures the zone for supervisory trouble signals upon loop short.

Range: 0 or 1

Factory default value: 0 (supervisory trouble on loop open)

### 47 Zone 2 Supervisory-

Refer to function 46.

Factory default value: 0 (supervisory trouble on loop open)

### 48 Zone 3 Supervisory-

Refer to function 46.

Factory default value: 0 (supervisory trouble on loop open)

### 49 Zone 4 Supervisory-

Refer to function 46.

Factory default value: 0 (supervisory trouble on loop open)

### 50 Zone 5 Supervisory-

Refer to function 46.

Factory default value: 0 (supervisory trouble on loop open)

# Programming the SX-2900 (Cont.)

## 51 Zone 6 Supervisory-

Refer to function 46.

Factory default value: 0 (supervisory trouble on loop open)

## 52 Not Programmable

## 53 Not Programmable

## 54 Configuration Digit Code 1-

The configuration digit allows the installer to assign a different level of security for each user authorization code.

Range: 0 to 9

Factory default value: 3 (Arm/Disarm or Access with code)

## 55 Configuration Digit Code 2-

Refer to function 54.

Factory default value: 3

## 56 Configuration Digit Code 3-

Refer to function 54.

Factory default value: 3

## 57 Configuration Digit Code 4-

Refer to function 54.

Factory default value: 3

## 58 Configuration Digit Code 5-

Refer to function 54.

Factory default value: 3

## 59 Configuration Digit Code 6-

Refer to function 54.

Factory default value: 3

## 60 Configuration Digit Code 7-

Refer to function 54.

Factory default value: 3

## 61 Configuration Digit Code 8-

Refer to function 54.

Factory default value: 3

## 62 Configuration Digit Code 9-

Refer to function 54.

Factory default value: 3

## 63 Two Digit Arm-

Programming a value of "1", allows the use of just the keypad command digit and the first digit of the arm/disarm code to arm the system. The entire code must be used to disarm. A value of "0" requires the entire code for both arming and disarming the system.

Range: 0 or 1

Factory default value: 0 (Entire code required)

**NOTE: If this feature is selected the first digit of a program code cannot be the same as the first digit of any user code.**

## 64 Command 4 & 5 Work While Armed-

If a "1" is programmed for this function, keypad commands 4 and 5 may be used while the system is armed.

Range: 0 or 1

Factory default value: 0 (commands 4 & 5 may not be used when armed)

## 65 Interior/Delay Mode-

The Interior and Delay modes change to a programmed configuration when disarmed. The configuration is determined by the value entered for function 65:

Value	Interior	Delay
0	On	On
1	Off	On
2	On	Off
3	Off	Off

Range: 0 to 3

Factory default value: 0 (Interior On, Delay On)

## 66 Disable Keypad Fire-

A "1" disables keypad fire alarm activation.

Range: 0 or 1

Factory default value: 0

## 67 Disable Keypad Police-

A "1" disables keypad police alarm activation.

Range: 0 or 1

Factory default value: 0

## 68 Disable Keypad Medical-

A "1" disables keypad medical alarm activation.

Range: 0 or 1

Factory default value: 0

## 69 Disable Keypad Shunting-

A "1" disables keypad shunting.

Range: 0 or 1

Factory default value: 0 (keypad shunting enabled)

## 70 No Keypad Beep On Burglar Activation-

A "1" silences the control station beep on burglar alarm activation.

Range: 0 or 1

Factory default value: 0 (control station beeps on burglar alarm activation)

## 71 No Control Station Beep Or LED On Police Activation-

Program this function with a "1" for a silent police alarm. The police output (J-4, pin 4) must NOT be connected to an audible device.

Range: 0 or 1

Factory default value: 0 (control station beep and LED on police alarm activation)

## 72 Start Entrance Delay 1 From Keypad-

A value of "1" causes an armed control to start entry delay 1 any time a keypad digit is pressed. The control will alarm if not disarmed before the entrance delay 1 time has expired. This feature can be used in high security areas to detect keypad tampering.

Range: 0 or 1

Factory default value: 0 (Factory disabled)

## 73 Disabled Keypad Command 4 (Interior Mode Change)-

A "1" disables keypad command 4.

Range: 0 or 1

Factory default value: 0 (keypad command 4 active)

