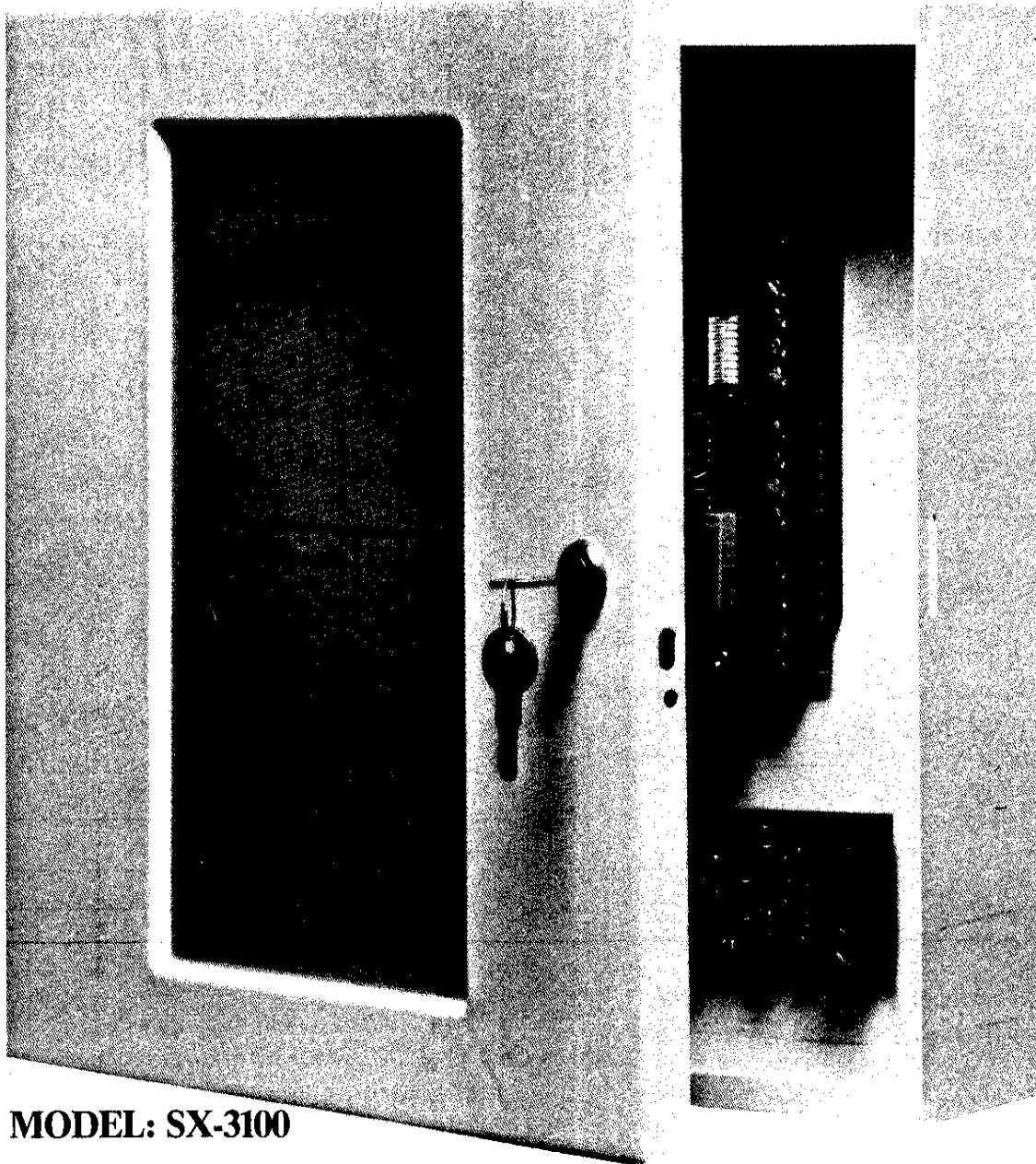




THE SECURITY OF NUTONE

INSTALLATION INSTRUCTIONS



MODEL: SX-3100

CONTENTS

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SYSTEM SPECIFICATIONS

Specifications

General

- Eight programmable zones—N.O./N.C. with end-of-line supervision (E.O.L.) or N.C. with no E.O.L.
- Three keypad-activated emergency zones—Fire, Police, Medical.
- Built-in 20 channel Digital Communicator with line seizure.
- Built-in battery charging circuit.
- Automatic, 24-hour battery test.
- Watchdog timer.
- Unpluggable circuit board.
- Two built-in Auxiliary output relays.
- Separate outputs for Burglary, Fire, Police, Medical and other options.
- Individual Burglary, Fire, Police and Medical cutoff timers.
- Two programmable entry delay times.
- Panel construction: 18 ga. steel.
- Cabinet keylock and two keys.
- Seven-stage lightning/transient protection.

Electrical

- Operating current: 160 mA (plus 20 mA for quiescent battery charge circuit).
- Heavy duty power supply: 13.8 VDC, 900 milliamps (.9 Amp) Auxiliary Power output.
- 18 Volt, 35 VA plug-in class II transformer (U.L. Listed).
- Separately fused outputs for Burglary and Fire alarm.
- Operating temperature range: 32° to 122°F (0°-50°C).

Dimensions

- Panel Cabinet: 14" x 14" x 3½"

Features

- Factory pre-programmed; no programming required to bench test.
- Keypad programmable; no programmer required.
- Eight fully programmable zones; plus keypad Fire, Police and Medical.
- Eight Zones can be individually programmed for:
 - Burglary Zone (instant or delay)
 - Burglary Zone (perimeter or interior)
 - Fire, Police or Medical (Police or Medical can be used as 24 hour Auxiliary zones.)
 - Day Zone
 - Keyswitch Zone
 - Loop Response time (slow or fast)
 - Alarm Lockout (restore)
 - Exit delay on all Burglar zones
 - "Follower" zones on entry delay (instant zones are shunted)
- Choice of three Digital Remote Controls:
 - One to four arm/disarm codes (1-5 digits long, numbers can be repeated)
 - Two-digit or single-digit arming

- Four wire hook-up
- Up to ten remote controls per system (basic keypad)
- Individual zone bypassing (shunting)
- Zone Status (by zone) memory retained until next alarm
- Interior bypassing
- Perimeter Monitor
- Detector Check
- Smoke Reset
- Access Control—timed output controlled by code entry
- Deluxe Remote Control with inside siren speaker and intercom capability.
- Program Key—for system programming

Digital Communicator

- Transmission Formats:
 - ADEMCO, ADCOR, VERTEX, and SILENT KNIGHT Slow Format
 - SESCOA, VERTEX, DCI and FRANKLIN Fast Format
 - RADIONICS Super Fast Format
 - SILENT KNIGHT Fast Format
- DPDT line seizure
- Up to twenty channels
- Delay before reporting
- Anti-jam feature
- True dial-tone detection
- Standard or extended formats
- One to 255 dial-out attempts
- Up to 3375 account codes (hexidecimal reporting)
- Reporting by zone
- Opening and closing report options
- Restore/cancel codes
- Trouble code
- 24-hour dynamic battery test
- 24-hour system test
- Two phone numbers (up to thirty digits each)
- Each phone number can be individually programmed for tone or rotary dialing
- Lamp-courtesy light output
- Fail-safe arming
- Seven-stage lightning/transient protection
- Bell/siren test upon arming (programmable)
- Silent police (panic) programmable
- Virtually unlimited program capability
- Three keypad zones—FIRE, POLICE, MEDICAL
- Keypad with built-in intercom/siren speaker
- Four user-programmable arm/disarm codes
- Duress, Maid and Access code options
- Multiple outputs for system flexibility
- Built-in fire circuit
- Non-volatile memory
- Zone Status and Alarm Memory—by zone
- Individual zone shunting
- Optional Intercom Module
- Optional Chime Module
- Optional deluxe 8-Tone Siren Driver
- Optional handheld upload/download programmer
- Plug-in circuit board
- User system test feature
- Zone identification labels
- Two entry delay times

SYSTEM OVERVIEW

General

The NuTech¹¹ system is ready to use from the factory. It comes preprogrammed with seven Burglar zones, one Fire zone, and three keypad zones. No special prom programmer or bar-code reader is required to take advantage of this control's many features. If the default settings described below do not meet your installation requirements, they can all be easily changed from the keypad.

The NuTech¹¹ system keypads "command" the system with a special COMMAND key followed by an AUTHORIZATION code. For example, COMMAND 1 and AUTHORIZATION code 2—4—5 will Arm or Disarm the system: press **1** **2** **4** **5**.

The following tables provide a list of the major features of the system as it comes from the factory.

Codes

AUTHORIZATION code 1: **2** **4** **5**
AUTHORIZATION code 2: not active
AUTHORIZATION code 3: not active
AUTHORIZATION code 4: not active
PROGRAM code: **9** **8** **7** **6** **5**

Zone Definitions

ZONE 1: BURGLAR Delay (Delay 1)
ZONE 2: BURGLAR Delay (Delay 2)
ZONE 3: BURGLAR Instant (Interior)
ZONE 4: BURGLAR Instant (Perimeter)
ZONE 5: BURGLAR Instant (Perimeter)
ZONE 6: BURGLAR Instant (Perimeter)
ZONE 7: BURGLAR Instant (Perimeter)
ZONE 8: FIRE (24 hour)

Timers

EXIT time:	60 seconds
ENTRANCE time (Delay 1):	30 seconds
ENTRANCE time (Delay 2):	45 seconds
BURGLAR Alarm-cutoff time:	15 minutes
FIRE Alarm-cutoff time:	no cutoff
POLICE/AUX 1 Alarm-cutoff time:	15 minutes
MEDICAL/AUX 2 Alarm-cutoff time:	15 minutes
LOOP-RESPONSE TIMES:	Slow=320 milliseconds/Fast=80 milliseconds

SYSTEM OVERVIEW

Programmable Zones

The system has eight supervised zones and three keypad zones. Each of the eight "hard-wire" zones can be wired so that normally open and normally closed devices may be contained within the same loop. Each zone can be individually programmed with the following features:

1. Burglar (Delay or Instant)
2. Entrance Delay 1 or 2
3. Perimeter or Interior
4. Fast or Slow loop-response
5. Day zone
6. Fire zone
7. Police/Aux 1 zone
8. Medical/Aux 2 zone
9. Keyswitch zone
10. Alarm lockout

Authorization Codes

Four independent AUTHORIZATION codes are programmable. Each code can be programmed for any one of the following options:

1. Arm/Disarm code.
2. Access code only (Use the keypad to activate a door release).
3. Arm/Disarm or Access code. Either Arm/Disarm the system or activate a door-release device.
4. Arm/Disarm and simultaneously Access.
5. Arm/Disarm/Access or Access only. Same as number 4, except Access can be used without Arming or Disarming.
6. Duress (ambush) code. Disarm the system and activate the Police channel on the communicator.
7. Single, 2-digit, or full-code arming.
8. A maid/service code (AUTHORIZATION code #4) may be programmed with any one of the above options. This code is programmed to be self-erasing after a selectable number of uses.

Programmable Timers

There are five different types of programmable timers within the NuTech¹¹ system. They are as follows:

1. Alarm Cutoff timers (4)
2. Entrance timers (2)
3. Loop-response timers (2)
4. Exit time (1)
5. Access output time (1)

Programming Options

A separate Programming Manual is provided with the Control Panel. Consult this manual for programming options.

INSTALLATION PROCEDURE

Using the Installer's Manuals

Two separate installer's manuals are provided with the NuTech¹¹ security system:

- (1) Installation Instructions
- (2) Installer's Programming Manual

The experienced installer will find this arrangement convenient. After several installations, the installer will no longer need the bulk of material in the installation instructions. When the installer becomes familiar with the system, he will most likely use only the system wiring diagram, programming manual, and programming worksheet. At this point, the installation instructions may be used for occasional reference.

Both the experienced and inexperienced installer should follow the installation procedure outlined below and use the installer's literature as described for each step of the installation.

Step 1: Plan the Installation

- Discuss the installation requirements and the system's applications in detail with the user or users.
- Physically survey the installation requirements.
- Compare the installation requirements to the pre-programmed zones and features.
- Where possible, layout the system to conform to the factory-program so that installer programming is minimized.

Step 2: Install the System

- Complete hardware installation of control panel and all other system components.
- Carefully label all wiring by zones.

Step 3: Learn Keypad Functions

- Become familiar with system operation.
- Power-up system and check remote control keypad operation.

Step 4: Program System

- Use the Programming Manual and the programming worksheet to note all programming entries.
- Use installer's programming procedures to program the system from the remote control keypad.

Step 5: Perform System Tests

- Use the remote control's "Zone Status" and "Detector Check" functions to check system operation.
- Perform the system tests described in the installation instructions.

Step 6: Explain System Operation to User

- Walk the user through the system, explaining the devices used.
- Using a digital remote control, demonstrate system operation to the user.
- Provide user with the appropriate User's Manual(s) for the digital remote controls used in the system.

PLANNING THE INSTALLATION

The first step in the installation of any multi-zone system is planning the job. Programming may be minimized by

analyzing what the installation requires and comparing these requirements with the factory pre-programmed features.

TABLE 1: FACTORY PROGRAM SETTINGS

The NuTech ¹¹ system is pre-programmed at the factory with the following program settings.		
1. ZONE 1	BURGLAR Delay zone (Delay 1)	Slow loop-response
2. ZONE 2	BURGLAR Delay zone (Delay 2)	Slow loop-response
3. ZONE 3	BURGLAR Instant zone (Interior)	Slow loop-response
4. ZONE 4	BURGLAR Instant zone (Perimeter)	Slow loop-response
5. ZONE 5	BURGLAR Instant zone (Perimeter)	Slow loop-response
6. ZONE 6	BURGLAR Instant zone (Perimeter)	Slow loop-response
7. ZONE 7	BURGLAR Instant zone (Perimeter)	Slow loop-response
8. ZONE 8	FIRE zone	Slow loop-response
EXIT time: 60 seconds	Delay 1 ENTRANCE time: 30 seconds	Slow loop-response: 320 milliseconds
Delay 2 ENTRANCE time: 45 seconds		Fast loop-response: 80 milliseconds
FIRE-alarm Cutoff time: No Cutoff	BURGLAR-alarm Cutoff time: 15 minutes	ACCESS on-time: 20 seconds
POLICE-alarm Cutoff time: 15 minutes	MEDICAL-alarm Cutoff time: 15 minutes	AUTHORIZATION code 1: 2 4 5
		PROGRAM code: 9 8 7 6 5
		DIGITAL COMMUNICATOR: Disabled
TRANSMISSION FORMAT: SESCOA, VERTEX, FRANKLIN FAST FORMAT, 2300 HZ KISSOFF, 1800 HZ DATA		ZONE 1 COMMUNICATOR code: 3
DATA FORMAT: Single-line reporting (non-extended)		ZONE 2 COMMUNICATOR code: 3
DIAL METHOD: PULSE (ROTARY)		ZONE 3 COMMUNICATOR code: 3
DIAL ATTEMPTS: 8		ZONE 4 COMMUNICATOR code: 3
ACCOUNT code NUMBER: 888		ZONE 5 COMMUNICATOR code: 3
		ZONE 6 COMMUNICATOR code: 3
		ZONE 7 COMMUNICATOR code: 3
		ZONE 8 COMMUNICATOR code: 1
		Keypad FIRE code: 1
		Keypad POLICE code: 2
		Keypad MEDICAL code: Not programmed

Sample Residential System

Table 2 describes the characteristics of a typical residential system. Note that some zones are different from the factory-set program, whereas other zones

remain unchanged. Zones 1, 3, 4, 6 and 8, which use the factory-set program characteristics, will require no installer programming.

TABLE 2: SAMPLE RESIDENTIAL SYSTEM

- ZONE 1: Burglar delay zone #1 (front door) with a 30-second entrance time and slow loop-response (320 milliseconds). **No programming required.**
- ZONE 2: Burglar delay zone #2 (garage door) with 120-second delay and slow loop-response (320 milliseconds). **Only delay time must be programmed.**
- ZONE 3: Burglar interior zone with slow loop-response for a motion detector. **No programming required.**
- ZONE 4: Burglar instant perimeter zone (front windows) with slow loop-response. **No programming required.**
- ZONE 5: Medical Emergency zone with slow loop-response for use with wireless pendant transmitter and digital receiver. **Programming required.**
- ZONE 6: Burglar instant perimeter zone (rear patio doors) with slow loop-response (320 milliseconds). **No programming required.**
- ZONE 7: Keyswitch zone for use with remote control device. **Programming required.**
- ZONE 8: Fire zone with slow loop-response. This is a 24-hour zone. **No Programming required.**

Again, plan an installation's zoning so that the factory-set program is used as much as possible.

INSTALLATION

SX-3100 CONTROL PANEL EXPLODED VIEW DRAWING

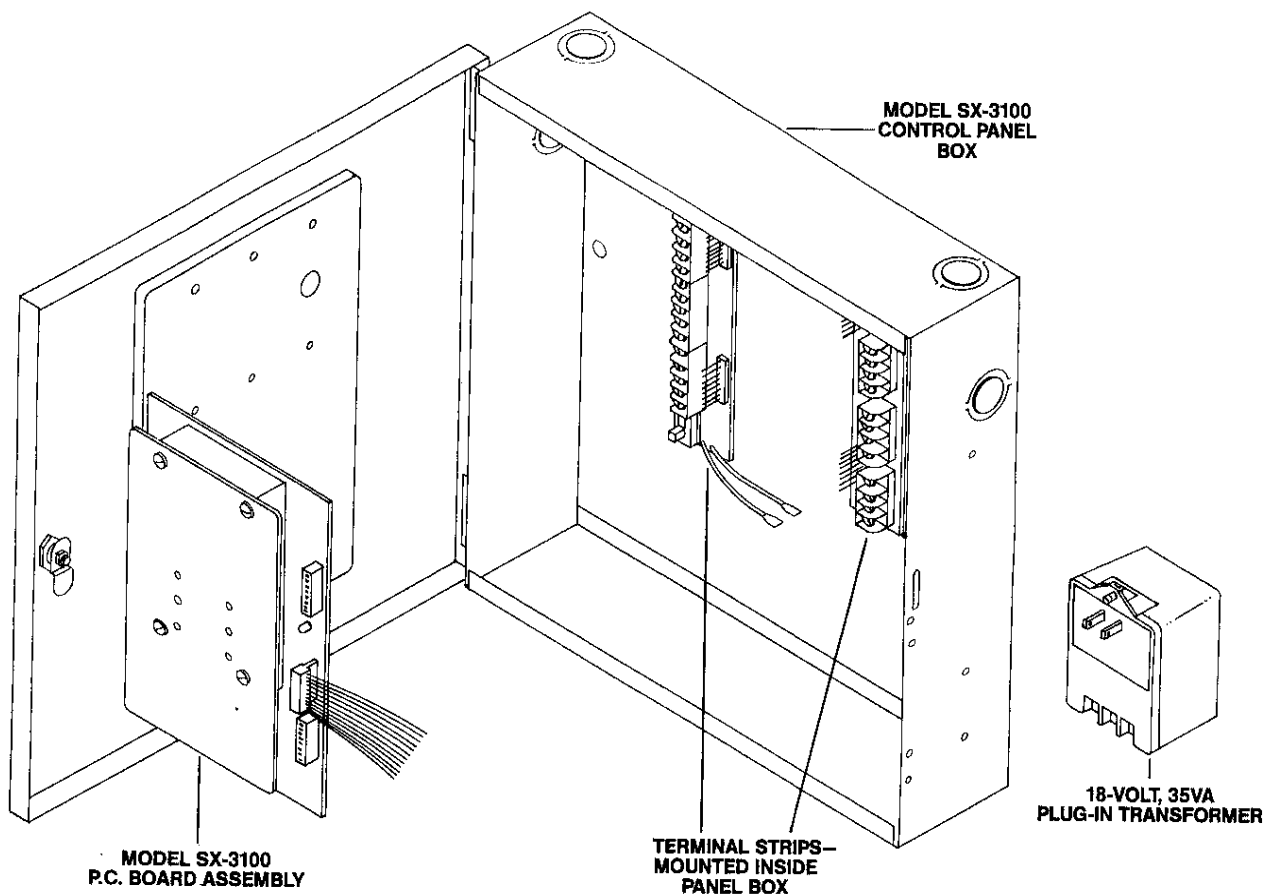


FIGURE 1

Preparation

1. Check to make sure there is no apparent shipping damage to the carton. Open the carton, remove contents, and make sure the carton contains all the items listed in the adjacent chart.
2. Remove control box wiring knockouts as required.
3. Mount the control box in a secure, dry location. Use six mounting holes and hardware (not provided) appropriate for installation.

System Wiring

Refer to Figure 3—"System Wiring Diagrams" for all system wiring.

Table 3 provides a quick-reference guide to the system's terminal-connected wiring.