	Telephone #1	Telephone #2	
<b>74 Disable Keypad Command 5 (Delay Mode Change)-</b> A "1" disables keypad command 5. Range: 0 or 1 Factory default value: 0 (keypad command 5 active)	<b>83</b>	<b>118</b>	<b>Account Code, Digit 1-</b> Thousands digit of the account code used in four digit account codes only. Enter a "0" to disable this digit if a three digit account code is used. Range: 1 to 15, 0=disable Factory default value: 0 (digit disabled)
<b>75 Disable Keypad Command 6 (Monitor On/Off)-</b> A "1" disables keypad command 6. Range: 0 or 1 Factory default value: 0 (keypad command 6 active)			
<b>76 Disable Keypad Command 7 Smoke Reset -</b> A "1" disables keypad command 7. Range: 0 or 1 Factory default value: 0 (keypad command 7 active)	<b>84</b>	<b>119</b>	<b>Account Code, Digit 2-</b> Hundreds digit of the account code. Range: 1 to 15, 0=disable Factory default value: 8
<b>77 Disable Keypad Command 8 (Test)-</b> A "1" disables keypad command 8. Range: 0 or 1 Factory default value: 0 (keypad command 8 active)	<b>85</b>	<b>120</b>	<b>Account Code, Digit 3-</b> Tens digit of the account code. Range: 1 to 15, 0=disable Factory default value: 8
<b>78 Communicator Disable Or Delay Before Dial-</b> A value of "0" disables the communicator. A value of 1 to 255 is the time in seconds the communicator will wait after activation and before dialing to allow aborting of alarms. Range: 1 to 255 seconds, 0=disabled Factory default value: 0 (communicator disabled)	<b>86</b>	<b>121</b>	<b>Account Code, Digit 4-</b> Ones digit of the account code. Range: 1 to 15, 0=disable Factory default value: 8
<b>79 Dial Attempts Before Shutdown-</b> A value of "1 to 255" sets the number of dial attempts before the communicator automatically shuts down. The dial attempts counter is decremented each time the communicator switches telephone numbers, even when only one of the two telephone numbers is programmed. Range: 1 to 255 attempts (DO NOT PROGRAM WITH A VALUE OF 0) Factory default value: 8 (dial attempts before shutdown)	<b>87</b>	<b>122</b>	<b>Transmission Format-</b> A value of "0" to "5" may be entered to select the transmission format. Range: 0 to 5 Factory default value: 0 (autobaud to format 1 or 2)
<b>80 Abort Communicator If Disarmed-</b> A value of "1" allows the communicator to abort any alarm reports when the arm/disarm code is entered. Upon abort, a cancel report may be sent by programming function 109 and 144. Range: 0 or 1 Factory default value: 0 (no communicator abort)	<b>88</b>	<b>123</b>	<b>Single Round Report-</b> Some older central station equipment can receive only a single report per telephone call. A value of "1" instructs the communicator to hangup after each single report and redial the central station for additional reports. <b>NOTE: Extended format (functions 90-91) can NOT be used with single round reporting.</b> Range: 0 or 1 Factory default value: 0 (single round reporting disabled)
<b>81 Disable Dialer Test On Power-up-</b> If a test reporting code (Function 117 and 152) is programmed, a value of "0" allows the communicator to dial the central station with a test report code 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. Range: 0 or 1 Factory default value: 0 (send test report on power-up)	<b>89</b>	<b>124</b>	<b>4/2 Transmission Format-</b> A value of "1" enables 4/2 transmission format which is a form of extended reporting. This format sends a four digit account code and a two digit report code. Range: 0 or 1 Factory default value: 0 (4/2 format disabled)
<b>82 Exception Opening/System Restore-</b> A value of "1" causes the communicator to report the opening code (functions 106 and 141) ONLY when the system had been disarmed (reset) after an alarm. Range: 0 or 1 Factory default value: 0 (no exception opening/system restore.) Opening reports if programmed, will be sent after every disarm cycle.			

# Programming the SX-2900 (Cont.)

Telephone #1	Telephone #2		Telephone #1	Telephone #2	
90	125	<b>Standard Extended-</b> A value of "1" enables the communicator to transmit all reports in extended two line format. Range: 0 or 1 Factory default value: 0 (standard two line extended disabled)	99	134	<b>Zone 6 Reporting Code-</b> See Function 94. Factory default code: 3
91	126	<b>Extended Single Line-</b> A value of "1" enables Single Line extended format. for information concerning Single Line extended format. Range: 0 or 1 Factory default value: 0 (Single Line extended disabled)	100	135	<b>Not Programmable</b>
			101	136	<b>Not Programmable</b>
			102	137	<b>Keypad Fire Reporting Code-</b> Code reported when keypad fire is activated. The keypad extended reporting code is programmed with Function 165. Range: 1 to 15, 0=disable Factory default code: 1
92	127	<b>(Radionics) Parity Checksum-</b> A value of "1" enables the communicator to transmit a parity checksum digit. Range: 0 or 1 Factory default value: 0 (no (Radionics) parity checksum)	103	138	<b>Keypad Police/Aux 1 Reporting Code-</b> Code reported when keypad police/aux. 1 is activated. The keypad extended reporting code is programmed with Function 165. Range: 1 to 15, 0=disable Factory default code: 2
93	128	<b>Touchtone® Dialing-</b> A value of "1" enables the communicator to dial the telephone number using touchtone. A value of "0" enables rotary (pulse) dialing. Range: 0 or 1 Factory default value: 0 (rotary dialing)	104	139	<b>Keypad Medical/Aux 2 Reporting Code-</b> Code reported when keypad medical/aux. 2 is activated. The keypad extended reporting code is programmed with Function 165. Range: 1 to 15, 0=disable Factory default code: 0 (reporting disabled)
94	129	<b>Zone 1 Reporting Code-</b> This is the communicator code reported when zone 1 is activated. A zero (0) is entered to disable communicator reporting of the zone. A true reporting code of "0" (corresponding to "operator" on a telephone) is truly a 10 and must be entered as a 10. Some systems report a 10 as a hexadecimal A. Range: 1 to 15, 0=disable Factory default code: 3	105	140	<b>Duress Reporting Code-</b> Code reported when a duress arm/disarm code is entered. The extended reporting code is the user code number. Range: 1 to 15, 0=disable Factory default code: 0 (reporting disabled)
95	130	<b>Zone 2 Reporting Code-</b> See Function 94. Factory default code: 3	106	141	<b>Opening Reporting Code-</b> Code reported when disarming the control. For exception opening For exception opening see Function 82. The extended reporting code is the user code number. Range: 1 to 15, 0=disable Factory default code: 0 (reporting disabled)
96	131	<b>Zone 3 Reporting Code-</b> See Function 94. Factory default code: 3	107	142	<b>Closing Reporting Code With Ringback-</b> Code reported when arming the control. The extended reporting code is the user code number. Range: 1 to 15, 0=disable Factory default code: 0 (reporting disabled)
97	132	<b>Zone 4 Reporting Code-</b> See Function 94. Factory default code: 3			
98	133	<b>Zone 5 Reporting Code-</b> See Function 94. Factory default code: 3			