Description	NuTone Part No.	Quantity
Model SX-3100 Control Panel Box (with cabinet lock and terminal strips)	43127	1
Transformer (18 volt, 35VA, plug-in type)	8003A	1
Control Panel P.C. Board	7999A	1
J-16 Wiring harness and connector assembly	8002A	1
Hardware Bag (includes: 2 keys, 8 ¼-watt, 2.2K resistors, six #6-32 x ¾" hex nut spacers)	8007A	1
Installation Instructions	49774	1
Programming Manual	49775	1
Model SX-3130 and SX-3131 Digital Remote Control User's Manual	49776	1
Model SX-3136 Digital Remote Control User's Manual	49773	1

TABLE 3: TERMINAL WIRING GUIDE

Terminal	Function	Description
1, 3, 4, 6, 7, 9, 10, 12	Zone Inputs	Each loop requires a 2200 E.O.L. ohm resistor. Normally closed and normally open devices may be connected in each loop. Jumpers can be cut to eliminate end-of-line resistors where only normally closed devices are used.
2, 5, 8, 11	Zone Common	Loop return for protective zones.
13 (—)	Remote Power	Keypad power. Connect BLACK wire.
14 (+)	Remote Power (fused at 1.5 amps)	Keypad power, Connect RED wire.
15	Data A	Data line.
16	Data B	Data line.
17, 18	AC Input	18 VAC 35VA input.
19	Earth Ground	Connect to dedicated metal-stake ground for best results.
20	K1 Relay Normally Open	
21	K1 Relay Common	
22	K1 Relay Normally Closed	
23	K1 Trigger (+)	Normally connects to one or more of connector J-16 outputs.
24	K2 Relay Normally Open	
25	K2 Relay Common	
26	K2 Relay Normally Closed	
27	K2 Trigger (+)	Normally connects to one or more of connector J-16 outputs.
28 (—)	Negative	Power-supply common.
29 (+)	Auxiliary Power (fused at 2.5 amps)	DC power for motion detectors and other accessories. 900 milliamps maximum continuous-current drain on all Power outputs combined (Auxiliary, Fire, Smoke, keypad and Connector J-16). Combined alarm-condition current drain should not exceed 2.5 amps.
30 (+)	Fire Alarm Power (fused at 2.5 amps)	DC power for Fire Alarm siren/bell.
31 (+)	Smoke Detector Power (fused at 1.5 amps)	Switched DC-power for smoke detectors.
32	Communicator	(T1) Telco. Connect GREEN wire.
33	Communicator	(R1) Telco. Connect RED wire.
34	Communicator	(T2) House. Connect BROWN wire.
35	Communicator	(R2) House. Connect GREY wire.

INSTALLATION

Ground Wire

1. Attach an earth ground to terminal 19. Use 14-gauge (or larger) wire and connect this wire to a ground stake. Do not use electrical conduit, gas pipe, or water pipe for grounding.

CAUTION: Do not earth-ground the negative side of the power supply, as this will greatly reduce lightning/transient protection.

2. NOTE: Do not plug in the transformer or connect the battery at this time.

Zone Wiring

1. Do not exceed 300 ohms resistance on each zone.
2. Connect zone wiring to terminals 1 thru 12.
3. End-of-line supervised zones: All zones are class "B" end-of-line supervised with 2200 ohm resistors. Resistors are provided in the hardware bag. For proper supervision, the E-O-L resistors should be placed at the most distant switch from the control panel. This type of circuit allows the use of both normally open and normally closed switches on the same loop.
4. For normally closed loops with no end-of-line supervision: Do not install the resistors. Cut jumpers J-1 through J-8 for those zones that do not require end-of-line supervision. See Figures 2 and 3.
5. If any zone is not used: The E-O-L resistor must be placed on the terminals of that zone.
6. **WARNING: Minimum recommended loop response time is 80 milliseconds. Window bugs with a shorter output time should only be used with a pulse stretcher.**
7. Keyswitch Zone: For keyswitch control, one of the zones can be programmed for keyswitch operation. A key-switch zone can be wired with normally open switches which provide contact closure to arm/disarm the system. The E-O-L resistor must be used for proper operation. A normally closed keyswitch can be used with no E-O-L resistor (cut jumper).

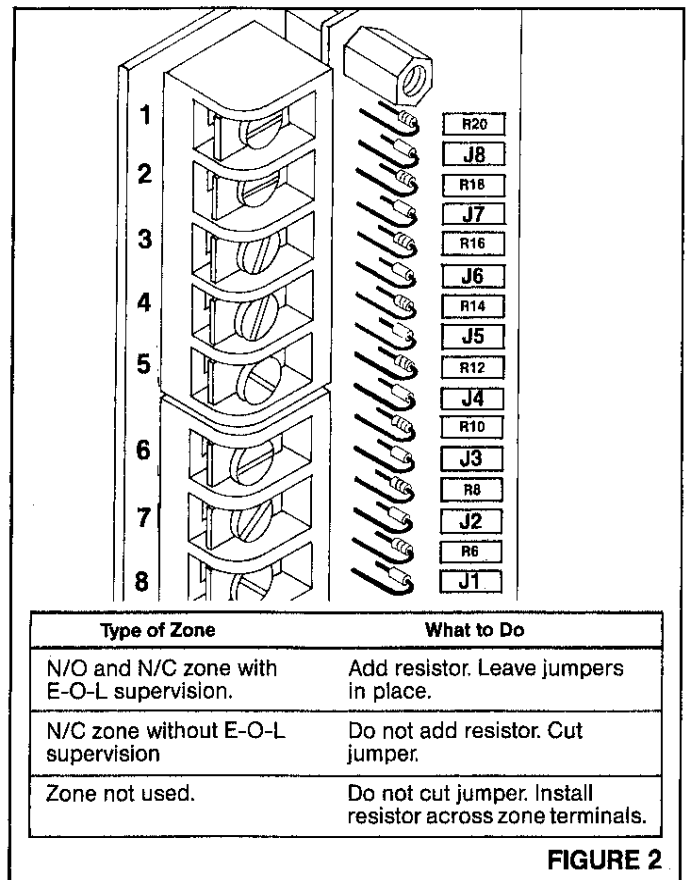


FIGURE 2

Digital Remote Control Wiring

1. For trouble-shooting purposes, it is recommended that all keypad wiring be "home-run" wired. Do not loop wire remote controls.
2. Use 4-conductor, 22 gauge (minimum) wire.

3. Connect all digital remote controls to terminals 13-16.
4. Models SX-3136 and SX-3131 require 4 wires. Model SX-3130 require 6 wires (4 for keypad, 2 for speaker); 7 wires are required if intercom option is used.

Transformer Wiring

1. Use only Class II 18VAC, 35VA transformer.
2. Use 18 gauge (or larger) wire.
3. Connect transformer wires to terminals 17 and 18.

4. Note: Transformer should be plugged into a 120VAC unswitched outlet only.
5. **CAUTION:** The provided transformer has a 3.2 Amp. output fuse. Shorting the output while the transformer is plugged in will blow the fuse. Fuse is not replaceable.

Telephone Wiring

1. Connect telephone lines to terminals 32 through 35.
2. Use RJ-31-X or RJ-38-X (tamper-protected) telephone jack.

Power Outputs

Auxiliary Power: Terminals 29 (+), 28 (—)

1. 12 Volts DC is supplied by the Model SX-3100 to power auxiliary accessories. The power supply provides a total continuous current drain of 900 ma (milliamperes) to power auxiliary devices. Current drains in excess of 900 ma should not be continuous as this will prevent the battery from reaching a full charge. Current drain during alarm should not exceed 2.5 amps. Auxiliary power is protected by a 2.5 amp fuse.
2. **NOTE: The power supply can provide a full 2.5 amps. under alarm condition with no battery (if 35VA transformer is used). U.L. standards require that the AUX. fuse must blow if the output is shorted (with no battery). (Larger fuses are not permitted.)**

Smoke Power: Terminals 31 (+), 28 (—)

1. 12 Volts DC is supplied for smoke detectors. Smoke detectors can be reset (unlatched) from the keypad with Command 7 (Smoke Reset). Smoke power is fused for 1.5 Amps.
2. Maximum continuous current drain should not exceed 900 milliamps from terminals 14, 29, 30, 31, and connector J-16. Alarm-condition current drain should not exceed 2.5 amps.

3. **NOTE: For U.L. installations, an end-of-line relay must be used to supervise power to smoke detectors.**

Fire Power: Terminals 30 (+), 28 (—)

1. A separate power output terminal is provided for powering fire alarm sirens or bells. This separate output is required by new regulations. See "System Wiring Diagram" for proper separate power connection for burglary and fire alarm devices.
2. Fire power is fused for 2.5 Amps.
3. **NOTE: 12vDC for all devices is reference voltage in this manual. Actual voltage output measures 13.6 to 13.8 vDC. This applies during stand-by conditions and during alarm when the total current from all terminals is less than 0.9 Amps. When this current exceeds 0.9 Amps., the voltage drops below 13.6 Volts and the extra current comes from the battery.**

Alarm/Function Outputs: Connector J-16

Outputs of the NuTech¹¹ system are present at Connector J-16. The function of each output is shown in Table 4. Each of these outputs (3 through 12) is capable of driving relay K1, Relay K2, or an external load of 50 milliamps at 12 Volts DC for auxiliary relays. Table 5 shows suggested alarm-hookups using the alarm-condition outputs of Connector J-16 to trigger relays K1 and K2.

NOTE: Connector J-16 Outputs can be connected to the same low-current trigger terminals. For example, POLICE and MEDICAL Outputs (9 and 10) can both be connected to terminal 23. J-16 Outputs cannot directly drive any device that requires more than 50 milliamps (0.05 Amp.) of current: Drive these devices with either of the general-purpose relays (K1 or K2).

TABLE 4: CONNECTOR J-16*

1. RED (+)	+12V Auxiliary Power
2. BLACK (—)	Negative
3. WHITE	Access Output (+)
4. GREEN	Lamp Output (+)
5. BROWN	Pre-Alarm Output (+)
6. BLUE	Burglar-zone Status (+)
7. ORANGE	Violation Output (+)
8. YELLOW	Armed Output (+)
9. PURPLE	Medical/Aux 2 Alarm Output (+)
10. GREY	Police/Aux 1 Alarm Output (+)
11. PINK	Fire Alarm Output (+)
12. TAN	Burglar Alarm Output (+)

*These outputs are normally LOW and go HIGH upon activation.

INSTALLATION

Connector J-16 Terminals:




1. RED (+)	Auxiliary Power
2. BLACK (—)	Negative (Power Supply Common)
3. WHITE	Access Output (+); Timed for 1 to 255 seconds.
4. GREEN	Lamp Output (+): Provides a positive output for 2 minutes when (1) any key is pressed, (2) during entry and exit delay, (3) during any violation and (4) during AC power failure. The lamp output may be used to activate lighting for additional security. The output can be connected to a universal relay or an AC line carrier system such as that supplied by Leviton or BSR.
5. BROWN	Pre-Alarm Output (+): Provides a positive output when (1) a key is pressed, (2) a steady output during entry delay, (3) a pulsing output (one beep each second) during exit delay and (4) various positive voltage pulses during alarm and programming. The output corresponds with the piezo buzzer in the key pad.
6. BLUE	Zone Status (+): Provides a high (positive) output when all zones are secure. It has a pulsing output if a zone(s) is shunted. It has a low output when the system is armed. Controls ready to arm LED.
7. ORANGE	Violation Output (+): Provides a positive output during any alarm condition except silent police. This output stays high (even though the alarm sound has ended) until the system is reset or disarmed. Remains low during timed entry delay.
8. YELLOW	Armed Output (+): Provides a positive output when the system is armed; ARMED LED blinks OFF for burglar alarm memory until system is reset by code entry, and then blinks ON until it is turned off by pressing the CLEAR  key.
9. PURPLE	MEDICAL OUTPUT (+): Positive output during medical alarm; goes low when reset by code, CLEAR  key, or when alarm times out.
10. GREY	POLICE OUTPUT (+): Positive output during police alarm; goes low when reset by code or when the alarm times out. Operates for both audible and silent alarm conditions.
11. PINK	FIRE OUTPUT (+): Positive output during Fire alarm; goes low when reset by code, CLEAR  key, or when the alarm times out.
12. TAN	BURGLAR OUTPUT (+): Positive output during burglar alarm (pulsing or steady); goes low when reset by code or when alarm times out.

TABLE 5: SUGGESTED ALARM-HOOKUPS

Alarm Condition	Connector J-16	Output Options	
		Voltage (+12V)	Dry Closure (SPDT)
BURGLAR	Connect TAN wire (#12) to terminal 27.	Connect jumper wire between 25 and 29. 24 (+) 28 (-)	Relay K2: 26 NORMALLY CLOSED 25 COMMON 24 NORMALLY OPEN
FIRE	Connect PINK wire (#11) to terminal 23.	Connect jumper wire between 21 and 30. 20 (+) 28 (-)	Relay K1: 22 NORMALLY CLOSED 21 COMMON 20 NORMALLY OPEN
POLICE/ AUX 1	Connect GREY wire (#10) to terminal 27.	Connect jumper wire between 25 and 29. 24 (+) 28 (-)	Relay K2: 26 NORMALLY CLOSED 25 COMMON 24 NORMALLY OPEN
MEDICAL/ AUX 2	Connect PURPLE wire (#9) to terminal 27.	Connect jumper wire between 25 and 29. 24 (+) 28 (-)	Relay K2: 26 NORMALLY CLOSED 25 COMMON 24 NORMALLY OPEN

How to use the Hookup Table:

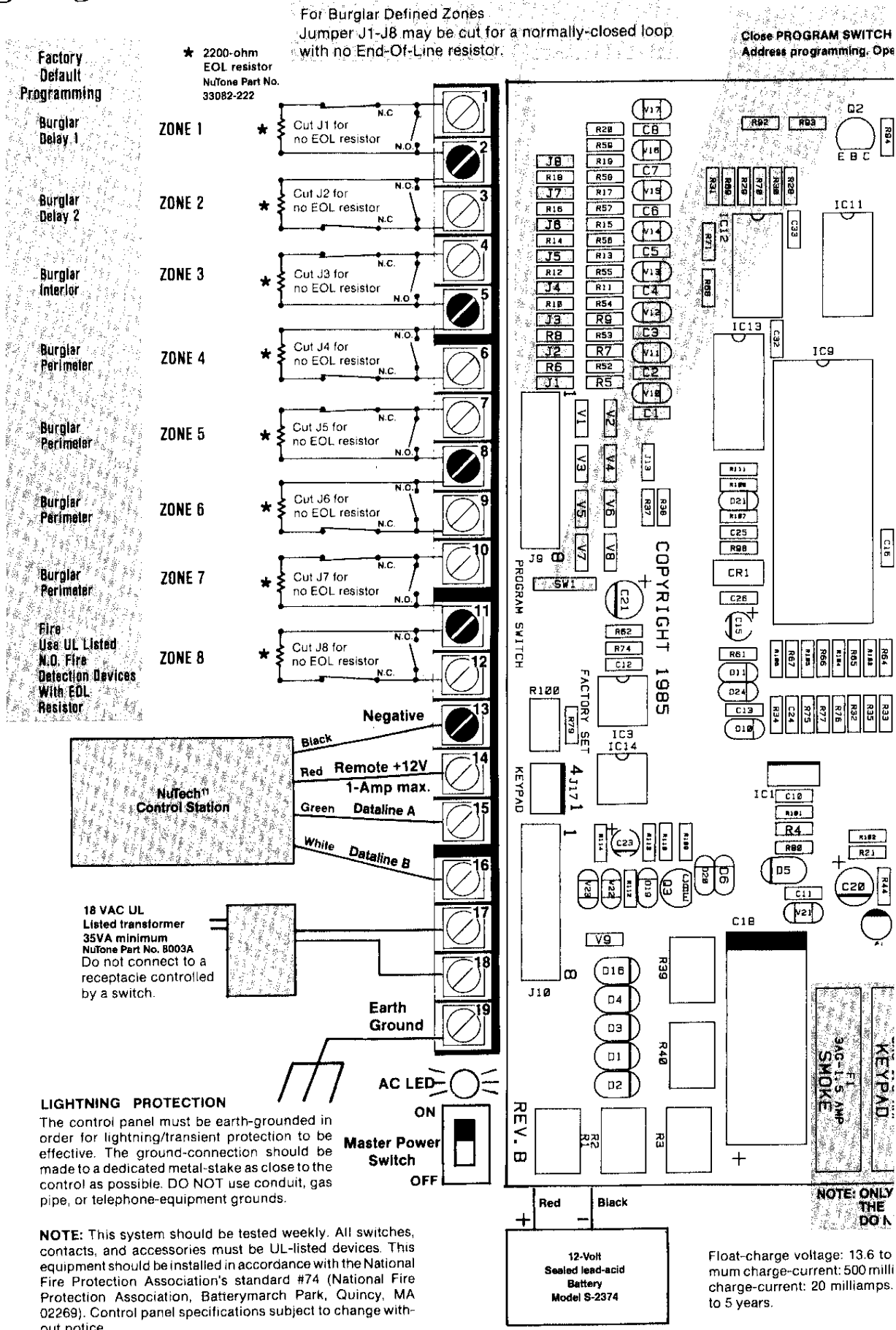
1. Choose an Alarm Condition.
2. Select the J-16 wire color (or wire number) for that Output.
3. Connect the J-16 wire to a relay trigger terminal.
Terminal 23: relay K1 trigger
Terminal 27: relay K2 trigger
4. Choose an OUTPUT: either +12 Volts or Dry Closure.
5. If a VOLTAGE Output is desired, connect a jumper wire to supply +12-Volts DC to the relay contacts.

Connector J-16 can be used to trigger: relay K1 (terminal 23); relay K2 (terminal 27); siren drivers with triggerable inputs; or a universal relay. It may also be used to drive LEDs.

NOTE: Connector J-16 outputs can be tied to the same trigger terminals. Maximum current drain from each lead is 50ma.

INSTALLATION

System Wiring Diagram



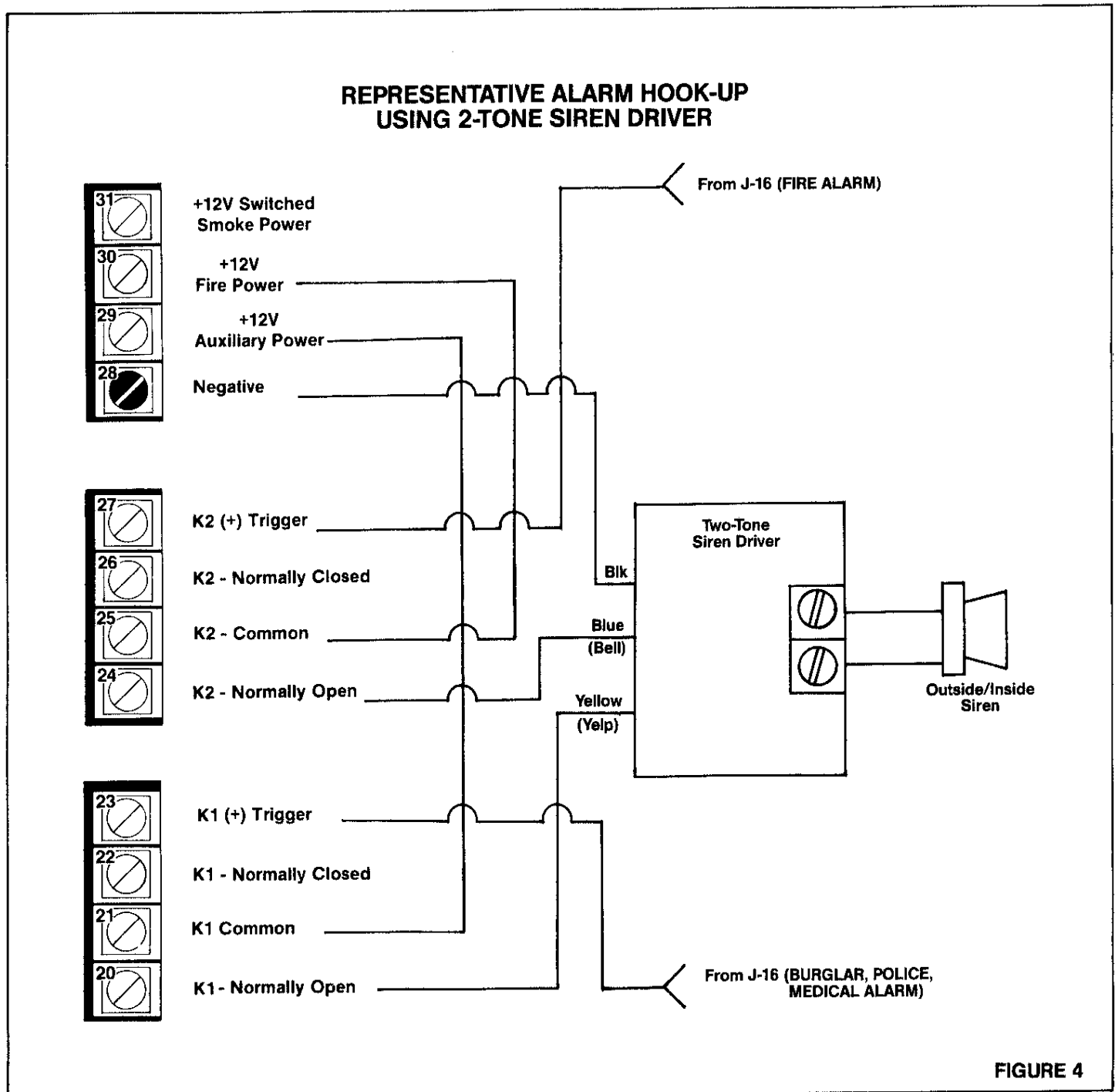
Complies with the limits for Class B computer devices in accordance with the specifications of Subpart J of part 15 of FCC rules.

pac
programming.