**Telephone Telephone**  
**#1 #2**

- 108 143 Shunted Reporting Code-**  
Code reported when the control is armed with a zone shunted. This code will be transmitted for each shunted zone. The extended reporting code is the zone number. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 109 144 Cancel Reporting Code-**  
Code reported when an alarm transmission is aborted. The extended reporting code is the zone number. Function 80 must be enabled for the cancel reporting code to work. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 110 145 Restore Reporting Code-**  
Code reported when a zone which caused an alarm is restored to operation. The extended reporting is the zone number. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 111 146 Supervisory Reporting Code-**  
Code reported when a zone programmed for supervisory is activated. The extended reporting code is the zone number. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 112 147 Low Battery/Fuse Blown Reporting Code-**  
Code reported when a low battery voltage or blown fuse is detected. The extended battery/fuse reporting code is programmed with function 162. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 113 148 Battery/Fuse Restore Reporting Code-**  
Code reported after the restoral of a low battery or blown fuse. The battery/fuse extended reporting code is programmed with function 162. U.L. requires low battery reporting for Grade B or C Central Station installations. Therefore DO NOT DISABLE. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)

**Telephone Telephone**  
**#1 #2**

- 114 149 AC Failure Reporting Code-**  
Code reported when AC power is interrupted for more than approximately 20 seconds. The AC extended reporting code is programmed with function 161. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 115 150 AC Restored Reporting Code-**  
Code reported when AC power is restored to the control. The AC extended reporting code is programmed with function 161. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 116 151 Memory Error Reporting Code-**  
Code reported when an error is detected in the EEPROM (memory). The memory error extended reporting code is programmed with function 163. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 117 152 Communicator Test Code-**  
Code reported for a communicator test. See Function 35. The communicator test extended reporting code is programmed with function 164. Range: 1 to 15, 0=disable  
Factory default code: 0 (reporting disabled)
- 153 Return To Run Mode-**  
This function is placed here as a safety stop. If this function is accessed, the system returns to the normal running mode.
- COMMON TELEPHONE WORKSPACE
- 154 Copy Dialer Codes For Telephone #1 to Telephone #2-**  
No value may be entered for this function. This function copies telephone #1 reporting codes into telephone #2 reporting codes. To copy the codes, enter "154" followed by the FIND Key (F).
- 155 Copy Telephone #1 to Telephone #2-**  
No value may be entered for this function. This function copies the telephone number programmed for telephone #1 into telephone #2. To copy the telephone number, enter "155" followed by the FIND Key (F).
- 156 New EEPROM Values - Reload factory default values back into memory, by programming this function with a "1".** Turn off the power switch, wait five seconds, then turn power back on. **WARNING:** This function replaces all data programmed by the user or installer with factory values and disables telephone #1 and #2. Range: 0 or 1

# Programming the SX-2900 (Cont.)

## 157 Listen-In Telephone #1-

A value of "1" enables a listen-in module connected to the communicator to be turned on for 60 seconds after final kissoff.

Range: 0 or 1

Factory default value: 0 (listen-in telephone #1 disabled)

## 158 Listen-In Telephone #2-

A value of "1" enables a listen-in module connected to the communicator to be turned on for 60 seconds after final kissoff.

Range: 0 or 1

Factory default value: 0 (listen-in telephone #2 disabled)

## 159 Line Seize Hangup Time-

Communicator hang up time in seconds if no dial tone is detected.

Range: 0 to 255 seconds

Factory default value: 3 seconds

## 160 Time Between Dial Attempts-

Time in seconds between subsequent dial attempts if previous attempt was not successful. U.L. requires no more than 45 seconds for U.L. certificated accounts.

Range: 0 to 255 seconds

Factory default value: 10 seconds

## 161 Extended AC Code-

AC reporting code used in extended reporting.

Range: 1 to 15

Factory default value: 10

## 162 Extended Battery/Fuse Code-

Battery/blown fuse reporting code used in extended reporting.

Range: 1 to 15

Factory default value: 9

## 163 Extended Memory Error Code-

Memory error reporting code used in extended reporting.

Range: 1 to 15

Factory default value: 15

## 164 Extended Test Code-

Communicator test reporting code used in extended reporting.

Range: 1 to 15

Factory default value: 9

## 165 Extended Keypad Panic Code-

Keypad panic reporting code used in extended reporting.

Range: 1 to 15

Factory default value: 9

## 166 Parity Checksum (Radionics) On



### Formats 0, 1, & 2-

A value of "1" allows transmission of parity checksum on transmission formats 0, 1, and 2. Normally, parity checksum works only with format 3 (Radionics).



Range: 0 or 1

Factory default value: 0 (No parity checksum of formats 0, 1, and 2)

## 167 Factory Touchtone® Generation Test-

This test function allows the communicator to seize the telephone line without dialing any number and to generate for four seconds the corresponding tones for any keypad digit pressed. Press the  or  key to return to the normal running mode of operation.