INSTALLATION

Burglar and Fire Outputs



Note: Components must be U.L. Listed for U.L. installations.
Figure 4 is a representative diagram only.

REPRESENTATIVE ALARM HOOK-UP USING 8-TONE (TRIGGERABLE) SIREN DRIVER

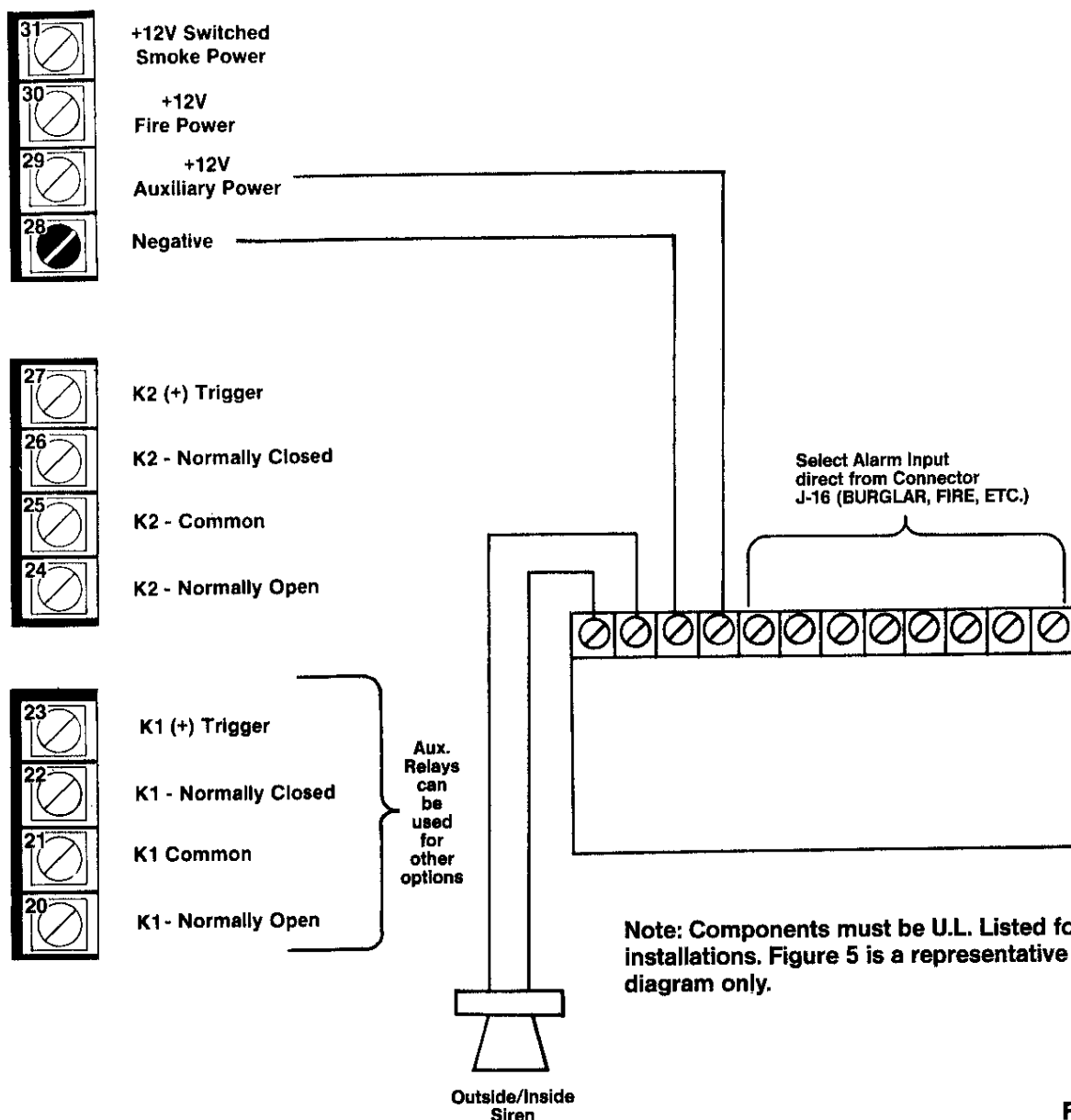


FIGURE 5

A Typical Polarity Reversal Output Using the Auxiliary Relays

1. Connect TAN wire to K1 trigger (terminal 23)
2. Connect a jumper between 23 and 27 (K1 and K2 triggers)
3. Connect a jumper between 20, 26, and 28 (-); NEGATIVE
4. Connect a jumper between 22, 24, and 29 (+); +12V
5. Output: 21-+12V (-)NEGATIVE on Alarm
25 (-) NEGATIVE+12V on Alarm

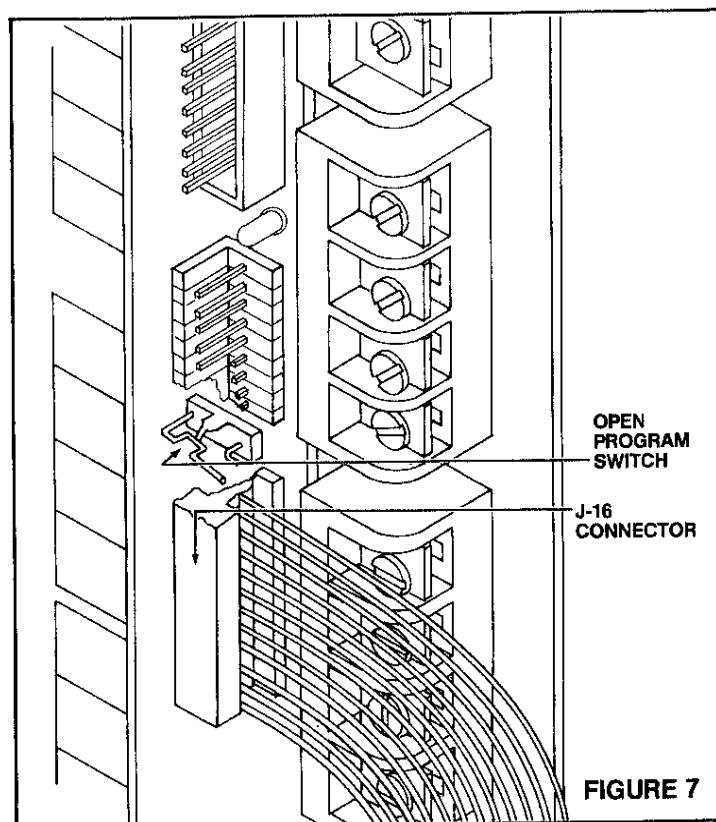
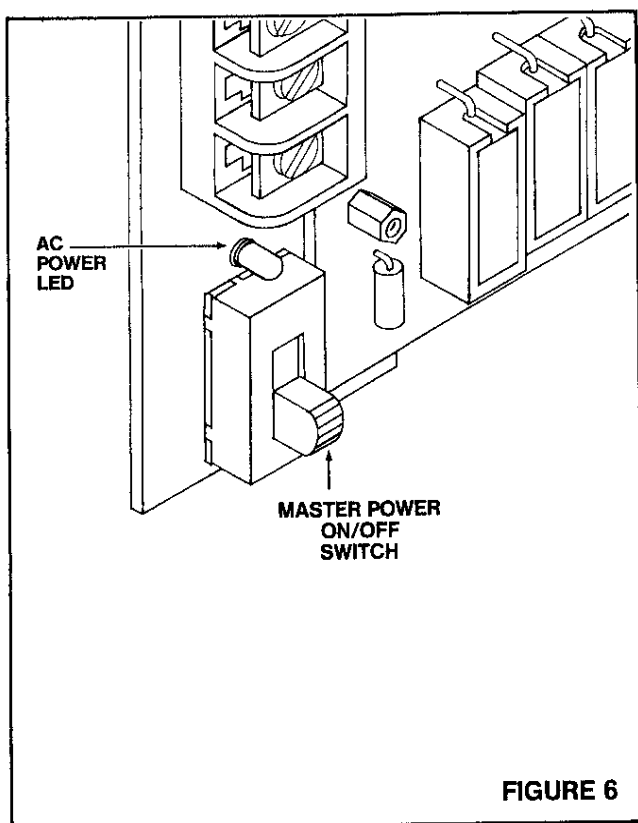
6. If Polarity-Reversal Output is used, then any positive voltage applied to 23 (K1 trigger) or 27 (K2 trigger) will cause polarity reversal. Use the universal relay if a dry-closure or voltage is desired for a different Connector J-16 Output.

NOTE: Some bells have a very large capacitor in them which can (when system alarms) short out the power supply or blow the fuse. Test all bells to make sure system operates properly when any bells are used.

INSTALLATION

Completing the Installation

1. Turn master power on/off switch to OFF (down position). See Figure 6.
2. Using provided hex nut spacers, secure Control Board to Terminal strips. Plug in Control Board.
3. Remember: Cut jumpers J-1 through J-8 for zones that do not require end-of-line supervision.
4. Make sure J-16 wire harness is securely plugged into J-16 connector. See Figure 7.
5. Verify that the Program Switch is OPEN. Locate switch above J-16 connector. See Figure 7. The normal position for this switch is open.
6. Insert plug-in transformer into a 24-hour, unswitched receptacle.
7. Connect battery, NOTE: Observe polarity—red wire to (+); black wire to (—).



DIGITAL REMOTE CONTROLS: FUNCTION AND OPERATION

General Description

The NuTech¹¹ keypads are more than arming stations. They are "Command Centers." Eight multi-function LEDs indicate system status, zone status, alarm memory, alarm activations, and also provide a "window" into the more advanced features of the system. A door on the keypad opens to reveal an inside label. This label provides spaces for marking zone descriptions and lists the various Commands and LED functions.

The keypad commands the system to ARM, DISARM, display ZONE STATUS, display ALARM MEMORY, turn INTERIOR zones on or off, switch to DELAY or INSTANT mode, activate MONITOR, reset SMOKE power and test

BATTERY, activate Detector Check enter PROGRAM mode, RESET, activate ACCESS, and SHUNT (bypass) zones.

Model SX-3136: A basic keypad with mechanical push-buttons and indicator lights. Requires 4 wires.























Model SX-3131: A membrane keypad with indicator lights. Requires 4 wires.

Model SX-3130: A deluxe remote control with membrane keypad, indicator lights, integral speaker used for siren, and optional intercom function. Requires 6 wires (4 wires for keypad, 2 for speaker); requires 7 wires if intercom option is used.

Indicator Lights

On each digital remote control, eight indicator lights (LEDs) show the status of the system at any given time. These LEDs serve two purposes. In one mode, they act as system function indicators; in another mode, they act as zone status or alarm memory indicators.

The graphics on the front of the panel, located to the left of the LEDs, indicate each system function. Affixed to the inside of the remote control's door, a label tells the user what it means when each LED is on, off, or blinking.

LED	INDICATION		WHAT IT MEANS
POWER		On Steady	The system is receiving AC power.
		Off	The system is not receiving AC power. The system is operating on the back-up power supply (battery).
		Blinking	The system's standby battery is not fully charged and may need service. Call your security representative.
READY TO ARM		On Steady	The system is secure and may be armed.
		Off	The system cannot be armed. One or more of the system's zones is not secure.
	 	Blinking/Steady On Blinking/Steady Off	The system is ready to be armed but a zone is bypassed. The system cannot be armed. One or more zones are bypassed but there is another unbypassed zone (or zones) that is not secure.
ARMED		On	The system is armed.
		Off	The system is not armed.
		Blinking	An alarm has occurred (system alarm memory).
INTERIOR READY		On	The interior zone(s) will arm when the system is armed.
		Off	The INTERIOR OFF LED should be lighted.
INTERIOR OFF		On	The interior zones are not activated. If the system is armed, none of the interior detectors will cause an alarm.
		Off	The INTERIOR READY LED should be lighted.
		Blinking	Alarm memory for "Police" alarm.
DELAY		On	All zones that are programmed for delay are in the delay mode. When the system is armed, the user may enter and exit through doors in a delay zone during the delay times.
		Off	The INSTANT LED should be lighted.
INSTANT		On	All zones that are normally programmed for delay are switched to instant alarm (after initial arming delay time).
		Off	The DELAY light should be on.
		Blinking	Alarm memory for "Medical" alarm.
FIRE		On	A fire alarm has occurred.
		Off	Normal.
		Blinking	A trouble condition exists on the fire zone(s).

DIGITAL REMOTE CONTROLS: FUNCTION AND OPERATION

Command Keys

A thorough understanding of the keypad is necessary for successful operation of the system. The following COMMAND examples use the factory pre-set AUTHORIZATION code.

NOTE: COMMANDS (other than Commands 1 and 0) will work ONLY if the system is Disarmed.

COMMAND FORMAT: Press a Command key followed by an AUTHORIZATION code. For example, to "Command" the NuTech¹¹ system to display ZONE STATUS, enter [2] [2] [4] [5].

COMMAND 1:

ARM/DISARM. Use this command to ARM/DISARM Burglar zones or to acknowledge (reset) Fire, Police, or Medical alarms.

FORMAT: [1] —AUTHORIZATION code.

ARM: enter [1] [2] [4] [5].

DISARM: enter [1] [2] [4] [5].

COMMAND 2:

Display ZONE STATUS. Use this command to check the status of zones.

Lighted LEDs indicate zone(s) violated (not secure).

Blinking LEDs indicate zone(s) shunted.

Unlighted LEDs indicate zone(s) normal (secure).

This command latches for 8 seconds. The latch-time can be extended by pressing any key, except the [X] key.

FORMAT: [2] —AUTHORIZATION code.

Display ZONE STATUS: enter [2] [2] [4] [5].

COMMAND 3:

Display ALARM MEMORY. Use this command to determine which hardwire zone(s) caused the last Alarm.

Lighted LEDs indicate zone(s) that caused last Alarm.

This command latches for 8 seconds. The latchtime can be extended by pressing any key, except the [X] key.

FORMAT: [3] —AUTHORIZATION code.

Display ALARM MEMORY: [3] [2] [4] [5].

COMMAND 4:

Turn INTERIOR zones on or off. Any zone defined as Interior may be turned off (bypassed) prior to Arming, by using this Command.

INTERIOR OFF: enter [4] [2] [4] [5].

INTERIOR ON: enter [4] [2] [4] [5].

NOTE: The INTERIOR ON or OFF mode and the DELAY or INSTANT mode both revert back to factory pre-set program (INTERIOR ON and DELAY active) when the system is Disarmed. The factory setting for these two modes can be modified by programming a value into ADDRESS 040.

COMMAND 5:

DELAY or INSTANT. Use this command to 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.

NOTE: Upon arming, exit-delay time applies to all Burglar zones, regardless of INSTANT or DELAY mode.

FORMAT: [5] —AUTHORIZATION code.

INSTANT: enter [5] [2] [4] [5].

DELAY: enter [5] [2] [4] [5].

COMMAND 6:

Perimeter MONITOR. Use this command to turn the perimeter MONITOR mode on or off. If the perimeter MONITOR mode is on, the keypad will beep three times when any Burglar zone is violated.

NOTE: For use while the system is Disarmed. Shunted zones will not annunciate.

FORMAT: [6] —AUTHORIZATION code.

MONITOR ON: enter [6] [2] [4] [5].

MONITOR OFF: enter [6] [2] [4] [5].

COMMAND 7:

SMOKE reset and BATTERY test. Use this command to reset smoke power and manually test the system battery.

FORMAT: [7] —AUTHORIZATION code.

SMOKE reset/BATTERY test: enter [7] [2] [4] [5].

COMMAND 8:

DETECTOR CHECK (loop walk test). Use this test feature for checking Burglar loops. The keypad beeps continuously when any non-24 hour zone is violated.

FORMAT: [8] —AUTHORIZATION code.

Loop—TEST OFF: enter [X].

COMMAND 9:

PROGRAM. Use this key to enter program mode. See "Programming Manual" for further information.

COMMAND 0:

ACCESS. Use this command followed by an access-defined AUTHORIZATION code to activate Connector J-16's Access Output.

FORMAT: [0] —AUTHORIZATION code.

COMMAND [X]:

The CLEAR [X] key will clear keypad entries, silence the keypad, acknowledge Fire and Medical/Aux 2 alarms, jump out of some Commands, or jump out of programming mode.

COMMAND [Y]:

Use the ZONE BYPASS key [Y] to bypass any zone. The READY LED blinks when a zone is bypassed. COMMAND 2 will display the status of a bypassed zone by blinking the LED that corresponds to the bypassed zone.

FORMAT: [Y]—number of the zone to be bypassed.

NOTE: All bypassed zones are restored if the system is disarmed after the exit-delay time expires. Press [X]—[0] to manually unbypass all zones.

Emergency Keypad Zones

The NuTech¹¹ keypads have three 24-hour emergency circuits: FIRE, POLICE/AUX 1. and MEDICAL/AUX 2. The keypad zones are independent of the "hardwire" zones and can be activated at any time; the system does not have to be armed.

NOTE: Each keypad zone requires at least a 1-second closure in order to trip the system.

FORMAT: All emergency Alarms are reset with Command 1 followed by an AUTHORIZATION code (or CLEAR \star for Fire or Medical). The following examples use the factory pre-set AUTHORIZATION code: 1 2 4 5.

Keypad FIRE:

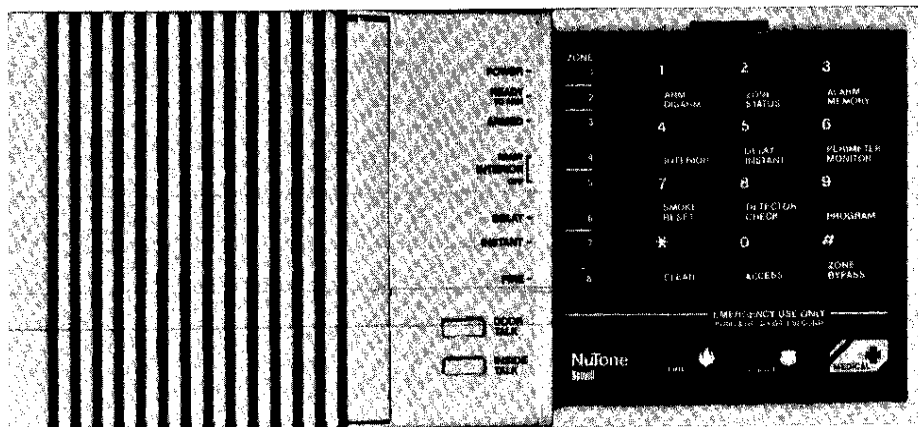
1. Press 1 and 7 at the same time. Or press FIRE key. (Hold keys for one second).
2. The keypad will beep rapidly.
3. FIRE Alarm Output will activate.
4. FIRE LED will be on.
5. Press the \star key to silence audible devices.
6. Audible devices silent. FIRE LED still ON.
7. Reset FIRE Alarm with Command 1 and AUTHORIZATION code: 1 2 4 5.
8. FIRE LED will be OFF.

Keypad POLICE/AUX 1:

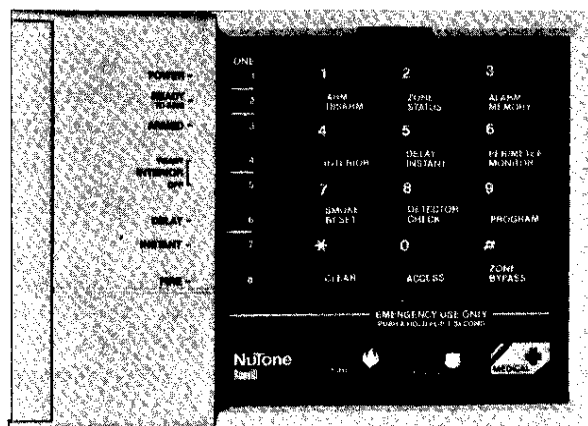
1. Press 1 and 3 or \star and # at the same time. Or press POLICE key. (Hold keys for one second).
2. The keypad will beep rapidly.
3. POLICE/AUX 1 Alarm Output will activate.
4. POLICE/AUX 1 LED (INTERIOR OFF LED) will blink.
5. Disarm the system.
6. Reset POLICE/AUX 1 Alarm with Command 1 and AUTHORIZATION code: 1 2 4 5.
7. POLICE/AUX 1 LED (INTERIOR OFF LED) will be OFF. Audible devices silent.