## TELEPHONE NUMBERS

A dialable digit may be any value from 1 to 9 or 0. If using touchtone, an "11" represents a star digit () and a "12" represents a number sign digit (). Entering a "13" instructs the communicator to wait three seconds before dialing the next digit. Entering a "14" causes the communicator to wait up to 10 seconds for a second dial tone. The digit following the last digit of the telephone number must be programmed with a value of "15" signifying end of dial. Table 8 lists the telephone # programming value.

Range of each digit: 0 to 15

Factory default value of each digit: 15 (no telephone number programmed)

Value Programmed	Function
0	0 Converts to 10
1 thru 9	1 thru 9
10	0-disabled zero
11	* (Only in touchtone)
12	# (Only in touchtone)
13	3 second wait
14	Wait up to 10 seconds for second dial tone
15	End of telephone number (must follow the last digit of the telephone number)

Table 10 Telephone Number Programming Values

Telephone Number 1	Telephone Number 2	
168	195	<b>Digit 1-</b> First digit of telephone number.
169	196	<b>Digit 2-</b> Second digit of telephone number.
170	197	<b>Digit 3-</b> Third digit of telephone number.
.	.	
.	.	
.	.	
.	.	
193	220	<b>Digit 26-</b> Twenty-sixth digit of telephone number.
194	221	<b>Return To Run Mode-</b> See Function 153



# Zone Planning Guide

## Procedure For Zone Planning:

1. Plan each ZONE individually.
2. Select the ZONE TYPE from left column. Using the DEFINITION COLUMN, select characteristics for each ZONE TYPE and enter appropriate VALUE in the block under the ZONE VALUE number for which you are programming.
3. Add vertically the values selected for each ZONE and place the total value in the ZONE VALUE TOTAL block.
4. When programming the control, enter the ZONE VALUE TOTAL of each zone into the FUNCTION number designated under each ZONE number column.

ZONE TYPE	DEFINITION	VALUE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
BURGLAR LOOPS	ENTRY DELAY 1	= 0						
	INSTANT	= 1						
	SILENT INSTANT	= 7						
	ENTRY DELAY 2	= 8						
	PERIMETER	= 0						
	INTERIOR	= 16						
	SHUNTABLE	= 0						
	NON SHUNTABLE	= 32						
	FAST LOOP	= 0						
	SLOW LOOP	= 64						
	SUPERVISORY	=128						
TOTAL VALUE FOR A BURGLAR ZONE								

ZONE TYPE	DEFINITION	VALUE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
FIRE	STANDARD	= 2						
	FAST LOOP	= 0						
	SLOW LOOP	= 64						
TOTAL VALUE FOR A FIRE ZONE								

ZONE TYPE	DEFINITION	VALUE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
POLICE/AUX 1	AUDIBLE	= 3						
	SILENT	= 11						
	CONTROL STATION							
	FAST LOOP	= 0						
	SLOW LOOP	= 64						
	SUPERVISORY	=128						
TOTAL FOR A POLICE/AUX 1 ZONE								

ZONE TYPE	DEFINITION	VALUE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
MEDICAL/AUX 2		= 4						
	FAST LOOP	= 0						
	SLOW LOOP	= 64						
	SUPERVISORY	=128						
TOTAL FOR A MEDICAL/AUX 2 ZONE								

ZONE TYPE	DEFINITION	VALUE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
KEYSWITCH (ONLY 1 KEY ZONE PER SYSTEM)		= 5						
	SHUNTABLE	= 8						
	SUPERVISORY	=128						
TOTAL FOR A KEYSWITCH ZONE								

ZONE TYPE	DEFINITION	VALUE	ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5	ZONE 6
COMMUNICATOR		= 6						
	FAST LOOP	= 0						
	SLOW LOOP	= 64						
	SUPERVISORY	=128						
TOTAL FOR A COMMUNICATOR ZONE								
FUNCTION # FOR ENTERING TOTALS			038	039	040	041	042	043

# Appendix

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## Telephone Company Information Incidence of Harm

In the unlikely event that the System communicator should ever cause harm to the telephone network, the telephone company will notify the telephone subscriber that temporary discontinuance of service may be required; however, where prior notice is not practicable, the telephone company may temporarily discontinue service. In the case of temporary discontinuance, the telephone company shall promptly notify the telephone subscriber who will be given the opportunity to correct the situation. The customer also has the right to bring a complaint to the FCC if he feels the disconnection is not warranted.

## Changes In Telephone Company Equipment Or Facilities

The telephone company may make changes in its communications facilities, equipment, operations or procedures, where such action is reasonably required and proper in its business. Should any changes render the System communicator incompatible with the telephone company facilities, the customer shall be given adequate notice to make modifications to maintain uninterrupted service.

## Telephone Company Requirements Notification

This equipment complies with Part 68 of the FCC rules. All connections to the telephone network must be made through standard plugs and standard telephone company jacks, or equivalent, in such a manner as to allow for easy and immediate disconnection of the alarm equipment. If the connecting cord is unplugged from the jack there shall be no interference to the telephone equipment still

connected to the telephone network. Before connecting the system to the telephone network the telephone company must be notified for the installation of an USOC RJ31-X or RJ38-X jack. The telephone company will need the following information:

1. The phone number to which the System will be connected.
2. The FCC registration number: DLH66Y-12286-AL-E.
3. The ringer equivalence: 0.0B
4. The manufacturer: NuTone Inc.

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, but not all areas, the sum of the REN's of all devices to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

Notify the telephone company if the System is removed from the premises and RJ31-X or RJ38-X jack is no longer needed.