Keypad MEDICAL/AUX 2:

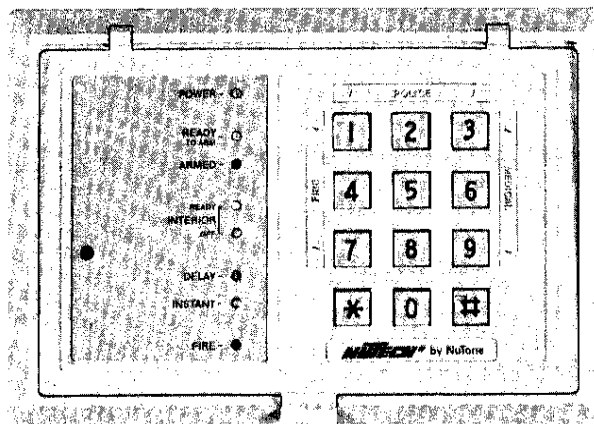
1. Press 3 and 5 at the same time. Or press MEDICAL key. (Hold keys for one second and release).
2. The keypad will beep slowly.
3. MEDICAL/AUX 2 Alarm Output will activate.
4. MEDICAL/AUX 2 LED (INSTANT LED) will blink.
5. Press the \star key to silence audible devices.
6. Reset MEDICAL/AUX 2 Alarm with Command 1 and AUTHORIZATION code: 1 2 4 5.
7. MEDICAL/AUX 2 LED (INSTANT LED) will be OFF.



SX-3130



SX-3131



SX-3136

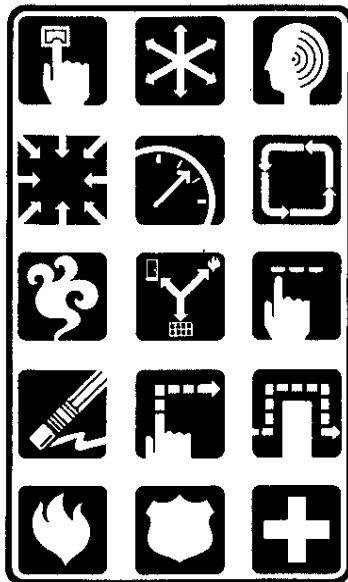
PROGRAMMING

If the system can be used with the factory pre-set program, proceed to the "SYSTEM TESTING" section of this manual.

Most installations, however, will require at least some programming. Use the "Installer's Programming Manual"

and the "Programming Worksheet" to program the system. When the programming is completed, use the latter sections of this "Installation Instructions" manual as a guide for testing the system.

NUTECH
THE SECURITY OF NUTONE



**INSTALLER'S
PROGRAMMING
MANUAL**

NUTECH™ INSTALLER'S PROGRAMMING WORKSHEET

Zone Identification

ZONE	ZONE TYPE/AREA/DEVICES	N/C	N/O	N/C	E-G-I	ZONE#-FACTORY PROGRAM
1		C1				ZONE 1 BURGLAR DELAY (1)
2		C1				ZONE 2 BURGLAR DELAY (2)
3		C1				ZONE 3 BURGLAR INTERIOR
4		C1				ZONE 4 BURGLAR PERIMETER
5		C1				ZONE 5 BURGLAR PERIMETER
6		C1				ZONE 6 BURGLAR PERIMETER
7		C1				ZONE 7 BURGLAR PERIMETER
8		C1				ZONE 8 FIRE
9		C1				ALL ZONES FACTORY-BEST FOR SLOW-LOOP RESPONSE

Programming Information

MEMORY LOCATION	DESCRIPTION	FACTORY PROGRAM	DATA TO PROGRAM
000	FAST LOOP RESPONSE TIME	000	(MILLISECONDS)
001	SLOW LOOP RESPONSE TIME	008	(MILLISECONDS)
005	TWO-DIGIT ARM (000=DISABLE)	255	(SECONDS)
011	ACCESS OUTPUT TIME	020	
022	ZONE 1 DEFINITION	084	
023	ZONE 2 DEFINITION	072	
024	ZONE 3 DEFINITION	081	
025	ZONE 4 DEFINITION	086	
026	ZONE 5 DEFINITION	085	
027	ZONE 6 DEFINITION	066	
028	ZONE 7 DEFINITION	065	
029	ZONE 8 DEFINITION	068	
030	EXIT TIME	040	(SECONDS)
031	ENTRANCE TIME #1	030	(SECONDS)
032	ENTRANCE TIME #2	046	(SECONDS)
033	DIALER DELAY TIME (000=DISABLE)	000	(SECONDS)
034	BURGLAR CUTOFF TIME	015	(MINUTES)
035	FIRE CUTOFF TIME	000	(MINUTES)
036	POLICE CUTOFF TIME	016	(MINUTES)
037	MEDICAL CUTOFF TIME	015	(MINUTES)
038	CONTROL CONFIGURATION	000	
040	INTERIOR/DELAY MODE	000	
041	DIALOUT ATTEMPTS	006	
042	TEL. NO. #1 FORMAT	002	
043	TEL. NO. #2 FORMAT	002	
044	ACCOUNT CODE (IMDI)	068	
045	ACCOUNT CODE (IMDI)	069	
046	ACCOUNT CODE (IMDI)	066	
047	SILENT KEYPAD POLICE (000=ENABLE)	255	
048	ZONE 1 ALARM CODE	003	
049	ZONE 2 ALARM CODE	003	
050	ZONE 3 ALARM CODE	003	
051	ZONE 4 ALARM CODE	003	
052	ZONE 5 ALARM CODE	003	
053	ZONE 6 ALARM CODE	003	
054	ZONE 7 ALARM CODE	003	
055	ZONE 8 ALARM CODE	001	
056	KEYPAD FIRE CODE	001	
057	KEYPAD POLICE CODE	002	
058	KEYPAD MEDICAL CODE	255	
059	CHIRPING REPORT ON ALARM CODE	255	
060	CLOSING WITH NO SHUNTS CODE	255	
061	CLOSING WITH SHUNTS CODE	255	
062	CANCEL CODE	255	
063	ZONE RESTORAL CODE	255	
064	FIRE TROUBLE CODE	255	
065	LOW BATTERY CODE	255	
066	COMMUNICATOR TEST CODE (255=DISABLE)	255	
068-067	TEL. NO. #1	255	
068-127	TEL. NO. #2	255	

Nutone

Madison & Red Bank Rte
Cincinnati, Ohio 45227

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Part No. SPG-100

SYSTEM TESTS


The NuTech¹¹ system is easily tested from the remote control keypads. Most testing can be at the keypad by entering commands and codes and checking the keypad's responses.





All examples in this section use the factory-programmed codes.

WARNING: If certain remote, supervised devices are used, they may cause an alarm on powering-up a system in the armed mode. The relays used in supervised devices must "pull-in" fast enough not to cause an alarm. Consult manufacturer of supervised device about this "pull-in" time. Program more loop response time accordingly.






Start-Up Procedure

IMPORTANT: If the system is being monitored, notify the monitoring service.











1. Make sure program switch is OPEN.
2. Turn the master power switch ON (up position).
3. The control panel's LED should be ON. See Fig. 6 (p. 18). If the power LED does not light, check the transformer.
4. The remote control will sound a steady tone for two seconds.
Note: If the keypad beeps four times, the control panel's program switch is closed. Open the program switch and press the CLEAR  key. See Figure 7 (page 18).
5. Four of the remote control's LEDs should now be ON: POWER, READY TO ARM, INTERIOR READY, and DELAY.

6. Make sure READY TO ARM LED is on. If it is not, enter ZONE STATUS command followed by the authorization code:    
7. Note zone or zones which are not secure. Check detectors in zone by using the DETECTOR CHECK command. See "Walk-Testing Burglar-Instant Zones" below.
8. If all zones are secure, but the READY TO ARM LED is still not on, check to see if appropriate jumpers J-1—J-8 are cut. See "End-of-line" supervision, page 10.
9. If appropriate jumpers are cut, there must be a wiring error. Check all wiring continuity.

Walk-Testing: BURGLAR-INSTANT Zones



1. Secure all burglar-detection devices (doors, windows, and motion detectors).
2. Enable the DETECTOR CHECK test feature with Command 8 followed by the AUTHORIZATION code:    
3. Test all Burglar devices. The keypad beeps continuously if a zone is violated during DETECTOR CHECK.
4. Turn off DETECTOR CHECK test by pressing the  key.

Keypad Testing A Burglar Zone

1. Secure all burglar detection devices (doors, windows, motion detectors).
2. Check to see if READY TO ARM LED is on.
3. Arm the system:    
4. The keypad will sound six beep tones as confirmation of arming.
5. The ARMED LED will be on.
6. The keypad will beep once a second until the exit time expires. (60 seconds).
NOTE: Exit time applies to all zones—delay or instant.
7. Wait until the keypad is silent (exit time has expired).
8. Violate any non-delay zone (factory programmed non-delay zones: 3, 4, 5, 6, or 7).
9. The keypad will beep and the audible alarm will sound.
Note: See explanation of alarm outputs under "J-16 Connector," page 12.
10. The ARMED LED will blink (burglar alarm memory), indicating a violation.
11. Disarm the system:    
12. The ARMED LED will continue to blink until the CLEAR key  is depressed.
13. Use Command Key  to check Alarm Memory. Remember: entry delay time sounds a steady tone for the entry delay time.
14. Use the same procedure in testing a DELAY zone. Remember: Entry delay time sounds a steady tone for the entry delay time.

Silencing A Day Zone

If the system is programmed for a "day zone," the remote controls will continuously sound a pre-alarm beep while the door(s) in that zone remain open.

To silence this day zone annunciator, use the ZONE BYPASS key to bypass that zone. For example: Zone #3 is programmed to be a day zone. To silence the day zone annunciation, press ZONE BYPASS  and .

SYSTEM TESTS

Testing the FIRE Zones

The FIRE zone is constantly monitored. If the circuit opens, a TROUBLE signal is generated. If the circuit shorts, then a FIRE alarm occurs.