## Malfunction of Equipment

In the unlikely event that the System should ever fail to operate properly, it should be disconnected from the RJ31-X or RJ38-X jack to determine if the problem is with the telephone network or with the System. If a problem is found with the communicator, leave disconnected until repaired or replaced.

The FCC prohibits customer-provided terminal equipment be connected to party lines or to be used in conjunction with coin telephone service. Inter-connect rules may vary from state to state.

# Function Map

001	USER AUTH. CODE 1	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	021	DELAY BEFORE BURGLAR ALARM	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255
002	USER AUTH. CODE 2	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	022	BURGLAR CUTOFF	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255 000 = NO CUTOFF
003	USER AUTH. CODE 3	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	023	FIRE CUTOFF	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255 000 = NO CUTOFF
004	USER AUTH. CODE 4	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	024	POLICE CUTOFF	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255 000 = NO CUTOFF
005	USER AUTH. CODE 5	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	025	MEDICAL CUTOFF	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255 000 = NO CUTOFF
006	USER AUTH. CODE 6	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	026	PULSING BURGLAR	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
007	USER AUTH. CODE 7	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	027	PULSING FIRE	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
008	USER AUTH. CODE 8	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	028	BURGLAR AUDIBLE ALARM LOCKOUT	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
009	USER AUTH. CODE 9	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	029	KEYSWITCH MODE CHANGE	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
010	USER PROGRAM AUTH. CODE	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS 0 - 9	030	SUPERVISORY LATCH	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
011	USAGE COUNT CODE 9	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255	031	AUTOMATIC INTERIOR OFF	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
012	TIME TILL NEXT COMM/BATT TEST	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 024	032	AUTOMATIC INSTANT OFF	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
013	CLEAR ALARM MEMORY ZONES	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		033	NO INTERIOR FOLLOWER	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
014	DELETE CODE	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text"/>	001-009	034	SIREN TEST ON ARMING	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> NO YES
015	UPLOAD DATA	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		035	TIME BETWEEN COMM/BATT TESTS	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text"/>	000 - 007
SYSTEM MUST BE IN INSTALLER LEVEL TO PROGRAM BEYOND THIS POINT				036	FAST LOOP RESPONSE	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 255
016	INSTALLER PROGRAM CODE	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	FIVE DIGITS RANGE. 0 - 9	037	SLOW LOOP RESPONSE	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 255
017	EXIT DELAY	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255	038	ZONE 1 DEFINITION	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255
018	ENTRANCE DELAY ONE	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255	039	ZONE 2 DEFINITION	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255
019	ENTRANCE DELAY TWO	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255				
020	ACCESS ON TIME	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 255 000 = TOGGLE				

040	ZONE 3 DEFINITION	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255	063	TWO DIGIT ARM	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
041	ZONE 4 DEFINITION	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255	064	COMMANDS 4 & 5 WORK IF ARMED	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
042	ZONE 5 DEFINITION	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255	065	DISARM MODE	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 003
043	ZONE 6 DEFINITION	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255	066	DISABLE KEYPAD FIRE	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
044	ZONE 7 DEFINITION	(not programmable)	000 - 255	067	DISABLE KEYPAD POLICE	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
045	ZONE 8 DEFINITION	(not programmable)	000 - 255	068	DISABLE KEYPAD MEDICAL	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
046	ZONE 1 SUPERVISORY	<input type="text"/> <input type="text"/> <input type="text"/> OPEN	<input type="text"/> <input type="text"/> <input type="text"/> SHORT	069	DISABLE KEYPAD SHUNTING	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
047	ZONE 2 SUPERVISORY	<input type="text"/> <input type="text"/> <input type="text"/> OPEN	<input type="text"/> <input type="text"/> <input type="text"/> SHORT	070	SILENT KEYPAD ON BURGLAR	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
048	ZONE 3 SUPERVISORY	<input type="text"/> <input type="text"/> <input type="text"/> OPEN	<input type="text"/> <input type="text"/> <input type="text"/> SHORT	071	SILENT KEYPAD ON POLICE	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
049	ZONE 4 SUPERVISORY	<input type="text"/> <input type="text"/> <input type="text"/> OPEN	<input type="text"/> <input type="text"/> <input type="text"/> SHORT	072	START ENTRANCE DELAY ONE	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
050	ZONE 5 SUPERVISORY	<input type="text"/> <input type="text"/> <input type="text"/> OPEN	<input type="text"/> <input type="text"/> <input type="text"/> SHORT	073	DISABLE KEYPAD COMMAND 4	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
051	ZONE 6 SUPERVISORY	<input type="text"/> <input type="text"/> <input type="text"/> OPEN	<input type="text"/> <input type="text"/> <input type="text"/> SHORT	074	DISABLE KEYPAD COMMAND 5	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
054	CONFIGURATION DIGIT CODE 1	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009	075	DISABLE KEYPAD COMMAND 6	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
055	CONFIGURATION DIGIT CODE 2	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009	076	DISABLE KEYPAD COMMAND 7	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
056	CONFIGURATION DIGIT CODE 3	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009	077	DISABLE KEYPAD COMMAND 8	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
057	CONFIGURATION DIGIT CODE 4	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009	078	COMMUNICATOR DISABLE/DELAY	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255 000 = DISABLED
058	CONFIGURATION DIGIT CODE 5	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009	079	DIAL ATTEMPTS	<input type="text"/> <input type="text"/> <input type="text"/>	000 - 255
059	CONFIGURATION DIGIT CODE 6	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009	080	COMMUNICATOR ALARM ABORT	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
060	CONFIGURATION DIGIT CODE 7	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009	081	DISABLE DIALER TEST ON POWER UP	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
061	CONFIGURATION DIGIT CODE 8	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009	082	EXCEPTION OPENING	<input type="text"/> <input type="text"/> <input type="text"/> NO	<input type="text"/> <input type="text"/> <input type="text"/> YES
062	CONFIGURATION DIGIT CODE 0	<input type="text"/> <input type="text"/> <input type="text"/>	001 - 009				

## TELEPHONE #1 WORKSPACE

### ACCOUNT CODE

0	0	0	0
083 DIGIT 1	084 DIGIT 2	085 DIGIT 3	086 DIGIT 4

RANGE OF EACH DIGIT: 000 - 015

000 = DIGIT DISABLED

010 = ZERO (0) DIGIT

- |     |                                  |                  |             |
|-----|----------------------------------|------------------|-------------|
| 087 | TRANSMISSION<br>FORMAT           | 0 0              | 000 - 009   |
| 088 | SINGLE ROUND<br>REPORT           | 0 0 0      0 0 1 | NO      YES |
| 089 | 4/2 TRANSMISSION<br>FORMAT       | 0 0 0      0 0 1 | NO      YES |
| 090 | EXTENDED<br>STANDARD             | 0 0 0      0 0 1 | NO      YES |
| 091 | EXTENDED<br>RADIONICS A+         | 0 0 0      0 0 1 | NO      YES |
| 092 | RADIONICS<br>PARITY              | 0 0 0      0 0 1 | NO      YES |
| 093 | TOUCHTONE®                       | 0 0 0      0 0 1 | NO      YES |
| 094 | ZONE 1<br>REPORTING CODE         | 0                | 000 - 015   |
| 095 | ZONE 2<br>REPORTING CODE         | 0                | 000 - 015   |
| 096 | ZONE 3<br>REPORTING CODE         | 0                | 000 - 015   |
| 097 | ZONE 4<br>REPORTING CODE         | 0                | 000 - 015   |
| 098 | ZONE 5<br>REPORTING CODE         | 0                | 000 - 015   |
| 099 | ZONE 6<br>REPORTING CODE         | 0                | 000 - 015   |
| 102 | KEYPAD FIRE<br>REPORTING CODE    | 0                | 000 - 015   |
| 103 | KEYPAD POLICE<br>REPORTING CODE  | 0                | 000 - 015   |
| 104 | KEYPAD MEDICAL<br>REPORTING CODE | 0                | 000 - 015   |
| 105 | DURESS<br>REPORTING CODE         | 0                | 000 - 015   |

\* TOUCHTONE IS A REGISTERED TRADEMARK OF AT&T

- |     |                                  |   |           |
|-----|----------------------------------|---|-----------|
| 106 | OPENING<br>REPORTING CODE        | 0 | 000 - 015 |
| 107 | CLOSING<br>REPORTING CODE        | 0 | 000 - 015 |
| 108 | SHUNTED<br>REPORTING CODE        | 0 | 000 - 015 |
| 109 | CANCEL<br>REPORTING CODE         | 0 | 000 - 015 |
| 110 | RESTORE<br>REPORTING CODE        | 0 | 000 - 015 |
| 111 | SUPERVISORY<br>REPORTING CODE    | 0 | 000 - 015 |
| 112 | LOW BATTERY<br>REPORTING CODE    | 0 | 000 - 015 |
| 113 | BATT. RESTORED<br>REPORTING CODE | 0 | 000 - 015 |
| 114 | AC FAILURE<br>REPORTING CODE     | 0 | 000 - 015 |
| 115 | AC RESTORED<br>REPORTING CODE    | 0 | 000 - 015 |
| 116 | MEMORY ERROR<br>REPORTING CODE   | 0 | 000 - 015 |
| 117 | TEST<br>REPORTING CODE           | 0 | 000 - 015 |

## TELEPHONE #2 WORKSPACE

### ACCOUNT CODE

0	0	0	0
118 DIGIT 1	119 DIGIT 2	120 DIGIT 3	121 DIGIT 4

RANGE OF EACH DIGIT: 000 - 015

000 = DISABLED DIGIT

010 = ZERO (0) DIGIT

- |     |                            |                  |             |
|-----|----------------------------|------------------|-------------|
| 122 | TRANSMISSION<br>FORMAT     | 0 0              | 000 - 005   |
| 123 | SINGLE ROUND<br>REPORT     | 0 0 0      0 0 1 | NO      YES |
| 124 | 4/2 TRANSMISSION<br>FORMAT | 0 0 0      0 0 1 | NO      YES |
| 125 | EXTENDED<br>STANDARD       | 0 0 0      0 0 1 | NO      YES |
| 126 | EXTENDED<br>RADIONICS A+   | 0 0 0      0 0 1 | NO      YES |
| 127 | RADIONICS<br>PARITY        | 0 0 0      0 0 1 | NO      YES |
| 128 | TOUCHTONE*                 | 0 0 0      0 0 1 | NO      YES |

## TELEPHONE #2 WORKSPACE (Cont.)

129	ZONE 1 REPORTING CODE	0			000 - 015
130	ZONE 2 REPORTING CODE	0			000 - 015
131	ZONE 3 REPORTING CODE	0			000 - 015
132	ZONE 4 REPORTING CODE	0			000 - 015
133	ZONE 5 REPORTING CODE	0			000 - 015
134	ZONE 6 REPORTING CODE	0			000 - 015
137	KEYPAD FIRE REPORTING CODE	0			000 - 015
138	KEYPAD POLICE REPORTING CODE	0			000 - 015
139	KEYPAD MEDICAL REPORTING CODE	0			000 - 015
140	DURESS REPORTING CODE	0			000 - 015
141	OPENING REPORTING CODE	0			000 - 015
142	CLOSING REPORTING CODE	0			000 - 015