Fire Trouble

1. Turn power ON/OFF switch to OFF position.
2. Open either side of the FIRE zone by disconnecting a wire from Terminal 11 or 12. Turn power switch to ON position.
3. FIRE LED will blink and pre-alarm will beep.
4. Depress the CLEAR key [C].
5. Keypad is silenced: FIRE LED still blinking.
6. Restore FIRE zone to normal condition.
7. FIRE LED will be OFF.

Fire Alarm

1. Activate a smoke detector or other fire sensor.
2. The keypad will beep rapidly.
3. The audible alarm will sound.
4. FIRE LED will be ON.
5. Depress CLEAR key [C] to silence audible devices.
6. FIRE LED still ON.
7. Reset FIRE Alarm with AUTHORIZATION code: [1] [2] [4] [5].
8. The FIRE LED will remain on if detectors are still latched.
9. Unlatch detectors with Command, seven [7] followed by AUTHORIZATION code: [7] [2] [4] [5].
10. After a short delay, FIRE LED will be OFF.

Walk-Testing: POLICE/AUX 1 Zone

The POLICE/AUX 1 zone is a 24-hour zone.

1. Activate a POLICE-zone sensor.
2. The keypad will beep rapidly.
3. POLICE/AUX 1 Alarm Output will activate.
4. POLICE LED (INTERIOR OFF LED) will blink.
5. Acknowledge POLICE/AUX 1 Alarm with Command 1 and an AUTHORIZATION code: [1] [2] [4] [5].
6. POLICE/AUX 1 LED will be OFF and audible devices will stop sounding.

Walk Testing: MEDICAL/AUX 2 Zones

The MEDICAL/AUX 2 zone is a 24-hour zone.

1. Secure all medical-detection devices.
2. Activate a MEDICAL-zone sensor.
3. The keypad will beep slowly.
4. MEDICAL/AUX 2 Alarm Output will activate.
5. MEDICAL LED (INSTANT LED) will blink.
6. Press the [C] key to silence audible devices.
7. Acknowledge AUX 2/MEDICAL Alarm with Command 1 and an AUTHORIZATION code: [1] [2] [4] [5].
8. MEDICAL/AUX 2 LED will be OFF.

Manual Battery-Test and Smoke Detector Reset

The system battery can be tested at any time.

1. Enter Command seven [7] followed by AUTHORIZATION code: [7] [2] [4] [5]. This Command also removes smoke-detector power.
2. Nothing should happen if the battery is good.
3. Disconnect one (1) leg of the battery, OR you can substitute a weak battery; leave the weak battery connected.
4. Enter Command seven [7] followed by AUTHORIZATION code: [7] [2] [4] [5].
5. The keypad will beep rapidly.
6. POWER LED (on keypad) will blink.
7. Depress the CLEAR key [C].
8. Keypad is silenced; POWER LED still blinking.
9. Re-connect good battery.
10. Enter Command seven [7] followed by ARM/DISARM code: [7] [2] [4] [5].
11. After short delay, POWER LED stops blinking.

TERMINAL VOLTAGES

ZONE TERMINALS	VOLTAGE	CURRENT
1—Zone 1	6 VDC	6 ma. max.
2—Zone 1/2 Comm.	0 VDC	—
3—Zone 2	6 VDC	6 ma. max.
4—Zone 3	6 VDC	6 ma. max.
5—Zone 3/4 Comm.	0 VDC	—
6—Zone 4	6 VDC	6 ma. max.
7—Zone 5	6 VDC	6 ma. max.
8—Zone 5/6 Comm.	0 VDC	—
9—Zone 6	6 VDC	6 ma. max.
10—Zone 7	6 VDC	6 ma. max.
11—Zone 7/8 Comm.	0 VDC	—
12—Zone 8	6 VDC	6 ma. max.
NOTE: 6 VDC readings are for zones with end-of-line supervision. 9 VDC is considered an open loop. 4 VDC is considered a shorted loop. If end-of-line supervision is not used (the zone jumper is cut) the zone should read zero (0) VDC when the contact on that zone is closed.		
KEYPAD TERMINALS		
13—Keypad (—)	0 VDC	—
14—Keypad (+)	12 VDC	1.5 amp. max. (Fused)
15—Keypad Data Line A	12 VDC	—
16—Keypad Data Line B	12 VDC	—
NOTE: Keypad Data terminal voltages are nominally 12 VDC when no data is being sent or received on the data lines.		
NOTE: 12 VDC used for reference—actual is 13.6-13.8 VDC.		
POWER INPUTS		
17—Trans. Input	18 VAC	Transformer fused at 3.2 amps.
18—Trans. Input	18 VAC	
19—Earth Ground	0 VAC	
AUXILIARY OUTPUTS		
20—Relay K1 N.O.	N/A	5 Amp./28 VDC rating on contacts
21—Relay K1 Comm.	N/A	
22—Relay K1 N.C.	N/A	
23—Relay K1 Trigger	12 VDC to activate	20 ma.
24—Relay K2 N.O.	N/A	5 Amp./28 VDC rating on contacts
25—Relay K2 Comm.	N/A	
26—Relay K2 N.C.	N/A	
27—Relay K2 Trigger	12 VDC to activate	20 ma.

TERMINAL VOLTAGES

POWER OUTPUTS (Fused for maximum current)		
28—Neg. Power Supply	0 VDC	
29—Aux. Power Supply	12 VDC	2.5 amps.
30—Fire Power Supply	12 VDC	2.5 amps.
32—Smoke Det. Power	12 VDC	1.5 amps.
DIGITAL COMMUNICATOR		
32—Telco Phone Line (T1)	When Dialer is not active T1/T2 and R1/R2 are connected together through the line seizure relay. Ohm reading should be zero (0).	
33—Telco Phone Line (R1)		
34—House Phone Line (T2)		
35—House Phone Line (R2)		

GLOSSARY

Acknowledge. Respond to an alarm condition by entering an AUTHORIZATION code.

Address programming. High-level programming. This level of programming is used to custom-design the Z1100 system. For example, enter 005 into Address 022 to define Zone 1 as a mechanical-key zone.

Authorization code. A programmable code that is used with a Command. For example, Command 4 and an Authorization code toggles interior zones. Authorization codes must be preceded by a Command key.

Command. Instruction. Tell the system to perform a function.

Command key. A single keypad digit (0-9) pressed before an Authorization code.

Configuration digit. The first programmed digit of any code. This digit is used only by the Z1100 system, not by the end-user.

Default. Pre-set values. The Z1100 system comes with default exit time, entrance times, cutoff times, zone definitions, and other features. The default program makes installation and testing easier.

Disabled. Turned off. Not active.

Dynamic test. Active test. The Z1100 battery test is a dynamic test; 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 Z1100 system. EEPROMs do not lose information (programming) if power fails.

Enabled. Turned on. Active.

Enter. Put in. Pressing keypad keys to put in information.

Fail-safe Arming. All Burglar zones must be secure (or shunted) before the system will Arm.

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 Z1100 system.

Prompt. Cue. When programming, the Z1100R keypad beeps after each step. The beeps are a "prompt" to continue with the next step.

Trigger. A low-current signal. Connector J-16 Outputs can be used to trigger relay K1 or relay K2.

User programming. Restricted-level programming. This level of programming is used to program Authorization codes, entrance times, change the program code, or to set the Communicator-test time offset.

Watchdog. A circuit in the Z1100 system that prevents microprocessor latch-up. The watchdog minimizes the harmful effects of lightning and high-voltage transients.

Zone Definition. How a zone is defined. Zones can be burglar, fire, police, medical, or key.

FCC COMPLIANCE

This equipment generates and uses radio frequency energy and if not installed and used properly in 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 of 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 residential installations. However, there is no guarantee that interference will not occur in certain installations. 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 alarm control are on different branch circuits.
4. If necessary, the user should consult the alarm dealer or a radio/TV 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 No. 004-000-00345-4

TELEPHONE COMPANY INFORMATION

Incidence Of Harm

In the unlikely event that the NuTech¹¹ 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 such changes render the NuTech¹¹ incompatible with the telephone company facilities, the customer shall be given adequate notice to make modifications to maintain uninterrupted service.

TELEPHONE COMPANY REQUIREMENTS

Notification

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 NuTech¹¹ to the phone network the telephone company must be notified for the installation of an USOC RJ31-X jack. The telephone company will need the following information:

1. The phone number to which the NuTech¹¹ will be connected.
2. The FCC registration number: see data labels in specific products to be connected.

3. The ringer equivalence: see data labels in specific products to be connected.

4. The manufacturer: NuTone Division Scovill.

Notify the telephone company if the NuTech¹¹ is removed from the premises and the RJ31-X jack is no longer needed.

Malfunctions Of Equipment

In the unlikely event that the NuTech¹¹ should ever fail to operate properly it should be disconnected from the RJ31-X jack to determine if the problem is with the telephone network or with the NuTech¹¹. If a problem is found with the control leave, disconnected until repaired or replaced.

The FCC prohibits customer-provided terminal equipment to be connected to party lines or to be used in conjunction with coin telephone service.

LIMITED WARRANTY

NuTone Security Products are warranted to be free from defects in material and workmanship for the "Warranty Period" which is eighteen (18) months from the date of original manufacture. Consumable items (such as non-rechargeable batteries or dial lights) are not warranted or guaranteed in any manner for any length of time.

Our warranty does not cover damage or failure caused by Acts of God, abuse, misuse, abnormal usage, faulty installation, improper maintenance or any repairs other than those provided by a NuTone Authorized Security Dealer. **There are no obligations or liabilities on the part of NuTone Inc. or Scovill Inc. for consequential damages arising out of or in connection with the use or performance of the product or other indirect damages with respect to loss of property, revenues or profit, or costs of removal, installation or reinstallation. All implied warranties with respect to NuTone security products, including implied warranties for merchantability and implied warranties for fitness, are limited in duration to eighteen (18) months from date of original manufacture.**

Some states do not allow the exclusion or limitation of incidental or consequential damages and some states do not allow limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you.

During the "Warranty Period," NuTone will repair or replace, at NuTone's sole option, free of charge, any defective parts. Please provide the model number of the product, original date of installation and nature of difficulty being experienced. There will be charges rendered for product repairs made after our "Warranty Period" (as defined above) has expired. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

For NuTone security product service please contact your NuTone Authorized Security Dealer or write: NuTone, 4820 Redbank Road, Cincinnati, Ohio 45227-1599. Attention: Security Products Department.

NuTone

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Cincinnati, Ohio 45227

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