143	SHUNTED REPORTING CODE	0			000 - 015
144	CANCEL REPORTING CODE	0			000 - 015
145	RESTORE REPORTING CODE	0			000 - 015
146	SUPERVISORY REPORTING CODE	0			000 - 015
147	LOW BATTERY REPORTING CODE	0			000 - 015
148	BATT. RESTORED REPORTING CODE	0			000 - 015
149	AC FAILURE REPORTING CODE	0			000 - 015
150	AC RESTORED REPORTING CODE	0			000 - 015
151	MEMORY ERROR REPORTING CODE	0			000 - 015
152	TEST REPORTING CODE	0			000 - 015
153	RETURN TO RUN MODE				

### COMMON TELEPHONE WORKSPACE

154 TRANSLATE DIALER CODES  
FOR TELEPHONE #1 TO  
TELEPHONE #2

155 TRANSLATE TELEPHONE #1  
TO TELEPHONE #2

156	NEW EEPROM FLAG	<table border="1"><tr><td>0</td><td>0</td><td>0</td></tr></table> NO	0	0	0	<table border="1"><tr><td>0</td><td>0</td><td>1</td></tr></table> YES	0	0	1
0	0	0							
0	0	1							
157	LISTEN-IN TELEPHONE #1	<table border="1"><tr><td>0</td><td>0</td><td>0</td></tr></table> NO	0	0	0	<table border="1"><tr><td>0</td><td>0</td><td>1</td></tr></table> YES	0	0	1
0	0	0							
0	0	1							
158	LISTEN-IN TELEPHONE #2	<table border="1"><tr><td>0</td><td>0</td><td>0</td></tr></table> NO	0	0	0	<table border="1"><tr><td>0</td><td>0</td><td>1</td></tr></table> YES	0	0	1
0	0	0							
0	0	1							
159	LINE SEIZE HANGUP TIME	<table border="1"><tr><td> </td><td> </td><td> </td></tr></table>				000 - 255			
160	TIME BETWEEN DIAL ATTEMPTS	<table border="1"><tr><td> </td><td> </td><td> </td></tr></table>				000 - 255			
161	EXTENDED AC CODE	<table border="1"><tr><td>0</td><td> </td><td> </td></tr></table>	0			001 - 015			
0									
162	EXTENDED BATTERY CODE	<table border="1"><tr><td>0</td><td> </td><td> </td></tr></table>	0			001 - 015			
0									
163	EXTENDED MEMORY ERROR	<table border="1"><tr><td>0</td><td> </td><td> </td></tr></table>	0			001 - 015			
0									
164	EXTENDED TEST CODE	<table border="1"><tr><td>0</td><td> </td><td> </td></tr></table>	0			001 - 015			
0									
165	EXTENDED KEYPAD PANIC CODE	<table border="1"><tr><td>0</td><td> </td><td> </td></tr></table>	0			001 - 015			
0									
166	RADIONICS PARITY FORMATS 0, 1 & 2	<table border="1"><tr><td>0</td><td>0</td><td>0</td></tr></table> NO	0	0	0	<table border="1"><tr><td>0</td><td>0</td><td>1</td></tr></table> YES	0	0	1
0	0	0							
0	0	1							
167	FACTORY TOUCHTONE® GENERATION TEST	0 — 9 or							

TELEPHONE NUMBER ONE:

011 = \*, 012 = #, 013 = SECOND WAIT,  
014 = WAIT FOR SECOND DIAL TONE,  
015 = END OF TELEPHONE NUMBER)

Figure 1 shows a sequence of 26 digits, labeled DIGIT 1 through DIGIT 26, and a RETURN TO RUN MODE signal. Each digit is represented by a 3x3 grid. The top row of each grid contains a 0 in the first column and a 1 in the second column. The other two rows are empty. The digits are arranged in three rows of nine, with the last row ending with the RETURN TO RUN MODE signal.

TELEPHONE NUMBER TWO

Diagram illustrating the sequence of digits (0-9) and the return to run mode:

Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit
0	0	0	0	0	0	0	0	0	0
195	196	197	198	199	200	201	202	203	203
DIGIT 1	DIGIT 2	DIGIT 3	DIGIT 4	DIGIT 5	DIGIT 6	DIGIT 7	DIGIT 8	DIGIT 9	DIGIT 9

Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit
0	0	0	0	0	0	0	0	0	0
204	205	206	207	208	209	210	211	212	212
DIGIT 10	DIGIT 11	DIGIT 12	DIGIT 13	DIGIT 14	DIGIT 15	DIGIT 16	DIGIT 17	DIGIT 18	DIGIT 18

Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit	Digit
0	0	0	0	0	0	0	0	0	0
213	214	215	216	217	218	219	220	221	221
DIGIT 19	DIGIT 20	DIGIT 21	DIGIT 22	DIGIT 23	DIGIT 24	DIGIT 25	DIGIT 26	RETURN TO RUN MODE	RETURN TO RUN MODE

# Selected Program Options and Operation

## Communicator Programming Typically Used With Radionics Receivers

Example: 3 digit account code: Account 888  
 Full alarm, restoral and shunt reports by zone  
 Opening/closings, low battery and AC failure reporting

	Telephone	Functions #1 / #2	Programmed Value
Account #: First digit		084 / 119	008
Second digit		085 / 120	008
Third digit		086 / 121	008
Transmission Format		087 / 122	003 For Radionics Fast = 3 For Radionics BFSK = 6
Single Round Report		088 / 123	000 = No
4/2 Transmission Format		089 / 124	000 = No
Extended Standard		090 / 125	001 = Yes
Extended Radionics A+		091 / 126	001 = Yes
Parity Checksum (Radionics)		092 / 127	001 = Yes
Zone 1 Reporting Code		094 / 129	001
Zone 2 Reporting Code		095 / 130	002
Zone 3 Reporting Code		096 / 131	003
Zone 4 Reporting Code		097 / 132	004
Zone 5 Reporting Code		098 / 133	005
Zone 6 Reporting Code		099 / 134	006
Keypad Fire Reporting Code		102 / 137	008
Opening Reporting Code		106 / 141	011
Closing Reporting Code		107 / 142	012
Shunted Reporting Code		108 / 143	015
Cancel Reporting Code		109 / 144	013
Restore Reporting Code		110 / 145	014
Supervisory Reporting Code		111 / 146	015
Low Battery Reporting Code		112 / 147	015
Batt. Restored Reporting Code		113 / 148	014
AC Failure Reporting Code		114 / 149	015
AC Restored Reporting Code		115 / 150	014
Test Reporting Code		117 / 152	014
Extended AC Code		161	010
Extended Battery Code		162	009
Extended Test Code		164	009

**Note: When sending to Radionics type receivers, values programmed as 11-15 will be printed as:**

11 = Opening 12 = Closing 13 = Cancel (abort) 14 = Restoral 15 = Trouble

# Glossary

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**Acknowledge.** Response to an alarm condition by entering an AUTHORIZATION code.

**Authorization Code.** A programmable code that is used with a Command. For example, Command 1 and Authorization code arms/disarms the system. Authorization codes must be preceded by a Command Key.

**Checksum.** A sum of program digits which is compared to a previously calculated value to insure program integrity.

**Command.** Instructions. Tells the system to perform a function.

**Command Key.** A single keypad digit (0-9) pressed before an Authorization Code.

**Configuration Digit.** A programmable digit which is assigned to each User Authorization Code to instruct the system what the code may be used for, i.e. arm/disarm, access, subzoning or duress.

**Default.** Pre-set values. The system comes with default exit time, entrance time, cutoff times, zone definitions, and other features. The default program makes installation and testing easier.

**Disable.** Turned off. Not active.

**Dynamic Load Test.** Active test. The system's battery is dynamically tested. A load is placed across the battery for 5 seconds and the battery voltage is measured.

**EEPROM.** Special type of "non-volatile" memory chip used in the system. EEPROMs retain programmed information without backup power.

**Enabled.** Turned on. Activated.

**Enter.** To press a keypad key for entry of information.

**Function Programming.** This level of programming is used for custom designing the system.

**Fail-safe Arming.** All burglar zones must be secure (or shunted) before the system will arm.

**Interior Follower.** When entering through a delay zone, the interior zones are automatically converted to delay zones.

**Loop response time.** The amount of time (in milliseconds) that a zone has to remain violated in order to cause an alarm.

**Program code.** The code used with Command 9 to program features of the SX-2900.

**Prompt. Cue.** The system's keypad beeps after each programming step. These beeps are a "prompt", or instruction, to continue with the next step.

**Supervisory/Trouble.** A zone violated condition that is not an alarm condition, i.e., fire zone open (fire zone shorts for alarm).

**Trigger.** A low current signal less than 50 milliamps.

**User programming.** This level of programming is used to set Authorization codes, the program code as well as entrance times and the communicator test time offset.

**Watchdog.** A circuit in the system that prevents microprocessor latch up. The watchdog minimizes the harmful effects of lightning and high voltage transients.

**Zone Definitions.** How a zone responds. Zones can be burglar, fire, police, medical or key.



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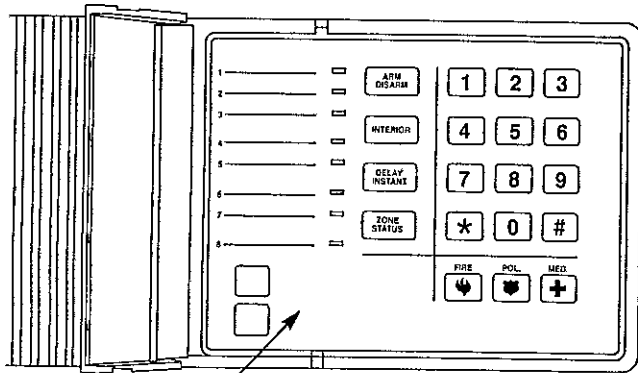
### FCC COMPLIANCE

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

1. Reorient the TV or radio antenna.
  2. Relocate or move the alarm control away from the receiver.
  3. Plug the transformer for the alarm control into a different outlet so that the receiver and the alarm are on different branch circuits.
  4. If necessary, the user should consult the alarm dealer or an experienced radio/television technician for additional suggestions.
- The user may find the following booklet prepared by the Federal Communications Commission helpful: "How To Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402 stock #004-000-00345-4.

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## To Enter the Installer Level Programming Mode



Press in this location on the SX-2900 keypad to locate the programming switch. When the programming switch has been activated, the LED's will blink and a beeping sound will be heard.

## Notes

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# NuTone

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